McCLELLAN-PALOMAR AIRPORT MASTER PLAN UPDATE

October 2018

Prepared for:

County of San Diego

Prepared by:

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EXECUTIVE SUMMARY

Overview

McClellan-Palomar Airport (Airport) is a general aviation airport owned and operated by the County of San Diego and located in the City of Carlsbad. The Airport provides valuable general aviation, corporate and commercial services acting as an economic engine for North San Diego County and the City of Carlsbad.

The Airport serves as a gateway to world-class resorts and tourist attractions and as a means of connectivity for local and visiting business people to and from the area. The Airport provides important linkage to a global economy, attracting corporations and bringing jobs. Economic activities related to the Airport generate hundreds and millions of dollars of income and revenue for the surrounding local communities.

The County of San Diego has prepared a comprehensive McClellan-Palomar Airport Master Plan Update (Airport Master Plan Update) to plan for the future while enhancing operations and safety at the Airport Many options were developed and considered as the Airport Master Plan Update was prepared.

The Airport Master Plan Update creates a new blueprint for development of the Airport over the next 20-year planning cycle. The major projects identified for consideration over the next 20-years include:

Installation of an Engineered Materials Arresting System, or EMAS, at both ends of the runways. EMAS enhances safety by working like a runaway truck ramp to slow and safely stop an aircraft by absorbing its energy should it overrun the runway.

Shift the Runway to the north by 123-feet to increase the separation distance between the runway and the taxiway. This will improve safety for current and projected aircraft types at the Airport by providing additional wingtip clearance during simultaneous runway/taxiway operations.

Extend the runway, possibly in phases, increasing the length by up to 800 feet for a maximum of 5,700 feet. This would allow aircraft already using the Airport to extend the distance they can fly by being able to take-off with more fuel. The extension would have the added benefit of reducing noise west of the Airport because aircraft will gain height sooner.

These projects would not make the Airport more usable for larger aircraft, such as Boeing 737's, because there would still be space limitations preventing such aircraft from operating on the ground at safe distances. In addition to the small size of the airport, there are a numbers of aviation businesses that have made substantial investment in facilities. These aviation businesses hold long-term leases with the County which the Airport Master Plan does not propose to redevelop. Even if every project in the Airport Master Plan Update is completed, McClellan-Palomar Airport would not be able to handle the size or volume of aircraft, or number of passengers, as San Diego International or John Wayne Airport.

The Airport Master Plan Update divides the projects into 3 phases; Near-term (0-7 years), Intermediate-term (8-12 years), and Long-term (13-20 years).

The Airport Master Plan Update also includes new forecasts for aircraft, commercial passengers and of takeoffs and landings. The new forecasts anticipate McClellan-Palomar Airport to regain a foothold on commercial airline service but remain a regional general aviation airport serving primarily corporate and private jets. The new Airport Master Plan Update includes three different scenarios- a baseline and two alternatives - to provide a range depending on future aviation demands within the San Diego Region.

The Airport Master Plan Update has analyzed the current facilities, including aircraft and public parking; passenger gates; ticketing and baggage areas; airline offices; and TSA screening and auxiliary spaces. It was determined the current facilities could service approximately 305,000 departing passengers, which may require minor modification. The Airport Master Plan Update also includes analysis to determine if a

higher number of passengers could be served, if needed, to meet demand. A second alternative scenario was included, as a contingency forecast, for up the 575,000 annual departing passengers. This scenario would require some modification to the terminal and facilities, such as additional passenger gates, larger restrooms and more area for TSA screening. The Airport Master Plan Update suggests Airport Management monitor use of the terminal to determine when these projects would be needed. The Airport Master Plan Update does not include any plans for more than 575,000 annual departing passengers.

The largest scenario in the Airport Master Plan Update predicts takeoffs and landings to reach a maximum combined total of 208,000 over the next 20-years. This is nearly 30% lower than McClellan-Palomar Airport's peak in 1999, when there were over 285,000 total takeoffs and landings. This is due to the shift from numerous smaller general aviation aircraft to fewer operations by larger, quieter corporate aircraft.

2036 Scenarios	Departing Commercial Passengers	Aircraft Takeoffs and Landings
BASELINE	171	192,860
Scenario 1	305,000	195,000
Scenario 2	575,000	208,000

McClellan-Palomar Airport Background

The airport was opened in 1959 by the County after being relocated from Del Mar due to the construction of Interstate 5. When it was constructed, the area was mainly dominated by agricultural uses surrounding the Airport. Over the years, as the region grew, the Airport also grew in activity with a peak in annual aircraft operations (either a takeoff or landing) in 1999 of nearly 292,000. For many years, the Airport served as a favorite location for pilots to train and base their small general aviation aircraft. As north San Diego and the City of Carlsbad developed robust centers of business and industrial parks, the Airport began serving as a vital link to global markets for corporate clients, and also expanded commercial airline service. Commercial air service was growing with multiple airlines when the County began building a new commercial passenger terminal in 2007. Over the next several years, the airline industry as a whole experienced changing economic conditions which led to a decline in aviation activity. At the time the highly acclaimed new terminal opened in 2009, there was only one airline operating at the Airport. This airline stopped service in 2015 due to a business decision to move to a larger aircraft unable to operate from McClellan-Palomar, and remove the aircraft type that had been operating at the Airport from its fleet. Since that time, several airlines have expressed interest in starting new commercial service out of McClellan-Palomar Airport with Cal Jet by Elite Airways being the first to restart commercial service in September 2017.

McClellan-Palomar Airport 1997 Master Plan

The County completed an Airport Master Plan for McClellan-Palomar Airport in 1997, which anticipated continued growth of aircraft operations over the 20-year planning horizon of the document. The 1997 Master Plan also predicted the type of aircraft serving McClellan-Palomar Airport to increase in size to newer, larger regional jets. The 1997 Master Plan projected that annual operations would grow to over 289,000 by 2015. However, continued growth of operations was not experienced throughout the last 20-years as predicted and has been declining over the past 10 years instead. The 1997 Master Plan did correctly predict the shift in aircraft to newer, quieter and more efficient regional jets.

Airport master plans are periodically updated to support the maintenance, development, and modernization of airports, as well as to plan for construction needed to accommodate future demand for aviation services on a local, regional, and national basis.

Previous Board Actions

In 2011, based on community support, the Board directed staff to conduct a feasibility study to determine if there were potential improvements, including extending the runway, that could make the Airport better and safer that made sense from an economic perspective.

On September 25, 2013, the Board received the completed Feasibility Study for Potential Improvements to McClellan-Palomar Airport Runway prepared for the County by Kimley-Horn and Associates, Inc. It was determined the options and alternatives from the Feasibility Study would be considered as part of a new 20-year McClellan Palomar Airport Master Plan Update (Master Plan Update).

The Airport Master Plan Update was started in early 2014 and to date has included numerous public outreach efforts. As the master plan process moved forward it became clear that there were several leading options to be considered as the preferred alternative for the future classification of the Airport. Three options were presented for the Board's consideration on December 16, 2015. The Board directed staff to proceed with the Airport Master Plan focusing on the modified C/D–III classification as the preferred option, subject to the preparation of a Program-Level Environmental Impact Report. As coordination with the FAA continued it was determined that combining the C/D classification was not a possibility so separate options were developed for both a modified C–III classification and a modified D–III classification. For the purposes of design, the FAA dimension standards for C-III and D-III airfields are the same.

Master Plan Purpose

The purpose of a Master Plan Update is to provide a developmental framework that meets existing and future aviation demand in a safe and cost-effective manner. A Master Plan Update further considers environmental, socioeconomic, and community development factors. The objective is to develop a planning road map for the future that is flexible, reasonable, and justifiable. Market trends, land use opportunities and constraints, phasing and financial feasibility are all considered as part of the master plan process. Public involvement and environmental review are also very important in developing a Master Plan Update that meets the needs of the community.

The new Master Plan Update considers the runway design elements in the context of other long-term facility improvements. It also considers future projects in terms of sequencing, prioritization, environmental processing requirements, business and real property issues, and financial planning. The Master Plan Update also strives to layout the sequence and thresholds for when improvements may be needed, as funding becomes available.

The Master Plan Update identifies the future role of the Airport to include supporting local businesses, accommodating corporate users, providing regional commercial airline service, serving private recreational fliers and enhancing public safety. These roles are all considered in planning future airport development.

Public Involvement

The master plan process included five specific opportunities for the public to be involved. These opportunities included a dedicated website, an introductory public meeting and three well-attended public workshops. Interested members of the public could sign up to receive notices about the Airport Master Plan Update. There have also been multiple Palomar Airport Advisory Committee meetings that included Airport Master Plan items on the agenda. Many comment cards, surveys, and emails regarding the Airport Master Plan have been received, reviewed, and responded to. There have been meetings with

stakeholder groups, comprised of tenant, industry, and local and federal agency representatives. There was coordination with Federal Aviation Administration and neighboring cities of Carlsbad, San Marcos, and Vista.

There were opportunities for the public to learn more about the Airport Master Plan and give input regarding impacts during the preparation of the Program Environmental Impact Report. This includes a public workshop at the beginning of preparation, and two more workshops to be held during the public comment period for the draft Program Environmental Impact Report and Airport Master Plan.

Aviation Activity Forecast

Forecast for aviation activity over the future planning period is an important part of a master plan. The Airport Master Plan Update contains serval types of forecast including number of passenger enplanements, based aircraft, and aircraft operations.

Aviation activity forecasting is both an analytical and subjective process. Actual activity that will be achieved in future years may differ from the forecasts developed in this planning document because of future changes in local conditions, dynamics of the airline and general aviation industries, and economic and political changes for the local area and nation as a whole. The FAA has a responsibility to review aviation forecasts that are submitted to the agency in conjunction with airport master plans and Airport Layout Plan (ALP) updates.

Aviation Activity Forecasts should:

- Be realistic
- Be based on latest available date
- Reflect current conditions at the airport
- Be supported by information in the study
- Provide adequate justification for the airport planning and development

The Airport Master Plan Update includes three potential scenarios. A Baseline forecast and two "planning-level" forecast scenarios that reflect the return of commercial service to the Airport. The forecasts are intended for facility planning to assist the Airport in determining appropriate facilities if demand exceeds forecasted levels of demand.

Baseline

The Baseline forecast was prepared in early 2017, using data from 2016 as the base year. However, unlike in past years, in 2016 there were almost no commercial operations at the Airport. The Baseline forecast uses the FAA's Terminal Area Forecast (TAF). This reflects the current conditions of the airline industry. However, the FAA TAF may not be the best indicator of future conditions at McClellan-Palomar Airport. This is because the TAF uses historic trends to predict future conditions and does not take specific airport circumstances into account.

The Baseline forecast, based on the TAF, goes from 2016 levels of passenger enplanements, based aircraft, and aircraft operations over the 20-year planning period. Passenger enplanements would increase from 131 in 2016, when there was almost no airline service, to 171 in 2036. This does not recognize the potential of the Airport to provide service. Based aircraft would increase from current 298 to 389 in 3036. Aircraft operations would increase from 149,029 in 2016 to 159,511 in 2036.

Baseline Forecast				
Year	Passenger Enplanements	Based Aircraft	Aircraft Operations	
2016	131	298	149,029	
2010	141	318	153,881	
2026	151	339	155,723	
2031	161	364	157,600	
2036	171	389	159,511	

Source: FAA Terminal Area Forecasts, issued January 2017

Planning Activity Level Forecasts

Since the commercial airline service trend for McClellan-Palomar had dropped to near zero in 2016 for various reasons, the TAF uses that depressed trend to predict only 171 annual passengers in year 2036. Therefore, two forecast scenarios (referred to as Planning Activity Level scenario 1 or PAL 1, and Planning Activity Level scenario 2 or PAL 2, in the Airport Master Plan Update) were also developed to reflect potential growth related to the return of commercial airline service, and consideration of local and regional planning documents.

Scenario 1

Scenario 1 (PAL 1 in the Airport Master Plan Update) is based on the number of passengers that the current terminal facility could handle with minor modifications. It reflects that one airline recently began service and could develop more flights to more destinations in the near future. This scenario would fully utilize the existing terminal with approximately 305,000 anticipated annual passengers by the end of the 20-year planning period. Aircraft operations are forecast to grow from 149,029 in 2016 to approximately 195,000, in 2036, which would still be significantly lower than the historical high of 292,000 in 1999. Based aircraft forecast is the same as the Baseline Forecast, 298 in 2016 to 389 in 2036.

Scenario 1: PAL 1 – Existing Facilities					
Year	Passenger	Based	Aircraft		
i cai	Enplanements	Aircraft	Operations		
2016	131	298	149,029		
2021	172,244	318	171,473		
2026	233,929	339	181,122		
2031	279,670	364	190,169		
2036	304,673	389	195,050		

Scenario 2

There is also another scenario, (PAL 2 in the Airport Master Plan Update) which reflects the number of passengers predicted in the Regional Aviation Strategic Plan (RASP) prepared by the San Diego County Regional Airport Authority (SDCRAA) in 2011. This indicates up to 575,000 annual passengers and would require some modifications to the Airport facilities, such as additional passenger gates, larger restrooms and more area for TSA screening. This scenario would result in the same number of based aircraft as the other scenarios and approximately 208,000 annual operations.

Scenario 2: PAL 2 – Contingency Scenario					
Year	Passenger Enplanements	Based Aircraft	Aircraft Operations		
0040	•				
2016	131	298	149,029		
2021	331,639	318	181,693		
2026	452,673	339	192,802		
2031	530,841	364	203,123		
2036	575,000	389	208,004		

Airport Classifications

Airport Classification is another important part of a master plan. Airports are classified by Airport Reference Code (ARC) based on the characteristics of the aircraft that operate at the Airport. The ARC dictates airport design criteria and signifies the airport's highest Runway Design Code (RDC), minus the third (visibility) component of the RDC. Runways are classified by; 1) RDC which includes the Aircraft Approach Category (AAC) and is given an alpha designation (A, B, C, D, & E) based on an aircraft's approach speed; 2) Airplane Design Group (ADG) indicated by numeric codes (I, II, III, IV, V, & VI) which are based on wingspan and tail height; and 3) the runway's visibility minimums expressed by Runway Visual Range (RVR) values in feet. The current ARC for McClellan-Palomar Airport is a B-II code which represents a mid-sized business jet. However, a substantial number of larger jets currently use the Airport and it's expected these aircraft will continue to use the Airport.

The Airport currently meets all B-II design criteria as designated in the previous 1997 Master Plan. However, the 1997 Master Plan did predict a future shift to larger C/D-III sized aircraft. FAA policy advises that during the Master Plan process airport dimensional standards, such as runway length and width, and separation between runways and taxiways, should be selected which are appropriate for the critical aircraft that will make substantial use of the airport during the planning period. This means that when a substantial number of operations of larger aircraft are taking place or expected to take place in the future, the Airport's Master Plan should address a transition to a classification that better supports these aircraft. Recent studies have determined that there are currently more than 500 annual operations of C-III and D-III category aircraft at McClellan-Palomar Airport. Aircraft Approach Category C and D airports support approach speeds up to 166 knots. Airplane Design Group III airports support wing spans up to 117 feet. The current B-II classification supports approach speeds of up to 120 knots, and wingspans up to 78 feet.

Alternatives Development and Evaluation

In order to determine the best options for the future multiple development options were identified and evaluated based on the following criteria:

- Ability to accommodate projected demand
- Impact on existing facilities
- Ability of improvements to remain on Airport-owned property
- Environmental impacts
- Implementation cost
- Safety Considerations
- Impacts to surrounding environs including businesses, roadways and neighborhoods
- Airport development potential
- Eligibility for FAA funding

It is also important to identify that recommended airport improvements are solely based on accommodating existing and projected aircraft operations and are not contingent on scheduled commercial activity in any way.

Preferred Airfield Alternative - D-III Modified Standards Compliance

Six airport design alternatives have been developed and included in the Airport Master Plan Update. Prior to identification of these final alternatives, an initial group of multiple design scenarios were developed. These scenarios were reviewed by the planning team and the Airport sponsor, discussed in general with an advisory group, presented at a public workshop, and refined into a final list of options to move forward for detailed evaluation.

On December 16, 2015, the Board reviewed leading options and directed staff to proceed with the McClellan Palomar Airport Master Plan Update focusing on the modified C/D–III classification as the preferred option, subject to the preparation of a Program-Level Environmental Impact Report. Following the Board meeting, the FAA indicated the County should select either C or D, rather than a hybrid. As such, the D-III Modified Standards Compliance was selected as the preferred alternative in the Airport Master Plan Update, subject to public review and a final determination by the County Board of Supervisors. This alternative includes the same features as the option identified by the Board but the name was changed to make it more consistent with FAA standards. This option conforms to most criteria for C-III and D–III airplanes, with four modification to standards that will need to be obtained from the FAA. It was developed to avoid the need to purchase additional land on the north side while meeting the runway/taxiway separations and minimizing impacts on the existing aircraft ramps. This option would allow a portion of the general aviation northern ramp to remain long enough to accommodate all aircraft that are currently using it as the airfield is transitioned to the full standards.

The D-III Modified Standards Compliance Alternative meets most of the D-III design criteria. This alternative would shift the centerline of Runway 06-24 123 feet to the north, and the centerline of Taxiway A 19 feet north in order to establish 400 feet of separation between the runway and Taxiway A. This achieves the required distance of separation between a runway and a taxiway for a D-III runway. There are only four non-standard components of this alternative. The first is it does not meet design criteria for the Runway Object Free Area (ROFA) to the north of Runway 06-24. The ROFA is an area which must remain clear of all objects. The standard width of the ROFA for a D-III runway is 800 feet (400 feet either side of runway centerline). D-III Modified Standards Compliance Alternative provides a 762-foot-wide runway object free area, 362 feet to the north of the runway centerline and 400 feet south of the runway centerline on the east end of Runway 06-24. The second non-standard component is the proposed distance of 493 feet from runway centerline to aircraft parking instead of the 500 foot standard. These actions are reasonable as they do not impact safety based on aircraft types anticipated to operate at the Airport. The third and fourth are that the ROFA at both the east and west ends of the runway do not meet design criteria, these can be addressed by EMAS or declared distances. These actions each require approval of modifications of standards from the FAA, which have been sought at the time this Airport Master Plan Update was prepared. This alternative also includes a recommended extension of the runway of up to 800 feet off the east end of Runway 24, as well as EMAS systems on both runway ends, which would enhance safety.

The D-III Modified Standards Compliance Alternative maintains the existing runway width of 150 feet. This runway width is adequate for large corporate aircraft as well as regional commercial aircraft. The proposed alternative does not introduce any new impacts to existing aviation businesses south of Runway 06-24, or the Airport's commercial aircraft ramp or terminal building.

This D-III Modified Standards Compliance alternative would address the needs of all aircraft currently using the Airport as well as newly designed corporate aircraft that would foreseeably use the Airport in the future. It would also address needs of smaller commercial aircraft, such as CRJ-700 and EMB 170/190.

The D-III is the design alternative the majority of community participants, including airport businesses and operators, local agencies, and community members, supported with over 90 percent favoring this option.

Currently, there are over 500 annual operations of D aircraft at the Airport. FAA guidance recommends that airport sponsors should start planning improvements when operations reach this level.

D-III Modified Standards Compliance Alternative		
Attributes	Compliant with FAA D-III design criteria with modifications to standard for ROFA	
	 Accommodates both the current corporate fleet and potential regional commuter aircraft 	
	EMAS systems to both Runway End 06 and 24 enhances safety	
	 Allows for up to an 800-foot extension to runway, which enhances safety and increases airfield capability 	
	 Consolidation and construction of connector taxiways between Taxiway A and Runway 06-24 to improve airfield safety and with proper placement can enhance operational capacity 	
	Approach RPZ dimensions do not change	
	 No impacts to aviation business, terminal ramp and southerly general aviation parking 	
	Good Potential for some FAA funding	
	Most public support	
	Stays within the existing footprint for the Airport.	
Constraints	Re-located RPZs move over existing buildings not previously covered	
	Significant costs and environmental impacts for extensions of Runway 06-	
	24 and Taxiway A over existing landfill areas	
	Requires shifting the approach lighting system	
	Requires relocation of existing NAVAIDs	
	Elimination of North Aircraft Parking Apron and self-service fuel facility	
	Requires approval of modification of standards from the FAA	

Future Projects

The McClellan-Palomar Airport Master Plan Update consists of many individual projects. It is expected the projects will be completed over a 20-year planning period covered by the new Airport Master Plan. Staff will return to the Board of Supervisors at later dates for approval, to advertise and award construction contracts as projects are fully designed and funding becomes available. Major projects identified in the Airport Master Plan include the Runway Safety Areas, Runway Extension and new Aircraft Rescue and Fire Fighting Facility.

Runway Safety Areas - Engineered Materials Arresting System (EMAS)

A modified C-III or D-III classification would require larger Runway Safety Areas (RSAs) compared with the current B-II classification. Construction of an EMAS would enable the Airport to function without a standard sized RSA because the energy absorbing materials slow and stop an aircraft within a shorter distance. With a preferred D-III classification, an EMAS would be required on the west end of the runway because there is not enough area to meet the higher safety standards associated with this designation. An alternative to EMAS on the west end of the runway would be implementation of declared distances to allow a 1,000-foot standard RSA, but such an action would shorten the useable portion of the runway by approximately 400-feet. There is currently enough area for the required larger safety area on the east

end if EMAS is installed or declared distances are implemented. A runway extension is not required but is included as a recommendation in the McClellan-Palomar Airport Master Plan as it would enhance the usability of the Airport, as described below. If the recommended 800-foot D-III runway extension was implemented, either EMAS or declared distances would be needed to account for the 1,000-foot RSA on the east end.

Shift Runway

One of the projects identified in the Airport Master Plan Update is to shift the Runway to the north by 123-feet to increase the distance between the runway and the taxiway. The shift will improve safety for aircraft types currently and projected to operate at the Airport by providing additional wingtip clearance during simultaneous runway/taxiway operations.

Completion of this project would eliminate the north aircraft parking area because this would fall into the new Runway Object Free Area. This would require relocating 30+ aircraft currently parked in this location. It would also require removal of the self-service fuel facility on the north side of the airfield that is used by those aircraft.

Runway Extension

McClellan-Palomar Airport is home to a wide range of aircraft, including business jets. The existing runway length of 4,897 feet does not provide aircraft operators that currently use the Airport the same benefits they would have with a longer runway. This is because these aircraft need more runway length than currently exists to takeoff fully-fueled and loaded, which would then allow them to fly farther and be more competitive in national and global markets. A business case analysis was completed as part of the Feasibility Study to aid in the assessment of an extension versus no extension. The McClellan-Palomar Airport Master Plan Update includes a runway extension option of up to 800 feet with a D-III design standard. This length was selected because it is the longest that could be accommodated on existing Airport land without the need to purchase additional land. An extension could be built in phases depending on funding availability. The Airport Master Plan also explores an interim option of extending the runway 200-feet in the current location.

Another benefit of a runway extension identified by the study is that it would reduce aircraft noise for residential communities west of the Airport. Shifting the beginning of the runway further east would mean aircraft would increase flight elevation sooner. Aircraft would be higher, and therefore quieter to those on the ground, as they fly west towards the coast. This would result in the footprint for noise sensitive areas moving east over industrial-use properties and even farther away from residential properties to the southwest. However, because the landing threshold would remain in the current location, noise to the east of the Airport from landing aircraft would not increase.

Larger corporate aircraft often stop and refuel at nearby airports with longer runways such as San Diego International Airport in order to reach their destination. This poses a significant inconvenience to operators, leads to lower fuel sales at McClellan-Palomar Airport, and increases the amount of fuel aircraft consume and emissions released into the environment.

Proposed runway extensions of varying lengths are identified in the Alternatives Analysis; for the purposes of this Airport Master Plan Update, in order to accommodate existing and projected operating aircraft at McClellan-Palomar Airport including the anticipated future design aircraft (Gulfstream G650), an extension of up to 800 feet is recommended to provide the Airport with approximately 5,700 feet of runway length. Longer options were considered but determined to be infeasible because, with the change to the preferred option of D-III Modified Standards Compliance alternative, any extension longer than 800 feet would require purchasing land around the Airport in order to comply with FAA safety requirements.

New Aircraft Rescue and Fire Fighting Facility

One of the specific components of this Airport Master Plan Update is to identify alternatives for the relocation of the existing ARFF facility. The existing facility is a canopy structure. A new proposed ARFF facility would be constructed to "Index B" standards identified in FAA guidance documents. The recommended site is located south of the existing Airport traffic control tower and west of an access road and encompasses approximately 7,000 square feet. This area is owned by the Airport and is currently occupied by a parking lot and adjacent lots could accommodate the parking spaces lost by relocation of the ARFF.

Potential Passenger Terminal Facility Improvements

The passenger terminal building at the Airport was completed in 2009 and has an interior area of approximately 12,590 square feet. The single-story facility includes awnings and outdoor space for the baggage claim that expand the building's footprint to approximately 18,000 square feet. It is expected the terminal can meet the levels of the Baseline Forecast and PAL 1 with little, if any modification. Terminal Improvements may be needed if passenger demand ever reaches the levels identified in Scenario 2, the contingency scenario. These potential projects include passenger boarding gates, hold room reconfiguration, employee parking, baggage screening, baggage makeup area, passenger screening, baggage claim and restroom facilities.

Potential Funding

The Airport Master Plan details potential grants and other funding sources. These sources include federal grants, passenger facility charges, state grants, County and Airport funds, bonds and private funds. However, funding of a runway extension or other projects detailed in the McClellan-Palomar Airport Master Plan Update is not guaranteed. Approval of the Airport Master Plan will not commit the County to construct any facilities, carry out any improvements or financially obligate the County. Staff would return to the Board at a later date(s) for approval to advertise and award construction contracts as projects are fully designed and funding is identified. It is expected the projects will be completed in phases over the 20-year planning period covered by the McClellan-Palomar Airport Master Plan Update.

Development Strategy and Time Frame

The McClellan-Palomar Airport Master Plan Update outlines recommended improvements to the Airport through 2036 based on Aviation Demand Forecasts. Implementation of the recommendations set forth in the plan will depend upon FAA programming and funding availability, completion of project specific environmental studies and documentation in accordance with CEQA and the National Environmental Policy Act (NEPA), as well as the attainment of the projected aviation traffic levels. The Airport Master Plan identifies specific projects and estimates completion according to short-term, mid-term and long-term timeframes, as shown on the following table:

Near-Term (±0-7 Years)				
Relocation of Segmented Circle	Pavement Removal/Installation	\$150,000		
Relocation of the Lighting Vault	Building Relocation 100 SF	\$575,000		
Relocation of the Glideslope Building and Antenna	Building Relocation ±360 SF	\$350,000		
Relocation of Windsock Equipment	Pavement Removal ±760 SY	\$130,000		
Environmental Assessment for EMAS		\$200,000		
Construction of EMAS System serving RWY 24 (Includes Relocation of the Vehicle Service Road)	EMAS ±580 SY VSR ±9,100 SY	\$25,000,000		
Relocation of ARFF Facility	±4,700 SF Facility	\$525,000		
Environmental Assessment for EMAS	,	\$200,000		
200' Extension of Existing Runway 06-24 and Taxiway A (Interim condition)	±11,600 SY	\$14,320,500		
	Phase Subtotal	\$27,130,000		
	Phase Subtotal*	\$41,450,500		
Intermediate-Term (±8-12 Years)				
Removal of North Apron and Taxiway N	Pavement Removal ±43,000 SY	\$684,000		
Enhancement of Near-Term Auto Parking	±800 SY of pavement	\$232,000		
Removal of Fuel Farm on North Apron	±25,000 GAL	\$45,000		
Environmental Assessment for facility Improvements		\$200,000		
Preservation of area reserved for GA aircraft parking	±3 acres	TBD		
Passenger/Admin/Parking Facility Improvements	±4 acres	TBD		
Improvements	Phase Subtotal	\$1,161,000		
Long-Term (±13-20 Years)				
800' Relocation/Extension of RWY 06-24 (if completed in one phase)	±81,610 SY	\$27,850,000		
Remove/Reconstruct Connector Taxiways	±13,000 SY	\$1,760,000		
Remove/Reconstruct TWY A	±39,070 SY	\$14,360,000		
Construction of EMAS System serving RWY 06	±580 SY	\$12,160,000		
Relocation of EMAS System serving RWY 24	±580 SY	\$11,240,000		
Relocation of NAVAIDS (ILS, GS, MALSR, PAPI)		\$2,800,000		
200' Relocation/Extension of Runway 06-24 and Taxiway A (if completed in 2 phases)		\$9,366,000		
Additional 600' Relocation/Extension of Runway		\$30,960,000		
06-24 and Taxiway A (if completed in 2 phases)	0' Extension plus 600' Extension)	\$82,646,000		
r nase Subtotal (20	\$70,170,000			
Phase Subtotal (800' Extension) \$70,170, Phased Development Total Costs				
Total Estimated Program Cost (200	'Extension plus 600' Extension)*	\$125,257,500		
Total Estimate	\$112,781,500			
Total Estimated Program Cost (20	\$110,937,000			
Total Estimate	\$98,461,000			

Source: Kimley-Horn, 2017. * Includes interim 200' extension to existing Runway 06-24 and Taxiway A

Board Policy F-44 Development of McClellan-Palomar Airport

The Board adopted Board Policy F-44 Development of McClellan-Palomar Airport in 1987. The purpose of the policy was to guide future development at the Airport and to implement a voluntary noise abatement program. The County's commitment to continue to implement a noise abatement program and monitoring program is duplicated in the Airport Master Plan.

Landfill

Another specific consideration addressed throughout the Airport Master Plan Update pertains to portions of the Airport that were previously used as a landfill. The landfill material underneath the east side of the Airport is unsuitable under current conditions to use as a stabilized base for airport improvements due to issues with settlement. The landfill area is equipped with a methane gas extraction system that consists of extraction wells, header piping, and condensate pumps. The constraints of the landfill have been considered in the preliminary design for the runway extension. Impacts from the landfill will be included in the Program EIR.

Noise

Aircraft noise is generally one of the most prominent and controversial environmental issues associated with Airport development. In 2006, a FAR Part 150 Study Update was completed by the County of San Diego for McClellan-Palomar Airport to identify land use compatibility and noise issues surrounding the Airport. The study determined that McClellan-Palomar Airport is not a noise impacted airport because the Community Noise Equivalency Level (CNEL) 65 dB contour does not extend into noise-sensitive areas surrounding the Airport. The County updated these noise contours in 2010 to address the potential increase in commercial operations with regional jet aircraft being considered at the Airport. The Airport Master Plan EIR will include an evaluation of existing and future contours. Both the 2010 and 2017 updated contours indicate that in most cases the noise levels have actually decreased around the Airport. This is most likely due to reduced number of aircraft operations and newer quieter aircraft using the Airport. Noise contours for the potential runway extension have also been developed. These contours demonstrate a runway extension would actually reduce noise for neighborhoods west of the Airport without increasing noise for other neighborhoods. The Airport Master Plan Update recognizes that noise is an issue.

A noise analysis completed as part of the accompanying Program Environmental Impact Report (PEIR) indicates that noise levels have actually decreased around the Airport over the past 20 years, due to reduced number of aircraft operations and newer, quieter aircraft using the Airport. The noise levels for the areas around the Airport are not expected to reach past levels for the next 20-year period included in the Airport Master Plan Update. Noise impacts related to the potential runway extension are also included in the analysis and show that noise would actually be reduced for neighborhoods west of the Airport, without any increase in noise to the neighborhoods east of the Airport.

Even with lower expected noise levels than have been experienced in the past, noise will inherently continue to be an issue with the Airport. To address community concerns, Palomar Airport has an Airport Noise Officer who helps implement a Voluntary Noise Abatement Program (VNAP) to coordinate with pilots on quiet hours, minimum altitudes, and flight routes to try to avoid residential areas. Additionally, the Airport Noise Officer conducts public outreach presentations to educate the general public on airport operations, noise and aviation regulations.

A PEIR was prepared for the Airport Master Plan Update, with opportunities for public involvement, and analysis of environmental effects for the project alternatives and describe mitigation measures. The PEIR analyzed if there are any impacts to resource areas such as biology, hazardous materials, noise and traffic.

Program Environmental Impact Report Prepared for the McClellan-Palomar Airport Master Plan

A Notice of Preparation for the Final Program Environmental Impact Report (PEIR) Prepared for the McClellan-Palomar Airport Master Plan was circulated for public and agency comment period from February 29, 2016 to March 29, 2016. The County circulated the Draft PEIR for public review prior to completing the report. The PEIR describes project objectives, setting and characteristics, analyzes its environmental effects, addresses project alternatives, and describe mitigation measures and

environmental design considerations. It identified any significant impacts to subjects such as biology, hazardous materials, temporary construction noise and traffic.

Section 1 - INTRODUCTION

McClellan-Palomar Airport (CRQ) is situated in North San Diego County, approximately 30 miles from downtown San Diego. CRQ (Airport) is categorized by the Federal Aviation Administration (FAA) as a non-hub primary airport. Until April 2015, the Airport had scheduled commercial service provided by United Airlines/SkyWest and by Biz Charters from June to August 2015. Starting in September 2017, Cal Jet by Elite Airways began providing scheduled commercial service utilizing 64-seat Bombardier CRJ-700 (CRJ-700) aircraft. The Airport experiences significant general aviation and corporate aircraft activity. This Airport Master Plan Update analyzes the Airport's ability to accommodate existing levels of aviation demand and makes specific development recommendations to accommodate projected demand. The previous Airport Master Plan was completed in 1997.

An Airport Master Plan Update is a projection of an airport's conceptual long-term facility development. This plan is documented and approved by the County of San Diego Board of Supervisors, which owns and/or operates the airport. The Airport Master Plan Update is a narrative that presents the data and logic for the plan and displays the ultimate development concepts graphically in an Airport Layout Plan (ALP) set of drawings. Airport master plans are regularly updated to support the maintenance, development, and modernization of airports, as well as to plan for construction needed to accommodate demand for aviation services on a local, regional, and national basis.

1.1 PURPOSE

The purpose of an Airport Master Plan Update is to provide a development framework that meets existing and future aviation demand in a safe and cost-effective manner. The Airport Master Plan Update further considers environmental, socioeconomic, and community development factors. Per *FAA AC 150/5070-6B, Airport Master Plans*, each Airport Master Plan Update should meet the following objectives:

- Document the issues that the proposed development will address.
- Plan the proposed development through the technical, economic, and environmental investigation of concepts and alternatives.
- Provide an effective graphic presentation of the development of the airport and anticipated land uses near the airport.
- Establish a realistic schedule for the implementation of the development, particularly the near-term capital improvement program.
- Propose an achievable financial plan to support the implementation schedule.
- Provide sufficient project definition and detail for subsequent environmental evaluations that may be required before the project is approved.
- Present a plan that adequately addresses the issues and satisfies local, state, and federal regulations. This includes meeting land use compatibility compliance with FAA standards and CUP-172, which is detailed in subsequent portions of this Airport Master Plan Update.
- Document policies and future aeronautical demand to support municipal or local deliberations on spending, debt, land-use controls, and other policies necessary to preserve the integrity of the airport and its surroundings.
- Set the stage and establish the framework for a continuing planning process. Such a process should monitor key conditions and permit changes in plan recommendations as required.

Specific to this Airport Master Plan Update, the following additional goals and objectives have been established:

• Generate an Airport Master Plan Update that will be a useful tool for planning and project funding purposes for a 20-year horizon.

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- Produce a document that adequately identifies existing facilities at the Airport, establishes
 projected levels of aviation demand, identifies facility requirements based on projected
 demand, and recommends realistic, feasible development alternatives to accommodate
 facility needs.
- Identify near-, intermediate-, and long-term improvements that enhance the Airport's safety, maximize efficiency, promote sustainability and economic stability, and are environmentally conscious while being attentive to the needs of the Airport and the community it serves.
- Examine previous Master Plans and other Airport-specific studies to validate or modify recommended actions as they pertain to projected levels of activity and proposed improvements.
- Incorporate recommended improvements into an updated ALP.

Baseline assumptions that have been established as a component of this Airport Master Plan Update include:

- McClellan-Palomar Airport will continue to operate as a publicly-owned facility that accommodates general aviation and corporate aircraft activity and re-established scheduled commercial service.
- Other commercial service airports in Southern California will continue service for the foreseeable future.
- The Airport will continue to secure scheduled commercial service and expand operations currently provided by Cal Jet by Elite Airways.
- The Airport will continue to foster growth in general aviation and corporate business aviation based tenants and transient operations.
- At a national level, the aviation industry will grow as forecasted by the FAA in its annual Aerospace Forecasts.
- Local and regional socioeconomic characteristics will mimic forecasts utilized from U.S.
 Census data and data provided by Woods and Poole, Inc., which is an independent firm that specializes in long-term county economic and demographic projections.¹ This assumption is important as forecasts presented in this Airport Master Plan Update do not incorporate any unforeseen changes in socioeconomic conditions of the Airport's surrounding community.
- Airport facilities will not expand outside existing ownership boundaries. It is recommended
 that all Runway Protection Zones (RPZ) be acquired or have easements. The acquisition of
 property interests for RPZ does not require a change in land use or land uses designation.
- The County of San Diego will continue to experience economic and population growth during the 20-year planning horizon (SANDAG 2050 Regional Growth Forecast).

1.2 MASTER PLANNING PROCESS

This Airport Master Plan Update is an organized collection of information, analyses, and resulting decisions and policies guiding the future development of the Airport over a period of 20 years. This study addresses the following elements:

Inventory of Existing Facilities – This element entails an evaluation of existing documents that
directly or indirectly impact the functionality of the Airport. It also includes an extensive
inventory of existing airside and landside facilities at the Airport as well as support facilities
such as transportation infrastructure and auto parking. The inventory process also includes

Introduction 1-2

¹ The Complete Economic and Demographic Data Source (CEDDS). http://www.woodsandpoole.com/, Woods & Poole. 2016.

- documentation of air traffic activity, airspace, air traffic control, regional airports, local and regional socioeconomic data, and local and regional land use.
- Forecasts of Aviation Demand Forecasts have been prepared for near-term (0-7 year), intermediate-term (8-12 year), and long-term (13-20 year) periods using 2016 as a base year. Forecasts for this Airport Master Plan Update have been compared with the FAA's Terminal Area Forecasts (TAF) and submitted to the FAA for review and approval. Specific elements of forecast analysis include passenger enplanements, aircraft operations (commercial/general aviation, local/itinerant), based aircraft, and aircraft fleet mix (based and itinerant).
- Demand/Capacity This element entails determination of the existing airport's capacity in comparison to existing and projected levels of aviation demand. A specific component of this Airport Master Plan Update is to also evaluate the adequacy of the existing transportation network that connects to the Airport, and identify potential impacts of future aviation activity. This evaluation is presented in Section 4.
- Facility Requirements This component identifies airside and landside needs of existing facilities based on projected levels of aviation-related demand.
- Alternatives Analysis Based on recommended facility requirements and projections of demand/capacity, this component identifies project development alternatives that are possible, reasonable, feasible, sustainable, and environmentally responsible. When applicable, this section of the Airport Master Plan Update also includes an environmental overview for projects that incorporate National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) guidelines as a precursor to future environmental documentation such as an Environmental Assessment (EA) or a Categorical Exclusion (CATEX). The primary objective of the Alternatives Analysis is to evaluate all development options for airside and landside facilities and recommend a preferred option and phasing strategy. This strategy, which categorizes the alternatives into near-term (0-7 years), intermediate-term (8-12 years), and long-term (13-20 years) timeframes, is also identified in the Scope of Services of this Airport Master Plan Update as the recommended Airport concept.
- Financial Management and Development Program This element incorporates planninglevel cost estimates for all recommended development alternatives, as well as for potential future planning efforts such as an Airport Master Plan Update.
- ALP The recommended physical facility improvements identified in this Airport Master Plan
 Update are graphically represented on the ALP, which incorporates recommended
 development alternatives, as well as any changes that have occurred since the previous ALP
 was approved. This includes updates to Part 77 Surface drawings, FAA-approved approach
 and departure drawings, the Airport Property Map, and the On-Airport Land Use Plan.
- Public Involvement Program The Public Involvement Program encourages information sharing and collaboration between the airport sponsor and the stakeholders. Opportunities to comment, before major decisions have been made, are essential to an effective Public Involvement Program. Throughout the development of this Airport Master Plan Update, input was gathered at regular coordination meetings with County staff, County officials, the FAA, and stakeholders. In addition, four public workshops were conducted at various benchmarks of the master plan process to provide status updates on the project and to gather feedback on the Airport Master Plan Update and other Airport-specific issues. The primary reason for receiving and incorporating public feedback is to ensure that proposed improvement at the Airport represent the surrounding community as well as specific Airport users.

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Section 2 - INVENTORY OF EXISTING CONDITIONS

2.1 INTRODUCTION

McClellan-Palomar Airport is a Class I Part 139 FAA certified facility, which permits commercial service aboard scheduled small aircraft (10-30 seats), scheduled large aircraft (30+ seats), and unscheduled large aircraft. As noted, Cal Jet by Elite Airways began scheduled commercial service in September 2017 using 64-seat CRJ-700 aircraft. The Inventory of Existing Conditions provides an overview of existing airport facilities, which provides the requisite general facility data on which subsequent and more detailed analyses of airport capability/capacity will be conducted. This will be compared against projections of future aviation-related demand to determine whether current Airport facilities can meet projected passenger, aircraft operations, and based and itinerant aircraft demand and, if not, what future facilities may be needed at the Airport to do so.

This section provides an overview of the existing facilities and operational areas of the Airport. The following topics are discussed in this section:

- Airport facilities
- Meteorological data
- Operations and airspace procedures
- Airport traffic control facilities
- Passenger terminal facilities
- Airport access and circulation
- Airport tenant and support facilities
- Airport utilities
- Land use and zoning policies
- Environmental considerations

2.2 AIRPORT FACILITIES

Airport facilities that accommodate aircraft operations are depicted in **Exhibit 2.1** and are briefly described in the following sub-sections.

2.2.1 AIRPORT DESIGN CRITERIA

Prior to outlining the existing airport facilities at the Airport, it is necessary to consider the dimensional criteria that the FAA utilizes in the planning of airports and their relationship to aircraft size and performance. The FAA classifies airports and their runways according to the size and performance of aircraft that typically operate at an airport. Per FAA Advisory Circular (AC), 150/5300-13A, each runway is classified using a three-component identifier called the Runway Design Code (RDC). The RDC is comprised of the Aircraft Approach Category (AAC), the Airplane Design Group (ADG), and the operational visibility minimums specified for the runway. The AAC is based upon the approach speed of an aircraft or how fast the aircraft flies as it is landing; the ADG is based upon the wingspan and tail height of an aircraft; and the runway visibility minimums are expressed in terms of runway visual range (RVR), which is the minimum available horizontal visibility required of the pilot at the time of the landing. The RDC provides dimensional criteria for pavement surfaces, safety areas, runway width, and separation standards between active runways, runways and taxiways, runways to aircraft parking positions, and several other requirements to ensure the runway infrastructure can safely and efficiently accommodate the most demanding aircraft types, also referred to as the "design aircraft" that are expected to use the Airport on a regular basis. The components of the RDC are shown in **Table 2.1**.

McClellan-Palomar Airport

Airport Master Plan Update

Exhibit 2.1 Existing Airport Facilities



Source: CRQ Airport Certification Manual. Airport Layout Plan, July 2010. Master Record 5010, October 2013 Prepared by: Kimley-Horn and Associates, Inc. August 2017

Inventory of Existing Conditions 2-2

Runway Aircraft **Approach** Airplane Statute Wing Span Tail Height Visual **Speed Approach** Design Mile (feet) (feet) Range **Visibility** Category (knots) Group (feet) Less than Less than Α Less than 91 I **VIS** Visual 49 20 <1 Mile ≥ В 91 to 120 П 49 to 78 21 to 29 4,000 3/4 Mile < 3/4 Mile C 121 to 140 Ш 79 to 117 30 to 44 2,400 ≥ ½ Mile < ½ Mile D 141 to 165 I۷ 118 to 170 45 to 59 1,600 ≥ ¼ Mile 166 or ٧ Ε* 171 to 213 60 to 65 1,200 < 1/4 Mile Greater 214 up to 66 up to but ۷I but less than less than 80 262

Table 2.1- FAA Airport Design Criteria Classifications

Source: FAA Advisory Circular 150/5300-13A. Prepared by: Kimley-Horn, 2017. * AAC "E" only includes military aircraft.

Aircraft with approach speeds in Categories A and B are typically smaller, piston-engine aircraft, although Category B also includes small to mid-size business jets, including Cessna and Dassault Falcon models. Approach Category B also includes several regional commuter aircraft types including the Embraer EMB-120 that was operated by SkyWest Airlines at the Airport until April 2015. Approach Categories C, D, and E are normally larger turboprop- and turbine-powered aircraft.

Similarly, the wingspan and tail height of small, piston-engine aircraft normally correspond to Design Group I. Aircraft in Design Group II typically include commuter aircraft such as the Saab 340 or the Embraer EMB-120, along with several business turboprop and corporate jets that include the Beechcraft King Air, Cessna Citation Jet series, the Raytheon Learjet series, Embraer Legacy series, and smaller Dassault Falcon and Gulfstream business jets. Design group II also includes the CRJ-700 currently operated by Cal Jet by Elite Airways.

Design Group III includes larger corporate jets including the Gulfstream G500, G550, and G650; Bombardier Global Express; Dassault Falcon 5X and 7X; Embraer Lineage 1000; and a number of commercial regional/commuter turboprop aircraft such as the Bombardier Dash 8 100-400, ATR 42, and 72, and, while not seen at the Airport, larger air carrier aircraft types including the Boeing 717 and 737 series; Airbus A318, 319, 320 and 321; and McDonnell Douglas MD-80 series aircraft. Design Groups IV and V include large commercial transport aircraft not seen at the Airport such as the Airbus A330 and A340 and Boeing B757, B767, B777 and B747-400. Group VI would include the largest aircraft, such as the B747-800, Airbus A380, or C-5 military cargo aircraft. Group IV and V aircraft have not operated at the Airport due to operating conditions and insufficient space for ground movement and parking.

An example RDC would be a combination of the AAC, ADG, and visibility minimums, such as C-III-2400. As defined in FAA AC 150/5300-13A, the FAA classifies airport reference codes (ARC) based on the size of the largest aircraft that generally records at least 500 operations annually at an airport; this aircraft is known as the airport's "critical design aircraft." The critical aircraft may consist of the physical characteristics from several different aircraft types that are considered collectively. The overall ARC is the airport's highest RDC, minus the visibility component or third item noted in the above example. It is important to note that the ARC is used for planning and design and does not necessarily limit the types of aircraft that can safely operate at the Airport.

Based on the current ALP for CRQ (approved by the FAA in July 2010), the ARC is set at Approach Category B and Airplane Design Group II, or in its shortened form B-II, with the design aircraft designation

of a Falcon 2000. The ultimate build-out ARC on the 2010 ALP is identified as C-II. Subsequent sections of the Airport Master Plan Update will review this designation under current conditions and determine whether any changes have taken place that trigger the need to adjust the ARC.

2.2.2 RUNWAY SYSTEM

The key portion of the airfield at every airport is the runway system. At McClellan-Palomar Airport, there is one active runway designated as Runway 06-24. It is 4,897 feet long and 150 feet wide and is oriented in a northeast/southwest direction. The approach end of runway 06 has a displaced threshold of 297 feet and a declared distance of 4,600 feet of landing distance. **Table 2.2** summarizes the physical characteristics of the runway.

Table 2.2 – Existing Runway Data

Item	Runway 06-24		
Length	4,897'		
Width	150'		
Effective Runway Gradient	.01	.01%	
Runway Surface Type	Asp	Asphalt	
Runway Condition (1)	Good		
Runway Treatment	Grooved		
	60 – Single Wheel		
Load Bearing Capacity (1,000 lbs.)	80 – Dual Wheel		
	110 – Double Dual Tandem		
Aircraft Approach Category	В		
Airplane Design Group	ı	II	
Runway Safety Area Length (beyond runway	300'		
ends)	300		
Runway Safety Area Width	150'		
Runway Object Free Area Length (beyond	300'		
runway end)			
Runway Object Free Area Width	500'		
Runway 06-24 to Taxiway A	296.5'		
Runway 06-24 to Taxiway N	300'		
Runway Visual Range	4,000		
Runway End	06	24	
Runway End Elevations (2)	330.0'	326.3'	
Approach Runway Protection Zone			
Length (starting 200' from landing threshold)	1,000'	1,700'*	
Inner Width	500'	1,000'	
Outer Width	700'	1,510'*	
Departure Runway Protection Zone			
Length (starting 200' from pavement end)	1,000'	1,000'	
Inner Width	500'	500'	
Outer Width	700'	700'	

Notes:

^{*} These are the FAA design standard dimensions for the visibility minimums in existence today; however, on the ALP of July 2010, the Approach RPZ is depicted as a larger size.

Based on Form 5010, Effective 5/7/2015

Elevations in feet above MSL

Source: FAA Airport Master Record #5010, 2017; McClellan-Palomar Airport ALP, FAA Approved July 2010. Prepared by: Kimley-Horn, 2017.

2.2.3 TAXIWAY SYSTEM

The existing taxiway system at the Airport consists of Taxiway A—a full-length parallel taxiway south of Runway 06-24 and Taxiway N—a one-quarter length parallel taxiway to the north. Taxiway A is an apronedge taxiway along most of its length. Taxiway N provides access from Runway 06-24 to the north apronarea. Existing characteristics of these taxiways are shown in **Table 2.3**.

Table 2.3 - Existing Taxiway Data

Item	Taxiway A	Taxiway N
Taxiway Width (ft.)	50	35
Taxiway Safety Area (ft.)	79	49
Pavement Composition	asphalt	asphalt

Source: Airport Records. Prepared by: Kimley-Horn, 2017.

In addition to the parallel taxiways, there are several connecting taxiways that provide access to and from the runway. Taxiway A has six connecting taxiways located between the runway ends. These connecting taxiways are designated from east to west as A1 through A6. Taxiway A3 is a high-speed exit taxiway for arrivals on Runway 06. Taxiways A4 and A5 are 45-degree high-speed exit taxiways for arrivals on Runway 24. Both ends of Taxiway A have large pre-flight run-up areas located just prior to the taxiway connection to the alignment of Runway 06-24. These areas have been sized to accommodate aircraft up to and including the majority of the ARC C-III and D-III business jets operating at the Airport without creating any impact to activity on Taxiway A. The run-up area immediately south of the Runway 06 landing threshold is also provided with a painted compass rose.

Taxiway N has a total of three connecting taxiways located between the runway ends. These connecting taxiways are designated as N1 through N3 from east to west. Taxiways N1 and N3 both intersect Runway 06-24 and Taxiway N at a 90-degree angle, while Taxiway N2 intersects Runway 06-24 at an approximate 30-degree angle oriented to favor west flow landing operations. Taxiway N has a designated pre-flight aircraft run-up area at its eastern end that is sized to accommodate several small general aviation (GA) aircraft that also provides enough space for aircraft taxiing on Taxiway N to pass by aircraft on the run-up area without interference.

2.2.4 HELIPADS

There are two helicopter parking areas at the Airport. The first is a designated helipad, which is located on the southeast side of the Airport immediately south of the Taxiway A run-up area near the approach end of Runway 24. This facility is 70' by 60' and marked with a painted "H" in a northwest/southeast orientation. The helipad is also equipped with lights at the outer boundary of the designated Final Approach and Takeoff Area (FATO) and its affiliated safety area.

A second helicopter parking area is marked to the west of the Magellan Aviation facilities on the eastern end of a set of tie-downs located along the south side of Taxiway A. This pad consists of a marked area on existing pavement 42' in diameter with an elevated towable landing surface capable of accommodating a single helicopter. This parking area is not lighted.

2.2.5 NAVIGATIONAL AIDS

Navigational aids (NAVAIDS) are any visual or electronic devices airborne or on the surface that provide point-to-point guidance information or position data to aircraft in flight. The Airport contains on-site

NAVAIDS, as well as various NAVAIDS within the vicinity of the Airport, providing guidance to aircraft approaching or departing.

The Airport has a Category I (CAT I) Instrument Landing System (ILS) installation, consisting of a localizer antenna and a glideslope antenna. These NAVAIDS provide course and altitude guidance to aircraft approaching Runway 24 under Instrument Meteorological Conditions (IMC). A CAT I ILS provides an approach path for exact alignment and descent of an aircraft on final approach to a runway.

Another type of ground-based NAVAID is the Very High Frequency Omnidirectional Range (VOR) antenna. This type of facility allows not only for point-to-point navigation, but also provides position and distance information. There are several VORs within the region that provide navigational aid to aircraft departing from or arriving to the Airport. The Oceanside VOR is located approximately 11 miles northwest of the Airport and is used in conjunction with the ILS Runway 24 approach. It is also the primary NAVAID for executing the VOR-A approach to the Airport. The Mission Bay VORTAC (VOR with Tactical Air Navigation) is located approximately 24 miles southwest of the Airport and provides information used in conjunction with the ILS Runway 24 approach. The facility is used by pilots executing the ILS approach to determine when they arrive at specific points on the approach.

Other radio navigational aids within the vicinity include Julian VORTAC, Poggi VORTAC, Tijuana VOR/DME, Homeland VOR, and El Toro VOR/DME. VOR/DME refers to combined radio navigation station for aircraft, which consists of two radio beacons placed together, a VHF omnidirectional range (VOR), and distance measuring equipment (DME).

The National Airspace System (NAS) is being modernized by the Next Generation Air Transportation System (NextGen), including moving away from ground based radar to satellite signals. NAS programs and initiatives affect flight plans and can have noise impacts, as well as impacts to navigation aids, airspace, airport capacity, and obstruction management. These initiatives and programs include 1) Automated Dependent Surveillance-Broadcast (ADS-B), which is the FAA's satellite-based successor to radar that uses GPS technology to determine and share precise aircraft location information, and streams additional flight information to the cockpits of properly equipped aircraft, and 2) NextGen Weather, which reduces weather impacts by producing and delivering tailored aviation weather products via System Wide Information Management (SWIM), helping controllers and operators develop reliable flight plans, make better decisions, and improve on-time performance. While some initiatives are already being implemented, more programs are in their initial stages of deployment such as weather, voice systems, information management, and data communications. Each of these programs is geared towards improving one facet of the safety and efficiency of the aviation transportation system.

Area Navigation (RNAV) is the overall terminology used for non-ground based instrument approaches that use the Global Positioning System (GPS) Wide Area Augmentation System (WAAS). These RNAV approaches are being implemented as part of the NextGen Performance Based Navigation (PBN) initiative. Several RNAV approaches are available at CRQ.

With ADS-B, pilots have access to the same radar information that Airport Traffic Control Tower (ATCT) can see as well as hazardous weather, terrain, and airspace restrictions. Additionally, while pilots are on the ground at an airport they can see where other aircraft and ground vehicles are located in an effort to raise situational awareness and reduce incursions.

2.2.6 Instrument Approaches

Instrument Approach Procedures (IAP), also known as Instrument Flight Rules (IFR), provide airports the capability to accommodate aircraft operations during periods of low visibility. This capability is tied to the type of procedure and the types of electronic navigational aids that are in place. Five published IAPs are available at the Airport.

There is an ILS approach, which is a precision IAP that provides vertical and horizontal guidance for aircraft approaching Runway 24. This IAP uses ground-based radio navigational aids for aircraft guidance, including localizer antenna and a glideslope antenna. If an aircraft does not have the technology to complete the full ILS approach, it may use this approach as a Localizer (LOC) approach, which only provides horizontal guidance. The ILS version of this approach has a visibility minimum of $\frac{3}{4}$ statute mile (sm). The Localizer version has a visibility minimum of $\frac{1}{2}$ sm.

In addition to the ILS approach, there are three GPS approaches to Runway 24, which use information from GPS satellites as opposed to ground-based radio navigational aids. The RNAV Z approach employs Required Navigation Performance (RNP), which requires greater navigation system performance monitoring and alerting than standard GPS approaches. An RNP approach can allow an appropriately-equipped aircraft and trained pilot to precisely fly curved approach paths and other complex arrival routes without the need for ground-based radio navigational aids. The visibility minimum for RNAV Z is 1 sm. The visibility minimums for RNAV X and RNAV Y approaches are $\frac{3}{4}$ sm. These approach procedures are shown in **Exhibits 2.2 through 2.5.**

There is also a VOR approach to the Airport, designated VOR-A. This approach utilizes the Oceanside VORTAC which is a ground-based radio navigational aid located off-airport. The procedure is a circling approach, meaning that the approach is not aligned with a specific runway end; rather, it requires the pilot to obtain sight of the airport environment and enter the airport traffic pattern to land while maintaining visual contact with the airport and runway. The visibility minimum for the VOR-A approach is 1 statute mile. This approach is shown in **Exhibit 2.6.**

CARLSBAD, CALIFORNIA AL-5310 (FAA) 16315 LOC/DME I-CRQ 4897 Rwy Idg TDZE ILS or LOC RWY 24 APP CRS 108.7 326 245° MC CLELLAN-PALOMAR (CRQ) Apt Elev 331 Inop table does not apply to S-ILS Rwy 24. MISSED APPROACH: Climb MALSR Autopilot coupled approach NA below 960. DME required. to 3000 on heading 245° and on OCN VORTAC R-145 Rwy 24 helicopter visibility reduction below RVR 4000 NA. For inop ALS, increase S-LOC 24 Cat A/B visibility to RVR 5500 and Cat C visibility to 1 % SM. to OCN VORTAC and hold. SOCAL APP CON GND CON CLNC DEL ATIS PALOMAR TOWER* 120,15 127,3 323,0 18,6 (CTAF) 0 276,4 134,85 121,8 5438 5710 **OCEANS** DE 5.3 OCN =: Chan 100 HOMEY INT 4500 0830 3300 (17.6) 183° (2.5) I-CRO 8 065° HUSET SW-3, 712 FCRQ 4.2 201 609 (4) (14.3) 17 AUG 20 JUL 2017 to 17 AUG 2017 481 1053 / ESCON INT GENTA INT 024 RECCO INT. I-CRQ 10.4) /JLI 18.2) I-CRQ 6.5 2300 0 ZANIG INT 245° (1.5) JU 22.2 2017 JULIAN LOCALIZER 108.7 114.0 JU 278 2010 Chan 87 HCRQ ----20 JUL 3 OCN Chan 24 S. C. SW-3, 7000 608 428 **ELEV 331** D TDZE 326 N. Wall 2100 100 po . 3000 WUNUB **ESCON INT** OCN OCN I-CRQ B) CIDRU **FCRQ** 10.4) ♡ R-145 I-CRQ 6.5 3300 HUSET hdg 245° I-CRQ 4.2) 2300 LOC only *I-CRQ 2600 2.7 I-CRQ 0.9 640 245° 5.7 NM 2300 GS 3.20° TCH 55 from FAF - 2.4 NM -CATEGORY 576/40 S-ILS 24 527/40 201 (200-34) NA 250 (300-3/4) 1000-11/2 S-LOC 24 1000/40 674 (700-34) NA 674 (700-1 1/2) REIL Rwy 24 0 1020-1 1260-23/4 1000-1 **C** CIRCLING HIRL Rwy 6-24 0 NA 689 (700-1) 669 (700-1) 929 (1000-23/4) CARLSBAD, CALIFORNIA MC CLELLAN-PALOMAR (CRQ) Amdt 9D 10NOV16 33°08'N-117°17'W

Exhibit 2.2 FAA Published ILS or LOC/DME Runway 24 Approach

ILS or LOC RWY 24

Exhibit 2.3 FAA Published RNAV (GPS) X Runway 24 Approach

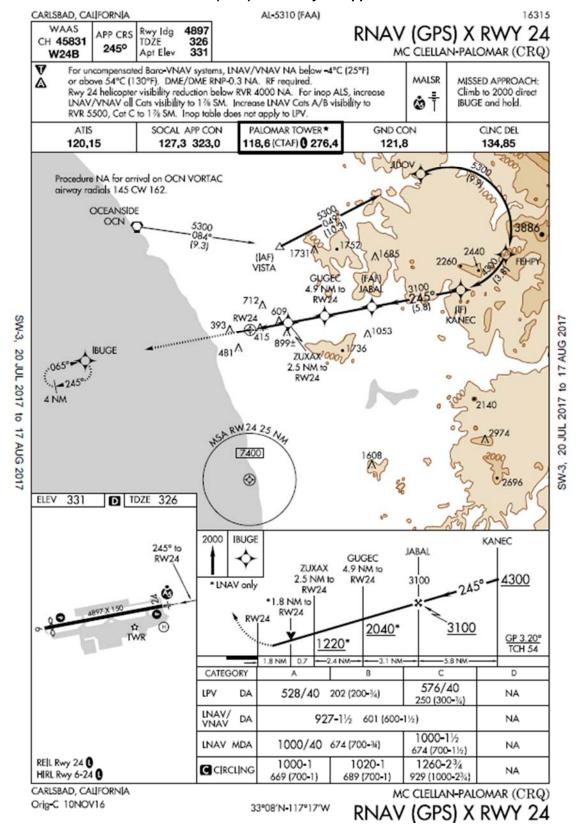
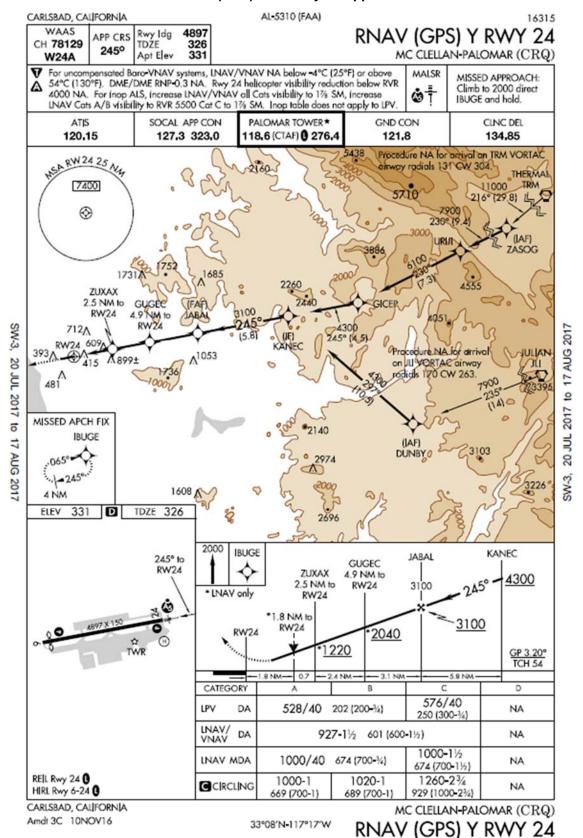


Exhibit 2.4 FAA Published RNAV (GPS) Y Runway 24 Approach



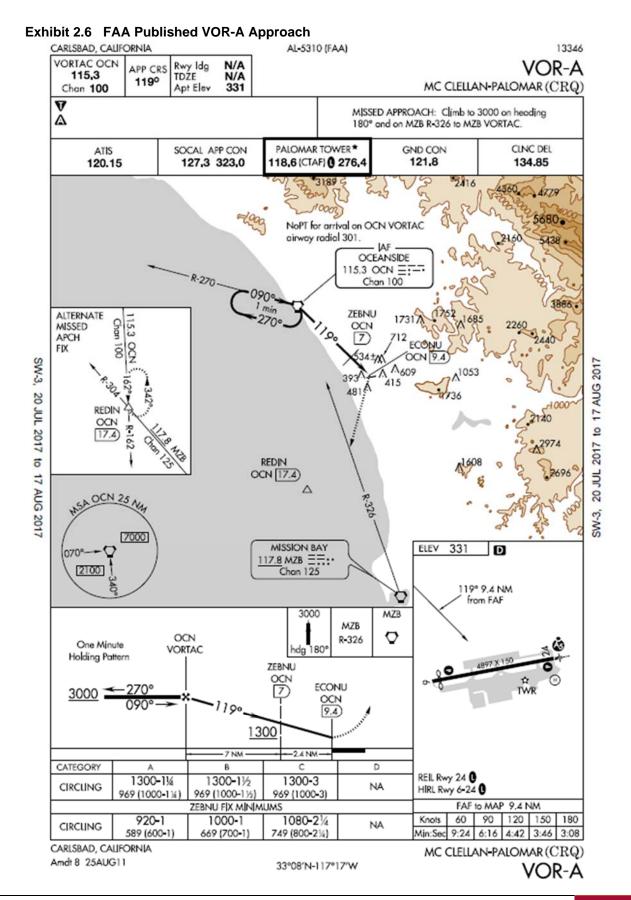
CARLSBAD, CALIFORNIA AL-5310 (FAA) 14205 4897 RNAV (RNP) Z RWY 24 Rwy Ida APP CRS 326 TDZE 245° MC CLELLAN-PALOMAR (CRQ) Apt Elev 331 V MALSR For uncompensated Baro-VNAV systems, procedure NA below 1°C (34°F) or above 54°C (130°F). For inoperative MALSR, increase RNP 0.10 visibility to RVR 6000 all Cats, RNP 0.30 visibility to 1% all Cats. GPS required. MISSED APPROACH: Climb to <u>.</u> آ 2000 on track 245° to IBUGE and hold. ATIS SOCAL APP CON PALOMAR TOWER* GND CON CLNC DEL 118,6 (CTAF) @ 276,4 134.85 120,15 127,3 323,0 121,8 A 3802 (IAF) TANNE 3189 (RF REQD) IRNA 0,360 Procedure NA for arrivals on TRM VORTAC girway Procedure NA for radials 13) CW 304. (RNP 0.30) 10000 arrivals at TANNR on 5680 2169 (29.8) V186 northwest bound. Procedure NA for arrivals on OCN VORTAC airway PALCI . radials 083 CW 162. Max 180 KIAS WAGAV (IF) ZAVAN URUL 3200 5000 KNP 0.30 (IAF) - 081 175° (5) 3600 Procedure NA for arrivals 237° (6) OCEANSIDE (7.5)685 on JLL VORTAG alrway SW-3, 4100 OCN EGIVE radials 170 CW 263 (RF REQD) (RNP 0.30) 075° (5) Max 180 KIAS AUG 500±171245° 20 JUL 3931 to 17, BUGE (12.3) (IF) TIAF 1609 CAFTS 053 (FAF) CARCA 2017 MAHUL (10.8) 2400 JU 2017 JUBIM (RNP 0.30) 257° (5.3) MISSED APCH FIX (IAF) 0 ICUGA 20 JUL **IBUGE** 17 Max 210 KIAS (RADAR REQD) AUG SW-3, 2017 4 NM **ELEV 331** D TDZE 326 245° to **RW24** 2000 VGSI and RNAV glidepath not coincident IBUGE JUBIM (VGSI Angle 3.20/TCH 54). 2400 See Planview for multiple IF locations. tr 245° 2400 RW24 GP 3.30° TCH 55 5.8 NM CATEGORY В D RNP 0.10 DA 810/50 484 (500-1) NA RNP 0.30 DA 931-1% 605 (600-1%) NA **AUTHORIZATION REQUIRED** REIL Rwy 24 0 HIRL Rwy 6-24 0 CARLSBAD, CALIFORNIA MC CLELLAN-PALOMAR (CRQ)

33°08'N-117°17'W

Exhibit 2.5 FAA Published RNAV (RNP) Z Runway 24 Approach

Orig-B 29MAY14

RNAV (RNP) Z RWY 24



2.2.7 AIRFIELD LIGHTING, MARKINGS, AND SIGNAGE

The Airport has various lighting, marking, and signage systems to aid pilots not only in ground wayfinding around the movement and non-movement areas, but also in the approach and departure phases of flight. The airport beacon is located on top of the ATCT and is a rotating light projecting an alternating green and white beam of light, 180 degrees apart, to demonstrate McClellan-Palomar Airport is a civilian land airport to pilots.

Runway 06-24 is equipped with a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) that serves the Runway 24 approach end. It is also equipped with Runway End Identifier Lights (REIL) on the Runway 24 end and Precision Approach Path Indicator lighting (PAPI), which provides visual aid to pilots in the proper glide path to the runway. PAPIs are provided for both ends of the runway. Runway 24 provides precision markings, while Runway 06 provides non-precision markings. The runway is also delineated with High Intensity Runway Lights (HIRL) that run along both sides of the runway for its entire length.

Table 2.4 summarizes the runway lighting and marking systems.

ItemRunway 06-24Runway LightingMALSR (Runway 24)
HIRLRunway MarkingsRunway 06 - Non-Precision, Runway 24 - PrecisionVisual Approach AidsPAPI on both endsRunway End LightingREIL (Runway 24)

Table 2.4 – Runway Lighting and Marking Systems

Source: FAA Airport Master Record #5010. Prepared by: Kimley-Horn, 2017.

Taxiways at the Airport are equipped with Medium Intensity Taxiway Lights (MITL) that are located along the side of the taxiway except for where Taxiway A and Taxiway N abut aircraft parking aprons where the taxiway is delineated by painted markings. Taxiways are also delineated through signage and centerline and edge markings.

2.3 METEOROLOGICAL DATA

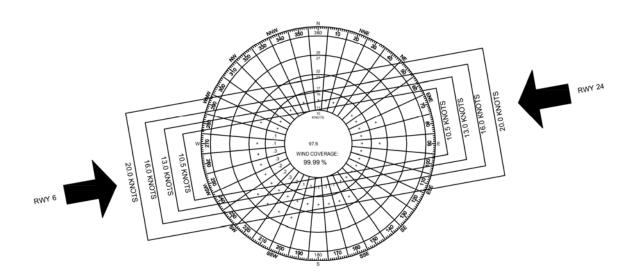
2.3.1 TEMPERATURE AND PRECIPITATION

The City of Carlsbad is located on the southern coast of the State of California and experiences a semiarid Mediterranean climate and averages 263 sunny days per year. The city's yearly temperatures vary between a high of 66 and 74 degrees and a low between 47 and 65 degrees. Average annual precipitation for Carlsbad is around 11.84 inches, with a typical seasonal variation of 0.30 inches during summer to 6.66 inches during winter.

2.3.2 WIND DATA

The prevailing winds for the Carlsbad area are predominantly westerly. Summaries of wind data at the Airport from 2009-2016 are shown in wind rose format in **Exhibit 2.7.**

Exhibit 2.7 CRQ Wind Rose



ALL WEATHER WIND ROSE				
RUNWAY	CROSSWIND COMPONENT (KNOTS)			
	10.5	13.0	16.0	20.0
6-24	99.25%	99.63%	99.94%	99.99%



Source: National Climate Data Center FAA AGIS Web Portal Station 722927. Period 2009-2016.

2.4 OPERATIONS AND AIRSPACE PROCEDURES

The airspace surrounding the Airport is classified as Class D from the surface of the ground to 2,500 feet above Mean Sea Level (MSL) during the hours of ATCT operation. In the hierarchy of airspace, Class D airspace generally describes the airspace that surrounds airports with an operational control tower, but with limited or no air carrier operations. The hours of control tower operation are 7:00 a.m. to 10:00 p.m. daily. During hours of tower operation, airport traffic controllers control runway usage by issuing landing and take-off clearances. ATCT also controls aircraft and vehicle ground movements on taxiways and runways. Aircraft operating under visual flight rules (VFR) must establish two-way radio communications with the tower prior to entering the Class D airspace. When the control tower closes, the airspace reverts to Class G airspace, which is uncontrolled airspace. Two sections of Class E airspace exist beyond Class D to provide additional control for the approaches to the runway. **Exhibit 2.8** illustrates the airspace surrounding the Airport.

As shown on **Exhibit 2.8**, the Airport's Class D airspace is located adjacent to the Class B airspace of San Diego International Airport and within the Mode C requirement. Class D airspace is much busier with

a high level of air traffic, especially air carrier traffic, and employs higher restrictions on aircraft access. Directly to the west, Vector 23-363-597 provides a route for IFR arrivals and departures along the coast for San Diego International Airport. Camp Pendleton military airport and three airspaces restricted for military activities are located 11 nautical miles (nm) to the north.

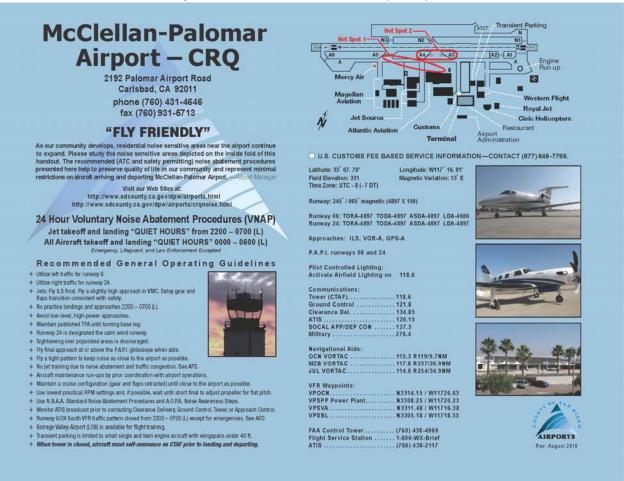
As depicted on the segmented circle, Runway 06 traffic pattern is left and Runway 24 is non-standard right. This traffic pattern helps aircraft avoid flying over the south of the Airport.

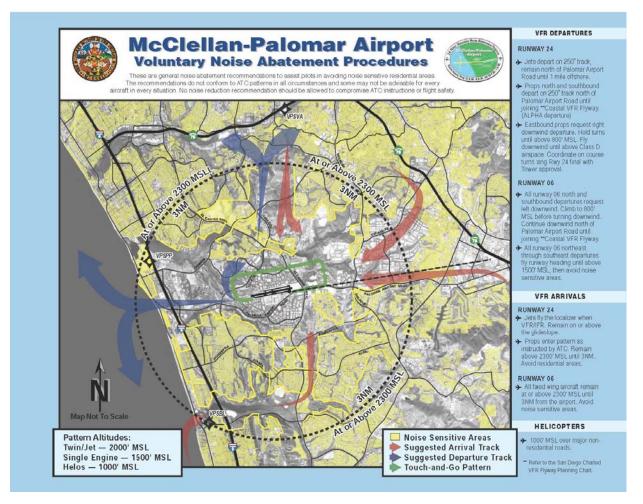
Exhibit 2.8 CRQ Airspace Map L on 124.1 or 127.3 for od Area activity state McClellan-Palomar Airport 000° ON 127.3° QR 323.0 000° TO 11,000° ON 132.2 QR 269. of 100 Catalina 100 100 JLI 242° 68 0 100 32 & 100 18 & 68 20 12 100 18

Source: FAA San Diego Terminal Area Chart, Obtained June 2017. Prepared by: Kimley-Horn, 2017.

Several restrictions are in place due to operational capacity and voluntary noise abatement procedures (VNAP). Per the VNAP's Recommended General Operating Guidelines and FAA's Chart Supplements (previously known as the Airport Facility/Directory), no training is allowed by jet aircraft and multiple approaches from larger aircraft including helicopters is strongly discouraged. Jets are requested to fly the ILS approach. The traffic pattern altitude varies depending on the type of aircraft. The VFR traffic pattern is closed on the south side of the airport while the tower is closed 10pm to 7am, and any training activities are discouraged during this time. Per the VNAP, there is a voluntary curfew, or "quiet hours," for jets from 10:00 p.m. to 7:00 a.m. and propeller aircraft from 12:00 a.m. to 6:00 a.m. VNAP are shown in **Exhibit 2.9**.

Exhibit 2.9 CRQ Voluntary Noise Abatement Procedures (VNAP)





Source: County of San Diego. Obtained June 2016. Prepared by: Kimley-Horn, 2017.

2.5 AIRPORT TRAFFIC CONTROL FACILITIES

There are three facilities that provide air traffic control (ATC) services to aircraft arriving or departing the Airport or flying in the immediate vicinity. These facilities include the following:

- Los Angeles Air Route Traffic Control Center (ARTCC)
- Southern California Terminal Radar Approach Control (TRACON)
- McClellan-Palomar Airport Traffic Control Tower

The CRQ ATCT (identified on the radio as "Palomar Tower") authorizes aircraft to land or take-off at the Airport or to transit the Airport's Class D airspace while operating under VFR. VFR are a set of flight rules that govern aircraft flight during Visual Meteorological Conditions (VMC). The ATCT is operated by the FAA and is open daily from 7:00 a.m. to 10:00 p.m. The ATCT also provides clearances to aircraft on the ground planning to operate under IFR. These rules govern aircraft flight and separation during instrument meteorological conditions (i.e., when the visibility and sky conditions do not allow visual flight).

The Southern California TRACON provides radar services to aircraft approaching or departing the southern California region. Aircraft enroute to the Airport while operating under IFR will likely be in communication with the TRACON prior to arriving and will be separated from other aircraft. The Los Angeles ARTCC provides enroute radar services to aircraft for longer routes.

2.6 PASSENGER TERMINAL FACILITIES

2.6.1 TERMINAL BUILDING

In 1960, a one-story terminal building was built to serve the newly constructed Airport (opened in 1959) located north of Palomar Airport Road and south of the runway. The existing passenger terminal building at the Airport was constructed in 2009 and has an interior area of approximately 12,590 square feet. The total terminal complex includes awnings and outdoor space for the baggage claim, restaurant, Customs, rental car, and hold room that when included with the passenger terminal building footprint, encompasses a total area of approximately 22,139 square feet.

The existing terminal complex consists of three primary sections: the airport terminal, the Landings Restaurant, which is in a separate structure, and the Customs facility also located in a separate structure from the terminal building. The passenger terminal facilities are shown in **Exhibit 2.10**. Major terminal area categories are listed in **Table 2.5**

Table 2.5 – Passenger Terminal Complex – Area Summary

· · · · · · · · · · · · · · · · · · ·
Total Area (Square Feet)
2,996
2,507
1,800
1,918
2,110
3,729
1,490
260
4,760
569
22,139

Source: McClellan-Palomar Airport Terminal Floor Plans, Sheets A02.01.A-C, October 2011. Prepared by: Kimley-Horn, 2017.

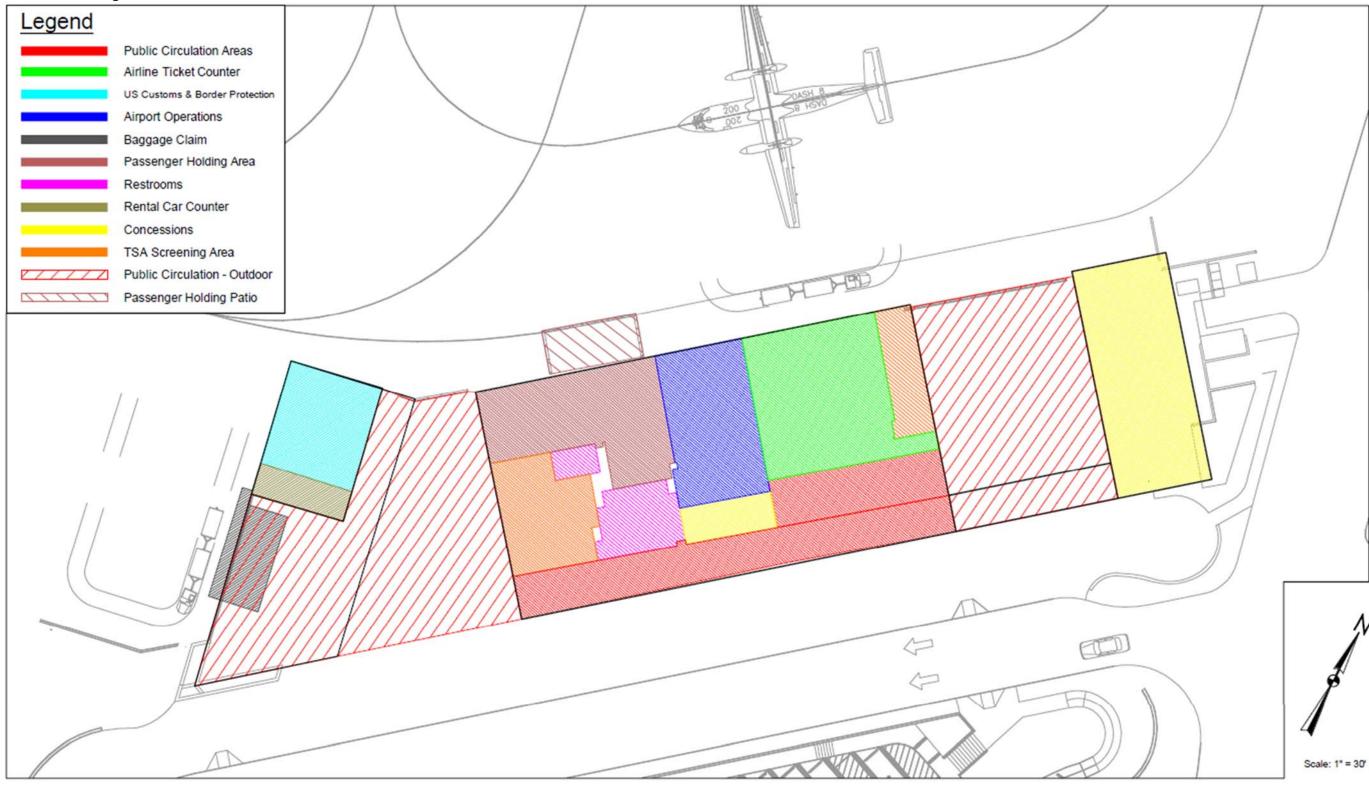
Note: Circulation/Auxiliary calculations do not include exterior spaces (outside hold room, baggage claim). CBP, restaurant, and rental car facilities are in adjacent facilities and are not included as calculations for the 12,590-sf passenger terminal building footprint.

Major terminal area categories identified in **Table 2.5** are defined as follows:

Airline – These areas are leased to airlines for passenger processing and airline operations:

- Ticketing-Check-in: space dedicated to outbound passenger processing for obtaining boarding passes and checking baggage.
- Hold room: space dedicated for passengers waiting to board aircraft. This area includes seating and standing areas and gate processing equipment.
- Baggage Claim: this area includes airside baggage drop including tug movement area, baggage claim devices, associated baggage area queuing, and waiting area.
- Airline Offices and Operations: areas dedicated to airline personnel for administrative and operational functions.

Exhibit 2.10 Existing Terminal Facilities



Source: McClellan-Palomar Airport Terminal Floor Plans, October 2011. Prepared by: Kimley-Horn, 2017.

<u>TSA</u>– Areas dedicated for security screening. Passengers are required to go through TSA checkpoints prior to entering and leaving the hold room. This area also includes checked baggage screening areas.

<u>Concessions</u> – Area leased to vendors for retail, food and beverage sales, merchandise sales, vending areas, etc. A stand-alone airport restaurant is located to the east of the main passenger processing building and is separated from the actual terminal function by an open patio area with outdoor seating.

<u>U.S. Customs and Border Protection (CBP)</u> – CBP enforces the import and export laws and regulations of the U.S. federal government and conducts immigration policy and programs. The CBP facility provides areas used for conducting private and commercial air carrier inspections, specifically for aircraft entering from or leaving to a foreign country.

Rental Car – Area used for rental car companies, including counter space.

<u>Circulation</u> – Circulation areas are provided to allow for ample space to travel to different areas of the terminal and accommodate unforeseen changes in terminal use. These areas are not dedicated to any single tenant.

<u>Restrooms</u> – Areas used for men's and women's public bathroom facilities in the public portion of the terminal and in the sterile passenger areas.

2.6.2 VEHICLE PARKING

Vehicle parking at the Airport includes short-term and long-term public parking facilities. The short-term parking lot is located just south of the terminal curb front, parallel to Palomar Airport Way and contains 19 spaces, seven of which are currently used by the rental car agencies for arriving passengers.

The long-term parking lot is located southwest of the terminal building between Palomar Airport Way, Owens Avenue, and Palomar Airport Road. The closest parking space in the long-term lot is approximately 700 feet from the nearest entrance to the primary terminal building. The lot itself is approximately 25 feet to 30 feet below the terminal and, to address this topographic condition, an elevator was constructed adjacent to the east end of the parking lot to ease the impact of the elevation change on pedestrians. From the furthest parking stall in the long-term lot to the elevator is a straight-line distance of just under 1,200 feet. The long-term lot accommodates 667 vehicles, 605 excluding rental car spaces. Approximately 75 spots are used for airport employees, rental car companies, and visitors. **Exhibit 2.11** depicts the location of the short- and long-term parking lots.

2.6.3 TERMINAL CURB FRONT

The vehicular curb front adjacent to the terminal building consists of two lanes for its entire length (approximately 400 feet of loading zone area) between McClellan Way and Palomar Airport Way. The curb front provides dwelling space for private vehicles, taxicabs, and on-demand commercial vehicles such as limousines. Two crosswalks divide the curb front into three sections. Each crosswalk provides pedestrian access to the small short-term parking and rental car pick-up parking spaces in front of the terminal. Standing for vehicles picking up and dropping off passengers occurs in the inner lane closest to the terminal building, while the outer lane serves as the single through lane.

2.6.4 RENTAL CAR FACILITIES

Two rental car companies—Hertz and Avis—currently operate at the Airport passenger terminal. The rental car office for both agencies is located on the west end of the facility, adjacent to the CBP offices and the baggage claim area.

Exhibit 2.11 2017 Airport Tenants and Support Facilities



Source: CRQ Tenant Leases; McClellan-Palomar Airport Business Map, January 10, 2014; Airport Records Prepared by: Kimley-Horn and Associates, Inc., August 2017

Arriving customers pick up their rental vehicles at the short-term parking lot. Departing customers are directed to drop off the vehicles in the long-term parking lot and walk to the terminal. As a result, no shuttles are required for rental car operations. As noted, approximately seven of the short-term parking lot spaces in front of the terminal building are presently allocated to the rental car operation². The remaining rental car vehicles are stored in the long-term parking lot.

2.7 AIRPORT ACCESS AND CIRCULATION

2.7.1 Access Roadways

Primary vehicular access to the Airport is via Palomar Airport Road at the signalized intersection of Palomar Airport Way and Yarrow Drive. Palomar Airport Road is a six-lane divided roadway with access to Interstate 5 approximately 2 miles west of the Airport. To the east, Palomar Airport Road turns into W. San Marcos Boulevard when entering the City of San Marcos. To the east of the Airport, El Camino Real provides primary north/south access to the immediate area. El Camino Real is also a six-lane divided roadway that provides access to CA State Routes 78 and 76, approximately five and eight miles north of the Airport, respectively.

Table 2.6 provides a summary of the surrounding roadways and existing average daily traffic (ADT) volumes.

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² Kimley-Horn, Site Visit Observations, November 2013.

Table 2.6-2016 CRQ Area Traffic Count Data

Segment	Segment Location	Average Daily Traffic (ADT)
Palomar Airport Rd.	Paseo Del Norte to Armada Dr.	54,870
Palomar Airport Rd.	Yarrow Dr. to El Camino Real	38,882
Palomar Airport Rd.	El Camino Real to Loker Ave	55,192
Palomar Airport Rd.	Melrose Dr. to Paseo Valindo	37,152
El Camino Real	Plaza Dr. to Marron Rd.	31,098
El Camino Real	Tamarack Ave. to Kelly Dr.	28,072
El Camino Real	Jackspar Dr. to College Blvd.	35,892
El Camino Real	Faraday Ave. to Palomar Airport Rd.	35,509
El Camino Real	Arenal Rd. to Costa Del Mar Rd.	53,804
El Camino Real	Levante St. to Calle Barcelona	37,773
Melrose Dr.	Lionshead Ave. to Palomar Airport Rd.	31,512
Carlsbad Blvd.	State St. to Mountain View Dr.	14,148
Carlsbad Blvd.	Acacia Ave. to Cherry Ave.	19,755
Carlsbad Blvd.	Tamarack Ave. to Tierra Del Oro	23,834
Carlsbad Blvd.	Cannon Rd. to Cerezo Dr.	20,704
Carlsbad Blvd.	Breakwater Rd. to Poinsettia Ln.	18,033
Carlsbad Blvd.	Avenida Encinas to La Costa Ave.	19,635
La Costa Ave.	Piraeus St to Saxony Rd.	39,539
La Costa Ave.	Romeria St. to Cadencia St.	12,248
Rancho Santa Fe Rd.	La Costa Meadows Dr. to San Elijo Rd.	29,389
Poinsettia Ln.	Paseo Del Norte to Batiquitos Dr.	26,873
Tamarack Ave.	El Camino Real to La Portalada Dr.	8,892
Cannon Rd.	Paseo Del Norte to Car Country Dr.	26,504
Cannon Rd.	Hilltop St. to College Blvd.	28,578
College Blvd.	City Limits N to Tamarack Ave.	28,155
College Blvd.	Aston Ave. to Palomar Airport Rd.	14,237
Alga Rd.	Corinthia St. to El Fuerte St.	11,516

Source: City of Carlsbad 2016 Traffic Monitoring Program, Prepared by: Kimley-Horn, 2017

2.7.2 Public Transportation

The North County Transit District (NCTD) provides public transportation to the Airport vicinity via two primary bus routes. Route 445 travels along Palomar Airport Road with a stop at Yarrow Drive on its route between Carlsbad Poinsettia and Palomar College. Route 309 travels along El Camino Real with stops near Palomar Airport Road on its route between Oceanside and Encinitas. Currently, no scheduled bus service stops at the terminal.

2.8 AIRPORT TENANT AND SUPPORT FACILITIES

The following sections describe the airport tenants who lease buildings or building space at the Airport for various purposes. These purposes include aviation businesses, such as Fixed Based Operators (FBOs) and aircraft maintenance facilities, as well as lessors of aircraft hangar space. Additionally, airport support facilities, such as airport maintenance, are described.

2.8.1 GENERAL AVIATION TENANTS

General aviation tenants at the Airport include entities such as FBOs, corporate flight department, T-hangar tenants, and other aviation-related businesses. The FBOs provide services such as fuel, hangar space and passenger amenities to transient and based aircraft. There are currently several FBOs that provide aircraft and passenger services, including Magellan Aviation, Western Flight Services, LLC, Royal Jet, and Atlantic Aviation. A brief description of these facilities is below, and they are depicted previously on **Exhibit 2.11**.

2.8.1.1 Magellan Aviation

Magellan Aviation is an FBO located south of Runway 06-24 on the western end of the developed general aviation facilities at the Airport. The FBO provides flight services to private aircraft, including jet fuel and Avgas from a fuel farm with in-ground tanks in the southeast corner of their leasehold, apron and hangar storage, aircraft maintenance, charter, sales, and passenger/pilot amenities. Magellan recently expanded into approximately 125,000 square feet of operational space³. The FBO operates four multi-aircraft hangars that are individually divided to provide a private unit for each tenant. These are all situated in the southern half of their leasehold. Three of these are sized for smaller aircraft (generally Group I) and consist of one single-loaded structure and two nested T-hangar units, while the fourth structure is sized for small to mid-sized business turboprop and business jet aircraft. To the west of the larger multi-tenant hangar is an individual hangar approximately 5,500 square feet in size.

Along the north side of the leasehold and fronting onto an open ramp that abuts the south side of Taxiway A is a new hangar/office facility with an approximate foot print of 69,800 square feet. To the immediate south of this structure is a new vehicle parking area and access drive that connects to Aircraft Road at its cul-de-sac terminus. Immediately south of this parking area is a combined hangar/office and shop facility that has an approximate footprint of an additional 38,800 square feet. Light aircraft parking is also provided on the south and west periphery of the site.

2.8.1.2 <u>Atlantic Aviation</u>

Atlantic Aviation is another FBO located at the Airport, offering many typical FBO services, including aircraft line services, flight planning, fueling, passenger concierge, and hangar/office leasing. It is located south of Runway 06-24, immediately adjacent to the passenger terminal and its associated ramp. Atlantic Aviation has a single large hangar complex with an associated airside ramp that fronts outward onto Taxiway A. This facility, which has a footprint of approximately 125,000 square feet, includes a general aviation lounge area providing services and amenities to both customers and corporate pilots located in the center of the hangar structure. A second small hangar and support space structure is located to the south of the large hangar and has a building footprint of approximately 23,600 square feet. A vehicle parking area for both buildings is provided to the south of the large hangar and west of the smaller hangar structure. Access to the site is provided by way of a drive that intersects the FBO access road approximately 500 feet west of the crosswalk from the main terminal parking lot to the terminal building. To both the east and west of the access drive, there is small aircraft parking and individual aircraft Porta-Port hangars. There are approximately 31 Port-a-Port portable hangars located to the east of the entrance drive and 21 to the west.

Additionally, Atlantic Aviation purchased Jet Source whichis also located south of Runway 06-24, between Magellan Aviation and Atlantic Aviation proper, and offers all standard FBO services, as well as hangar and office leasing.

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³ http://www.magellanaviation.aero/locations.html

The northernmost building is a combination hangar, shop area, FBO/GA terminal use, and parts storage building that fronts to an aircraft ramp abutting the south side of Taxiway A. This building has a footprint of approximately 51,800 square feet. One notable aspect of this structure is the investment that has been made into solar panels for building power.

Immediately south of the above noted building is an additional hangar approximately 17,700 square feet in size that opens to the east onto a north-south oriented taxilane that is shared with Atlantic Aviation to provide access to Taxiway A. The third building includes both finished office/support space and a hangar that opens onto the shared taxilane previously noted. This building also includes a significant solar panel system on its roof and has a footprint of approximately 45,400 square feet.

2.8.1.3 Western Flight Services, LLC

Western Flight Services, LLC is adjacent to the ATCT and directly east/northeast of the terminal building on the eastern half of the airport, south of Runway 06-24. Western Flight Services provides aircraft line services and passenger/flight crew amenities to general aviation users out of two separate hangars. Their first hangar located immediately east of the ATCT fronts on an open parking apron that abuts the south side of Taxiway A. This building has a footprint of approximately 14,500 square feet of hangar with an attached 3,550-square-foot structure for offices, lounge area, waiting room, and other support facilities for passengers and pilots.

The second Western Flight Services hangar building is located due south of the first structure and has a footprint of approximately 16,700 square feet. Vehicle parking for both uses is located along the western sides of the two noted hangars with direct access onto McClellan Drive.

2.8.1.4 Royal Jet

Royal Jet Inc. is a FBO that provides flight services to corporate and general aviation clients, including fueling and aircraft storage. The 9,800 square-foot hangar is located southeast of the ATCT along Palomar Airport Road with a 14,000 square-foot concrete ramp.

2.8.1.5 <u>Civic Helicopters</u>

Civic Helicopters is a Manufacturer Authorized Service Center for several types of aircraft and provides flight training with its fleet of nine rotorcraft. Civic also offers charter and air taxi operations, aerial photography, aerial surveys, and frost control. They operate from an approximately 14,000-square- foot facility located on the southern portion of the airport immediately east of the Airport's main entrance.

2.8.1.6 Other Tenants

In addition to these tenants, there are several tenants that provide aviation services such as air taxi and aircraft charter. These tenants include Schubach Aviation, JetMethods, Inc., Latitude 33 Aviation, Cutter Piper Sales, Loft, ATP Flight School, Pacific Coast Flyers, Pinnacle Aviation Academy, AirOptions Aviation LLC, Charter Flight Group, Plus One Flyers, and Clay Lacy Aviation. Many of these businesses sublease space from the aforementioned FBOs.

A listing of major tenants and buildings is provided in **Table 2.7**.

Table 2.7– Airport Buildings

Building #	Tenant	Facility Type
2002	Magellan Aviation	Hangar
2006	Magellan Aviation	FBO/main office/sublease offices

Building #	Tenant	Facility Type
2008	Magellan Aviation	Hangar
2010	Magellan Aviation	Hangar
2012	Magellan Aviation	Hangar
2014	Magellan Aviation	Aircraft detailer
2016	Magellan Aviation	Hangar
2018	Magellan Aviation	Hangar
2026	Atlantic Aviation	Schubach Aviation main office/hangar maintenance/Avionics
2036	Atlantic Aviation	Latitude 33
2056	Atlantic Aviation	Office/charter/aircraft sales/maintenance
2100	Atlantic Aviation	Main office/charter/aircraft sales/hangar
2150	Atlantic Aviation	Hangar/maintenance/aircraft detailer
2186	County Owned Hangar	Hangar/maintenance/flight school
2192	County of San Diego	Airport admin/Ops/maintenance building
2198	Commercial service passen Customs and Border Protect Passenger Terminal Restaurant Transportation Security Adr Rental car agencies	
2200	Federal Aviation Administration	Airport traffic control tower
2206	Civic Helicopters, Inc.	Office/flight training/charter/tours/ maintenance/aircraft sales
2208	Western Flight	Hangar
2210	Western Flight	Office/charter/aircraft sales/flight school/ flying club
2220	Royal Jet	Hangar

Source: McClellan-Palomar Airport Business Map, January 10, 2014. Prepared by: Kimley-Horn, 2017.

2.8.2 RETAIL TENANTS

A retail site, called Palomar Commons, is located on Airport-owned property that is not accessible to the airport along the south side of Palomar Airport Road. Specifically, this parcel is situated in the southwest quadrant of El Camino Real and Palomar Airport Road. The retail complex, which opened in late 2013, houses several large retailers, including Lowe's, and several associated outparcel businesses. This portion of Airport-owned property encompasses approximately 20.5 acres.

2.8.3 AIRCRAFT STORAGE FACILITIES

The Airport contains many aircraft storage facilities, including community hangars and T-hangars. The Airport has 20 buildings and 50.6 acres of lease area, which includes hangar space. There are 52 T-hangar units. Other buildings include the airport operations and maintenance facility and airport terminal building. A listing of airport buildings is provided above in **Table 2.7**.

2.8.4 SUPPORT FACILITIES

Airport support facilities ensure the airport continues operating in an efficient and safe manner. These facilities include Aircraft Rescue and Firefighting (ARFF), the ATCT, airport maintenance, and fueling facilities.

2.8.4.1 <u>Aircraft Rescue and Firefighting</u>

The Airport's onsite ARFF facility is located directly west of and adjacent to the passenger terminal and is a canopy structure that houses two ARFF vehicles—one primary and one backup. The facility allows direct apron access for ARFF operations. ARFF services are provided from 6:00 a.m. until 11:30 p.m. The primary unit is kept in response-ready status 15 minutes before the first scheduled flight in the morning and 15 minutes after the last scheduled flight each day of the week, according to the Airport Certification Manual (ACM).

2.8.4.2 <u>Airport Operations and Maintenance</u>

The Airport has one airport operations and maintenance building located south of the terminal along the north side of Palomar Airport Road. This building is approximately 9,500 square feet and houses a wide variety of equipment for performing Airport operations and maintenance, including trucks, tool equipment, a wheel loader, backhoe, and various other machines. The Airport's maintenance staff handles most of the routine airport maintenance needs, including maintaining airport lighting, airport pavement, and facilities.

2.8.4.3 <u>Fueling Facilities</u>

McClellan-Palomar Airport has several fueling facilities, with each fuel provider maintaining its own fuel storage, inventory, and distribution system. There are no fuel distribution lines at the Airport; all fuel is delivered to the storage tanks by truck.

There is no common use fuel storage facility or fuel distribution system maintained by the Airport. There are five entities on the field that dispense fuel: Magellan Aviation, Royal Jet, Western Flight Services, LLC, Atlantic Aviation, and the County of San Diego (which owns a self-service fuel facility on the north apron that has an agreement with a 3rd party to operate it). A summary of the fueling facilities and their fuel types and capacities is shown below in **Table 2.8.**

12.000

Table 210 7 mp of the admitted				
Provider	Jet A Capacity (Gallons)	AvGas Capacity (Gallons)		
Atlantic Aviation	70,000	40,000		
Magellan Aviation	20,000	15,000		
Western Flight Services, LLC	40,000	12,500		
Royal Jet	12,000			

Table 2.8 - Airport Fuel Facilities

Source: Airport Certification Manual, 2011; Interviews conducted 11/28/2013 onsite; Airport Records. Prepared by: Kimley-Horn, 2017 and updated 2018.

2.8.4.4 Airport Traffic Control Tower

County of San Diego (North Ramp)

As noted in Section 2.5, the ATCT is operated by the FAA and is currently open daily from 7:00 a.m. to 10:00 p.m. The ATCT also provides clearances to aircraft on the ground planning to operate under IFR. These rules govern aircraft flight and separation during instrument meteorological conditions or when requested by the pilot under visual meteorological conditions.

2.8.5 APRON AREAS

Existing aircraft apron areas include aircraft tie-down storage facilities and circulation areas for general aircraft movement. The existing apron storage areas include space for based and itinerant aircraft parking. There are various categories of apron area, including FBO apron, public apron, and commercial service apron. FBO aprons are in front of Magellan, Atlantic Aviation, and Western Flight. A small public apron is in front of the ATCT, adjacent to the Western Flight apron. There is also a 38,530- square-yard apron (excluding the alignment of Taxiway N) located north of Runway 06-24, which includes 130 ADG I (wing-spans less than 49 feet) aircraft tie-downs for based aircraft.

There are several additional aircraft tie-down ramp locations situated along the south side of the alignment of Taxiway A. Proceeding from east to west, the first area with 27 tie-downs is located immediately west of the run-up area on the east end of Taxiway A and fronts directly out onto Taxiway A. This tie-down area is separated from a larger parking apron by an ADG I taxilane that runs along the south side of the tie-down apron. South of this tie-down area, there is an aircraft parking apron that extends from the fuel farm (west of the helipad) to the Western Flight hangar facilities.

The next designated tie-down area, for small aircraft, is located to the immediate north/northwest of the Airport Traffic Control Tower, along the northeast boundary of the air carrier ramp. This tie-down area is situated immediately adjacent to the taxilane that provides access to the terminal ramp area. East of the tie-downs is an open ramp that is approximately 110 square yards that abuts the north side of Western Flight.

An additional aircraft parking ramp that includes 30 small aircraft tie-downs is situated along the south side of Taxiway A between the Magellan Aviation leasehold and the run-up area/compass rose site toward Runway End 06.

A commercial airline service apron of approximately 14,700 square yards is located to the immediate north of the passenger terminal and is marked with five designated aircraft parking positions for commercial aircraft arriving at and departing the terminal. These positions are marked to accommodate the dimensional criteria for the previously operated fleet of EMB 120 aircraft as well as aircraft with wingspans in the lower half of the ADG III category. Within the overall terminal area ramp, a small section apron delineated with a blue boundary line is dedicated for use by the CBP. Unlike many airports, the configuration of the parking positions at the Airport does not allow aircraft to park nose in toward the

terminal. This is due largely to the extent of facility development to the east and west of the terminal complex. The five parking positions are configured in a manner that places the aircraft in a line perpendicular to the terminal building, resulting in the first aircraft position being located approximately 63 feet from the backside of the terminal while position two is 172 feet, position three is 285 feet, position four is 400 feet, and position five is 516 feet from the terminal. The apron area locations are shown on **Exhibit 2.12.** It should be noted that the configuration of the CRJ-700, which began operation in September 2017 has a body width of 76.3 feet and length of 106.6 feet. While it is not anticipated that more than two of these aircraft will be staged on the commercial apron at a given time, re-striping of the apron spaces may be required to accommodate multiple aircraft.

Exhibit 2.12 Airport Apron Areas



Source: Airport Records Prepared by: Kimley-Horn and Associates, Inc., August 2017

2.8.6 AIRPORT WEATHER INFORMATION

The Airport has an on-site Automated Surface Observation System (ASOS), which provides a continuous broadcast of weather information at the surface of the Airport, including temperature, dew point, precipitation intensity and type, cloud cover, visibility, and various other measures. This facility is located adjacent to the segmented circle, north of Runway 06-24 and east of the northern apron. The weather information can be accessed by aviation radio, Automated Terminal Information System (ATIS), or by telephone.

2.8.7 AIRPORT SECURITY

The Airport's perimeter is enclosed by a combination of six- and eight-foot chain link fencing topped with three strands of barbed wire. The security gates are controlled and maintained by the County Airports Staff. Passage through the security gates is provided by contacting ATCT via radio communications. Access gates are kept closed and locked.

2.9 AIRPORT UTILITIES

Public and private sector utility companies serve the Airport and associated facilities. The major systems on Airport property are water, electric, natural gas, communications, sanitary sewer, and stormwater.

Water and sanitary sewer services are provided by the City of Carlsbad. The City of Carlsbad Environmental Service Department requires a stormwater management plan for all development within its city limits. City of Carlsbad Local Facilities Management Plan Zone 5, which includes the Airport, is divided into three separate drainage basins, two of which drain to the Agua Hedionda Lagoon. The third and most predominant basin drains down the Encinas Canyon and empties directly into the Pacific Ocean.

Currently, Pacific Bell (AT&T) is the only provider of landline telephone service and internet service at the Airport. Consultation with this provider revealed that only basic landline telephone service is currently available in the area.

San Diego Gas and Electric provides electrical service and natural gas service to the Airport and surrounding vicinity.

2.10 LAND USE & ZONING POLICIES

The County takes a proactive role working with local agencies, the San Diego County Regional Airport Authority (SDCRAA), and the FAA to protect the airspace around the airport from encroachment and to promote compatible off airport land development, and ensure the future safety and compatibility of the runway.

The following sections provide a description of the physical, political, and socio-economic aspects of the areas that surround the Airport. The specific sections include a discussion of area land uses surrounding the Airport and area land use plans, as well as an inventory of land use controls and future land use actions near the Airport. A map of existing land use delineated by the City of Carlsbad is shown on **Exhibit 2.13**.

Exhibit 2.13 Airport Area Existing Land Use



Source: City of Carlsbad GIS, 2016 Prepared by: Kimley-Horn and Associates, August 2017

Scale: 1" = ± 700'

2.10.1 On-AIRPORT LAND USES

The Airport is on County of San Diego property within the municipal limits of the City of Carlsbad and is zoned Industrial (M) pursuant to the Carlsbad Municipal Code (CMC) Title 21 "Zoning Ordinance" (Section 21.34) and consists of government (airport) facility land uses. While the County has immunities from the City's land use restrictions (See, for example, Government Code § 53090, et seq.), the County coordinates with the City in an effort to ensure City requirements are taken into consideration. The County has historically used the City's use permit process as a vehicle to facilitate coordination and obtained Conditional Use Permit (CUP) 172 from the City on September 24, 1980. The County subsequently sought and obtained an amendment to CUP-172 related to the use of three parcels as parking lots. The amendment was approved on November 3, 2004 as CUP-172(B). Given the scope of uses allowed by right pursuant to CUP-172 as amended, the County has voluntarily remained in compliance with the use permit, but reserves the right to assert immunities should it become necessary to operate the Airport in a manner consistent with federal obligations or County objectives.

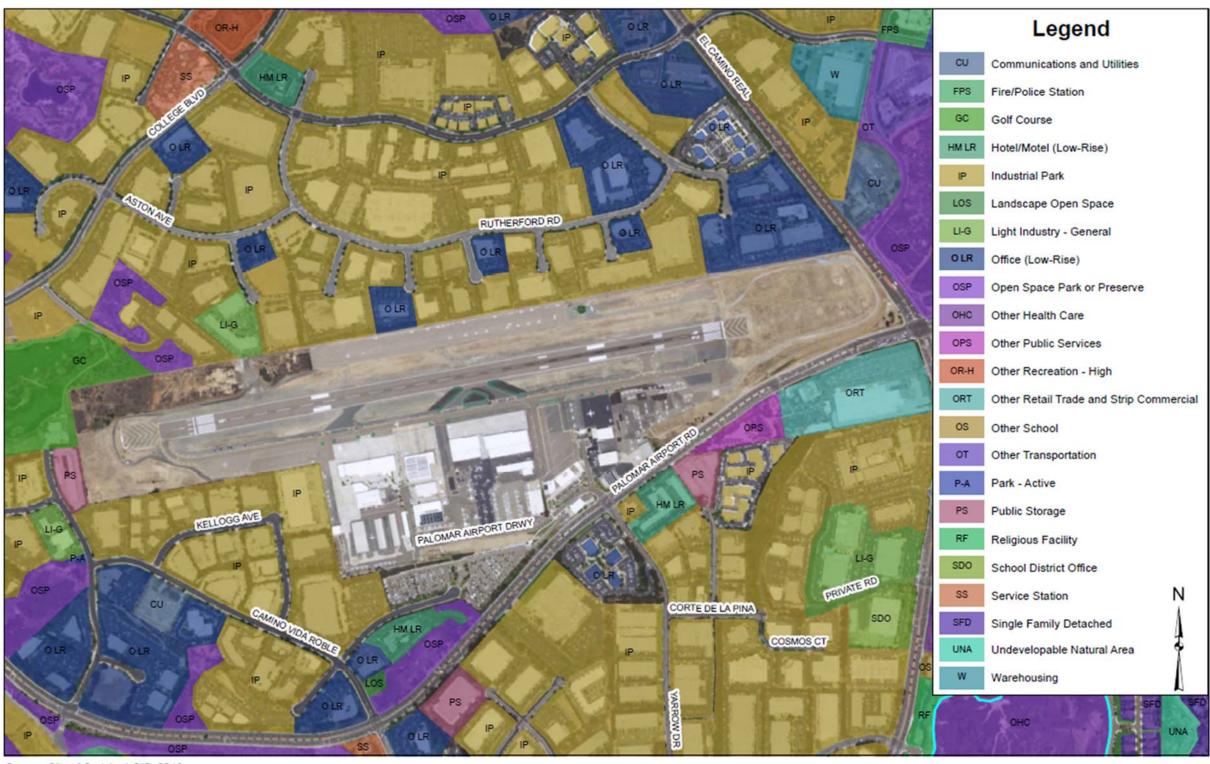
2.10.2 AREA LAND USE PLAN

Airport land use planning attempts to reconcile airport development and operations with surrounding land uses. Compatibility issues are generally defined as, "any airport impact that adversely affects the livability of a surrounding community, as well as any community characteristic that can adversely affect the viability of an airport." California Department of Transportation's (Caltrans) *California Airport Land Use Planning Handbook* (Handbook) provides regulatory guidance and best practices for State-compliant and effective airport land use planning (CALTRANS 2011). Most notably, the Handbook provides regulatory guidance pursuant to the 1967 California State Aeronautics Act (SAA, Public Utilities Code [PUC], Section 21001, et seq.), Article 3.5, *Airport Land Use Commissions* (ALUC or Commission). The SAA requires that every county in California with an airport operated for the benefit of the general public create an ALUC responsible for conducting airport land use compatibility planning and preventing the creation of new noise and safety problems in the vicinity of public-use airports.

For the Airport, the ALUC is the San Diego County Regional Airport Authority (SDCRAA). (Public Utilities Code § 170002, et seq.) One of the primary responsibilities of the ALUC is the preparation of an airport land use compatibility plan (ALUCP). Each ALUCP may include measures specifying land use, height restrictions, and building standards. The ALUCP is required to use and be based on the long-range master plan or airport layout plan for an airport. (Public Utilities Code § 21675.) Cities and Counties with land use jurisdiction for areas around airports are required to ensure their general and specific plans are consistent with the ALUCP. The authority of cities and counties to adopt land use plans that are inconsistent with an ALUCP is constrained by State law. (See, Government Code § 65302.3 & Public Utilities Code § 21675.)

The Airport is located in the City of Carlsbad, California, in the County of San Diego. The Airport is in an area of industrial and mixed uses that include commercial and utilities. The Airport is designated as public by the Carlsbad General Plan. Land use surrounding the Airport is regulated by the City of Carlsbad. The City of Carlsbad future land use map of the Airport and surrounding areas is shown in **Exhibit 2.14**.

Exhibit 2.14 Airport Area Future Land Use



Source: City of Carlsbad GIS, 2016 Prepared by: Kimley-Horn and Associates, August 2017

Scale: 1" = ± 700'

2.10.3 **ZONING**

General zoning for the City of Carlsbad is provided in the City's official zoning code. A City of Carlsbad zoning map of the Airport and surrounding uses is shown in **Exhibit 2.15**. All development proposals—except where exempted by applicable law—are subject to the Carlsbad Municipal Code Title 21 (Zoning Ordinance). In an effort to coordinate City planning and County Airport operations, and without waiving immunities provided by Government Code § 53090, et seq., the County applied for and obtained a zone change and conditional use permit (CUP-172) from the City for the Airport in 1980. In 2004, the County voluntarily sought an amendment to CUP-172 to include adjacent industrial lots used for Airport parking. The CUP as amended to date is broad enough in scope to support all the facilities changes proposed in this Master Plan Update.

In response to a proposal to expand the Airport to the north to add an additional runway, Carlsbad residents proposed an initiative in 1980 to require voter approval of certain expansions of the Airport. The City adopted Ordinance No. 9558 in 1980 adding Section 21.53.015 to the City's Municipal Code. This Section provides as follows:

"21.53.015 Voter authorization required for airport expansion.

- a) The city council shall not approve any zone change, general plan amendment or any other legislative enactment necessary to authorize expansion of any airport in the city nor shall the city commence any action or spend any funds preparatory to or in anticipation of such approvals without having been first authorized to do so by a majority vote of the qualified electors of the city voting at an election for such proposes.
- b) This section was proposed by initiative petition and adopted by the vote of the city council without submission to the voters and it shall not be repealed or amended except by a vote of the people."

Municipal Code § 21.53.015 only applies if a legislative enactment is required from the City for an expansion. The County has not, as part of this Master Plan Update process, identified construction needed to expand airport facilities beyond the current boundaries of the Airport or for a legislative enactment from the City such as a zone change or general plan amendment to support any changes to facilities recommended by the Airport Master Plan Update. To the extent Municipal Code § 21.53.015 could be read to apply to acquisitions of property interests for safety zones or safety related improvements necessary to comply with federal standards, it is preempted by federal law. (*Burbank-Glendale-Pasadena Airport Authority v. City of Los Angeles* (9th Cir. 1992) 979 F.2d 1338.)

Exhibit 2.15 Airport Area Zoning



Source: City of Carlsbad GIS, 2016 Prepared by: Kimley-Horn and Associates, August 2017

Scale: 1" = ± 700"

2.10.4 McClellan-Palomar Airport Land Use Compatibility Plan

The County recognizes the SDCRAA serves as the Airport Land Use Commission responsible for developing an Airport Land Use Compatibility Plan for the Airport. The basic function of the Airport land use compatibility plans (compatibility plans) is to promote compatibility between airports and the land uses that surround them "to the extent that these areas are not already devoted to incompatible uses." (Pub. Util. Code § 21674(a).) With limited exceptions, California law requires preparation of compatibility plans for each public-use and military airport in the State. Most counties have established an Airport Land Use Commission (ALUC), as provided for by law, to prepare compatibility plans for the airports in that county. In the County of San Diego, the ALUC function rests with the SDCRAA, in accordance with section 21670.3 of the California Public Utilities Code.

SDCRAA adopted the McClellan-Palomar Airport Land Use Compatibility Plan on January 25, 2010 and last amended the compatibility plan on December 1, 2011. This compatibility plan is the tool used by the SDCRAA, acting in its capacity as the County of San Diego ALUC, in fulfilling its purpose of promoting airport land use compatibility. Specifically, this compatibility plan (1) provides for the orderly growth of the Airport and the area surrounding the Airport and (2) safeguards the general welfare of the inhabitants within the vicinity of the Airport and the public in general. In accordance with State law, the compatibility plan was based on the ALP developed by the County for the Airport. (Pub. Util. Code § 21675(a).)

State law requires that compatibility plans be based on a long-term master plan or ALP. (Pub. Util. Code § 21675(a).). Prior to modifying an airport master plan, the public agency owning the airport must submit the proposed modification to the ALUC for review (Pub. Util. Code §21676(c)) The ALUC may thereafter amend the compatibility plan. If the compatibility plan is amended, local agencies may be required to amend their general plans, specific plans, zoning ordinances, and building codes to bring them into compliance with the compatibility plan. (Pub. Util. Code § 21676(a) and (b).) Furthermore, the ALUCP applies to special districts such as school districts and private parties when considering the siting and design or new facilities or expansion of existing ones. It is important to note that local agencies, such as the City of Carlsbad, do retain the authority to overrule the compatibility plan if certain findings can be made. (*Id.*) Per the City of Carlsbad General Plan, this requires a two-thirds vote by the City Council. This process helps to ensure that changes in Airport facilities approved as part of the Airport Master Plan Update process are reflected in local land use plans.

Proposed facility changes identified in the Airport Master Plan Update such as the relocation and extension of the runway, as well as forecasts of aviation activity would likely result in SDCRAA needing to amend the compatibility plan for the Airport. Changes to the compatibility plan could result in the City having to modify or amend its General Plan and other land use regulations. Additionally, any facility "expansions" as defined by State of California Public Utilities Code § 21664.5 (e.g., the extension or realignment of a runway) will require the Airport to amend the Airport's State permit. It should be noted that this definition of expansion only applies to State issued operating permits.

The Airport Current Land Use Compatibility Plan Maps are depicted on the following page and include:

- Noise: Noise contours reflect anticipated growth of the Airport through 2031 (Exhibit 2.16).
- Safety: Safety zones are established for evaluating safety and compatibility of land use
 actions in the Airport Influence Area (AIA). The risk contours and generic safety zones that
 apply to Runway 06-24 at the Airport are those for runway lengths of 4,000 feet to 5,999 feet
 (Exhibit 2.17).
- Airspace Protection: The airspace protection surfaces are established for evaluating the airspace compatibility of land use actions in the AIA of the Airport. The zones represent imaginary surfaces defined for the Airport in accordance with Part 77, Terminal Instrument

- Procedures (TERPS), and the FAA's height notification area as defined in Part 77, Subpart B (**Exhibit 2.18**).
- Overflight: The overflight notification area established for the Airport, within which developers
 of new residential development projects shall record an overflight notification document as a
 condition of development approval (Exhibit 2.19).
- Airport Influence Area: The AIA is defined in the Airport Land Use Compatibility Plan as "the
 area in which current or future airport-related noise, overflight, safety, or airspace protection
 factors may significantly affect land uses or necessitate restrictions on those uses." (Exhibit
 2.20)

Exhibit 2.16 Compatibility Policy Map: Noise

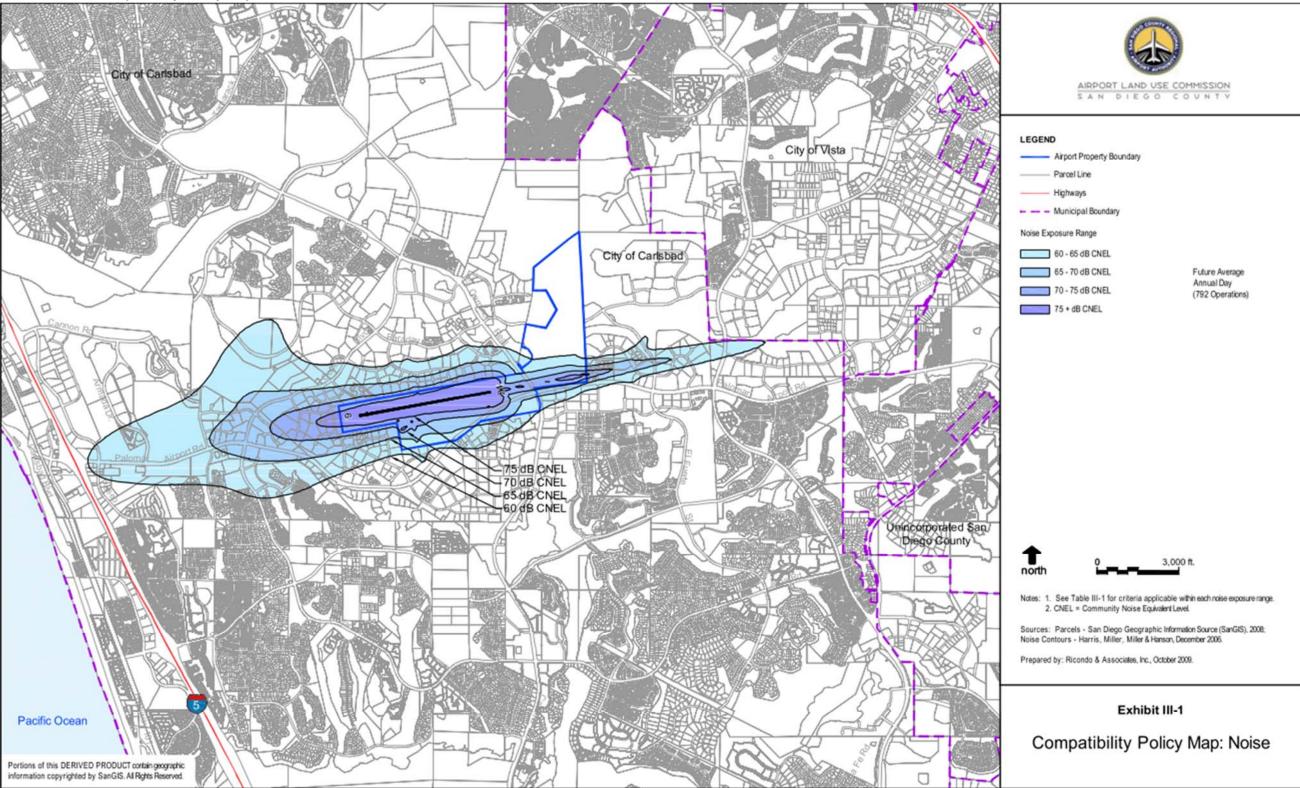


Exhibit 2.17 Compatibility Policy Map: Safety

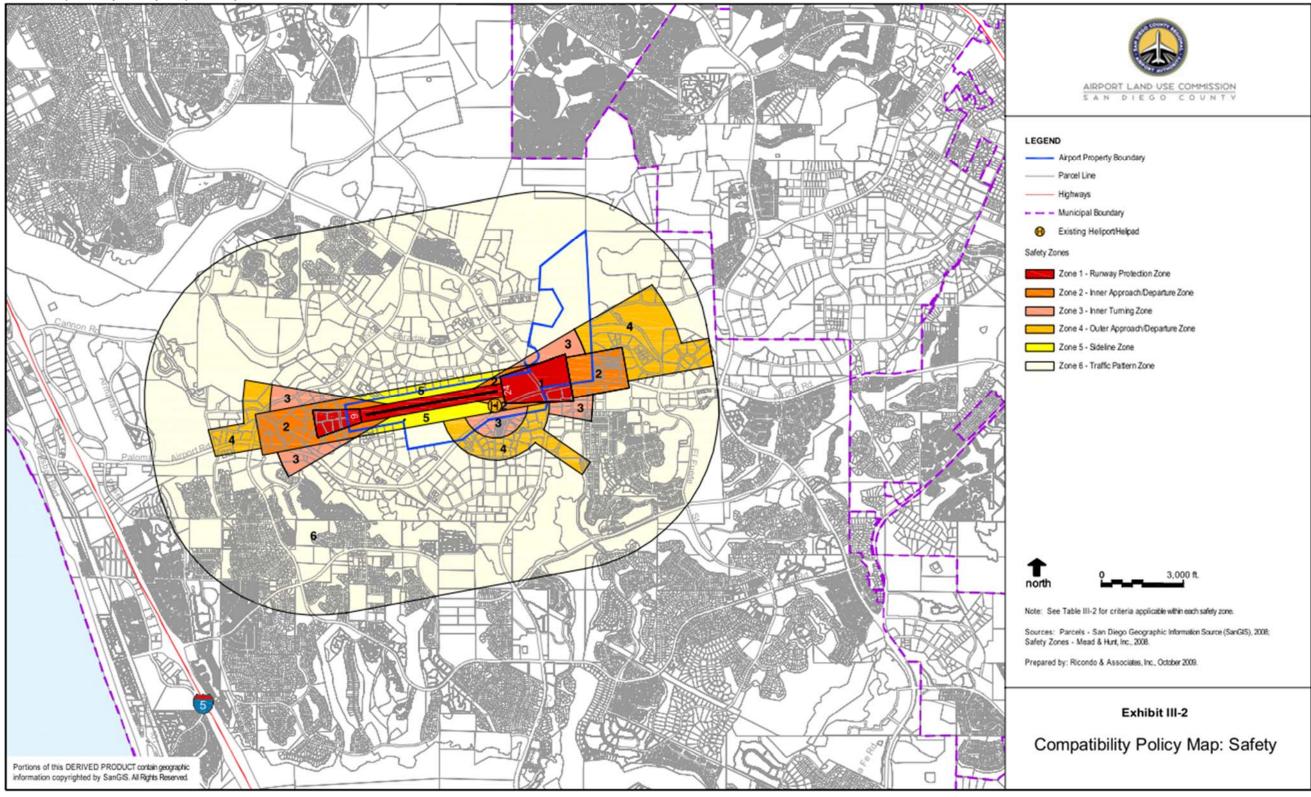


Exhibit 2.18 Compatibility Policy Map: Airspace Protection

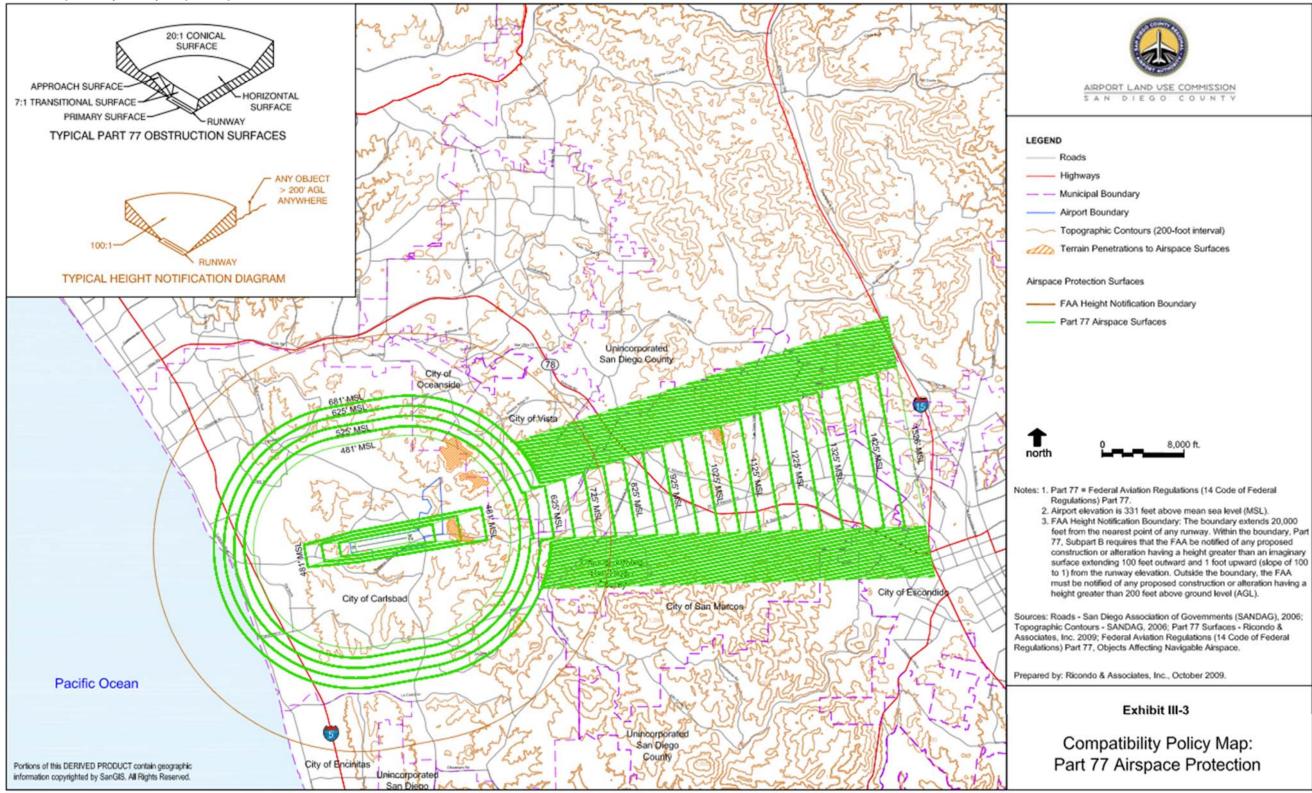


Exhibit 2.19 Compatibility Policy Map: Overflight

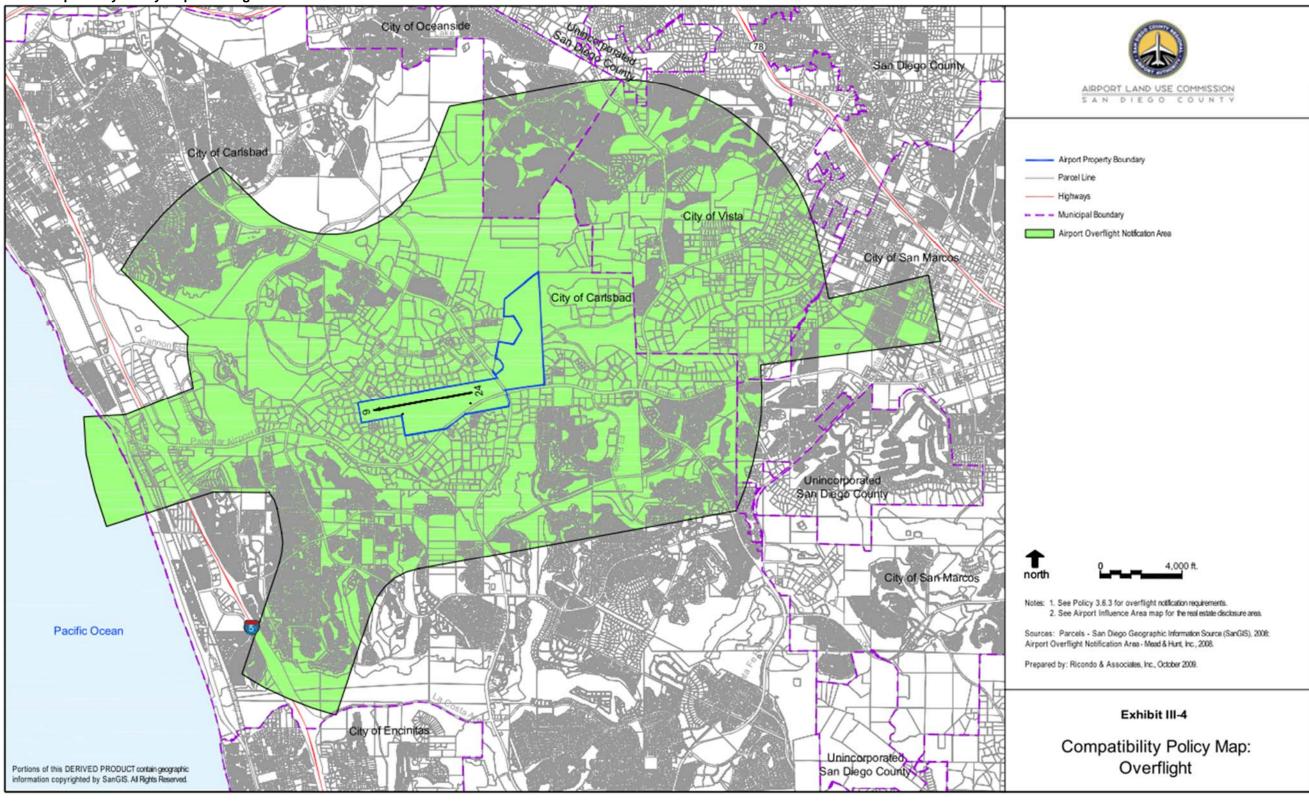
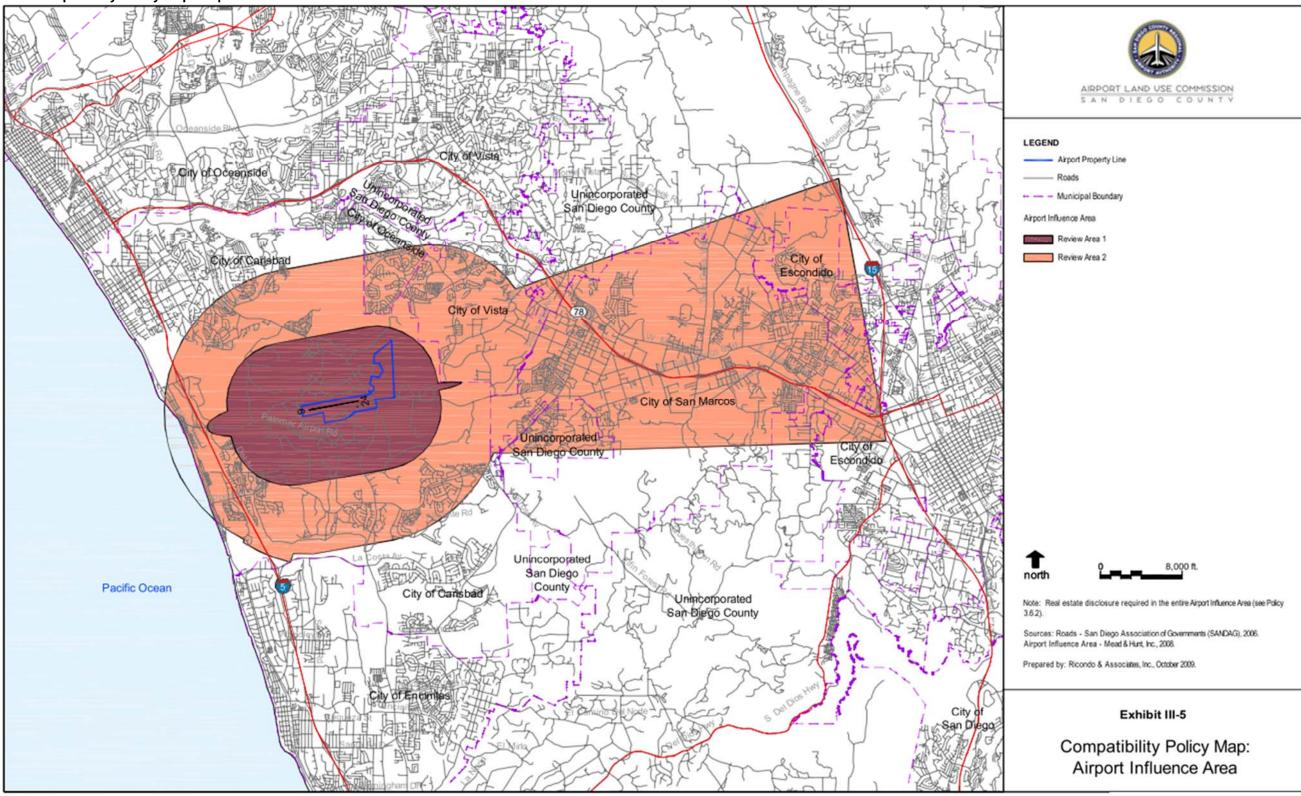


Exhibit 2.20 Compatibility Policy Map: Airport Influence Area



2.10.5 POLICY F-44 "DEVELOPMENT OF McCLELLAN-PALOMAR AIRPORT"

County Policy F-44 "Development of CRQ" was adopted by the Board of Supervisors in 1987 to serve as a land use plan supplement to optimize airport use while minimizing noise impacts to the surrounding community. The policy currently provides general guidance regarding the following:

- The role of the Airport shall be to provide air transportation for the residents of North San Diego County and to facilitate general aviation support activities while minimizing noise impacts on surrounding areas and communities.
- Scheduled commuter airline operations are limited to aircraft meeting the approach speed and wing span categories for the Airport in accordance with FAA regulations. Commuter airline aircraft shall meet the FAA Stage III noise criteria. The policy also limits aircraft to 70 seats or less. However, applications from airlines proposing to operate aircraft with more than 70 seats can be submitted to the Airport. When necessary to comply with federal requirements or if desired by the Board, the policy can be waived to allow for operations by aircraft with over 70 seats.
- The County will take a proactive role working with local agencies, the SDCRAA, and the FAA
 to protect the airspace around the Airport from encroachment, promote compatible off-airport
 land development, and to ensure the future safety and compatibility of the existing runway
 length and displacement threshold.
- The County will operate the Airport in accordance with any adopted FAA Part 150 Noise
 Compatibility Plan recommendations and in full compliance with any State or Federal
 mandated noise standards relating to the operation of a public airport. The plan recognizes
 the Noise Element of the City of Carlsbad's General Plan and implements mitigation
 measures consistent with State and Federal requirements.
- The County will monitor aircraft noise and verify the Community Noise Equivalent Level (CNEL) noise contours within the airport influence area as described in the Palomar Airport Comprehensive Land Use Plan, as well as monitor pilot compliance with any adopted FAA Part 150 Noise Abatement Program. The County will also continue to monitor air traffic around the airport with a noise monitoring and flight tracking system and implement procedures consistent with State, Federal, and FAA Grant Assurance Agreements.
- The Airport Manager will produce, distribute, and promote a detailed noise abatement program for the airport. The program will contain specific flight information and a chart identifying noise-sensitive areas. The noise abatement program will be updated annually and distributed to pilots. The Airport Manager will request pilot compliance with the program.
- This policy recognizes the SDCRAA as the Airport Land Use Commission responsible for developing an Airport Land Use Compatibility Plan for the Airport.

The purpose of this policy was to guide future development at the airport. The Master Plan lays out a new comprehensive 20-year plan for development of the Airport, making Board Policy F-44 Development of McClellan-Palomar Airport unnecessary. Following adoption of the Master Plan Update, the Board of Supervisors may determine Board Policy F-44 is no longer needed and repeal it.

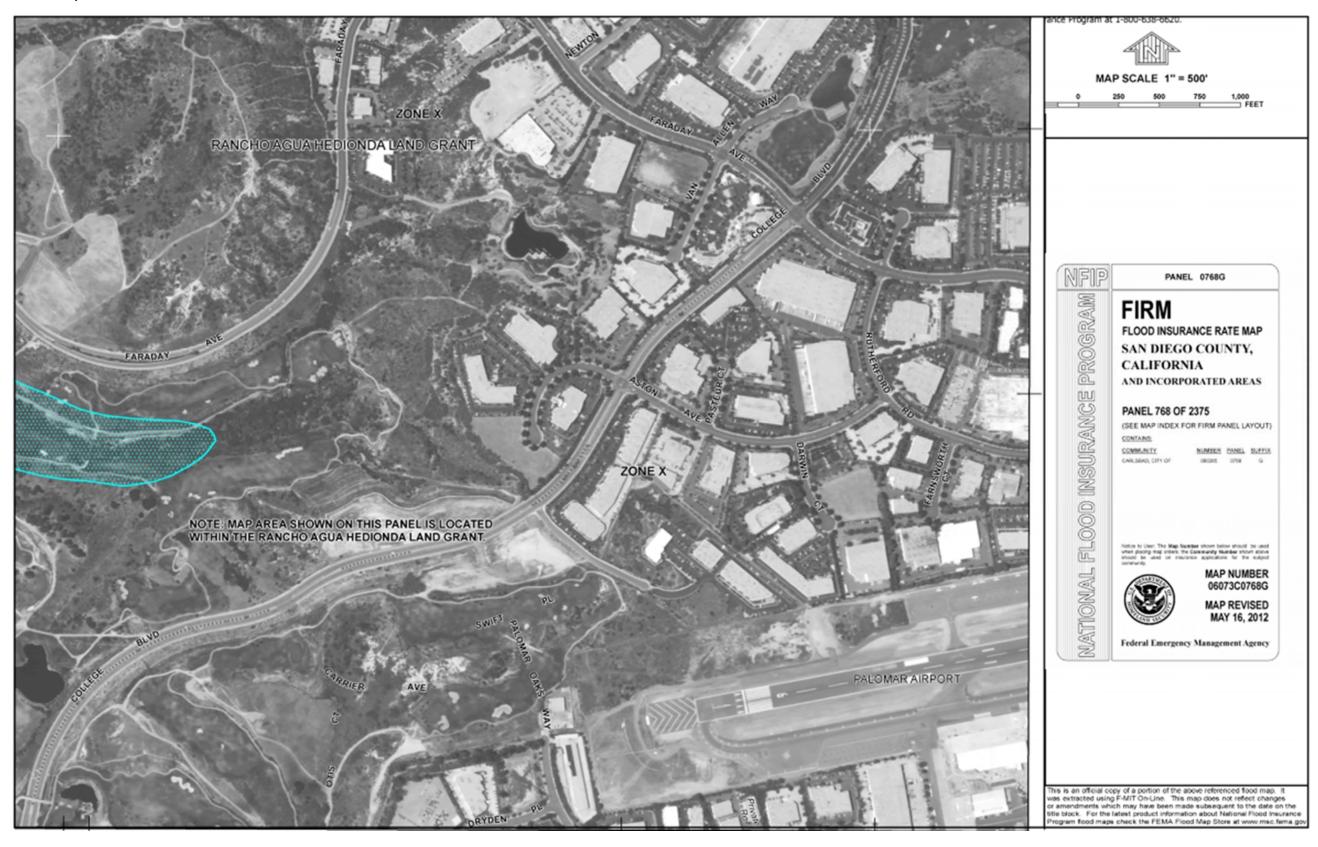
2.11 ENVIRONMENTAL CONSIDERATIONS

An environmental overview is included in the Alternatives Section of this Airport Master Plan Update. Below is an initial inventory of environmental conditions at the Airport.

2.11.1 FLOODPLAIN

Flood Insurance Rate Maps (FIRMs), published by the Federal Emergency Management Agency (FEMA), are the basis for floodplain management, mitigation, and insurance activities for the National Flood Insurance Program. **Exhibit 2.21** and **Exhibit 2.22** show the FIRMs for the Airport's vicinity. As shown on **Exhibit 2.21**, there is a small area offsite located northwest of the Airport within a 100-year floodplain.

Exhibit 2.21 Floodplain Exhibit – West



McClellan-Palomar Airport

Airport Master Plan Update

Exhibit 2.22 Floodplain Exhibit – East



Inventory of Existing Conditions 2-47

2.11.2 Noise

Aircraft noise is generally one of the most prominent and controversial environmental issues associated with airport development. In 2006, a FAR Part 150 Study Update was completed by the County of San Diego for the Airport to identify land use compatibility and noise issues surrounding the Airport. The study concluded that the Airport does not negatively impact noise sensitive areas and no mandatory noise restrictions were needed. This was illustrated on the Noise Exposure Maps (NEM) for the CNEL 65 dB contour for no-action (2004) conditions. In order to be a good neighbor, VNAPs have been established to preserve quality of life for the community and place minimal voluntary restrictions on aircraft arriving and departing the Airport. The VNAPs are presented in **Exhibit 2.9.**

The County updated these noise contours in 2010 in the ALUCP to address the potential increase in commercial operations that was being considered at the Airport. This update increased the number of operations under the 2004 no-action conditions to include the evaluation of noise environment with a possible 21 daily departures and arrivals (42 total daily operations) of Embraer-170 (EMB-170) aircraft. This update represented the anticipated commercial aircraft that would operate at the Airport as expressed in the activity forecasts and recommendations of this Airport Master Plan Update's 20-year planning horizon.

As noted, Cal Jet by Elite Airways began scheduled commercial service in September 2017 using CRJ-700 aircraft. Based on this recent change and anticipated increase of commercial operations, the County will continue to operate the Airport in accordance with any adopted FAA Part 150 Noise Compatibility Plan recommendations and full compliance with any State or Federal mandated noise standards relating to the operation of a public airport. The programs will recognize the Noise Element of the City of Carlsbad's General Plan and implement measures consistent with State and Federal requirements to minimize noise impacts.

The County will continue to monitor aircraft noise and verify the CNEL noise contours within the airport influence area as described in the Palomar Airport Comprehensive Land Use Plan as well as monitor pilot compliance with any adopted FAA Part 150 Noise Abatement Program. The County will also continue to monitor air traffic around the Airport with a noise monitoring and flight tracking system and continue to implement procedures consistent with State and Federal requirements.

The Airport Manager will continue to produce, distribute and promote a detailed noise abatement program for the Airport. The program will contain specific flight information and a chart identifying noise sensitive areas. The noise abatement program will be updated periodically and distributed to pilots by posting on the Airport website. The Airport Manager will request pilot compliance with the program.

2.11.3 LANDFILL

Another specific environmental consideration that will be addressed in greater detail throughout this Airport Master Plan Update pertains to portions of the airport that were previously used as a landfill. The landfill material underneath the east side of the airport is unsuitable under current conditions to use as a stabilized base for airport improvements due to issues with settlement. The landfill area is equipped with a methane gas extraction system that consists of extraction wells, header piping, and condensate pumps.

The 2013 Feasibility Study for Potential Improvements to the Airport Runway (2013 Feasibility Study) included a thorough evaluation of environmental impacts related to the landfill. Conceptual settlement mitigation options for runway and taxiway extensions that were considered include:

Structural options: bridging of the landfill or a structural slab supported by driven piles;

- Soil improvement options: fill supported on stone columns, fill supported on drilled displacement columns, accelerated settlement by surcharging, deep dynamic compaction, injection grouting, and excavation and backfilling of the landfill material; and
- Maintenance options: placing lightweight or standard fill to grade with periodic asphalt.⁴

Inventory of Existing Conditions

⁴ Feasibility Study for Potential Improvements to McClellan-Palomar Airport Runway, Final Report, August 1, 2013.

Section 3 - AVIATION ACTIVITY FORECAST

3.1 PREAMBLE

Forecasts of aviation demand for the Airport were originally developed in 2013 using year 2012 data as the base year for 5-, 10-, 15-, and 20-year projections. Due to significant changes in commercial service at the Airport since the completion of these forecasts (withdrawal of United Express/SkyWest Airlines service, trial service provided by Biz Charters) and a decline in overall activity at the Airport as reported in the FAA's TAF, forecasts have been updated using 2016 as the base year.

In addition to preferred methodologies for passenger enplanements, based aircraft, and aircraft operations that have been submitted to the FAA for review and approval, additional forecasts have been developed as "planning-level" scenarios in this Airport Master Plan Update. These forecasts are intended for facility planning to assist the Airport in determining appropriate facilities if demand exceeds forecasted levels of demand. The justification for development of alternative scenarios for planning purposes is supported by the return of commercial service at the Airport in September 2017 as well as other prospective airlines planning commercial service operations at the Airport. The Transportation Security Administration (TSA)-San Diego formally committed to provide Federal Screening Resources and Other Requirements (FSROR) and start screening passenger services for the first airline upon operation. Forecasts of demand for planning-levels is further justified by the fact the cessation of commercial service provided by United Express/SkyWest was only due to the airline's removal of the Embraer 120 from its fleet (which operated at the Airport) despite high passenger demand and profitable passenger load factors.

3.2 INTRODUCTION

McClellan-Palomar Airport is a non-hub, primary airport owned and operated by the County of San Diego (the County). The Airport is one of 12 public-use airports located in the County of San Diego and is one of two airports in the County certified by the Federal Aviation Administration (FAA) for commercial airline service use. In addition to being certified for commercial operation, the Airport serves a high level of general aviation activity in the County.

An important factor in airport planning is the examination of the level of demand that may reasonably be expected to occur over a defined period. For purposes of this master planning effort, this involves projecting potential aviation activity through 2036. For a non-hub, primary airport such as McClellan-Palomar Airport, forecasts of enplaned passengers, based aircraft, operations (takeoffs and landings), and aircraft fleet mix are prepared to evaluate future demand. Forecasts of these factors help shape an understanding of future airport demand on existing airport facilities and aid in providing a picture of future facility requirements for the Airport.

Aviation activity forecasting is both an analytical and a subjective process. Actual activity that is achieved in future years may differ from the forecasts developed in this planning document because of future changes in local conditions, dynamics of the airline and general aviation industries, and economic and political changes for the local area and nation as a whole. These elements are examined and considered as part of the forecasting process but are subject to change over the course of the 20-year planning horizon.

The FAA has a responsibility to review aviation forecasts that are submitted to the agency in conjunction with airport master plans and ALP updates. The FAA reviews such forecasts with the objective of comparing these to the FAA's TAF to determine consistency with the TAF or, where defensible justification is established, include the forecasts in its Terminal Area Forecasts and the National Plan of Integrated Airport Systems (NPIAS). As stated in FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, dated December 4, 2004, forecasts should:

- Be realistic
- Be based on latest available data
- Reflect current conditions at the airport
- Be supported by information in the study
- Provide adequate justification for the airport planning and development

The forecast process consists of a series of basic steps that can vary depending on the issues to be addressed and the level of effort required to develop the forecast. These steps include a review of previous forecasts, determination of data needs, identification of data sources, collection of data, selection of forecast methods, preparation of the forecasts, and evaluation and documentation of the results

The forecast analysis for the Airport was produced using these basic guidelines:

- Recent Airport forecasts, such as the RASP, the 2013 Feasibility Study, and the FAA TAF were examined and compared against current and historical levels of activity.⁵
- Historical Airport and national aviation activity were examined along with other factors and trends that could affect demand.
- Other Airport and regional forecasts and studies were also reviewed for items that could influence the level and complexity of demand at the Airport.

The Airport Master Plan Update forecast was prepared in early 2017, using data from 2016 as the base year. The FAA's TAF is utilized to establish the existing and historical activity for the Airport. Furthermore, the FAA's TAF was selected as the preferred source for a baseline forecast with a "planning-level" forecast scenario, which includes the re-introduction of commercial service to the Airport based on re-introduction of commercial service at the Airport and the planning data supplied to the Airport by airlines as part of their negotiations to operate at the Airport.

Since the "planning-level" scenario is beyond the specific tolerance for future projections, submitted forecasts of aviation activity have not been approved by the FAA in their entirety. On October 10, 2017, The FAA Los Angeles Airports District Office issued a memo to the Airport Sponsor approving forecasts identified in the January 2017 FAA TAF for planning purposes. The memo also noted that while the FAA acknowledged that passenger service was reintroduced on October 26, 2017, with two daily departures to Las Vegas, there was a relatively high level of uncertainty about how passenger service will continue to evolve at the Airport in the coming years.

The memo went on to state that the FAA's understanding was that the County of San Diego was not proposing any near-term terminal or airport capacity projects dependent upon the "planning-level" forecast for justification and because of this, the FAA had no objections if the County chose to base local land use planning decisions on the "planning-level" forecast, however, any related mitigation measure would not be eligible for Airport Improvement Program funding.

As such, while the FAA TAF issued January 2017 is the approved forecast for this Airport Master Plan Update, "planning-level" forecasts described in subsequent sections are also analyzed for long-term facility planning.

⁵ Sources: Regional Aviation Strategic Plan, Final Report, Jacobs Consultancy, March 2011, 2013 Feasibility Study for Potential Improvements to McClellan-Palomar Airport Runway, FAA Terminal Area Forecast issued January 2017.

3.3 AIRPORT SERVICE AREA

An airport's service area helps to define the market or area from which its aviation activity is being generated. The size of the airport service area is dependent upon the airport role, the airport's facilities and services, and the location of the airport relative to other facilities. Other factors that affect the airport service area include socioeconomic conditions and demographic characteristics. There are different airport service areas for commercial service and general aviation activities, and each must be examined to evaluate the future demand for the Airport.

3.3.1 COMMERCIAL AIRPORT SERVICE AREA

McClellan-Palomar is one of 12 public-use airports in the County of San Diego as depicted on **Exhibit 3.1**. It is the only airport in the County, other than San Diego International Airport, certified for commercial passenger service. The airport service area for commercial service at the Airport is influenced both by the market capture of San Diego International Airport and by other commercial service airports to the north within the Los Angeles metropolitan area.

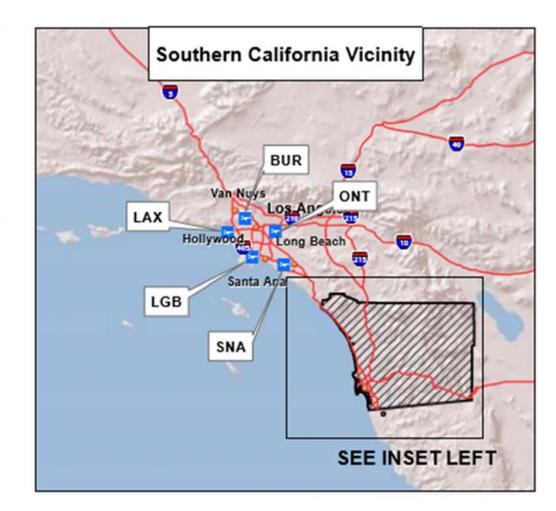
The Airport is in the northern County of San Diego, approximately four miles southeast of downtown Carlsbad, 30 miles north of downtown San Diego, and 50 miles southeast of the center of neighboring Orange County. This location also places the Airport near a significant base of population, business, employment, and potential passenger demand, including the communities of Oceanside, San Marcos, Vista, Encinitas, Rancho Santa Fe, and Carlsbad, while also being within the section of the County of San Diego with the highest median family income level. The Airport is situated approximately 2 miles to the east of Interstate 5, a major north-south connector between San Diego, Orange County, and the Los Angeles Metro area. The location of the Airport places the Airport between the two largest commercial passenger market areas in Southern California, San Diego and Los Angeles, and immediately adjacent to a primary corridor for a significant number of County of San Diego residents who routinely opt to drive to Los Angeles International Airport and, to a lesser extent, John Wayne Airport for commercial air service.

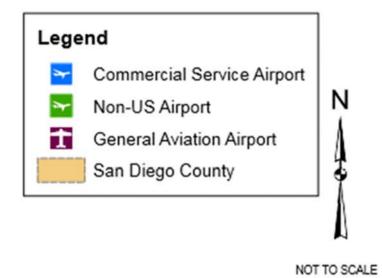
McClellan-Palomar Airport

Airport Master Plan Update

Exhibit 3.1 Airport Service Area







Aviation Activity Forecast

John Wayne Airport, located 58 miles to the north in Orange County, is the closest commercial airport outside of the County of San Diego and enplaned over 4.9 million annual passengers in 2016⁶; the FAA classifies it as a medium-hub airport. San Diego International Airport is located 28 miles to the south of McClellan-Palomar Airport and is classified by FAA as a large hub airport. In 2016, San Diego International Airport accommodated approximately 10.3 million annual enplanements⁷.

With FAA-classified large- and medium-hub passenger airports located within 60 miles in each direction, the Airport's commercial airport service area is primarily limited to the northwest portion of the County of San Diego and portions of southern Orange County. Due to their greater choice in the number of air carriers and in the number of non-stop markets served, both the medium and the larger hub airports capture a significant portion of air travelers from this airport service area.

In 2010, the Airport completed the *Passenger Retention Study and True Market Size Analysis* (Retention Study) to provide more definitive information regarding demand for commercial airline service in the region. The Retention Study examined airline trips taken by those living in the immediate McClellan-Palomar Airport service area for a 12-month period ending March 31, 2010. The immediate catchment or service area defined in this study was "the area where residents are closer to the Airport than any of the other Southern California airports". It is important to note that 2010 had the lowest operational activity compared to the prior 20 years (e.g., 138,361 in 2010 compared to 285,122 in 1999) and has since increased. This study occurred during a downturn in the national economy due to the recession. Also, Los Angeles International Airport was the only destination from the Airport at the time the study was conducted.

The Retention Study determined that the Airport was capturing only 1.6 percent of commercial air service passengers from its defined airport service area. This low capture rate was based upon an estimate of 3.27 million annual passengers within the Airport catchment area which, according to the Study, equated to approximately 1.64 million annual enplanements. It was found that 76 percent of these potential McClellan-Palomar Airport passengers were using San Diego International Airport to the south, while 5.6 percent opted to take the 58-mile (116-mile round trip) drive to John Wayne Airport. Much of this market leakage was likely attributable to the 20 non-stop markets served from John Wayne Airport that include several west coast destinations. Of even greater interest was the determination that an estimated 15.8 percent of these passengers opted to drive the 95 miles (190-mile round trip) to Los Angeles International Airport. More local travelers (1.8 percent) used Ontario International Airport (ONT) with its 14 non-stop markets despite a driving distance of 87 miles one way from McClellan-Palomar Airport. Again, the number of destinations served by non-stop flights to markets such as Oakland, San Jose, Sacramento, and Las Vegas contributed to this leakage from the Airport catchment area.

The Retention Study identified the top five destinations of the commercial air passengers in the Airport's service area as the following:

- 1. San Francisco Bay Area (13.8 percent)
- 2. New York/Newark (6.8 percent)
- 3. Seattle/Tacoma (4.2 percent)
- 4. Las Vegas (4.1 percent)
- 5. Sacramento (3.8 percent)

In its conclusions, the Retention Study indicated that "the breadth of airline service provided by airlines at these other airports surrounding McClellan-Palomar Airport is the biggest impediment to potential local air

⁷ FAA TAF Issued January 2017

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⁶ FAA TAF Issued January 2017

⁸ McClellan-Palomar Airport, Passenger Retention Study and True Passenger Market Size Analysis, Sixel Consulting Group, Inc., September 2010.

service in Carlsbad." The study researchers pointed out that they could not accurately determine the percentage of local passengers that would use additional air service and that considerable time and effort marketing new services would be necessary to change travel habits. However, this has been mischaracterized as concluding that the Airport could expect to serve the entire 3.27 million passengers within the study area. This would require all potential passengers from North County to use McClellan-Palomar Airport as their only commercial airport. Even though the study did not estimate the number of passengers that might use the Airport, the Master Plan is analyzing two planning scenarios described in subsequent sections that utilize 304,673 and 575,000 annual enplanements by 2036.

Finally, the Retention Study concluded, "It appears that the biggest challenge to passenger retention at the Airport is the fact that it offers the fewest non-stop destinations of all airports in Southern California. The key to reduced leakage will be increases in non-stop destinations, daily flights, and available seats."

3.3.2 GENERAL AVIATION AIRPORT SERVICE AREA

All 12 public-use airports in the County serve general aviation as shown in **Exhibit 3.1**. The four closest public use airports to McClellan-Palomar Airport include two that are classified by the FAA as general aviation airports and two that are classified as general aviation reliever airports. As a result, these four airports share the Airport's general aviation service area.

Fallbrook Community Airpark (L18) and Oceanside Municipal Airport (OKB) are the two closest airports from a nautical mile or flying perspective to the Airport, located 16 nautical miles north and 6.5 nautical miles northwest, respectively. Both airports have runways less than 2,200 feet in length, effectively limiting both airports to serving smaller piston-powered aircraft. While both are equipped with instrument approaches, neither has an airport traffic control tower. Fallbrook Community Airpark reported 101 based aircraft, while Oceanside Municipal Airport reported 79 based aircraft⁹. Both facilities are primarily single-engine, piston general aviation airports.

Ramona Airport (RNM), located 19 nautical miles to the southeast, and Montgomery-Gibbs Executive Airport (MYF), located 20 nautical miles to the south, are both classified by the FAA as reliever airports and are served by an ATCT and equipped with instrument approaches. Ramona Airport has a 5,000-footlong runway with a 95,000-pound dual wheel pavement strength, making the airport capable of accommodating general aviation aircraft like that at McClellan-Palomar Airport. Ramona Airport reported 132 based aircraft, only one of which was identified as a jet aircraft.

Montgomery-Gibbs Executive Airport is somewhat limited by its 4,577-foot-long runway and 12,000-pound single wheel pavement strength, but was noted to have nine based jets out of a reported total of 456 based aircraft. As the closest FAA reliever airport to San Diego International Airport and the San Diego central business district, Montgomery-Gibbs Executive Airport has more annual operations than McClellan-Palomar Airport with a 2015 operational level of 213,848 operations¹⁰.

As with commercial service, the general aviation service area for the Airport is primarily the northwest portion of the County of San Diego. Smaller general aviation aircraft have additional options in Fallbrook Community Airpark and Oceanside Municipal Airport, but Ramona Airport is the closest airport with similar capabilities to serve business-class general aviation aircraft.

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⁹ Airport Master Record 5010, accessed November 1, 2016.

¹⁰ Airport Master Record 5010, accessed November 1, 2016.

3.4 SOCIOECONOMIC AND DEMOGRAPHIC TRENDS OF THE SERVICE AREA

Local and regional forecasts developed for key socioeconomic variables provide an indication of the potential for supporting growth in aviation activity. Three variables that are typically useful in evaluating the service area and its potential for air traffic growth are population, employment, and income.

Population and other socioeconomic forecasts are regularly prepared by a number of sources. At the regional level, the San Diego Association of Governments (SANDAG) prepared population, employment, and income forecasts for the San Diego Metropolitan Statistical Area (MSA) and subareas in support of its 2050 Regional Transportation Plan (RTP). These forecasts were prepared with a 2012 base year and were adopted by SANDAG in October 2013. The SANDAG forecasts were developed for the RTP in 10-year increments to the planning horizon of 2050. The forecasts shown are for the San Diego MSA, which is estimated to reflect socioeconomic trends that impact the airport service. San Diego's MSA and subareas are depicted in **Exhibit 3.2**. It should be noted that the area identified as North City is more commonly referred to as North County. Socioeconomic data specific to the identified subareas were not available in the RTP.

The SANDAG forecasts for the primary socioeconomic variables for the MSA through 2050 are presented in **Table 3.1**. The SANDAG forecasts did not include per capita personal income. For this indicator, Woods and Poole Economics' *Complete Economic and Demographic Data Source (CEDDS)* was utilized and included in **Table 3.1**. Because the RTP utilized 2015 as a base year for socioeconomic forecasts, this is used as the base year for CEDDS data as well.

Between 2015 and 2050, the average annual growth rate (AAGR) of population in the MSA is projected to increase by 1.19 percent. The average annual growth rate for employment in the MSA between 2015 and 2050 is projected at 1.63 percent, while the MSA is expected to have an AAGR of 0.62 percent in median household income during that timeframe. Per capita personal income, adjusted for inflation, is projected to grow at an AAGR of 1.13 percent annually in the MSA through 2050. It should be noted that economic estimates were adjusted to constant dollars (2015), which adjusts for inflation over time.

Income levels are often cited as a key variable in defining propensity for air travel and aircraft ownership. As shown in **Table 3.1**, the MSA of San Diego is anticipated to experience consistent growth through 2050.

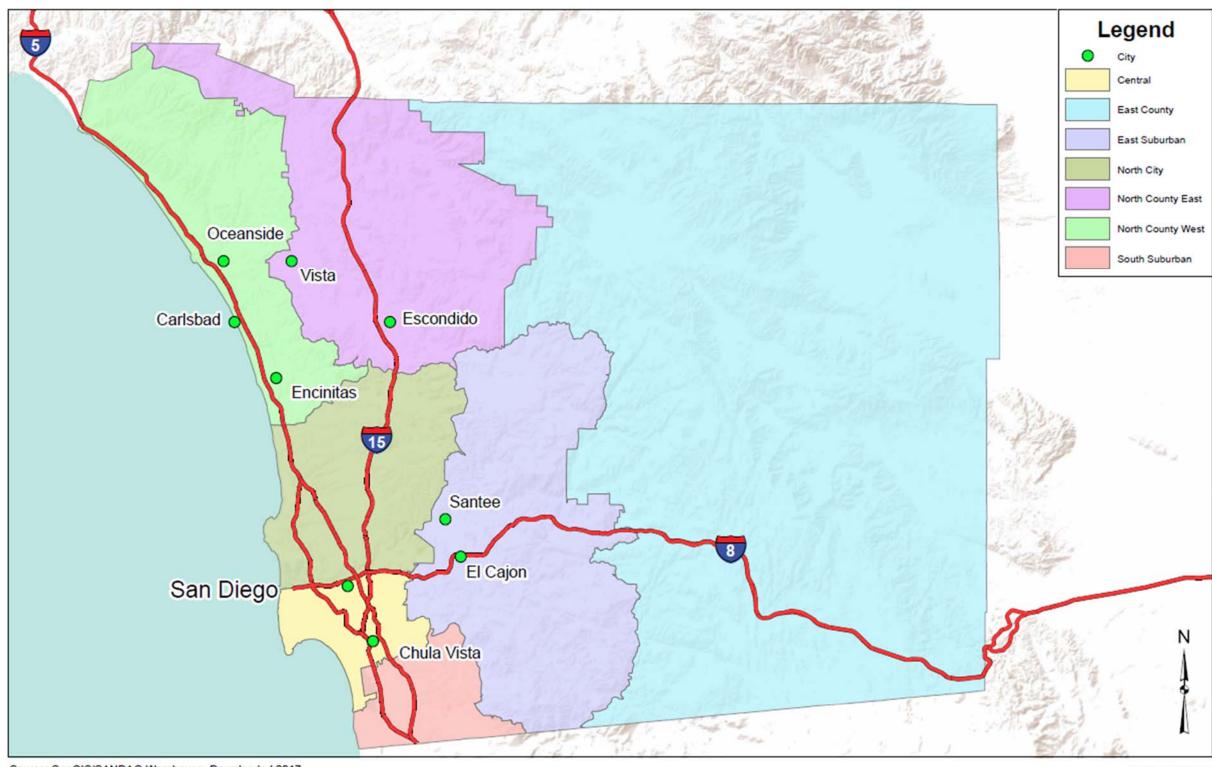
Table 3.1 - County of San Diego Socioeconomic Forecasts

		,					
0.1	Actual Foreca				AAGR		
Category	2015	2020	2035	2050	2015-2050		
Population Forecasts							
San Diego MSA	3,297,980	3,489,220	4,093,700	4,667,620	1.19%		
Employment Forecasts	3						
San Diego MSA	2,012,630	2,180,340	2,669,985	3,159,630	1.63%		
Median Household Inc	ome (2015\$)						
San Diego MSA	\$74,184	\$77,390	\$84,512	\$92,091	0.62%		
Per Capita Personal Income (2015\$)							
San Diego MSA	\$ 52,937	\$ 56,821	\$ 64,494	\$ 78,515	1.13%		
AAGR: Average Annual	Growth Rate						

Sources: Final Series 13 – 2050 Regional Growth Forecast, SANDAG, Adopted October 2013; PCPI: The Complete Economic and Demographic Data Source (CEDDS). http://www.woodsandpoole.com/, Woods & Poole. 2016, 2016 Extrapolated to 2015 dollars. Prepared by: Kimley-Horn, 2017.

McClellan-Palomar Airport Airport Master Plan Update

Exhibit 3.2 San Diego Metropolitan Statistical Area



Source: SanGIS/SANDAG Warehouse, Downloaded 2017 Prepared by: Kimley-Horn and Associates

NOT TO SCALE

3-8 **Aviation Activity Forecast**

3.5 HISTORICAL AVIATION ACTIVITY

This section presents a brief review of historical aviation activity at the Airport. The historical activity indicators examined include airline service, enplaned passengers, based aircraft, and aircraft operations data.

3.5.1 AIRLINE SERVICE

The Airport received Part 139 certification as a Class I facility from the FAA in 1996. A Part 139 Certification serves to ensure safety in air transportation. Airports serving all types of scheduled operations of air carrier aircraft for at least 31 passenger seats and any other type of air carrier operations are Class I airports¹¹. The Airport has historically been served by regional (also referred to as commuter) carriers. According to Airport records, American Eagle Airlines operated at the Airport from 1991 through 1997. From 1996 through April 2015, United Express operated by SkyWest Airlines flew from McClellan-Palomar Airport to Los Angeles International. America West Airlines operated by Mesa Airlines (acquired by US Airways Group in 2005) operated at the Airport from 1999 to February 13, 2008, offering flights to Phoenix. Historical and recent air service had been provided on 30-seat turboprops.

The events of September 11, 2001, combined with an economic recession, significantly impacted the Airport's passenger enplanements. While both United Express (operated by SkyWest Airlines) and America West Express (operated by Mesa Airlines) maintained commercial airline service to the Airport, the number of daily flights was reduced by almost half. From 2002 to 2007, both airlines continued to serve the Airport, but annual enplanements dropped significantly. With the onset of the "Great Recession" of 2008-2010, passenger traffic at the Airport and airports throughout the U.S. dropped. America West Express/Mesa Airlines discontinued their service to the Airport in February 2008 due to consolidation of its routes. As of the first guarter of 2012, United Express/SkyWest Airlines averaged seven daily flights from McClellan-Palomar Airport to Los Angeles International Airport. United/SkyWest service stopped in April of 2015. United Express/SkyWest was experiencing high passenger demand and profitable passenger load factors at the Airport, but a company-wide decision was made to remove the Embraer 120 from its fleet. The deletion of this aircraft, which operated the route between the Airport and Los Angeles International Airport, from its fleet led to the cessation of service at the airport. A start-up airline began operating flights to and from Los Angeles International Airport and later to and from LAS in summer of 2015 but ceased service due to company funding issues. At the time this Forecast Section was completed in Fall 2017, scheduled commercial service had resumed on CRJ-700 aircraft operated by Cal Jet by Elite Airways under FAA Part 121 Regularly Scheduled Airline Service.

3.5.2 ENPLANED PASSENGERS

Historical passenger enplanements at the Airport are shown in **Table 3.2** and **Exhibit 3.3**. Enplanements include fare-paying passengers aboard scheduled flights that originate at an airport. For the purposes of this Airport Master Plan Update, non-revenue enplanements and charter passengers are not included or analyzed. Commercial passenger activity at the Airport increased from 2,000 annual enplanements in 1990 to a peak of 78,519 enplanements in 2000. The events of September 11, 2001, combined with the economic recession that began in 2001, saw enplanement levels drop and stabilize around 50,000 by 2006. From 2007 to 2010, enplanements continued to decline even further to approximately 24,000 by 2010 due largely to the economic recession that began in 2007 and changes in airline business models. These models reduced seat capacity and resulted in changes in contracts between regional airlines and their air carrier partners, which contributed to the departure of Mesa Airlines in early 2008. Passenger

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¹¹ Part 139 Airport Certification, Federal Aviation Administration, http://www.faa.gov/airport_safety/part139_cert/?p1=classes, accessed December 5, 2013.

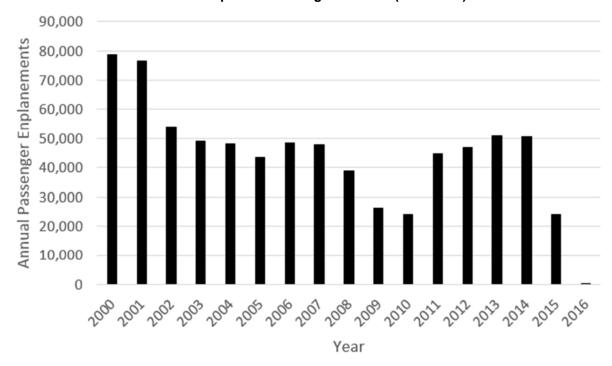
activity increased dramatically between 2010 and 2014 before scheduled commercial service was discontinued in 2015.

Table 3.2 - Historical Annual Passenger Enplanements

Year	CRQ Enplanements	Annual % Change
2000	78,519	
2005	43,553	-8.9%
2006	48,489	11.3%
2007	47,941	-1.1%
2008	38,994	-18.7%
2009	26,297	-32.6%
2010	23,996	-8.8%
2011	44,775	86.6%
2012	46,903	4.8%
2013	50,970	8.7%
2014	50,668	-0.6%
2015	23,988	-52.7%
2016	131	-99.5%

Sources: FAA TAF issued January 2017. Prepared by: Kimley-Horn, 2017.

Exhibit 3.3 Historical Annual Enplaned Passengers at CRQ (2000-2016)



Sources: FAA TAF Issued January 2017, Prepared by Kimley-Horn, 2017.

3.5.3 BASED AIRCRAFT

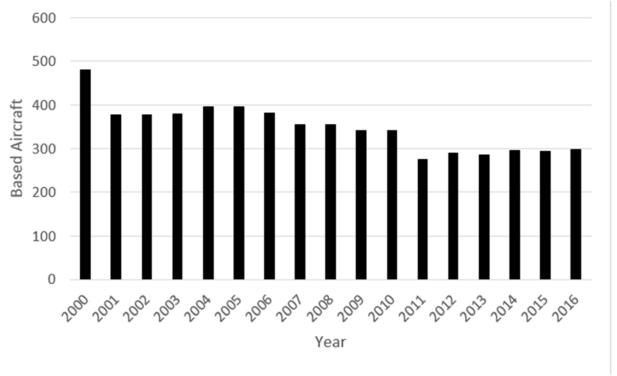
Historical based aircraft data was obtained from the FAA TAF issued January 2017. The Airport's historical based aircraft numbers are shown in **Table 3.3** and **Exhibit 3.4**. Total based aircraft have fluctuated over the past 20 years, from a high of 480 in 2000 and 1998 to a low of 274 in 2011. While there have been fluctuations since 2000, based aircraft have continued to decline, although there has been a slight increase since 2011. This overall decline is similar to that experienced by general aviation as a whole throughout the U.S. Additionally, in 2010, the FAA required all airports to provide the specific aircraft N-numbers, the unique alphanumeric characters starting with the letter "N" that are used to register and identify aircraft, for aircraft based at airports. This effort found the same aircraft based at multiple airports and led to decreases in based aircraft at many of the nation's airports. As of 2016, there were 298 based aircraft reported at the Airport. Of these aircraft, 63 percent were single-engine piston, 5 percent were multi-engine piston, 5 percent were turboprops, 22 percent were jet aircraft, and the remaining 5 percent were helicopters.

Table 3.3- Historical Total Based Aircraft

Year	Based Aircraft	% Change
2000	480	
2005	395	-17.7%
2006	382	-3.3%
2007	354	-7.3%
2008	354	0.0%
2009	341	-3.7%
2010	341	0.0%
2011	274	-19.6%
2012	290	5.8%
2013	285	-1.7%
2014	296	3.9%
2015	294	-0.7%
2016	298	1.4%

Source: FAA TAF Issued January 2017. Prepared by Kimley-Horn, 2017.

Exhibit 3.4 Historical Total Based Aircraft at CRQ (2000-2016)



Source: FAA TAF Issued January 2017. Prepared by Kimley-Horn, 2017.

3.5.4 AIRCRAFT OPERATIONS

While the Airport is equipped with an ATCT that operates from 7:00 a.m. to 10:00 p.m. local time, seven days a week, historical and base year operations estimates used in the forecasts for this Airport Master Plan Update are derived from the FAA's TAF. Operations are recorded by type and include air carrier, air taxi/commuter, general aviation, and military. Each aircraft's takeoffs and landings are summed to comprise total annual operations at the Airport. An operation is defined as a single landing or a single takeoff. Air Carrier operations are conducted under 14 Code of Federal Regulations (CFR) Part 121 and include scheduled, commercial flights. Air taxi operations are conducted under 14 CFR Part 135 as an on-demand or limited schedule basis with aircraft than have no more than 60 passenger seats. General aviation operations are typically conducted under 14 CFR Part 91 with single- and multi-engine aircraft for non-revenue service or non-passenger revenue services such as flight training, recreational, or emergency response.

The Airport's historical annual aircraft operations are presented in **Table 3.4** and **Exhibit 3.5**. Total annual aircraft operations have decreased significantly over time. The reduction in aircraft operations is not just a trend specific to the Airport, but one that has been occurring nationally since 2000 as the costs (fuel, insurance, aircraft, etc.) associated with general aviation aircraft ownership have risen. Declines in the national economy that occurred from 2008 to 2010 have also negatively impacted the aviation sector.

Table 3.4- Historical Annual Aircraft Operations

Year	Air Carrier	Air Taxi	General Aviation	Military	Total Operations
1995	0	14,083	198,017	3,012	215,112
1996	15	15,298	204,693	3,021	223,027
1997	54	10,128	217,572	1,444	229,198
1998	8	11,537	232,285	1,545	245,375
1999	12	14,597	259,535	10,978	285,122
2000	0	16,110	242,087	8,245	266,442
2001	0	16,081	209,415	6,756	232,252
2002	0	13,209	191,918	1,824	206,951
2003	3	13,267	178,566	1,994	193,830
2004	2	13,733	194,121	1,634	209,490
2005	5	14,736	188,933	1,485	205,159
2006	0	17,207	178,781	1,750	197,738
2007	37	18,245	196,100	1,477	215,859
2008	0	14,288	177,403	1,616	193,307
2009	9	9,460	164,608	825	174,902
2010	0	8,042	129,466	853	138,361
2011	32	8,967	131,213	723	140,935
2012	3	9,085	132,542	924	142,554
2013	4	9,934	137,476	1,259	148,673
2014	1	9,961	137,297	1,350	148,609
2015	6	10,053	117,479	1,089	128,627
2016	1	8,982	139,091	955	149,029
Average Ani	nual Grow	th Rates			
1995-2016	N/A	-1.72%	-1.42%	-3.25%	-1.46%

Source: FAA Terminal Area Forecast, Issued January 2017. Prepared by Kimley-Horn, 2017.

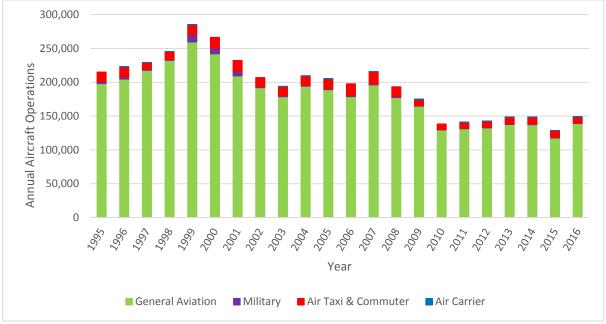


Exhibit 3.5 Historical Annual Aircraft Operations at CRQ (1995-2016)

Source: FAA Terminal Area Forecasts issued January 2017. Prepared by: Kimley-Horn and Associates, 2017.

In addition to the total number of annual aircraft operations, another important element to identify is operations by aircraft type, specifically as it pertains to the existing and recommended Airport Reference Code (ARC). An analysis of the FAA's Traffic Flow Management System Counts (TFMSC) database for base year 2016 was initially developed in April 2017, and has since been updated to reflect changes in how data are reported by the FAA. TFMSC data include aircraft-specific operations categorized by AAC and ADG (the two components that combine to identify ARC). As shown in **Table 3.5**, the Airport regularly experienced operations by a variety of aircraft types with varying ARCs. Based on recent trends in the general aviation sector as well as historical trends at the Airport, it is anticipated that the operational fleet mix will continue to shift toward a greater proportion of aircraft with ARCs of B-II and higher.

Table 3.5 – Aircraft Operations by ARC (2016)

Aircraft Design Group	2016 Operations
Less than B-II	118,924
B-II	7,891
B-III	34
B-IV	1
C-I	1,137
C-II	2,553
C-III	317
C-IV	1
D-I	77
D-II	854
D-III	745
Total Operations	149,029

Source: FAA TFMSC, obtained September, 2018.

The primary purpose of evaluating operations described in **Table 3.5** is to identify that there are a significant number of operations at the Airport conducted by aircraft that exceed the Airport's existing B-II ARC. In 2016, there were 5,719 aircraft operations that exceeded the Airport's B-II ARC. Based on local and national trends, it is anticipated that the proportion of larger corporate aircraft operations at the Airport compared to total aircraft operations will increase throughout the 20-year planning horizon. Furthermore, as older jets are retired out of the active fleet, they are being replaced by larger, more fuel-efficient jet aircraft. It should also be noted that the 2013 Feasibility Study identified significant aircraft operations conducted by aircraft with ARCs that exceeded a C-III designation.

The FAA designates an airport's design aircraft based on the most demanding ARC category of aircraft that conducts at least 500 annual operations. Based on current operational activity, FAA guidance would indicate D-III design aircraft should be considered in the design of the Master Plan. This means that in the future, Airport facilities should be designed and constructed to accommodate ARC D-III aircraft. As such, facility requirements and development alternatives described in subsequent Sections have been developed to accommodate D-III ARC aircraft. This does not mean that the existing B-II ARC cannot safely accommodate larger design class aircraft. C-III and D-III ARC aircraft can continue to safely use a B-II airport. Accordingly, the Master Plan Update retains a B-II ARC alternative. Additional discussion regarding the Airport's design aircraft is provided in Section 3.10.3.

3.6 PREVIOUS PASSENGER ENPLANEMENT FORECASTS

Passenger enplanement forecasts for the Airport were prepared previously in three separate efforts including the following:

- 1. Regional Aviation Strategic Plan (RASP), March 2011
- 2. FAA Terminal Area Forecasts (TAF), Fiscal Years 2017-2040

3. Feasibility Study for Potential Improvements to McClellan-Palomar Airport Runway, 2013

These forecasts were developed for different reasons and with different underlying factors and assumptions. The 2013 Feasibility Study's forecast was developed for conditions specifically existing at the Airport at the time the projections were prepared, while the RASP was developed for a broader geography and examined passenger enplanement activity at numerous airports in the San Diego region. The TAF is developed by the FAA and updated on an annual basis for all active airports in the National Plan of Integrated Airport Systems (NPIAS). In the case of the TAF, the greatest attention and level of detail are provided to the development of forecasts for larger airports.

Brief descriptions of each of these studies' passenger enplanement forecasts are presented below.

3.6.1 2011 REGIONAL AVIATION STRATEGIC PLAN (RASP)

The RASP was developed for the SDCRAA to assess long-range capabilities of all public-use airports in the County of San Diego. The primary focus of the RASP was to determine how to handle the increasing passenger demand for air carrier service at San Diego International Airport when that facility reaches its estimated capacity at 28 million annual passengers (14.2 million enplanements). San Diego International Airport had 10.3 million enplanements in 2016.

The RASP assumes that San Diego International Airport will reach its capacity somewhere between 2020 and 2025 and, as a strategy of alleviating congestion, the RASP indicated that some air carrier activity will be distributed to McClellan-Palomar Airport due to its proximity and because it is the only other Part 139 commercial service airport in the County of San Diego. The RASP enplanement forecast for the Airport reflects this shift in a projection of significantly increased enplanements during that timeframe.

The RASP uses 2009 as a base year and projects enplanements to the year 2030 for its study area. The RASP study area included the County of San Diego and the larger region, including five airports in the greater Los Angeles metropolitan area: Los Angeles International Airport, John Wayne Airport, Long Beach Airport, Ontario Airport, and Burbank Airport. The baseline RASP findings projected annual enplanements to increase region-wide from 48 to 80 million between 2009 and 2030, representing an average annual growth rate of 2.4 percent per year. The RASP baseline model (described as a no-action alternative) indicated that San Diego International Airport will begin to experience capacity constraints between 2020 and 2025, resulting in residents and visitors using other airports (including the Airport and airports outside the County of San Diego) beginning around 2020. This no-action alternative projected that San Diego International Airport's share of the County of San Diego resident and visitor enplanements would drop from 85 percent in 2009 to 78 percent in 2030. The Airport's projected enplanements in the RASP baseline scenario were anticipated to increase from 62,400 in 2009 to 511,700 in 2030, representing an average annual growth rate of 10.5 percent per year.

The RASP considered 15 alternative scenarios to optimize the County of San Diego Airport System. One of those scenarios (Scenario 1C) assumes optimizing regional commercial activity by providing facilities for multi-carrier passenger service at the Airport. In this scenario, the Airport enplanements were forecast to increase from 62,400 to 641,400 between 2009 and 2030, representing an average annual growth rate of 11.7 percent per year. SDCRAA worked closely with SANDAG as it concurrently developed its Airport Multimodal Accessibility Plan (AMAP), and will ultimately incorporate the RASP recommendations into the AMAP and the region's 2050 Regional Transportation Plan.

3.6.2 TERMINAL AREA FORECAST (TAF)

The FAA TAF is the official forecast of aviation activity at airports eligible for FAA funding and is prepared for planning purposes related to the system budget and facility needs. The TAF is prepared annually for active airports in the NPIAS, including FAA-towered airports, Federal contract tower airports, non-federal

towered airports, and non-towered airports. The 2016 TAF includes historical data through 2015 for based aircraft, passenger enplanements, and aircraft operations delineated by air carrier, air taxi & commuter, general aviation, and military. The TAF uses year over year trend methodology to project future conditions and does not take into account specific characteristics of the airport or region. Aircraft operations by type are also identified as itinerant or local. The TAF also includes estimates of projected activity for years 2016 through 2040. The most recent TAF, issued in January 2017 reflects the gap in commercial service in its estimates of base year 2016 data. The TAF shows 131 passenger enplanements in 2016, increasing to 171 in 2036, representing an average annual growth of 1.53% per year.

3.6.3 2013 FEASIBILITY STUDY FORECAST

The aviation activity forecast developed for the 2013 Feasibility Study was used in the analysis of the potential extension of the runway at the Airport, but anticipated that the airport would remain a B-II ARC. The study used 2011 as a base year and projected activity through 2021. The 2013 Feasibility Study forecast projected enplanements at the Airport to increase from 47,983 in 2011 to 62,000 in 2021, representing an average annual growth rate of 2.6 percent per year.

The 2013 Feasibility Study did not consider increased commercial service activity as outlined in the RASP or as identified under alternative demand scenarios later in this section of the Airport Master Plan Update. The 2013 Feasibility Study's focus was on general aviation uses only; it assumed commercial service would grow at a rate similar to recent historical passenger activity and the TAF.

3.6.4 SUMMARY OF PREVIOUS PASSENGER ENPLANEMENT FORECASTS

Table 3.6 and **Exhibit 3.6** summarize the passenger enplanement levels for the Airport for each of the previous forecasts outlined above.

2035 **Activity/Forecast** 2016 2020 2025 2030 **Actual Activity** 131 **Previous Forecast** San Diego RASP Forecast Scenarios Baseline - No Action Scenario 126,332 307,213 511,676 Scenario 1C – Enhanced Commercial 147,427 542,922 641,355 Service at CRQ **FAA Terminal Area Forecast** 139 149 159 169 2013 Feasibility Study (1) 60,400

Table 3.6 – Previous Passenger Enplanement Forecasts for CRQ

Notes:

2013 Feasibility Study projections for 2015 and 2020 were interpolated from the 2011 actual enplanement count and forecast values listed for 2016 and 2021 in the study's Final Report.

Sources: RASP Forecasts, Final Report, Jacobs Consultancy, March 2011, Appendix B; FAA TAF – FAA Terminal Area Forecast issued January 2017; Feasibility Study for Potential Improvements to McClellan-Palomar Airport Runway, Final Report, August 1, 2013 – Table 3E. Prepared by: Kimley-Horn, 2017.

700,000 600,000 Annual Passenger Enplanements 500,000 400,000 300,000 200,000 100,000 0 2000 2005 2010 2015 2020 2025 2030 2035 Year FAA TAF RASP Baseline RASP Scenario 10 2013 Feasibility Study • Historical Activity Feasibility Study. Prepared by: Kimley-Horn, 2017.

Sources: RASP Forecasts, Final Report, Jacobs Consultancy, March 2011, Appendix B; FAA TAF issued January 2017; 2013

Exhibit 3.6 Previous Passenger Enplanement Forecasts for CRQ

reasibility Study. Frepared by. Rimley-Horn, 2017.

3.6.5 EVALUATION OF PREVIOUS PASSENGER ENPLANEMENT FORECASTS

The commercial service passenger enplanement forecasts from the RASP, TAF, and the 2013 Feasibility Study were evaluated to determine if any of these would be suitable for use as the basis of the Airport Master Plan Update's passenger enplanement forecast. The underlying assumptions for each forecast are numerous and differ significantly. Key points of comparison between the RASP, TAF, and 2013 Feasibility Study forecasts are:

- The RASP forecasts were developed with a focus on activity projections for the San Diego region, not for activity at the Airport specifically. The RASP considers potential effects of increasingly constrained activity at San Diego International Airport and how that might shift demand to McClellan-Palomar Airport, resulting in a higher activity forecast. The RASP assumes that the Airport can accommodate increased passenger activity up to 500,000 annual enplanements at the existing terminal facility and up to 750,000 annual enplanements with an increased terminal facility and vehicular parking capacity. RASP scenarios also assume implementation of a 1,000-foot runway extension. It should be noted that the capacity constraints that were identified for San Diego International Airport were subsequently pushed 10 years further into the future from the 2035 timeframe (Regional Aviation Strategic Plan, Final Report, Jacobs Consultancy, March 2011).
- While the FAA applies a nationwide annual growth rate in the TAF, it does not consider the
 regional aviation conditions at San Diego International Airport or does it look at the ability of the
 Airport to enhance its facilities to accommodate additional commercial passenger service, it does
 provide insight as to what existing and projected levels of demand would be based on market
 conditions and historical activity. However, the TAF forecasts do not assume that scheduled
 commercial service will return to the Airport in the 20-year planning period, despite the fact that at

- the time this Forecast Section was developed, two airlines had submitted applications to start operating at the Airport.
- The 2013 Feasibility Study forecast was developed specifically for current conditions and does
 not consider potential effects of constrained activity, thereby producing a lower activity forecast.
 The 2013 Feasibility Study did not consider increased commercial service activity as outlined in
 the RASP. It was focused on general aviation activity growth and use at the Airport and assumed
 commercial service would grow at a rate similar to recent historical passenger activity.

Through coordination with County staff, it was determined that the RASP and 2013 Feasibility Study forecasts represented factors that generated relevant demand scenarios that should be considered and used as a basis for comparative enplanement forecasts. This determination was triggered by the recognition that, despite extensive study, the region had not found an acceptable alternative to mitigate the well-documented constraints at San Diego International Airport and the resulting shift in demand to McClellan-Palomar Airport as the only other airport with passenger service in the County. Furthermore, it is important to consider the limitations at John Wayne Airport (), the cap on commercial flights at Long Beach Airport, and capacity issues at Los Angeles International Airport (assuming no changes in these limiting factors). John Wayne Airport currently has two potentially constraining factors: the cap on enplaned passengers per year and their runway length. Long Beach Airport is constrained to a total number of commercial operations. Los Angeles International Airport is in the process of adding capacity but is limited in gates.

Additionally, the TAF reflects the cessation of scheduled commercial service at the Airport in 2015 and projects minimal passenger enplanements in the future with air taxi operations. As such, previous studies and the TAF do not accurately reflect anticipated levels of passenger forecast associated with the introduction of new scheduled commercial service that is anticipated to begin in 2017. The following sections describe methodologies and passenger enplanement forecasts that have been submitted to the FAA for review and approval.

3.7 PASSENGER ENPLANEMENT FORECASTS

This section presents forecasts of enplaned passengers at the Airport, which were developed with consideration of several factors and methodologies, including the following:

- Local socioeconomic and demographic factors
- The Airport's historical market share of regional enplaned passengers
- Previous forecasts developed for the Airport
- Known industry trends
- Strong interest from potential airlines, including two existing applications with two signed agreements to operate

As noted, facility requirements identified in subsequent sections of this Airport Master Plan Update are being driven by the proportionately high level of corporate and business aircraft that operate at the Airport and not by an anticipated increase in scheduled commercial operations and passenger enplanements. This is an important distinction, as there are no FAA Airport Improvement Program-eligible facility needs associated with the forecasts of airline operations or passenger enplanements.

3.7.1 FORECAST METHODOLOGY AND ASSUMPTIONS

As noted, in September 2017, Cal Jet by Elite Airways began scheduled commercial service at the Airport. Other airlines have also expressed legitimate interest in providing additional service at the Airport. It is assumed that the proposed improvements recommended in this Airport Master Plan Update will provide an environment more conducive to supporting scheduled air service while satisfying and

remedying other issues more closely aligned with the existing based aircraft fleet mix and corporate general aviation activities at the Airport.

Enplanement forecasts are typically prepared using methodologies such as trend line, regression, and market share. Historical enplanement trends and their relationships to other indicators are considered to project future activity. For the Airport, historical enplanements have varied significantly based on the commercial airline providing the service, as well as other factors including aircraft type, economic conditions, and service destinations. Based on the lack of consistent historical trends, partially due to a nationwide downturn and a major shift in airline operations after September 11, 2001 as well as the economic downturn that occurred from 2008 to 2010, many of the typical analytical forecasting techniques are not applicable for the Airport. In addition, due to the Airport's airport service area and the extensive amount of leakage of area passengers to other airports, the Airport's future enplanement levels will depend more upon its ability to retain and re-attract passengers and less on standard growth-based methodologies.

Numerous passenger enplanement forecast methodologies were initially developed for the purposes of this Airport Master Plan Update, including ones that examined the Airport's market share of enplanements compared to the San Diego Region and the State of California and others that incorporated historical trends and projected socioeconomic trends of the Airport's service area. Upon examination of these and other results, it was determined that the methodologies employed for the FAA's TAF were outside the tolerance of the TAF as discussed below. Per the FAA:

"Airport District Offices (ADO) or Regional Airports Divisions (RO) are responsible for forecast approvals. When reviewing a sponsor's forecast, FAA must ensure that the forecast is based on reasonable planning assumptions, uses current data, and is developed using appropriate forecast methods. Additional discussion on assumptions, data, and methodologies can be found in the APO report 'Forecasting Aviation Activity by Airport.' After a thorough review of the forecast, FAA then determines if the forecast is consistent with the TAF.

For all classes of airports, forecasts for total enplanements, based aircraft, and total operations are considered consistent with the TAF if they meet the following criterion:

• Forecasts differ by less than 10 percent in the 5-year forecast period, and 15 percent in the 10-year forecast period

If the forecast is not consistent with the TAF, differences must be resolved if the forecast is to be used in FAA decision-making. This may involve revisions to the airport sponsor's submitted forecasts, adjustments to the TAF, or both."

As described below, the recommended forecast of passenger enplanements and total aircraft operations described in this Airport Master Plan Update exceed these review and approval thresholds for the local ADO. As such, the forecast has been submitted to FAA headquarters along with appropriate justification for review and approval.

Based on discussions with representatives of the County of San Diego and the FAA's Los Angeles Airports District Office in late Fall 2016 and early 2017, it was determined that, if a reasonable forecast could not be generated using typical projection methodologies, utilization of the TAF as a recommended forecast for this Airport Master Plan Update would be an acceptable approach in conjunction with a planning activity level (PAL) forecast that includes potential new airlines.

As several methodologies were developed and compared with the most recent version of the TAF issued in January 2017, none produced results that were within the previously identified tolerance for FAA forecast approval. Even with the reintroduction of commercial service, and the historical enplanement counts from the past 20 years, actuals exceeded allowable TAF variances. If only one of the two applicant airlines are successful, as was United Express/SkyWest for many years, the current TAF forecast

projecting only 171 enplaned passengers by 2036 would be vastly inadequate. As such, this Airport Master Plan Update uses a dual approach. The TAF is the recommended baseline forecast for passenger enplanements and aircraft operations as it pertains to this Airport Master Plan Update, with the Planning Activity Level enplanement forecast and resulting operational forecast also being used for planning purposes over the 20-year horizon.

The baseline forecast, which follows the TAF, is referred to as the "Baseline Forecast" or the "Baseline Scenario" throughout the remainder of this document. The Planning Activity Forecast, which plans for the event that the new entrant airlines are successful and continue to succeed within their management plans is referred to as "PAL 1" throughout the remainder of this document. A summary of the Baseline Forecast is presented in **Table 3.7.**

As it pertains to the PAL 1 Forecast, each of the applicant airlines have confirmed that their operation plans can and will operate utilizing the existing airport system and that their operations are not dependent on any airport improvements.

The PAL 1 forecast assumes that the entrant airlines will operate as their business and operational plans predict and thus return commercial service to the Airport. This scenario matches the County's objective to continue to operate and market the airport as a commercial airport and, as such, this forecast will be used for planning purposes over the 20-year horizon.

Table 3.7- Baseline Passenger Enplanement Forecast - FAA TAF

	acconge. =	
Year		CRQ Enplanements
Historical		
2007		47,941
2008		38,994
2009		26,297
2010		23,996
2011		44,775
2012		46,903
2013		50,970
2014		50,668
2015		23,988
2016		131
Projected		
2021		141
2026		151
2031		161
2036		171
Average Annual Gr 2016-2036	owth Rate	1.53%

Source: FAA TAF issued January 2017. Prepared by: Kimley-Horn, 2017.

3.7.2 PLANNING ACTIVITY LEVEL FORECAST

After the cessation of operations by United Express/SkyWest Airlines, various airlines expressed interest in operating from the Airport. Biz Charters provided commercial service at the Airport but discontinued service due to internal funding issues. At the time this forecast was prepared, Cal Jet by Elite Airways was in operation and two new airlines, with established main line carrier connections and different business plans have requested resumption of operations from the Airport. One airline has a current agreement necessary to start operations and San Diego-Transportation Security Administration (SAN-

TSA) has formally committed to providing FSROR within the next month. This fact—along with other airline projections—have been used as a restarting point for the forecasting activity for this Plan. Each of these two airlines represents a different capture rate of passenger enplanements in the North County service area. If passenger enplanement growth in the North County service area occurs at a similar rate as the rest of the RASP study area (2.4 percent per year), it is anticipated that the estimated 1.64 million enplanements in the Airport catchment area identified in the Retention Study would increase to approximately 2.73 million potential annual enplanements by 2030.

The PAL 1 forecast for passenger enplanements is derived from full utilization of the existing passenger terminal building and reasonable projections of airline applications in hand.

The Airport could focus on short-haul markets such as Los Angeles International Airport, Phoenix International Airport, Las Vegas International Airport, Oakland International Airport, San Jose International Airport, and Sacramento International Airport, relieving pressure on San Diego International Airport so that it could focus on longer-haul demand. The increase in enplanements and operations envisioned in this scenario would reflect an alleviation of congestion at San Diego International Airport through the entry of new airline service at the Airport. It is anticipated that, if the initial airlines are successful, that these conditions would allow a potential third airline to operate from the Airport in the long-term (10+ years) horizon.

The airlines planning on resuming commercial service at the Airport have identified their anticipated operating equipment, passenger load factors, route destinations, and flight schedules. This information has been evaluated and restructured to conform to historical trends and anticipated activity levels. **Table 3.8** identifies passenger enplanement forecasts by airline along with the assumptions that have been constructed based on the airlines' applications and factors described in the Retention Study.

As shown, modest boarding load factors (BLF) have been applied throughout the projection period, especially in the introductory years of anticipated service by the two initial airlines in 2017 and the third airline in 2027. The PAL 1 Forecast assumes that passenger load factors aboard the two entrant airlines will start at 50 percent in 2017 and increase gradually to 72 percent by 2036. The additional airline that is anticipated to start operation in 2027 is projected to operate with a passenger load factor of 50 percent in its initial year, increasing to 65 percent by 2036.

It should be noted that United/SkyWest experienced load factors¹² in the 62-68 percent range while in operation and the FAA Aerospace Forecast 2017-2037 identified that domestic load factors for U.S. commercial air carriers in 2016 was 79.9 percent for regional carrier load factors. Conservative Boarding Load Factors (BLF), well below previously achieved levels, were applied to the two airlines planning to offer scheduled passenger service at the Airport in mid-2017, identified in **Table 3.8.** As shown on this table, these projections, augmented by a third airline projected to begin service in the long-term timeframe, as described above, provide a realistic justification of the recommended forecast for passenger enplanements in this Airport Master Plan Update.

A key consideration with the re-commencement of commercial service is how the operations and enplanements are accounted for the first year of service by the three airlines. The forecast presented in this Airport Master Plan Update does not assume that airlines commence services at the first of the year or immediately operate at full planned operations. Lower boarding load factors and a later anticipated start date for operations are assumed. Airline #2 is anticipated to start operations with a smaller, 19-seat aircraft, and once the service is operating and recovering passengers, the airline plans to shift to a larger 30-seat aircraft. For this forecast the shift in equipment is assumed to occur after 90 days of operations. Airline #1 has stated their desire to commence service to multiple destinations right away upon start of service. This forecast does not include the full operational capacity the new airline anticipates with a total

¹² FAA Aerospace Forecast Fiscal Years 2017-2037.

of 14 departures per day until 2024 to allow gradual growth as the start-up operations attract passengers. This phased development of operations fits the plans of each potential airline while maintaining some constraints on projections. This same philosophy is maintained with the potential third operating airline that joins in 2027. The enplanements for this airline are not assumed to be as full during the first year of activity, and the boarding load factor is also maintained at a start-up level during this period. This approach is demonstrated within **Table 3.8** below.

McClellan-Palomar Airport

Airport Master Plan Update

Table 3.8 – Passenger Enplanement Forecast: PAL 1 Forecast

	Airline #1				Airline #2		Airline #3						
Year	Equipment (Seats)	Daily Departures*	BLF	Annual Enplanements	Equipment (Seats)	Daily Departures**	BLF	Annual Enplanements	Equipment (Seats)	Daily Departures	BLF	Annual Enplanements	Total Enplanements
2016	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	131
2017	64	12	50%	34,560	19/30	3	50%	4,410					38,970
2018	64	12	50%	140,160	30	3	50%	16,425					156,585
2019	64	12	52%	145,766	30	3	52%	17,082					162,848
2020	64	12	53%	148,570	30	3	53%	17,411					165,980
2021	64	12	55%	154,176	30	3	55%	18,068					172,244
2022	64	12	57%	159,782	30	3	57%	18,725					178,507
2023	64	12	59%	165,389	30	3	59%	19,382					184,770
2024	64	14	61%	199,494	30	3	61%	20,039					219,533
2025	64	14	63%	206,035	30	3	63%	20,696					226,731
2026	64	14	65%	212,576	30	3	65%	21,353					233,929
2027	64	14	65%	212,576	30	3	65%	21,353	64	3	50%	17,280	251,209
2028	64	14	65%	212,576	30	3	65%	21,353	64	3	50%	35,040	268,969
2029	64	14	65%	212,576	30	3	65%	21,353	64	3	52%	36,442	270,370
2030	64	14	66%	215,846	30	3	66%	21,681	64	3	53%	37,142	274,670
2031	64	14	67%	219,117	30	3	67%	22,010	64	3	55%	38,544	279,670
2032	64	14	68%	222,387	30	3	68%	22,338	64	3	57%	39,946	284,671
2033	64	14	69%	225,658	30	3	69%	22,667	64	3	59%	41,347	289,671
2034	64	14	70%	228,928	30	3	70%	22,995	64	3	61%	42,749	294,672
2035	64	14	71%	232,198	30	3	71%	23,324	64	3	63%	44,150	299,672
2036	64	14	72%	235,469	30	3	72%	23,652	64	3	65%	45,552	304,673

Source: County of San Diego; Prepared by: Kimley-Horn, 2017.

Notes: * Assumes 90 days in operation in 2017; **Assumes 60 days operating 19-seat aircraft in 2017, replaced permanently by 30-seat aircraft for remainder of 2017 (for 60 days) and then through 2036; *** Airline #3 commences the latter half of 2027 for 180 days.

Aviation Activity Forecast

3.8 BASED AIRCRAFT FORECAST

Based aircraft are those aircraft that are stored long-term and operate out of a specific airport. As noted in the Inventory Section, the number of based aircraft at the Airport has fluctuated in recent history. Overall, the number of based aircraft at airports nationwide has declined over the past decade, primarily due to economic instability, changes in pilot licensing requirements, increasing fuel prices, and other costs associated with owning and operating an aircraft. In its Aerospace Forecast 2017-2037, the FAA projects continuing declines in single-engine piston and multi-engine piston aircraft in the U.S. fleet. However, the forecast also projects significant increases in turboprop and jet aircraft.

Projections of based aircraft over the Airport Master Plan Update study horizon impact future airport facility and infrastructure requirements such as hangar storage space and apron tie-down areas. Facility needs associated with based aircraft are not typically eligible for FAA Airport Improvement Program (AIP) funding. Because of this and the historical fluctuation in the number of based aircraft at the Airport, the FAA TAF is the recommended forecast for based aircraft in this Airport Master Plan Update (see **Table 3.9**).

Year **CRQ Based Aircraft** Historical 2007 354 2008 354 2009 341 2010 341 2011 274 290 2012 2013 285 2014 296 2015 294 2016 298 **Projected** 2021 318 2026 339 2031 364 2036 389 **Average Annual Growth Rate** 1.53%

Table 3.9 - Based Aircraft Forecast

Source: FAA TAF issued January 2017, Prepared by: Kimley-Horn, 2017.

3.8.1 BASED AIRCRAFT FLEET MIX

2016-2036

With the total number of based aircraft at the Airport projected to increase, the type of aircraft, or fleet mix, also needs to be determined. Based on the TAF, issued January 2017, a significant proportion of based aircraft in 2016 consisted of single-engine piston aircraft (62.8 percent). Jet aircraft accounted for 22.4 percent of based aircraft in 2015. The remainder of based aircraft at the Airport consisted of multi-engine piston aircraft (5 percent), turboprops (5 percent), and helicopters (4.7 percent).

Based on projected U.S. general aviation trends found in the FAA Aerospace Forecast (FY 2017-2037), single- and multi-engine piston aircraft are anticipated to lose their current market share of the active general aviation aircraft fleet in the country. Jet aircraft, turboprop aircraft, and helicopters are expected to continue to represent a growing percentage of the market share.

The projected trends in the national general aviation fleet were used as a guide to develop fleet mix projections at the Airport. The based aircraft fleet mix projection is presented in **Table 3.10**. The major growth in based aircraft at the Airport is anticipated to mirror the national trends and occur in the business jet fleet, turboprops, and helicopters. The fleet mix projection results in an estimated based aircraft fleet consisting of 195 single-engine pistons (50.0 percent), 19 multi-engine pistons (5.0 percent), 31 turboprops (8.0 percent), 117 jets (30.0 percent), and 27 helicopters (7.0 percent).

	Table 3.10— Based Aircraft Fleet Mix Forecast							
Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Jet	Helicopter	Total		
Historical								
2014	167	18	25	70	14	294		
2015	179	17	23	68	17	304		
2016	187	15	15	67	14	298		
Forecast								
2021	188	16	19	78	17	318		
2026	190	17	22	90	20	339		
2031	191	18	27	104	24	364		
2036	195	19	31	117	27	389		
Average Ann	Average Annual Growth Rates							
2016-2036	0.21%	1.33%	5.33%	3.73%	4.64%	1.53%		

Table 3.10- Based Aircraft Fleet Mix Forecast

Source: 5010 Airport Master Record 2014-2016; Prepared by: Kimley-Horn, 2017.

3.9 AIRCRAFT OPERATIONS FORECAST

An aircraft operation can be defined as an aircraft takeoff or landing, with each of these activities resulting in one individual operation. The volume of aircraft operations in each timeframe, such as annual, monthly, daily, or hourly, is considered in relationship to the airport's capacity in that timeframe. If the volume of aircraft operations begins to approach or exceed the established capacity of an airport component—such as the runway—capacity improvements must be planned for and implemented.

At towered airports such as McClellan-Palomar Airport, operations are recorded and tracked by the ATCT during its operational hours. As noted previously, historical data from the TAF are utilized as a baseline for the development of forecasts identified in this Airport Master Plan Update. Aircraft operations are divided into local operations and itinerant operations. Local operations include aircraft operating in the traffic pattern or within sight of the ATCT, or aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches at the airport. Local operations include subcategories for military and civil aviation aircraft¹³.

Itinerant operations include takeoffs and landings of aircraft going from one airport to another. Itinerant operations are further subdivided into military, general aviation operations, air carrier, and air taxi/commuter operations. Air carrier operations represent takeoffs and landings by commercial aircraft with a seating capacity greater than 60, which includes the CRJ-700 currently being operated by Cal Jet by Elite Airways. Air taxi/commuter operations include takeoffs and landings by aircraft with 60 or fewer seats, conducting scheduled commercial flights. Air taxi/commuter operations also include takeoffs and landings by aircraft with 60 or fewer seats conducted on non-scheduled or for-hire flights.

Annual operations forecasts were prepared for each of the relevant categories for the Airport.

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¹³ Forecasting Aviation Activity by Airport, Federal Aviation Administration, July 2001.

3.9.1 AIR CARRIER OPERATIONS FORECAST

While the Airport does have scheduled commercial service provided by Cal Jet by Elite Airways, the FAA TAF issued January 2017 does not project future air carrier operations at the Airport. The FAA updates the TAF on an annual basis but at the time that forecasts were completed for this Airport Master Plan Update, historical air carrier activity was non-existent, which was reflected in the TAF issued January 2017. While future updates to the TAF will likely reflect air carrier operations that are now occurring at the Airport, no such activity is identified in the current TAF. As such, utilizing typical forecast methodologies for air carrier operations does not provide a fair representation of a forecast now that commercial service has resumed.

Air carrier operations have been developed based on application submittals from two separate airlines that intend to operate at the Airport in the near term. Similar to passenger enplanement forecasts, these applications have been examined based on historical levels of activity at the Airport, industry trends, and anticipated activity generated from leakage at San Diego International Airport and demand in North San Diego County. It should be noted that only one of the two airlines that have applied to operate at the Airport intends to operate air carrier category aircraft. The second airline has indicated it will operate air taxi category aircraft. It should also be noted that, based on the assumption air service at the Airport remains sustainable, it is estimated a third airline will enter the market in the long-term (10+ years) timeframe operating air carrier category aircraft (see **Table 3.11**).

Table 3.11 – Air Carrier Operations Forecast

	Airline #1						
Year	Daily	Daily	Annual	Daily	Daily	Annual	Total
	Departures*	Operations*	Operations	Departures	Operations	Operations	Operations
2016	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2017	12	24	2,160				2,160
2018	12	24	8,760				8,760
2019	12	24	8,760				8,760
2020	12	24	8,760				8,760
2021	12	24	8,760				8,760
2022	12	24	8,760				8,760
2023	12	24	8,760				8,760
2024	14	28	10,220				10,220
2025	14	28	10,220				10,220
2026	14	28	10,220				10,220
2027	14	28	10,220	3	6	1,080	11,300
2028	14	28	10,220	3	6	2,190	12,410
2029	14	28	10,220	3	6	2,190	12,410
2030	14	28	10,220	3	6	2,190	12,410
2031	14	28	10,220	3	6	2,190	12,410
2032	14	28	10,220	3	6	2,190	12,410
2033	14	28	10,220	3	6	2,190	12,410
2034	14	28	10,220	3	6	2,190	12,410
2035	14	28	10,220	3	6	2,190	12,410
2036	14	28	10,220	3	6	2,190	12,410

Source: County of San Diego. Kimley-Horn, 2017

Note: Only 2 airlines are projected to operate air carrier aircraft. Airlines #1 and #3 are referenced for consistency from Table 3.8;

^{*} Assumes 180 days of operation in 2027

The forecast for air carrier operations assumes that in 2017, one of the two airlines that have applied to operate at the Airport will utilize 64-seat aircraft. This airline is anticipated to commence operations by conducting 12 daily departures (24 operations), seven days per week for 90 days in 2017, 12 daily departures (24 operations), seven days per week for 365 days from 2018 to 2023, then 14 daily departures (28 operations), seven days per week for 365 days per year from 2024-2036.

The forecast also assumes that an additional airline (not associated with the two with applications to operate in the near-term) is anticipated to provide scheduled commercial service also utilizing 64-seat aircraft starting approximately in 2027. This airline is anticipated to conduct three daily departures (six operations) for 180 days in 2027 and three daily departures (six operations) for 365 days per year from 2028-2036. Total air carrier operations are calculated by adding annual operations for these two airlines in the appropriate years. As shown in **Table 3.11**, it is anticipated that the Airport will experience 12,410 air carrier operations by 2036. Air carrier operations are associated with the PAL 1 forecast, which is the recommended forecast for this Airport Master Plan Update.

3.9.2 AIR TAXI/COMMUTER OPERATIONS FORECAST

The FAA defines an air taxi operation as that which is conducted by an aircraft designed to have a maximum seating capacity of 60 seats or less, or a maximum payload capacity of 18,000 pounds or less, carrying passengers or cargo for hire or compensation. This includes both scheduled commercial service operations as well as corporate business/charter operations.

Air taxi forecasts have been developed for a Baseline and a PAL 1 scenario. The Baseline Forecast assumes that air taxi/commuter operations will follow the TAF, while the PAL 1 Forecast assumes that, in addition to projected TAF air taxi/commuter operations, one of the two initial applicant airlines will operate air taxi/commuter category aircraft throughout the 20-year planning horizon (Airline #2).

The PAL 1 Forecast assumes that the applicant airline that has signed agreements to operate at the Airport anticipates starting operations with 19-seat aircraft for initial operations, then transitioning to 30-seat aircraft as BLF increases. It is anticipated that this airline will conduct three daily flights (six operations) for 120 days in 2017, then three daily flights (six operations) for 365 days per year from 2018 through 2036. These estimates are added to TAF projections for air taxi/commuter operations for the appropriate year. The Baseline Forecast and PAL 1 Forecast for air taxi/commuter operations are shown in **Table 3.12**.

Baseline Forecast Airline #2 PAL 1 Forecast (FAA TAF) Air Taxi/ **Total Air Taxi/** Annual Daily Daily Year Commuter Commuter **Departures* Operations Operations Operations Operations** 2016 N/A 8,982 8,982 N/A N/A 720 2017 9,054 3 6 9,774 2018 9.127 3 6 2,190 11.317 2019 9,200 3 6 2,190 11,390 2020 9,274 3 6 2,190 11,464 2,190 2021 9.348 3 6 11,538 2022 2,190 9,423 3 6 11,613 2023 3 9.498 6 2,190 11.688 6 2024 9.574 3 2.190 11,764 2025 9,650 3 6 2,190 11,840 2026 9,728 3 6 2,190 11,918 2027 9.806 3 6 2,190 11,996 2028 9,885 3 6 2,190 12,075 2029 9,964 3 6 2,190 12,154 2030 10,044 3 6 2,190 12,234 2031 10,124 3 6 2,190 12,314 3 6 2032 10.206 2.190 12.396 2033 10,288 3 6 2,190 12,478 2034 10,371 3 6 2,190 12,561 2035 10,454 3 6 2,190 12,644 2036 10.537 3 6 2,190 12,727

Table 3.12 – Air Taxi/Commuter Operations Forecast

Source: County of San Diego; Prepared by: Kimley-Horn, 2017.

Notes: * Assumes 120 days in operation in 2017; Airline #2 is referenced for consistency from Table 3.8

As shown in **Table 3.12**, the Baseline Forecast projects 10,537 air taxi/commuter operations by 2036, and the PAL 1 Forecast projects 12,727 operations. For the purposes of this Airport Master Plan Update, the PAL 1 Forecast is the preferred methodology for air taxi/commuter operations.

3.9.3 GENERAL AVIATION OPERATIONS FORECAST

General aviation operations include all operations that are not categorized as air carrier, air taxi/commuter, or military. General aviation operations have declined steadily in recent years. Despite a 10-year peak of 196,100 general aviation operations in 2007, activity has declined to 139,091 operations in 2016. Despite this decline, general aviation activity is anticipated to remain relatively constant throughout the projection period. Due to the historical decline in general aviation activity at the Airport, typical forecast methodologies such as regression analysis and market share result in projected linear decline in operations throughout the 20-year projection period. Furthermore, because the Airport experiences a high proportion of itinerant activity (approximately 62 percent compared with 38 percent local), it is not estimated that local socioeconomic factors such as population, income, or employment are the primary drivers of general aviation activity. As such, comparing operations to local socioeconomic trends is not an adequate forecast methodology.

Two forecasts have been developed for general aviation operations at the Airport: Baseline Forecast and PAL 1 Forecast. The Baseline Forecast mimics the TAF, which identifies 0.32 percent annual growth through the 20-year planning horizon. The PAL 1 Forecast applies modest growth in general aviation operations driven by national economic recovery and the high proportion of corporate/business activity at

the Airport. This forecast produces a 1.07 percent annual growth rate over the 20-year planning horizon. In its Aerospace Forecast 2017-2037, the FAA projects significant general aviation growth in hours flown, operations, and aircraft fleet for jet, rotorcraft, and turboprop category aircraft, all of which are anticipated to grow at the Airport over the 20-year planning horizon.

Bolstered by local and national growth in these aircraft categories, the PAL 1 Forecast assumes an initial three percent increase in general aviation operations from 2016 to 2017 as economic recovery continues. General aviation operations growth is then projected to decrease to 1.5 percent per year from 2017 to 2018, one percent per year from 2018 to 2027, 0.75 percent per year from 2028 to 2032, and 0.5 percent per year from 2033 to 2037. The average annual growth rate for general aviation operations in the PAL 1 Forecast from 2016 to 2036 is 1.07 percent, which is slightly above the FAA Aerospace Forecast 2017-2037, which projects 0.90 percent annual growth in total general aviation hours flown at all NPIAS airports.

Historical and projected general aviation operations for the Baseline Forecast and the PAL 1 Forecast are shown in **Table 3.13**. As shown, the Baseline Forecast projects 148,018 operations by 2036, while the PAL 1 Forecast projects 168,958 operations. Based on the factors identified in this section, the PAL 1 Forecast is the recommended methodology for this Airport Master Plan Update. This methodology also projects a slight increase in the proportion of itinerant general aviation operations at the Airport during the 20-year planning horizon. This increase, while slight, is attributed to a decrease in training operations at the Airport, supplanted by an increase in corporate/business activity and potential scheduled passenger service at the Airport.

Table 3.13 – General Aviation Operations Forecast

Year	Baseline Forecast GA Operations (FAA TAF)	PAL 1 Forecast GA Operations	% Local	Local General Aviation Operations	% Itinerant	Itinerant General Aviation Operations
Historical						
2007	196,100	196,100	30.7%	60,300	69.3%	135,800
2008	177,403	177,403	33.8%	59,978	66.2%	117,425
2009	164,608	164,608	38.5%	63,363	61.5%	101,245
2010	129,466	129,466	33.9%	43,944	66.1%	85,522
2011	131,213	131,213	32.6%	42,835	67.4%	88,378
2012	132,542	132,542	37.6%	49,813	62.4%	82,729
2013	137,476	137,476	39.2%	53,910	60.8%	83,566
2014	137,297	137,297	42.0%	57,606	58.0%	79,691
2015	117,479	117,479	37.7%	44,317	62.3%	73,162
2016	139,091	139,091	38.6%	53,746	61.4%	85,345
Forecast						
2021	143,577	150,220	36.6%	57,910	63.4%	92,310
2026	145,039	158,029	34.9%	60,877	65.1%	97,152
2031	146,520	164,490	33.6%	63,361	66.4%	101,128
2036	148,018	168,958	32.8%	65,130	67.2%	103,828
Average Ann	nual Growth Ra	tes				
2016-2036	0.32%	1.07%		1.07%		1.07%

Source: FAA TAF Issued January 2017; Prepared by: Kimley-Horn and Associates, 2017.

3.9.4 MILITARY OPERATIONS

Military activity accounts for the smallest portion of operational traffic at the Airport. Historical military operations were obtained from the TAF database and are presented in **Table 3.14**. As shown, military operations at the Airport have fluctuated significantly between 2007 and 2016, and they can be difficult to predict, since military activity at public use airports is typically not tied to the same drivers that impact general aviation or commercial operations. As a result, the TAF forecast is the preferred methodology for military operations at the Airport. The TAF depicts 707 itinerant, 248 local, and 955 total military operations annually throughout the projection period.

Table 3.14 – Military Operations Forecast

Year	Itinerant Military Operations	Local Military Operations	Total Military Operations
Historical			
2007	1,104	373	1,477
2008	1,099	517	1,616
2009	531	294	825
2010	638	215	853
2011	483	240	723
2012	754	170	924
2013	934	325	1,259
2014	992	358	1,350
2015	879	210	1,089
2016	707	248	955
Forecast			
2021	707	248	955
2026	707	248	955
2031	707	248	955
2036	707	248	955

Sources: FAA TAF issued January 2017; Prepared by: Kimley-Horn, 2017.

3.9.5 OPERATIONS FORECAST SUMMARY

Table 3.15 provides a summary of the Baseline and PAL 1 (recommended) aircraft operations forecasts developed for the McClellan-Palomar Airport Master Plan Update. As shown, the PAL 1 Forecast projects an increase in total operations from 149,029 in 2016 to 195,050 in 2036. It should be noted that the Baseline Forecast has been reviewed and approved by the FAA, however, for the purposes of this Airport Master Plan Update, the PAL 1 Forecast will be used to identify facility needs and development alternatives. As noted, Cal Jet by Elite Airways began scheduled commercial service in September 2017 using 64-seat CRJ-700 aircraft, and it is anticipated that scheduled commercial service will continue to increase in the future.

Table 3.15 – Aircraft Operations Forecast Summary

Year	Air Carrier Operations	Air Taxi/ Commuter Operations	General Aviation Operations	Military Operations	Total Operations				
Historical									
2016	1	8,982	139,091	955	149,029				
Forecast - F	PAL 1 (Recomn	nended)							
2021	8,760	11,538	150,220	955	171,473				
2026	10,220	11,918	158,029	955	181,122				
2031	12,410	12,314	164,490	955	190,169				
2036	12,410	12,727	168,958	955	195,050				
Average An	Average Annual Growth Rates								
2016-2036	N/A	2.08%	1.07%	0.00%	1.54%				

Year	Air Carrier Operations	Air Taxi/ Commuter Operations	General Aviation Operations	Military Operations	Total Operations			
Historical								
2016	1	8,982	139,091	955	149,029			
Forecast – Baseline (TAF)								
2021	1	9,348	143,577	955	153,881			
2026	1	9,728	145,039	955	155,723			
2031	1	10,124	146,520	955	157,600			
2036	1	10,537	148,018	955	159,511			
Average Annual Growth Rates								
2016-2036	0.00%	0.87%	0.32%	0.00%	0.35%			

Source: FAA TAF Issued January 2017, County of San Diego. Prepared by: Kimley-Horn, 2017.

3.9.6 INSTRUMENT OPERATIONS FORECAST

A specific component of this Airport Master Plan Update is to identify the number of projected annual instrument operations at the Airport. According to data identified in the FAA's TFMSC database, 20.5 percent of total operations at the Airport in 2016 were instrument operations. It is assumed that all future scheduled commercial air taxi/commuter and air carrier category operations will be instrument operations. The 20.5 percent figure of instrument operations to total operations in base year 2016 is applied to all non-commercial operations throughout the 20-year planning horizon, then added to projected commercial operations, all of which are projected to be instrument operations, to determine total instrument operations (see **Table 3.16**).

Year	Total Operations	% IFR	IFR Operations	% VFR	VFR Operations
	Historical				
2016	149,029	20.5%	30,564	79.5%	118,465
	Forecast				
2021	171,473	24.8%	42,509	75.2%	128,964
2026	181,122	24.5%	44,347	75.5%	136,775
2031	190,169	24.7%	46,922	75.3%	143,247
2036	195,050	24.3%	47,314	75.7%	147,736

Table 3.16 – Instrument and Visual Flight Rules Operations Forecast

Source: FAA TFMSC Database. Prepared by: Kimley-Horn, 2017.

3.10 DESIGN HOUR ACTIVITY

A primary consideration for facility planning at airports is related to peak hour (or design hour) activity. For the purposes of this Master Plan Update, design hour activity is defined as activity that occurs during the peak hour of an average day during the peak month. The derivation of design hour activity is outlined in the following sections.

3.10.1 ENPLANED PASSENGERS

Design hour enplanements are used to size passenger-related airport facilities, specifically as it relates to the terminal building and associated facilities. As noted in previous sections of this Airport Master Plan Update, scheduled commercial service has historically been provided on 30-seat EMB 120 aircraft, which are no longer in operation at the Airport and are not anticipated to be in operation in the future. Commercial service is currently provided on CRJ-700 aircraft operated by Cal Jet by Elite Airways. Because the type of commercial aircraft that are anticipated to operate at the Airport in the future have not operated at the Airport in the past, assumptions have been identified that incorporate a realistic airline schedule that is able to function within existing facilities by adjusting timing and tempo—maximizing the Airport's airside and landside facility capacities by regulating the number of scheduled commercial departures that can occur within a specific timeframe.

Based on conversations with County Staff, it has been determined that optimizing timing and tempo could allow scheduled commercial departures to occur no closer together than approximately every 25-30 minutes. Although this does not allow for a totally unconstrained flight schedule (multiple flights departing within a shorter timeframe), it is estimated that this could be offset by larger aircraft with more seats that are anticipated to operate in the future, thus satisfying projected passenger demand.

Design hour enplanement forecasts represent the number of departing passengers who are anticipated to utilize the Airport during a typical busy hour. Although hourly passenger activity can vary significantly based on seasonal travel patterns, changes in ticket fares, economic conditions, and other factors, identification of high levels of passenger activity that will occur on a regular basis assists in the development of accurate facility needs as they pertain to terminal and other landside facilities. To estimate design hour enplanements for the Airport, the following assumptions were used:

- Annual Commercial Departures are utilized from Section 3.7.
- Commercial flights in the future will use a fleet of 19-seat, 30-seat, and up to 70-seat aircraft.
- Passenger demand and scheduled service will remain constant throughout the calendar year (no changes for seasonality).
- Passenger load factor for the design hour will be 90%. Although this figure is unlikely to occur
 on all departing aircraft, flights that occur during high-demand times of day are anticipated to
 reach 90% capacity regularly.

Design hour passenger enplanements are shown in **Table 3.17**. The forecast for design hour passengers is a function of typical aircraft that could operate at the Airport with a realistic load factor applied. With the understanding that the Airport's timing and tempo limits may remain in place throughout the 20-year planning period, design hour enplanements are generated by incorporating the largest type of aircraft anticipated to be in operation (70 seats) and applying a realistic passenger load factor during busy periods that could occur on a semi-regular basis (90 percent). This application results in 63 design-hour passengers. Although it is anticipated that there will be hours when passenger demand exceeds and falls short of these estimates (such as an additional smaller commercial aircraft in operation if demand dictates), these figures represent a typical busy hour that could occur on a typical flight aboard a 70-seat aircraft.

Table 3.17 - PAL 1 Design Hour Enplanements Forecast - 2036

Forecast Element	PAL 1 Forecast
Annual Commercial Departures	7,300
Annual Enplanements	304,673
Weekly Enplanements	5,859
Typical Busy Day Departures	20
Typical Busy Day Enplanements	837
Design Hour Enplanements	63

Source: Prepared by: Kimley-Horn, 2017.

3.10.2 AIRCRAFT OPERATIONS

Design hour aircraft operations were calculated based on the following assumptions:

- The percentage of peak month operations to annual operations based on historical operations data for the Airport was determined to be 9.8 percent. This ratio was applied to total annual operations projections to determine peak month aircraft operations.
- Average day conditions for the peak month are estimated by dividing peak month operations by 31 (average number of days in the peak months at the Airport).
- Based on historical data, design hour operations are estimated to consist of 12 percent of the daily operations.
- As shown in Table 3.18, design hour operations are forecasted to increase from 57 in 2016 to 74 in 2036.

Table 3.18 – PAL 1 Design Hour Operations

	14510 0110			Poranono		
Forecast Element	Historical	Forecast				
Forecast Element	2016	2021	2026	2031	2036	
PAL 1 Forecast						
Aircraft Operations						
Annual Operations	149,029	171,473	181,122	190,169	195,050	
Peak Month	14,605	16,804	17,750	18,637	19,115	
Average Day	471	542	573	601	617	
Design Hour	57	65	69	72	74	

Sources: FAA TAF Issued January 2017, County of San Diego; Prepared by: Kimley-Horn, 2017.

In the PAL 1 Forecast, it is anticipated that the Airport will experience continued growth through 2036 in all areas of aviation activity including passenger enplanements, aircraft operations, and based aircraft. If passenger activity shifts from San Diego International Airport to McClellan-Palomar Airport as assumed as part of the RASP, and if the new airlines start operating sustainable long-term service, commercial service at the Airport should exceed levels of activity previously experienced.

The enplaned passengers, based aircraft, and aircraft operations forecast presented in this section were developed as unconstrained forecasts. The evaluation of whether existing Airport facilities can accommodate projected demand will be addressed in the demand/capacity analysis and facility requirements phases of the Airport Master Plan Update. The determination of whether additional facilities can be incorporated at the Airport to meet the projected demand will be addressed in the Facility Requirements, Alternatives Analysis, Financial Plan, and Environmental Overview phases of the Airport Master Plan Update.

3.10.3 DESIGN AIRCRAFT

Facility planning for general aviation airports is impacted by existing and anticipated levels of aviation-related demand, both based aircraft and annual aircraft operations, and the size and type of aircraft that currently operate and are projected to operate at an airport.

As defined in FAA AC 150/5300-13A, Change 1, the FAA classifies airports by Airport Reference Code (ARC), which identifies the overall planning and design criteria for the Airport. The ARC is assigned based on the size of the largest aircraft that generally records at least 500 operations annually at an airport; this aircraft is known as the airport's "design aircraft." The design aircraft can consist of multiple aircraft that are considered collectively.

The ARC is based on the highest RDC of an airport. The RDC is comprised of the AAC, the Aircraft Design Group (ADG), and the approach visibility minimums. The AAC is based on the approach speed of the airport's design aircraft, and the ADG is based on the design aircraft's wingspan and tail height. Approach visibility minimums are expressed by runway visual range values in feet and relate to the lowest visibility minimums with the instrument approach procedure. Existing infrastructure at the Airport, including runway-taxiway separation, dictates that the Airport's RDC is currently listed as B-II-4000; however, based on an analysis of information provided in the FAA's TFMSC database combined with the Instrument Landing System's ¾ mile visibility approach minimums, FAA guidance indicates that D-III-4000 design aircraft should be considered in the design and planning of the airport.

The ARC provides the guidelines for pavement surfaces, safety area dimensions, runway lengths, separation standards, and taxiway criteria to ensure that the airport layout and geometry provide a safe and efficient operating environment for the aircraft that typically use the airport. The ARC consists of a letter and a numeric identifier. The letter represents the AAC; the numeral represents the ADG.

Aircraft approach speeds included in categories A and B are typically small, piston-engine aircraft, whereas C, D, and E are normally larger turboprop or turbine-powered aircraft. Similarly, the wingspan and tail height of small, piston-engine aircraft normally correspond to design group I. Typical aircraft in design group II include Beechcraft King Air, Cessna Citation, or smaller Gulfstream business jets. Design groups III, IV, and V represent air carrier aircraft, such as Boeing 737, B-757, and B-747, respectively. Group VI would include the largest of aircraft such as Airbus A-380 or C-5 military cargo aircraft.

The Airport's existing ARC is B-II, represented by a critical design aircraft that includes the Cessna Citation Sovereign, which conducted 820 operations in 2016. For this Airport Master Plan Update, the FAA's TFMSC database was analyzed to identify the recommended future critical design aircraft. The most demanding group of aircraft that conducted at least 500 operations in 2016 had an ARC of D-III, represented by a combination of the Gulfstream GV (405 operations in 2016) and the Gulfstream VI (340 operations in 2016). In 2016, these aircraft accounted for 745 operations. It is anticipated that annual operations conducted by these aircraft will increase at the same rate as total operations at the Airport throughout the 20-year planning horizon. Historical and projected design aircraft operations are shown in **Table 3.19**. As shown, operations conducted by aircraft with D-III ARCs are anticipated to increase from 745 in 2016 to 1,011 in 2036, which represents an average annual growth rate of 1.54 percent.

Table 3.19 – PAL 1 Design Aircraft Operations

			•	•	
Forecast Element	Historical	Forecast			
Forecast Element	2016	2021	2026	2031	2036
PAL 1 Forecast					
Aircraft Operations					
Annual Operations	149,029	171,473	181,122	190,169	195,050
D-III Aircraft Operations*	745	804	868	937	1,011

Sources: FAA TFMSC database, Prepared by: Kimley-Horn, 2017.

*Note: Design Aircraft is grouping of aircraft types that includes the Gulfstream V and Gulfstream VI.

Based on historical and projected activity, the Airport should design facility improvements to accommodate D-III operations. As such, the following are recommended existing and future critical design aircraft, ADG, RDC, and ARC for the Airport:

• Existing Critical Design Aircraft: Cessna Citation Sovereign

Existing ADG: II

• Existing RDC: B-II-4000

Existing ARC: B-II

Future Critical Design Aircraft: Gulfstream V and Gulfstream VI

Future ADG: III

Future RDC: D-III-4000

Future ARC: D-III

In sum, while the Airport's existing design aircraft is the Cessna Citation Sovereign, which merits a B-II ARC, existing activity exceeds this designation, and future facility improvements would ideally be constructed to accommodate the future design aircraft, represented by a Gulfstream V and Gulfstream VI, which carry D-III ARC designations. It should be noted that D-III class aircraft can and do safely use the Airport in its current B-II configuration. As such, one of the design alternatives in this Master Plan Update is to retain a B-II ARC for the Airport.

3.10.4 COMPARISON TO FEDERAL AVIATION ADMINISTRATION (FAA) TERMINAL AREA FORECAST (TAF)

The FAA template for summarizing and documenting airport planning forecasts is depicted in **Tables 3.20** and **3.21** for the PAL 1 Forecast presented in this Section. As noted, the FAA has reviewed and approved the Baseline Forecast, however, because the PAL 1 Forecast is considered the most reasonable and most likely forecast of aviation activity at the Airport, the PAL 1 Forecast is presented in the tables below and is used for facility needs and development alternatives presented in subsequent sections of this Airport Master Plan Update.

Table 3.20 – FAA Forecast Summary Template Template for Comparing Airport Planning and TAF Forecasts (1)

AIRPORT NAME:	McClellan-Palomar Airport (CRQ)				
		<u>Airport</u>		AF/TAF %	
Passenger Enplanements	<u>Year</u>	Forecast	TAF	Difference	
Base yr.	2016	131	131	0.0%	
Base yr. + 5yrs.	2021	172,244	141	122058.9%	
Base yr. + 10yrs.	2026	233,929	151	154819.9%	
Base yr. + 15yrs.	2031	279,670	161	173608.1%	
Commercial Operations					
Base yr.	2016	1	1	0.0%	
Base yr. + 5yrs.	2021	10,950	1	1094900.0%	
Base yr. + 10yrs.	2026	12,410	1	1240900.0%	
Base yr. + 15yrs.	2031	14,600	1	1459900.0%	
Total Operations					
Base yr.	2016	149,029	149,029	0.0%	
Base yr. + 5yrs.	2021	171,473	153,881	11.4%	
Base yr. + 10yrs.	2026	181,122	155,723	16.3%	
Base yr. + 15yrs.	2031	190,169	157,600	20.7%	

Note: TAF data is on a U.S. government fiscal year basis (October through September).

Prepared by: Kimley-Horn, 2017.

⁽¹⁾ Table is developed from Appendix C in the FAA Report, "Forecasting Aviation Activity By Airport."

Table 3.21 - FAA Forecast Appendix B

Appendix B

Template for Summarizing and Documenting Airport Planning Forecasts (1)

A. Forecast Levels and Growth Rates (Sample Data Shown)

Airport Name: McClellan Paloma	r Airport (CRQ)	Specify ba	se year: 2016		Average Annu	ual Compound Growth R	ates
	2016	2021	2026	2031			
	Base Yr. Level	Base Yr.+5yrs.	Base Yr.+10yrs.	Base Yr.+15yrs.	Base Yr. to +5	Base Yr. to +10	Base Yr. to +15
Passenger Enplanements							
Air Carrier	0	154,176	212,576	257,660	N/A	N/A	N/A
Commuter	131	18,068	21,353	22,010	167.9%	66.4%	40.7%
TOTAL	131	172,244	233,929	279,670	320.5%	111.4%	66.7%
Operations							
ltinerant							
Air Carrier	1	8,760	10,220	12,410	N/A	N/A	N/A
Commuter/Air Taxi	8,982	11,538	11,918	12,314	5.1%	2.9%	2.1%
Total Commercial Operations	8,983	20,298	22,138	24,724	17.7%	9.4%	7.0%
General aviation	85,345	92,310	97,152	101,128	1.6%	1.3%	1.1%
Military	707	707	707	707	0.0%	0.0%	0.0%
Local							
General aviation	53,746	57,910	60,877	63,361	1.5%	1.3%	1.1%
Military	248	248	248	248	0.0%	0.0%	0.0%
TOTAL OPERATIONS	149,029	171,473	181,122	190,169	2.8%	2.0%	1.6%
Instrument Operations	30,564	42,509	44,347	46,922	6.8%	3.8%	2.9%
Peak Hour Operations	57	65	69	72	2.7%	1.9%	1.6%
Cargo/mail	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Based Aircraft							
Single Engine (Nonjet)		188	190	191	0.1%	0.2%	0.1%
Multi Engine (Nonjet)		16	17		1.3%	1.3%	1.2%
Turboprop		19	22		4.8%	3.9%	4.0%
Jet Engine		78	90		3.1%	3.0%	3.0%
Helicopter		17	20		4.0%	3.6%	3.7%
Other	0	0	0		N/A	N/A	N/A
TOTAL	298	318	339		1.3%	1.3%	1.3%

B. Operational Factors

	Base Yr. Level	Base Yr.+5yrs.	Base Yr.+10yrs.	Base Yr.+15yrs.
Average aircraft size (seats)				
Air Carrier	N/A	70	70	70
Commuter	N/A	30	30	30
Average enplaning load factor				
Air Carrier	N/A	55%	65%	64%
Commuter	N/A	55%	65%	67%
A operations per based aircraft	467	472	466	452

⁽¹⁾ Table is developed from Appendix B in the FAA Report, "Forecasting Aviation Activity By Airport."

Prepared by: Kimley-Horn, 2017.

3.10.5 FACILITY PLANNING FORECAST

The recommended forecast (or most probable forecast) as displayed in Section 3.10.4, will be referred to as PAL 1 in Section 4 for facility planning purposes. In the event that the aviation activity exceeds the recommended forecast at the Airport, a secondary facility planning scenario, referred to as PAL 2, was identified in order to examine additional facility requirements that may be necessary within the 20-year planning horizon. PAL 2 activity forecasts are based on potential activity levels identified in the RASP. As described in Section 4.2, PAL 2 generally reflects projected growth rates of passenger enplanements and resultant increase in commercial aircraft operations outlined in the RASP Baseline Forecast, which equates to 575,000 annual enplanements and 208,004 total aircraft operations by 2036. The methodologies employed to determine total operations are detailed in Section 4.2.

Section 4 - DEMAND/CAPACITY AND FACILITY REQUIREMENTS ANALYSIS

4.1 INTRODUCTION

This section provides a technical analysis of demand/capacity and facility requirements for the Airport. The purpose of this analysis is to compare the Airport's existing facilities to the projected aviation-related activity levels and identify any enhancements that may be needed to meet user demand and/or FAA design standards.

As discussed in preceding sections, the principal challenge facing the Airport is accommodating changes in the aviation industry and future development within the geographical footprint at the Airport. Airport development is costly, particularly within constrained environs. Since each project is typically planned to last many years, care must be taken to ensure that each development project adequately accommodates airport activity to the maximum extent practicable and does so safely.

Thus, it is important that airport owners/managers capitalize on opportunities to develop facilities and resources and identify those trends and events that occur in the airport vicinity that may create opportunities or pose challenges to the future viability of the airport. When these challenges are not planned for or when opportunities are missed, the airport can face external limits on its ability to operate, lose potential revenues, inhibit tenants' maximum lease benefits, and provide an overall lower standard of service to airport users.

Equally as important is the need for airport sponsors to consider the quality of life of nearby residents when planning facility improvements and for sponsors to proactively address concerns and, to the extent possible, mitigate impacts that may exist. Communities make significant investments in these public facilities to the benefit of the entire region that is served. Protection of this investment is responsible public policy that benefits the entire community.

This section of the Airport Master Plan includes the following elements:

- Planning Activity Levels
- Airport Capacity
- Airport Facility Requirements
- Landside Facility Requirements
- Passenger Terminal Facility Requirements
- Support Facility Requirements

4.2 PLANNING ACTIVITY LEVELS

For the analysis in the remainder of this Airport Master Plan Update, references to specific years will be minimized. Instead, planning activity levels are utilized to relate facility needs to the specific level of activity creating a specific facility requirement over the 20-year planning period. This will assist Airport staff and officials in determining the level of operational activity that triggers a capacity constraint that would be sufficient to support the need for some form of improvement or upgrade to airport facilities. It is recognized that actual demand may vary from the forecasts but that demand will ultimately trigger facility needs, not a specific point in time.

Two specific planning scenarios have been developed for this Master Plan Update. The first, identified as Planning Activity Level 1 (PAL 1) incorporates the preferred forecasts of passenger enplanements and total aircraft operations identified in Section 3. The second scenario (PAL 2) describes a contingency scenario in the event that commercial aircraft operations and passenger enplanements exceed projected demand. PAL 2 generally reflects projected growth rates of passenger enplanements and resultant increase in commercial aircraft operations outlined in the RASP which was described in Section 3 (see

Table 4.1). Extrapolation of the RASP Baseline Forecast identifies 575,000 annual enplanements and 208,004 aircraft operations by 2036.

The number of total operations developed for PAL 2 were determined by combining GA, military, and non-scheduled air taxi operations in PAL 1 with the number of scheduled commercial operations required to accommodate 575,000 passenger enplanements using the same load factor and aircraft seat configuration criteria for scheduled airline operations described in Sections 3.9.1 and 3.9.2. The required number of daily air carrier departures and operations, commercial air taxi departures and operations, and total commercial operations needed to accommodate 575,000 passenger enplanements is presented in **Tables 4.1** and **4.2**.

It should be noted that these tables reflect the average number of daily departures and operations required, and when projected daily operations conducted by airlines 1, 2, and 3 are totaled and multiplied by the number of days in a calendar year, the result equates to 27,740 annual commercial operations by 2036. This number of operations would support a slightly higher number of enplanements than the 575,000 identified in PAL 2. Because there cannot be a fraction of a daily flight, the actual number of annual commercial operations required to accommodate 575,000 enplanements based on load factor and aircraft seat configuration criteria identified in Sections 3.9.1 and 3.9.2 by 2036 is 27,554 (23,421 air carrier, 4,133 air taxi). This forecast is used as the commercial operations planning metric for PAL 2.

Airline #1 Airline #3 Total Daily Daily Annual Daily **Daily** Annual **Air Carrier** Year **Operations Departures Operations Operations Departures Operations** Operations 2016 N/A N/A N/A N/A N/A N/A N/A 2021 23 46 16,790 N/A N/A N/A 16,790 2026 19.710 19.710 27 54 N/A N/A N/A 2031 27 54 19,710 5 10 3,650 23,360 2036 27 54 19,710 5 10 3,650 23,360

Table 4.1- Air Carrier Operations Forecast - PAL 2

Source: County of San Diego. Kimley-Horn, 2017. Note: N/A=Not applicable.

Table 4.2- Scheduled Air Taxi Operations Forecast - PAL 2

		Airline #2		Total	
Year	Daily Departures	Daily Operations	Scheduled Air-Taxi Operations	Air Carrier Operations*	Total Commercial Operations**
2016	N/A	N/A	N/A	N/A	N/A
2021	6	12	4,380	16,790	21,170
2026	6	12	4,380	19,710	24,090
2031	6	12	4,380	23,360	27,740
2036	6	12	4,380	23,360	27,740

Source: County of San Diego. Kimley-Horn, 2017. * Airline 1 and 3 from Table 4.1. ** Represents rounded figures based on daily flights. Actual forecasted commercial operations in 2036 equal 27,554 (23,421 air carrier, 4,133 scheduled air taxi). Note: N/A= Not applicable.

A comparison of annual aircraft operations by type and passenger enplanements for PAL 1 and PAL 2 is presented in **Table 4.3**. It should be noted that both scheduled (airline) and non-scheduled air taxi operations are included within the air taxi category.

Since the forecasts developed for PAL 1 reflect recommended activity levels of the Airport Master Plan Update, facility planning should be based on needs developed for this scenario. Facility needs described for PAL 2 are intended solely for planning purposes in the event that activity in the future exceeds PAL 1.

It should be noted that activity levels identified in the Baseline Forecast in Section 3 are not used for facility planning purposes in this Airport Master Plan Update because it reflects the FAA TAF, which projects nominal passenger activity over the 20-year planning period and existing facilities are deemed adequate to accommodate such levels of demand.

Table 4.3- Facility Planning Demand Scenarios - 2036

Activity Type	PAL 1	PAL 2
Passenger Enplanements	304,673	575,000
Air Carrier Operations	12,410	23,421
Air Taxi Operations	12,727	14,670
General Aviation Operations	168,958	168,958
Military Operations	955	955
Total Operations	195,050	208,004

Source: RASP Forecasts, Final Report, Jacobs Consultancy, March 2011.

Prepared by: Kimley-Horn, 2017

4.3 AIRPORT CAPACITY

The ability of an airport to serve its role in the regional and national airspace systems and to meet the current and future needs of the traveling public is dependent on unconstrained access to its facilities. The operational capacity of the surrounding airspace and of the airport (often referred to as airfield capacity) were evaluated using guidance contained in *FAA AC 150/5060-5, Airport Capacity and Delay*. Calculating airport capacity, relative to forecast activity levels, also provides an indication of when airport improvements or additional infrastructure may be needed so as not to increase aircraft congestion or delay.

Airport capacity is the estimated number of total operations that an airport configuration can facilitate in an established period of time and under a given set of assumptions regarding fleet mix, separation minima rules, weather conditions, and technological aides. The calculations of airport capacity and delay are the basis for evaluating the adequacy of the runway and taxiway system to meet existing and future airport activity levels. The following analysis was conducted using the process outlined in FAA AC 150/5060-5, *Airport Capacity and Delay*, which identifies specific inputs/factors that must be considered in the development of capacity calculations.

A calculation of the runway system's capacity as presented in the guidance is based on a methodology that determines both hourly airport capacity and Annual Service Volume (ASV) of the airport. As defined by AC 150/5060-5, ASV is a reasonable estimate of an airport's annual capacity, accounting for differences in runway use, aircraft mix, prevailing weather conditions at the airport, and other factors that would be encountered over a year's time. Hourly capacity is the number of aircraft operations (departures and arrivals) that can be accommodated in a one-hour-time-period, given the configuration of the airport (e.g., runway, taxiways) and the specific runway use strategy. Hourly capacity is calculated for both VFR conditions (i.e., generally clear visibility) and IFR conditions (i.e., periods of limited visibility and/or low cloud ceilings) and is expressed as the number of landings and takeoffs that can be accommodated within a one-hour period. Generally, more landings and takeoffs can be accommodated in visual conditions than during periods of reduced visibility.

4.3.1 CAPACITY FACTORS

Numerous factors are taken into account when evaluating airport capacity, including runway use and configuration, meteorological conditions, aircraft fleet mix, touch and go operations, exit taxiways, and frequency of arrivals and departures. These conditions are described in the following sections.

Airport Characteristics and Runway Use Configuration

The spatial configuration and number of runways, parallel taxiways, and exit taxiways have a direct influence on an airport's ability to accommodate both the number of landings and takeoffs at an airport as well as the various types of aircraft in a given timeframe. The types of navigational aids, airport lighting, surveillance radar, and other airport instrumentation also affect runway capacity by facilitating flight operations at times when weather conditions do not allow for visual approaches. It is also important to consider the type and direction of operations in the particular timeframe.

At the Airport, there is a single runway alignment and two potential operational directions. Aircraft typically operate into the wind, so the orientation of a runway is typically established based on a review of historical wind direction and speed. The alignment of the runway is typically oriented to maximize the percent of time that operations can occur based on prevailing winds. In the case of McClellan-Palomar Airport, the runway is oriented in a northeast to southwest alignment. Runway use configuration (easterly vs. westerly flow) is tied to the percent of time that an aircraft can land or take off in a specific direction and not experience a direct tailwind or a crosswind that can, based on the crosswind speed, preclude its ability to operate. Therefore, runway use configuration is a significant input factor in determining airport capacity for airports.

Meteorological Conditions

Runway capacity is highest during good weather conditions when visibility is at its best and visual flight rules are in effect. When visibility and cloud ceilings drop below certain FAA-established levels (3 statute mile visibility and a 1,000-foot ceiling), IFR go into effect, which results in greater horizontal separations between arriving and departing aircraft. Operating under these conditions increases runway occupancy times. Meteorological factors such as fog, low cloud ceilings, rain, and in some cases man-made conditions such as smoke, and in rare cases inversion events, all impact runway capacity when visibilities are low. These conditions may even cause runway closures at times when visibility drops below approach minimums. In the case of the Airport, the lowest approach minimums are associated with operations on Runway 24, which has a minimum required horizontal visibility of three-quarters of a mile and a 200-foot vertical ceiling for aircraft with approach speeds of less than 121 knots. Approach minimums are three-quarters of a mile horizontal visibility and a vertical ceiling of 300 feet above the published Airport elevation for aircraft with approach speeds of between 121 knots and 141 knots.

Based on the meteorological (wind and visibility) data obtained from the National Oceanic and Atmospheric Administration's National Climatic Data Center for the Airport, VFR weather conditions prevail approximately 88 percent of the time, while IFR conditions occur approximately 12 percent of the time. This information is based on weather observation data collected over a period of a minimum of least 10 years. The VFR/IFR percentages are input into the capacity assessment formula set forth in *FAA AC* 150/5060-5 Airport Capacity and Delay to calculate both hourly and annual throughput capacity of the airport.

Aircraft Fleet Mix

Fleet mix, in the context of the capacity analysis, is used to describe the composition of various aircraft types that operate at an airport and is based on aircraft size and approach speeds. This metric affects airport capacity because the size, weight, approach speed, and braking ability of operating aircraft affect the length of time the aircraft occupies the runway and the manner in which the air traffic controllers direct and horizontally separate activity. Variations in approach speeds and landing distance performance can affect the amount of time an aircraft occupies the runway (runway occupancy time), which in turn affects runway capacity. Larger aircraft generally have higher approach speeds and require more airspace compared to smaller aircraft. As such, a fleet mix comprised of a greater proportion of larger aircraft results in a decrease of airport capacity.

The aircraft fleet mix is divided into four classes when estimating capacity. These classes are identified by the letters A through D and represent the group of aircraft by general type and weight. **Table 4.4** summarizes representative aircraft types found in each aircraft class and employs an alphabetic category reference. It is important to note that, although they share similar alphabetic designations, the fleet mix classes identified for the purposes of calculating airport capacity are not the same as those used to determine the Aircraft Approach Category referenced in Section 2.2.1.

Table 4.4- Aircraft Classifications for Airport Capacity Analysis

	Class	Aircraft Type				
Class A		Small Single-Engine (Small Single-Engine (Gross Weight: 12,500 pounds or less)			
Examples	7	Cessna 172/182	Mooney 201			
·		Beech, Bonanza	Piper Cherokee/Warrior			
Class B		Small Twin-Engine (G	ross Weight: 12,500 pounds or less)			
Examples	- n	Beech Baron	Mitsubishi MU-2			
•		Cessna 402	Piper Navajo			
	Lear 25	Cessna Citation I				
Class C		Large Aircraft (Gross Weight: 12,500 to 300,000 pounds)				
Examples		Lear 35/55	Gulfstream (I thru V,			
			G350/450/500/550/650)			
	A R	Embraer 120/135/ 145/170/175/190/195	Canadair CRJ100/200/700/900			
	- Tomas	Saab 340	CRJ-700 Series			
		BBJ	McDonald Douglas MD-88/90			
		Boeing B737	Airbus A-318/A-319/A-320			
Class D		Large Aircraft (Gross	Weight: more than 300,000 pounds)			
Examples		Lockheed L-1011	Airbus A-300/A-310/A-330/A-340/A-350/A-380			
	\mathcal{A}	Boeing B767/B777	Douglas DC-8-60/70			
	00 00	Boeing B747	McDonald Douglas MD-11			

Note: Fleet mix classes identified here for the purposes of calculating airport capacity are not the same as the Aircraft Approach Category referenced in Section 2.2.1.

Sources: FAA Advisory Circular 150/5060-5, Airport Capacity and Delay; FAA AC 150/5300-13A, Airport Design. Prepared by: Kimley-Horn, 2017

Table 4.5 presents the estimated percentage of operations by aircraft class for Base Year 2016, PAL 1 and PAL 2 as identified in **Table 4.3**. Projected operations by aircraft category are based on a review of historical operations by aircraft type at the Airport as well as the anticipated increase in commercial operations under PAL 1 and PAL 2.

Table 4.5 - All Clait Fleet MIX Illuex						
Weight Class	Air Carrier	Air Taxi	GA	Military	Total	Mix Index
Operational Fle	Operational Fleet Mix - 2016					
A/B	0	2,695	75,109	745	78,549	53%
С	1	6,287	63,982	210	70,480	47%
D	0	0	0	1	1	0%
Total	1	8,982	139,091	955	149,029	100%
Operational Fle	eet Mix – PAL 1					
A/B	0	3,818	91,237	745	95,800	49%
С	12,410	8,909	77,721	210	99,249	51%
D	0	0	0	0	0	0%
Total	12,410	12,727	168,958	955	195,050	100%
Operational Fle	eet Mix – PAL 2					
A/B	0	3,818	91,237	745	95,800	46%
С	23,421	10,852	77,721	210	112,203	54%
D	0	0	0	0	0	0%
Total	23,421	14,670	168,958	955	208,004	100%

Table 4.5 - Aircraft Fleet Mix Index

Sources: FAA Operational Network (OPSNET); FAA TFMSC Database; Prepared by: Kimley-Horn, 2017

Class B and C aircraft make up the bulk of the operational aircraft fleet mix currently at the Airport, a trend anticipated to continue throughout the planning period. The projected aircraft fleet mix classes at the Airport are then used to calculate a mix index. The formula established in *FAA AC 150/5060-5 Airport Capacity and Delay* for calculating the mix index is C+3D, with C representing the percentage of aircraft greater than 12,500 pounds but less than 300,000 pounds, and D representing the percentage of aircraft greater than 300,000 pounds. The lower the calculated mix index, the higher the percentage of A and B aircraft that make up the composition of the fleet.

Based on the anticipated mix of aircraft expected to utilize the Airport throughout the planning period, the mix index calculation for the Airport designated in the "C" category is anticipated to increase from 47 percent in 2016 to 51 percent by the end of the 20-year planning horizon for PAL 1, and 54 percent for PAL 2. No operations by Category D aircraft are anticipated at any point in the planning horizon. Mix indices between 21 percent to 50 percent yield different values for taxiway exit factors than mix indices between 51 percent and 80 percent. This is discussed in greater detail in the subsequent section entitled, "Taxiway Exit Factor."

Touch and Go Operations

Touch and go operations are conducted primarily for practice and flight training and have the ability to significantly affect runway capacity. Because touch-and-go operations result in lower runway occupancy times than full-stop landing operations, a runway will typically be able to accommodate more touch and go operations in a given time period. As noted in the 1997 Master Plan, touch and go operations were estimated to comprise approximately 33 percent of general aviation operations at the Airport. Since the last master plan, the level of touch and go operational activity has declined as a percentage of total aircraft operations. Based on discussions with the ATCT and review of their data, it was determined that touch and go operations currently comprise approximately 10 percent of operations at the Airport. For the purposes of the capacity analysis, this level of activity is assumed to continue throughout the planning period.

Taxiway Exit Factor

Similar to runways, the presence of well-placed taxiways can significantly affect the level of air traffic an airport may ultimately accommodate. Well-placed exit taxiways can help reduce runway occupancy times by enhancing the efficiency with which aircraft can exit the active runway and allow other operations to

121 to 180

take place on the runway. A well-placed set of exit taxiways can preserve or enhance levels of operational capacity on the runway they serve. Utilizing the methodology contained in AC 150/5060-5, an exit factor is determined based on the number and placement of exit taxiways along the runway alignment within a specified distance identified in the FAA guidance for the calculated aircraft mix index.

At the Airport, there is a mix of aircraft types that range from relatively low speed, single-engine piston aircraft to high-performance corporate jets. These aircraft types possess significantly different landing speeds, which may vary by as much as 50 to 70 knots (57 to 80 mph), and the location along the runway that these varying aircraft can safely exit the runway after landing also varies considerably. The period of time that a landing aircraft must remain on the runway corresponds with that runway's capacity. This can be addressed by placing taxiway exits at optimum locations for the mix of aircraft types that operate at an airport.

The Airport's projected fleet mix index for each forecast demand scenario determines the prescribed exit location range from the threshold for exit taxiways to be considered (see **Table 4.6**).

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Aircraft Fleet Mix Index	Taxiway Exit Ranges (Feet from Landing Threshold)			
0 to 20	2,000 feet to 4,000 feet			
21 to 50	3,000 feet to 5,500 feet			
51 to 80	3,500 feet to 6,500 feet			
81 to 120	5,000 feet to 7,000 feet			

Table 4.6 – Aircraft Fleet Mix Index and Affiliated Taxiway Exit Ranges

5,500 feet to 7,500 feet

Sources: FAA Advisory Circular AC 150/5060.5 Airport Capacity Delay. Prepared by: Kimley-Horn, 2017

In terms of operations for the Base Year 2016, the estimated mix index is between 21 and 50, which results in a prescribed exit range for taxiway exits between 3,000 and 5,500 feet from the landing thresholds. The exit range under current operational activity is indicative of an aircraft fleet mix comprised of a higher percentage of light aircraft (under 12,500 pounds) activity. This mix would be typified by a predominance of single- and twin-engine piston aircraft that often require shorter landing distance. For a mix index of 21 to 50, the optimum placement of taxiway exits should be between 3,000 and 5,500 feet from the landing threshold that is in use at the time of the landing operation.

Based on FAA guidance, if a runway has four or more taxiway exits within the prescribed distances for the mix index then a value of 1.0 is assigned. If there are less than four exits in the range, then a reduced value based on the number of exits is assigned. The specific taxiway exit values are delineated based on the airport configuration and are presented in the FAA guidance. Runway 06 and 24 both have two existing exit taxiways located within the prescribed range for the 21 to 50 mix index. The resulting Taxiway Exit Factor values for both VFR and IFR conditions as set forth in FAA guidance are presented in **Table 4.7**.

For PAL 1 and PAL 2, an operational scenario that involves a higher level of commercial operations, the fleet mix index, range increases to the 51 to 80 category. This increase is triggered by the anticipated increase in commercial operational activity and an increase in the size of the commuter aircraft that typically occurs as a result of the higher level of passenger activity assumed under the PAL 1 and PAL 2 scenarios. Thus, the mix index is indicative of a fleet with higher commuter jet activity and a greater number of aircraft with weights over 12,500 pounds.

The change in the mix index triggers a change in the prescribed taxiway exit range. This results from the fact that the fleet is incorporating more operations by aircraft heavier than 12,500 pounds that, as a result, often have longer landing roll-outs. For the mix index of 51 to 80, the prescribed distance for taxiway exits as set forth in the FAA guidance is 3,500 feet to 6,500 feet from the runway landing thresholds.

For the 51 to 80 mix index and its affiliated taxiway exit range, Runway 06 has two exit taxiways, and Runway 24 has one exit taxiway within the prescribed taxiway exit range (3,500 to 6,500 feet). The resultant taxiway exit factor values for Runway 06 and Runway 24 for the 51 to 80 mix index under both VFR and IFR conditions are presented in **Table 4.7**.

,							
Runway	Activity Scenario	Mix Index	Exit Range	Visibility	Exit Factor		
Runway 06	Existing	21 to 50	3,000 to 5,500	VFR	0.93		
Runway 06	Existing	21 to 50	3,000 to 5,500	IFR	0.92		
Runway 24	Existing	21 to 50	3,000 to 5,500	VFR	0.83		
Runway 24	Existing	21 to 50	3,000 to 5,500	IFR	0.83		
Runway 06	PAL 1 & 2	51 to 80	3,500 to 6,500	VFR	0.83		
Runway 06	PAL 1 & 2	51 to 80	3,500 to 6,500	IFR	0.83		
Runway 24	PAL 1 & 2	51 to 80	3,500 to 6,500	VFR	0.83		
Runway 24	PAL 1 & 2	51 to 80	3,500 to 6,500	IFR	0.83		

Table 4.7 – Taxiway Exit Factor Values

Sources: FAA Advisory Circular 150/5060.5 Airport Capacity Delay Handbook. Prepared by: Kimley-Horn, 2017.

Arrivals/Departures

The percentage of aircraft arrivals and the sequencing of aircraft departures are two other operational characteristics that affect overall airport capacity. The percentage of aircraft arrivals is the ratio of landing operations to total airport operations during a given timeframe. This percentage is important because arriving aircraft require higher runway occupancy time than departing aircraft. The FAA methodology provides for the use of 40 percent, 50 percent, or 60 percent of aircraft arrivals in the computation of airport capacity. For the Airport, a 50 percent aircraft arrivals figure was inputted, as the Airport does not typically experience significant peaks of arriving or departing aircraft often associated with busier commercial service airports.

4.3.2 HOURLY CAPACITY

Hourly capacity is a measure of the maximum number of aircraft operations that can be accommodated at the airport in an hour. Hourly capacity is compared to peak hour activity projections, the busiest hour at the airport each day, to determine if an airport can accommodate projected peak hour operations. The hourly capacity during VFR and IFR conditions was calculated using the methodology described in Section 3 of FAA AC 150/5060-5. Based on the hourly capacity methodology set forth in this AC, the calculated hourly capacity of the Airport that incorporates mix index, taxiway exit factor, runway use percentages, and prevailing weather/visibility conditions, was determined to vary between 54 and 63 hourly aircraft operations in VFR conditions and 47 to 52 hourly IFR aircraft operations.

Peak hour demand was determined by applying a 12 percent value of peak month average day operations forecasts and is projected to increase from 57 operations in 2016 to 74 in PAL 1 and 79 in PAL 2. It should be emphasized that the peak hour would only occur occasionally throughout the year, during the busiest hours of the peak season. **Exhibit 4.1** shows projected hourly operational demand for each of the PALs compared to hourly airport capacity based on the FAA methodology identified in the AC. The dashed line in **Exhibit 4.1** represents the hourly capacity when the Airport is operating under IFR (during periods of inclement weather or other period of limited visibility). The solid line on the chart represents the hourly capacity of the existing runway system during VFR conditions (when visibility is not below three miles). Hourly capacity during IFR is typically less than during VFR due to increased spacing between landing aircraft and greater horizontal spacing between departing aircraft.

The decrease in IFR and VFR capacity from Base Year 2016 to PAL 1 and PAL 2 is a result of the change in the projected aircraft fleet mix index. By the time demand reaches the level identified in PAL 1,

the number of Category C aircraft (aircraft greater than 12,500 lbs. but less than 300,000 lbs.) is projected to increase with additional airline service.

As depicted in **Exhibit 4.1**, the level of projected hourly operational demand, based on the peak demand hour, is anticipated to exceed IFR and VFR capacities for both PAL 1 and PAL 2 by 2036. This is attributed to changes in the fleet mix, under the level of demand occurring at the operational demand level associated with PAL 1 and PAL 2.

As operational demand approaches the capacity of the runway/taxiway system at an airport, aircraft operational delays, the number of minutes an aircraft is delayed from the originally scheduled arrival or departure, increase. As demand further approaches airport capacity, this delay increases exponentially. A significant increase in aircraft delay corresponds with a decrease in the level of service provided to airport users and tenants not only at the Airport, but the national airspace system as well. At the same time, operational costs increase as aircraft have longer queues to depart and longer queues to land. This results in greater aircraft fuel use, and higher costs to passengers and persons waiting. Further details on the delay levels at the Airport and potential mitigation measures are discussed in Section 4.3.3.

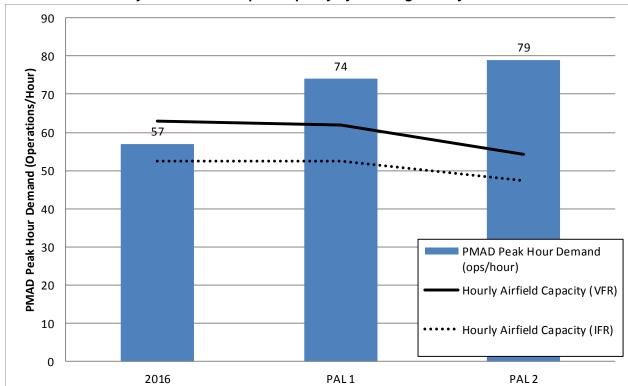


Exhibit 4.1 Hourly VFR and IFR Airport Capacity by Planning Activity Level

Sources: FAA Advisory Circular 150/5060-5, Airport Capacity and Delay; Prepared by: Kimley-Horn, 2017

4.3.3 ANNUAL SERVICE VOLUME (ASV)

ASV represents an approximation of an airport's annual capacity, taking into consideration weighted hourly capacities and the hourly, daily, and monthly operational patterns. *FAA AC 150/5060-5 Airport Capacity and Delay* refers to ASV as "a reasonable estimate of an airport's annual capacity. It accounts for differences in runway use, aircraft mix, weather conditions, etc., that would be encountered over a year's time."

The weighted peak hour capacity (C_w) was developed using the previous analyses and the methodology in Chapter 3 of *AC 150/5060-5 Airport Capacity and Delay*. Weighting factors are established in the FAA's guidance and relate to annual demand as a percentage of maximum capacity, the percent of maximum capacity under VFR conditions, and the percent of maximum capacity under IFR conditions by mix index (see Table 3.1 of AC 150/5060-5). The C_w is multiplied by two operational ratios to obtain the airport's estimated ASV: D (the ratio of annual demand to average daily demand in the peak month) and H (the ratio of average daily demand to average peak hour demand during the peak month).

The data used for calculating these two ratios for each PAL was based on the peaking characteristics outlined in Section 3.9. ASV is then calculated through the following formula:

ASV = C_w x D x H

The resulting ASV estimates compared to the projected annual operations for the forecast scenarios are summarized below in **Table 4.8.**

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Year/Planning Level	Projected Annual Operations	Annual Service Volume	Ratio of Annual Operations to ASV					
Base Year (2016)	149,029	194,000	76.8%					
PAL 1	195,050	193,300	100.9%					
PAL 2	208,004	195,400	106.4%					

Table 4.8 – ASV Demand/Capacity Summary

Prepared by: Kimley-Horn, 2017

Based on projected activity and type of aircraft in operation, the Airport's ratio of annual operations to ASV would be expected to be 100.9 percent by the end of PAL 1 and 106.4 percent by the end of PAL 2. FAA airport planning guidelines recommend planning for airport capacity improvements when projected demand reaches 60 percent of capacity and implementing those improvements when an airport reaches 80 percent of its calculated ASV. At the Airport, the taxiway exit factor and fleet mix index are anticipated to remain relatively consistent (no monumental changes) throughout the planning period. As such, the only action that would significantly increase airport capacity would be an additional runway, which, due to geographical constraints and the type of users that the Airport serves, is not a viable option.

It should be noted that ASV is not an absolute limit of operational capacity. An airport can operate at a level of activity that exceeds ASV but will do so at a degradation to the level of service provided and with potential operational delays. As airports approach their ASV level, delay begins to expand exponentially, and operators will often choose other airports if that option is available. Aircraft delay calculations are identified in *FAA AC 150/5060-5 Airport Capacity and Delay*, Table 2-2. As noted in previous sections of this Airport Master Plan, activity levels are not anticipated to surpass the PAL 1 forecast. The average delay per (which incorporates both IFR and VFR conditions) for 195,050 annual operations (PAL 1) would be approximately 2 minutes per aircraft operation.

The ability of the Airport to fully address the requisite level of operational capacity necessary to accommodate demand scenarios may be challenging; however, it should be noted that the Airport has had annual operational levels exceeding 208,004 (total operations forecast in PAL 2) in the past. As recently as 2007, the Airport experienced over 215,000 aircraft operations. Extensive on-airport development, the limited property envelope associated with the Airport, and adjacent off-Airport development all pose challenges to accommodate projected levels of demand. Actions that would significantly increase operational capacity such as development of a parallel runway are simply not possible due to the cost and environmental impacts such an action would generate. Adjustments to the placement of taxiway exits from the runway to parallel taxiways should be considered in order to better meet the demands of the changing aircraft fleet. This will be addressed in greater detail in the Airport Master Plan sections that pertain to development alternatives.

4.4 AIRPORT FACILITY REQUIREMENTS

As an element of the existing facility requirements analysis, airport facility needs presented in this section identify improvements to the existing Airport runways and taxiways necessary to meet forecasts of operational demand associated with the PAL scenarios. This section reviews the existing facilities from both a capability and a design standards perspective to define the airport requirements necessary to accommodate current activity and changes in the complexion of aircraft operations that may occur in the future.

The analysis of airport facility requirements builds off the previously documented inventory of existing facilities and considers both the demand projections contained in the activity forecasts and the operational capacity calculations in this section to determine potential improvements to accommodate future activity at the Airport. The result of this analysis is the identification of excess or deficient capacity/capability of the airport's ability to provide for current and projected levels of activity and the type of aircraft responsible for that activity.

As noted, this analysis is intended to present the optimum improvement that should be evaluated. The improvements recommended in this section will be described in greater detail in the Alternatives Analysis Section of this Airport Master Plan Update. In short, the facility requirements assessment provides a listing of needed improvements, while the alternatives analysis reviews the environmental, operational, financial, and feasibility considerations that determine whether or not a desired improvement can realistically be implemented. Before the airport facilities requirements at the Airport are evaluated, it is important to review criteria that are employed by the FAA for the planning and design of airports. These criteria establish certain benchmarks used to define the adequacy of specific airport areas and facilities.

4.4.1 RUNWAY ORIENTATION

The orientation of a runway at an airport is primarily a function of wind direction and velocity. Ideally, a runway is oriented with the prevailing wind, as taking off and landing into the wind enhance aircraft performance. The FAA recommends that the primary runway have at least 95 percent wind coverage, which means that 95 percent of the time, the wind at an airport is within acceptable crosswind limitations. Crosswind coverage is calculated using the highest crosswind component that is acceptable for the types of aircraft expected to use the runway system. Larger aircraft have a higher tolerance for crosswind than smaller aircraft due to their size, weight, and operational speed. If 95 percent coverage cannot be met by the primary runway, an additional "crosswind runway" may be needed to safely accommodate the aircraft needing the additional crosswind coverage. FAA guidance recommends that an airport's runway configuration provide runway availability of at least 95 percent on the basis of the most applicable crosswind velocity component. Crosswind threshold criteria vary depending upon aircraft size and approach category. The FAA criteria are delineated in **Table 4.9**.

Table 4.9 – Allowable Crosswinds by Design Code

Runway Design Code	Allowable Crosswind Component
A-I and B-I (including A-I/B-I small aircraft)	10.5 knots
A-II and B-II	13 knots
A-III, B-III, C-I through C-III, D-I through D-III	16 knots
A-IV and B-IV, C-IV through C-VI, D-IV through D-VI	20 knots
E-I through E-VI	20 knots

Source: FAA Advisory Circular AC 150/5300.13A, Change 1. Prepared by: Kimley-Horn, 2017

Runway 06-24 is aligned in a northeast-southwest direction. The prevailing winds at the Airport are predominantly from the southwest from the Pacific Ocean. According to the wind data analysis for the Airport, the Airport has 99.25 percent wind coverage for the 10.5-knot component and 99.94 percent coverage at 16.0 knots based on the existing single runway alignment. As a result, the existing runway

orientation not only meets but exceeds the wind coverage threshold criteria, and no further airport enhancements are necessary from a wind coverage perspective.

It should be noted that, although the wind coverage is adequate for Runway 06-24, the magnetic variation of the Runway has changed over time. As noted on the Airport Layout Plan, magnetic variation changes at a rate of approximately 0 degrees, 5 minutes, 0 seconds each year. As such, when adjusting for the magnetic variance of 12 degrees, 4 minutes, the true bearing Runway 06-24 has been determined to be approximately 67 degrees, 2 minutes, 32 seconds. According to *FAA AC 150/5340-1L, Standards for Airport Markings*, the runway designation number is defined as the whole number nearest the one-tenth of the magnetic azimuth along the runway centerline when viewed from the direction of the approach. As such, based on the gradual shift of the Earth's magnetic poles, the actual true bearing of the existing runway is calculated to be 07-25.

The process to change a runway's designation number must be formally approved by the FAA and can take a significant amount of time to be completed. As such, references to the existing runway in this Airport Master Plan Update and the updated Airport Layout Plan remain as 06-24; however, it is recommended that the Airport consult with the FAA to pursue a formal change in the Runway's designation number.

4.4.2 RUNWAY REQUIREMENTS

Airport commercial service briefly discontinued in April 2015, and a new carrier resumed air service in June 2015. This carrier has since halted operations. Cal Jet by Elite Airways started commercial service in September 2017 utilizing 64-seat CRJ-700 aircraft, which has an AAC/ADG of C-II. Previously, commercial service had been conducted by the Embraer EMB-120, which carries a B-II designation. Although the CRJ-700 is now in operation, as has been noted, the critical aircraft is anticipated to remain the Gulfstream G650 or a comparably sized general aviation business jet because they are larger, faster aircraft types. The only facility that is the exception to this is the EMAS, which should be designed to accommodate the critical design aircraft. The analysis of future runway requirements includes criteria such as runway length, dimensional standards including pavement width and safety areas, and pavement strength.

4.4.2.1 Runway Length Requirements

The Airport is utilized by a large variety of general aviation aircraft, ranging from single-engine propeller-driven aircraft to large corporate jet aircraft such as the Gulfstream G550, G650 and Bombardier Global Express. Until May 2015, it served regional aircraft, notably the Embraer-135 and currently serves, 64-seat CRJ-700 aircraft operated by Cal Jet by Elite Airways. The national commuter airline fleet has been transitioning away from both turboprops and smaller regional jet models. In the latter case, this has occurred as the 35- to 50-seat commuter jets have become less profitable given their operational costs.

Table 4.10 delineates runway takeoff and landing length requirements of typical general aviation jet aircraft that utilize the Airport. The requirements were developed using aircraft manufacturer airport and flight planning manuals, published Airport elevation, and mean maximum daily temperature of the warmest month data from the National Climatic Data Center and are consistent with FAA analytical procedures. Distances highlighted in **blue** indicate that an aircraft's required takeoff length is at or very close to the existing available length at the Airport, while distances highlighted in **red** represent aircraft whose takeoff distances exceed Runway 06-24's available length of 4,897 feet by at least 100 feet.

Table 4.10 - Runway Takeoff and Landing Length Requirements

Aircraft Type	Takeoff Length at Maximum Takeoff Weight (MTOW)	Takeoff Length at 75% MTOW	Takeoff Length at 50% MTOW	Landing Length at Maximum Landing Weight (MLW)	Landing Length at 50% of MLW
Regional Commuter Aircraft					
CRJ-900	6,900	6,300	5,600	5,800	4,900
CRJ-700	5,500	4,900	4,400	5,100	4,600
CRJ-200	6,600	5,700	4,800	4,900	4,200
EMB-190	5,400	4,800	4,100	4,000	3,700
EMB-175	5,200	4,900	4,300	4,700	4,300
EMB-170	4,900	4,400	3,800	4,100	3,700
EMB -145	6,600	5,400	4,600	4,600	4,300
EMB-120	5,900	5,100	4,400	4,400	4,200
DASH 8 Q400	5,200	4,700	4,300	2,600	2,500
DASH 8-200	4,000	3,600	3,400	1,600	1,500
General Aviation Jet Aircraft					
Cessna Citation Encore	4,100	3,400	3,000	2,900	2,600
Cessna Citation XLS	4,000	3,500	3,100	3,320	2,900
Cessna Citation X	5,700	4,700	3,900	3,600	2,900
Cessna Citation Sovereign	3,900	3,500	3,400	2,770	2,400
Bombardier Global Express XRS	6,190	N/A	N/A	2,670	N/A
Gulfstream G450	5,700	4,610	3,800	5,380	4,600
Gulfstream G550	6,200	4,730	3,780	4,613	3,800
Gulfstream G650	6,500	5,200	4,100	3,508	2,800
Hawker 800	7,140	5,700	4,500	2,800	2,300
Hawker 400/Beechjet	5,900	5,200	4,300	3,550	3,200

Highlighted values indicate required runway lengths in excess of the available runway length at CRQ

Sources: Runway length values based on aircraft performance charts from manufacturer aircraft characteristics manuals. Prepared by: Kimley-Horn, 2017.

Based on the runway length requirements of several different types of aircraft shown above, the existing length is adequate for most aircraft when operating at reduced loads, including the CRJ-700, which currently provides scheduled commercial service. However, takeoffs at maximum takeoff weight (MTOW) or even 75 percent of MTOW are not possible for several mid-to-large size corporate and regional/commuter airline aircraft. Additional length for Runway 06-24 would be beneficial to support operations of aircraft currently operating at the Airport and forecasted aircraft.

Larger corporate aircraft often stop and refuel at nearby airports with longer runways such as San Diego International Airport in order to reach their destination. This poses a significant inconvenience to operators, leads to lower fuel sales at the Airport, and increases the amount of fuel aircraft consume and emissions released into the environment.

The 2013 Feasibility Study recommended that Runway 06-24 be extended by 900 feet to provide a total runway length of 5,800 feet. This length was essentially defined as being the greatest runway extension possible at the Airport given surrounding constraints and conforming to the airport design dimensional criteria for B-II aircraft only and did not consider other design group criteria. While the Airport Master Plan Update runway length analysis considers an extension of Runway 06-24 to the extent identified in the 2013 Feasibility Study, the analysis of the 2013 Feasibility Study did not establish or address the viability

of an extension that could be reasonably achieved given the constraints that exist off the runway ends at the Airport. Proposed runway extensions of varying lengths are identified in the Alternatives Analysis; for the purposes of this Airport Master Plan Update, in order to accommodate existing and projected operating aircraft at the Airport including the anticipated future design aircraft (Gulfstream G650), an extension of up to 800 feet is recommended to provide the Airport with approximately 5,700' of runway length.

4.4.2.2 Runway Dimensional Standards

Runway dimensional standards are determined by the RDC of the runway. The AAC and ADG are combined with the visibility minimums of the runway to form the RDC. Dimensional standards pertaining to runways and runway-related separations are essential to provide clearances from potential hazards affecting routine aircraft movements on the runways. These standards relate to separations for parallel runways, hold lines, parallel taxiways, aircraft parking, obstacle free areas, and safety areas.

Currently, Runway 06-24 is classified with an RDC of B-II-4000 (AAC B, ADG II, Runway Visual Range 4,000 feet). As noted in Section 3, there are a significant number of aircraft operations at the Airport that exceed the B-II designation. As such, facility improvements and development alternatives should be geared toward achieving design standards based on aircraft that currently operate, and that are projected to operate at an airport. Any transition from ADG II to ADG III along with the change from AAC B to an AAC D will mean an increase in the runway related safety dimensions.

Table 4.11 presents the existing runway-related dimensional standards for Runway 06-24 and compares them to the existing dimensional standards (B-II-4000), and those of the D-III-4000. The design standards requirements will be further addressed as needed in the Alternatives Analysis Section. Runway 06-24 meets or exceeds the design standards of B-II. **Table 4.11** also identifies that Runway 06-24 does not meet most of the separation and safety design standards required for a D-III facility.

An example from **Table 4.11** for the impact of the change in ARC from B-II to D-III is the dimensional requirements associated with the Runway Safety Area (RSA) and ROFA. The RSA length for AAC B is 240 feet from the runway end, while a D category RSA is 1,000 feet in length. Implementation of a 1,000-foot RSA at the Airport would reduce the available length off the end of the runway for a runway extension and inhibit operational capabilities. A potential option for addressing RSA length requirements (but not width) could involve the construction of an engineered materials arresting system (EMAS) and in some cases, the use of declared distances. When runway thresholds have been displaced, enhanced operational safety or additional utility for turbine powered aircraft may sometimes be acquired through the use of declared distances per FAA AC 150/5300-13A. Declared distances identify what distances are available for takeoff, landing, and rejected-takeoff aircraft performance requirements as approved by the FAA. In some specific cases, declared distances can help satisfy design standards for runways with displaced thresholds while minimizing their dimensional impacts to runway length. As it pertains to the Airport, in order for the airport to satisfy D-III runway design standards, a combination of EMAS as well as declared distances may enhance operational safety and provide an efficient use of limited runway length.

Table 4.11 - Runway Dimensional Standards

				ensional Stal ng Runway ensions			
Design Criteria	B-II-4000 Desi Standard	gn			D-III-4000 Design Standard		
Visibility Minimum	Not Lower than 1 mile	Not Lower than ³ / ₄ mile	Not Lower than 1 mile	Not Lower than ¾ mile	Not Lower than 1 mile	Not Lower than ¾ mile	
Runway:	06	24	06	24	06	24	
Width	75			150		150*	
Safety Area Width	150			150		500	
Safety Area Prior							
to Landing	300			300	600		
Threshold					000		
Safety Area	000				4 000		
Length Beyond R/W	300			300	1,000		
End	500				000		
ROFA Width	500			500	800		
ROFA Length	300			200	1,000		
Beyond R/W End Approach RPZ			300				
Length	1,000	1,700	1,000	1,700**	1,700	1,700	
Approach RPZ							
Inner Width	500	1,000	500	1,000**	500	1,000	
Approach RPZ							
Outer Width	700	1,510	700	1,510**	1,010	1,510	
Departure RPZ							
Length Width	1,000		•	1,000		1700	
Inner Width	700		700			500	
Outer Width	500		500			1010	
Runway Centerline							
to:							
Parallel Taxiway	240	240 207 200		297-300		400	
Centerline							
Aircraft Hold Line	200			250		250	
Aircraft Parking	250			370		500	
Limit Line	cular 150/5300-13A Chan	4. D				300	

Sources: FAA Advisory Circular 150/5300-13A, Change 1; Prepared by: Kimley-Horn, 2017.

4.4.2.3 Runway Width

The standard runway width for aircraft in the D-III category is typically 150 feet; however, for aircraft with a maximum certificated takeoff weight of 150,000 pounds or less and an airport with approach visibility minimums of not lower than ¾-mile, the standard runway width is 100 feet. Runway 06-24 is presently

^{*} See section 4.4.2.3 below

^{**} These are the FAA design standard dimensions for the visibility minimums in existence today; however, on the ALP of July 2010, the Approach RPZ is depicted as a larger size.

150 feet in width. The aircraft that currently operate on a routine basis and those projected to operate at the Airport all have maximum certificated takeoff weights of less than 150,000 pounds.

The lowest approach visibility minimum at the Airport is not lower than $\frac{3}{4}$ mile, given the visibility conditions that typically occur at the Airport, lowering minimums is not anticipated.

While retaining a runway width of 150 feet is ideal, it increases maintenance costs and may not be eligible for future FAA funding since it exceeds the required dimensional standards. Despite these impacts, it is preferable that the runway maintains its 150-foot width, as additional width enhances safety and operational capability.

4.4.2.4 Runway Protection Zones

A Runway Protection Zones, or RPZ's function is to enhance the protection of people and property on the ground. This is best achieved through airport owner control over the RPZs. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ and includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Table 4.11 above shows the dimensional standards for RPZs per FAA AC 150/5300-13A Airport Design.

4.4.2.5 Runway Shoulder Width

Shoulder areas adjacent to the runway pavement are designed to prevent jet-blast erosion and support the occasional passage of aircraft, maintenance equipment, or emergency equipment under dry conditions. Paved shoulders are required for airport pavements that accommodate Airplane Design Group (ADG) IV and higher aircraft, and are recommended for pavements supporting ADG-III aircraft. Turf, aggregate-turf, soil cement, lime or bituminous stabilized soil are acceptable for airport pavements accommodating ADG-I and II aircraft. Similar to the criteria for runway width, the width of a paved shoulder is reduced from 25 feet to 20 feet on runways serving aircraft with a maximum takeoff weight of less than 150,000 pounds and approach minima of not less than 3/4-mile. If Runway 06-24 is narrowed to 100 feet, 20-foot paved shoulders are recommended in order to prevent erosion.

4.4.2.6 Runway Blast Pads

Runway blast pads are required to be paved and extend beyond the ends of the runway to minimize erosion associated with aircraft jet blast. The Airport currently has paved blast pads off both ends of Runway

6-24. The blast pad on the Runway 06 end (west end of runway) is 200 feet wide by 265 feet in length, while the Runway 24 blast pad (east end of runway) is 150 feet wide and 200 feet long. The required blast pad width for D-III is typically 200 feet; however, for aircraft with maximum certificated takeoff weight of 150,000 pounds or less and approach visibility minimums of not less than ¾-mile, the standard width is 140 feet. The required runway blast pad length for D-III standards is 200 feet. Both blast pads exceed the dimensional criteria contained in FAA guidance and no improvements, other than maintenance of the blast pad surface and markings, are required.

4.4.2.6 <u>Pavement Strength Requirements</u>

According to the 5010 Airport Master Record, Runway 06-24 has a published pavement strength of 60,000 pounds for single-wheel landing gear configuration, 80,000 pounds for dual-wheel landing gear configuration, and 110,000 pounds for dual-tandem wheel landing gear configuration. There are no known aircraft with a single gear configuration in the active fleet that exceed a 60,000-pound maximum takeoff weight. As a result, the current weight bearing capacity for aircraft with a single gear configuration is sufficient to meet both the current fleet of these aircraft types as well as any future aircraft types anticipated to operate at the Airport.

The Airport experiences a significant number of operations by aircraft that are equipped with dual wheel landing configuration. Only a few of these operations occur by aircraft that have landing weights that exceed the existing 80,000-pound dual wheel strength rating. Aircraft that do routinely operate at the Airport are close to the pavement strength include the Gulfstream G650 (maximum takeoff weight of up to 99,600 pounds) and the Gulfstream G500/550 (91,000 pounds) that have in the past and are currently based at the Airport.

Using TFMSC data from a 2016 sample of 20 percent of the annual operational activity by aircraft type at the Airport (approximately 30,500 operations sampled), operations by the Gulfstream G 500/550/650 accounted approximately 750 landings and takeoffs. Combined, these aircraft exceed the operational threshold for use as a design aircraft for runway pavement strength purposes and support the contention that no additional runway pavement strengthening would be needed to meet projected demand. It should be noted that runway pavement strength requirements are based off different activity thresholds standards than runway dimensional standards. While the threshold remains 500 annual operations, this is based off aircraft weight rather than wingspan and approach speed. While pavements can withstand operations that exceed design strength, based on the current runway length at the Airport, heavier corporate aircraft are unlikely to operate at or near maximum takeoff weight and it is estimated that existing runway pavement strength is adequate for dual wheel configurations.

It should also be noted that the existing 110,000-pound dual wheel loading (DWL) strength of Runway 06-24 is sufficient to meet the fleet of commercial aircraft that could operate throughout the planning horizon.

4.4.3 TAXIWAY REQUIREMENTS

Taxiway requirements are grouped into design standards based on ADG, and design standards based on Taxiway Design Group (TDG). Design standards based on ADG are designed to enhance safety of operating aircraft, and address lateral separation between other parallel taxiways, the taxiway and the runway, and object clearing areas. Standards based on TDG include pavement dimensions such as taxiway width, shoulder width, and fillet size.

The Airport's existing taxiway system primarily consists of two parallel taxiways along Runway 06-24, and various connector taxiways along both the north and south sides of the runway. For Taxiway A requirements, the existing critical/design aircraft is the Cessna Citation Sovereign, which is an ADG II aircraft with a landing gear configuration that garners a TDG 2 designation. Taxiway safety areas and object free areas, however, conform to ADG II standards. The future critical/design aircraft is the Gulfstream G650, which is an ADG III aircraft with a TDG 2 designation. When the Airport's ADG changes to III, the associated taxiway safety areas identified in *FAA AC 150/5300-13A* for that classification will need to be adhered to.

Taxiway N is 35 feet wide and serves the North Apron, which is limited to small aircraft (less than 12,500 lbs.) As such, Taxiway N is designed to accommodate ADG I aircraft. **Table 4.12** presents taxiway dimensional standards to be applied at the Airport relative to ADG II and TDG 2 design standards for Taxiway A and ADG I and TDG 2 standards for Taxiway N. As shown, the Airport meets or exceeds applicable taxiway dimensional requirements.

Table 4.12 Taximay Dimensional Requirements								
ltem	ADG II / TDG 2 Design Standards	Taxiway A	ADG I/ TDG 2 Design Standards	Taxiway N				
Taxiway Width (ft.)	35	50	35	35				
Taxiway Safety Area Width (ft.)	79	79	49	49				
Taxiway OFA Width (ft.)	131	131	89	89				
Taxilane OFA Width (ft.)	115	115	79	79				
Taxiway Centerline to:								
Fixed or Moveable Object (ft.)	65.5	65.5	44.5	44.5				
Taxiway/Taxilane Centerline Parallel Runway Centerline (ft.)	240	297	225	300				

Table 4.12 - Taxiway Dimensional Requirements

Sources: FAA Advisory Circular 150/5300-13A. Prepared by: Kimley-Horn, 2017.

Note: All distances in feet

4.4.4 OTHER AIRPORT REQUIREMENTS

4.4.4.1 Navigational Aids (NAVAIDS)

The Airport's on-site electronic NAVAIDS consist of an instrument landing system (ILS) installation that includes a localizer antenna and glideslope antenna supporting Runway 24. The Airport has a published ILS approach procedure to Runway 24 that provides visibility minima of not lower than ¾-mile horizontal visibility and a ceiling of 200 feet. Additionally, the Airport has several GPS-based approach procedures with higher visibility minimums as discussed in Section 2.2.6. The not lower than ¾-mile, 200-foot ceiling does not provide for Category I visibility, which is not lower than a ½ mile visibility and a 200-foot ceiling.

A review was conducted to identify the potential impacts of implementing these lower minima. Based on the review, it was found that addressing off-Airport obstacle penetrations east of the Airport was impractical; this, combined with the limited time that the lower minima would be needed means that no action to achieve a full Category I approach minimum is recommend for the purposes of the Airport Master Plan Update.

The existing Airport Layout Plan (ALP) currently depicts an RPZ of the size that supports a Category I approach minimum, however, given that it is not anticipated that such a minima will ever be achieved, the approach RPZ for Runway 24 will likely reduce to one that supports the existing minima of not less than $\frac{3}{4}$ mile.

Currently there is no defined non-precision or precision approach to Runway 06. The closest such capability is a general Airport approach identified as a VOR-A approach that provides guidance to the Airport and allows the pilot to execute a circling approach to either end of the runway based on ATCT direction and prevailing winds. This approach has horizontal visibility minima of 1½-mile for approach category "A" aircraft, 1½-mile for approach category "B" aircraft, and 3 miles for approach category "C" aircraft and a minimum ceiling of 1,300 feet. It is not anticipated that the Airport will require any additional NAVAIDS, as approaches to Runway 06 are relatively rare given the prevailing wind conditions at the Airport. As such, the existing and ultimate Runway 06 approach RPZ shall be sized for a not lower than 1 mile visibility minima.

4.4.4.2 Lighting, Marking, and Signage

Runway 06-24 is currently equipped with HIRL, and the approach to Runway 24 is equipped with a Medium Approach Light System with Runway Alignment Indicator Lights (MALSR) as well as REILs. Both runway ends are also equipped with visual descent guidance via Precision Approach Path Indicator

(PAPI) installations. The Airport is anticipated to maintain its current ¾-mile instrument visibility minimum and 200-foot ceiling for the approach to Runway 24 throughout the planning period. The lighting standards associated with the Category I capability are met by the equipment that is presently in place. Signage and markings should continue to comply with the current FAA standards per FAA AC guidance and FAR Part 139 regulation. It should be noted that runway approach lighting will need to be relocated in the event of a runway extension and relocation.

The taxiway network is equipped with medium intensity taxiway edge lighting (MITL). Since low visibility aircraft operations below a RVR value of 1,200 feet are not anticipated, the current taxiway lighting are sufficient for the planning period.

4.4.4.3 <u>Aircraft Hangars and Apron</u>

As noted in the Inventory section of this Airport Master Plan Update, there are numerous commercial and non-commercial aircraft parking aprons and hangars available at the Airport. Although the forecasts identify an increase in the number of based aircraft at the Airport from 298 in 2016 to 398 in 2036, the physical constraints of the airport, such as available land and safety clearances, do not a significant increase in the size of existing aircraft parking facilities. As such, since the Airport is near capacity for based aircraft and will continue to become closer to full capacity, it is anticipated that the availability of aircraft parking will dictate the ultimate number of based aircraft at the Airport in the future. Although there is demand for additional aircraft parking apron and hangar space, there are existing physical constraints and additional facilities that will be needed for the Airport to remain functional long-term such as the runway shift. This shift will result in the loss of the north parking apron for GA aircraft, which will need to be relocated on the airport or to another airport entirely.

In order to mitigate the potential loss of the north parking apron and to satisfy a portion of anticipated future demand, the Airport has identified an area east of Royal Jet approximately 2.5 acres in size that is designated for future GA aircraft parking. This area is depicted in **Exhibit 5.9** in Section 5 of this Airport Master Plan Update.

4.5 LANDSIDE FACILITY REQUIREMENTS

This section focuses on the landside circulation and access system at the Airport and includes the following components:

- Airport roadway and curb front facilities
- Parking facilities including public, employee, and rental cars
- Airport access and circulation

The majority of landside and passenger terminal facilities are based on design hour enplanements and a realistic portrayal of commercial aircraft that could operate in the near and long term at the Airport. These aircraft include models such as the Embraer ERJ 140 (typically configured with 44 seats) and the CRJ 700 (configured up to 70 seats). Design hour passenger enplanements are shown in **Table 4.13**. Design hour enplanements are generated by incorporating the type of aircraft anticipated to be in operation, identifying how many operations would need to occur annually in order to achieve that figure, and applying a passenger load factor that could occur, paired with a realistic daily airline schedule. Although it is anticipated that there will be hours when passenger demand exceeds and falls short of these estimates, these figures represent a typical busy hour that could occur on a typical weekday using a realistic airline schedule.

Hourly Hourly **Passengers Passengers** Annual **ERJ 140 or Typical** CRJ 700 or **Typical** at 90% **Design Hour** at 90% **PAL** Similar **Enplaned** Seat Similar Seat Load Load **Enplanements Passengers** Aircraft Config. Aircraft Config. **Factor Factor Operations Operations** Base N/A 0 0 0 70 0 N/A Year 44 (2016)PAL 1 304,673 0 44 0 1 70 63 63 PAL₂ 2 575,000 44 70 126 39 165

Table 4.13 - Design Hour Enplanements

Source: Kimley-Horn, 2017. Note: N/A=Not applicable.

As shown, 63 enplanements represent the design hour figure for PAL 1 when annual enplanements are 304,673 and 165 enplanements for PAL 2 when annual enplanements are 575,000. It should be reiterated that based on conversations with County Staff, it has been determined that optimizing timing and tempo could allow scheduled commercial departures to occur no closer together than approximately every 25-30 minutes. While passenger activity in PAL 2 is not anticipated to occur, a design hour where three commercial departures occur within an hour is achievable. The values presented in **Table 4.13** are used to identify facility needs for landside, passenger terminal, and support facilities. For landside facility planning, this Airport Master Plan Update anticipates PAL 1 to be the primary forecast.

4.5.1 AIRPORT ROADWAY AND CURB FRONT

The vehicular curb front adjacent to the terminal building consists of two lanes for its entire length (approximately 400 feet of loading zone area) between McClellan Way and Palomar Airport Way. Approximately 270 feet of this curb front is located between two crosswalks where it is ideal to pick up and drop off passengers. Each crosswalk provides pedestrian access to the short-term parking lot. Dwelling for vehicles picking up and dropping off passengers occurs in the inner lane closest to the terminal building, while the outer lane serves as the single through lane. An analysis was conducted to identify the required length of curb front needed compared to design hour passenger demand and is shown in **Table 4.14**.

Curb front requirements incorporated the following assumptions:

- The percentage of vehicles in the peak hour that will arrive in the peak 15-minute period is 30 percent.
- Vehicle dwell time for private autos is 3 minutes, 1.5 minutes for taxis, 2 minutes for limos, vans, and shuttles.
- Average length of private autos and taxis is 22 feet, 30 feet for limos, and 25 feet for vans/shuttles.
- 75 percent of passengers will use curb front; 25 percent will park vehicles. Vehicle fleet mix for curbside pickups and drop offs is 80 percent private autos, 15 percent taxis, and 5 percent vans/shuttles.

Table 4.14 - Passenger Curb front Requirements

	Design Hour Enplanements	Peak 15 Minute Vehicle Demand	Peak 15 Minute Curb front (LF)
PAL 1	63	16	64
PAL 2	165	41	165

Source: Kimley-Horn, 2017.

As shown, the Airport's 270 feet of curb front is adequate to accommodate design hour passenger demand for both PAL 1 and PAL 2. No additional curb front is anticipated in the near-term; however, the Airport should continue to monitor airline activity and examine options for improvements in the event that hourly demand significantly exceeds 165 passengers.

4.5.2 AUTO PARKING

According to County Staff, it was identified that the Airport has approximately 625 public auto parking spaces (40 short-term, 585 long-term) and 25 spaces for employees. The employee parking estimates do not include parking designated for FBOs or other on-Airport businesses. According to the Airport Cooperative Research Program (ACRP) Report 25, Airport Passenger Terminal Planning and Design¹⁴, the recommended number of public auto parking spaces should be between 900 and 1,400 per a million annual enplanements. For employee parking, it is recommended that there be between 250 and 400 spaces per a million annual enplanements. Based on these recommendations, auto parking requirements were calculated and are shown in **Table 4.15**.

Table 4.15 – Auto Parking Requirements

				•	
	Annual Enplanements	Public Parking (Low)	Public Parking (High)	Employee Parking (Low)	Employee Parking (High)
PAL 1	304,673	274	427	76	122
PAL 2	575,000	518	805	144	230

Source: Kimley-Horn, 2017.

Based on the industry planning principals, the existing number of 625 public parking spaces is adequate to meet demand for PAL 1 and possibly PAL 2. Though it should be noted that when commercial activity took place at the Airport previously, the public lots were occasionally filled to capacity during peak passenger activity. As such, it is recommended that the Airport continue to monitor passenger activity and examine options to enhance existing public parking facilities, such as off-site parking lots with shuttle service, if annual enplanements approach 500,000. The existing 25 employee parking spaces are adequate to meet existing demand as well as demand identified in PAL 1, although some re-configuration or designation of public spaces to employee spaces may be needed. It should be noted that a total of approximately 75 parking spaces in the public lot are designated for Airport employees, rental cars, and visitors.

4.5.3 Sources

Airport access roadways and average daily traffic are described in detail in the Section 2.7. Primary vehicular access to the Airport is via Palomar Airport Road at the signalized intersection of Palomar Airport Way / Yarrow Drive. To the east, Palomar Airport Road turns into W. San Marcos Boulevard when entering into the City of San Marcos. On the east side of the Airport, El Camino Real provides primary north/south access to the immediate area. In August 2017, a Transportation Impact Analysis was completed based on the recommendations identified in this Airport Master Plan Update. This Analysis

¹⁴ Airport Cooperative Research Program Report 25, Airport Passenger Terminal Planning and Design

identified existing roadway segment volumes and intersection delays as well as future roadway segment volumes and intersection delays based on the passenger enplanements described in **Table 4.16**.

, , , , , , , , , , , , , , , , , , ,							
	Existing	PAL 1	PAL 2				
Year	2016	2036	2036				
Annual Operations	149,029	195,050	208,004				
Annual Enplanements	131	304,673	575,000				
Design Hour Enplanements		63	165				
Average Daily Enplanements		835	1,575				

Table 4.16- Passenger Activity Assumptions

Source: Transportation Impact Analysis McClellan-Palomar Airport Plan Update (Linscott Law & Greenspan, August 2017). Kimley-Horn, 2017.

The vehicle trips associated with PAL 1 and PAL 2 were allocated to the surrounding street system. Trip distribution assumptions were based on trip distribution percentages from the Transportation Impact Analysis McClellan-Palomar Airport Plan Update (Linscott Law & Greenspan, August 2017).

Analysis of the traffic impacts associated with PAL 1 and PAL 2 was conducted at the following locations:

- Intersections:
 - 1. Palomar Airport Road at College Boulevard
 - 2. Palomar Airport Road at Camino Vida Roble
 - 3. Palomar Airport Road at Yarrow Drive
 - 4. Palomar Airport Road at El Camino Real
- Roadway Segments:
 - 1. Palomar Airport Road west of College Boulevard
 - 2. Palomar Airport Road between Yarrow Drive and El Camino Real
 - 3. Palomar Airport Road east of El Camino Real

The analysis was conducted for existing conditions and for Build-out 2036 Forecast conditions (detailed below in **Tables 4.17-4.19**), with and without inclusion of PAL 1 and PAL 2 levels of activity.

4.5.4 PEAK HOUR TRAFFIC VOLUMES FOR ROADWAYS NEAR MCCLELLAN-PALOMAR AIRPORT

Traffic volume count data for the existing analysis and traffic forecasts for the Build-out analysis were obtained from the following sources:

 Transportation Impact Analysis McClellan-Palomar Airport Plan Update (Linscott Law & Greenspan, August 2017)

Roadway Analysis

The roadway segment capacity analysis compares the volume of traffic traveling in each direction along that segment of roadway during the morning and evening peak hours to the hourly capacity of the roadway. The City of Carlsbad uses a one-direction maximum capacity of 1,800 vehicles per lane, per hour, in the peak period.¹⁵ The resulting volume-to-capacity (v/c) ratio translates into a corresponding Level of Service (LOS) measure A through F, with LOS A representing uncongested, free-flowing conditions; and LOS F representing congested, over-capacity conditions. The City considers LOS C or better to be acceptable for mid-block roadway operations during the AM and PM peak hours.

¹⁵ Source: 2016 Traffic Monitoring Program Summer 2016– City of Carlsbad Growth Management Plan (Michael Baker International)

The results of the roadway segment analysis are presented below. **Table 4.17** shows the roadway segment capacity analysis for Existing Conditions. **Table 4.18** and **Table 4.19** present the roadway segment capacity analysis for 2036 Build-out Conditions with the addition of projected traffic associated with PAL 1 and PAL 2 level of passenger enplanement activity, respectively.

Table 4.17- Roadway Segment Analysis - Existing Conditions

Roadway	Segment D	5 1	# of Lanes	Capacity	AM P	eak Ho	ur	PM Peak Hour		ur
		Direction			Volume	V/C	LOS	Volume	V/C	LOS
	West of	EB	3	5,400	1,851	0.34	Α	1,406	0.26	Α
	Camino Vida Roble (to College Blvd)	WB	3	5,400	1,183	0.22	А	1,911	0.35	А
	Camino Vida	EB	3	5,400	1,521	0.28	Α	2,088	0.39	Α
Palomar Airport	Roble to Yarrow Drive	WB	3	5,400	1,347	0.25	Α	1,338	0.25	Α
Road	Yarrow Drive	EB	3	5,400	1,153	0.21	Α	2,064	0.38	Α
	to El Camino Real	WB	3	5,400	1,941	0.40	Α	1,333	0.25	Α
	East of El	EB	3	5,400	1,640	0.30	Α	2,700	0.50	Α
	Camino Real (to Loker Ave)	WB	3	5,400	2,654	0.49	Α	1,927	0.36	Α

Source: Transportation Impact Analysis McClellan-Palomar Airport Plan Update (Linscott Law & Greenspan, December 2017).

Table 4.18 - Roadway Segment Analysis - Build-out 2036 Forecast with PAL 1 Activity

Roadway Segment		Direction # of		Canacity	AM Peak Hour			PM Peak Hour		
Roadway	Segment	Direction	Lanes	Capacity	Volume	V/C	LOS	Volume	V/C	LOS
	West of	EB	3	5,400	2,237	0.41	Α	1,737	0.32	Α
	Camino Vida Roble (to College Blvd)	WB	3	5,400	1,417	0.26	А	2,257	0.42	Α
	Camino Vida	EB	3	5,400	1,794	0.33	Α	2,454	0.45	Α
Palomar Airport	Roble to Yarrow Drive	WB	3	5,400	1,668	0.31	Α	1,764	0.33	Α
Road	Yarrow Drive	EB	3	5,400	1,514	0.28	Α	2,485	0.46	Α
	to El Camino Real	WB	3	5,400	2,475	0.46	Α	1,815	0.34	Α
	East of El	EB	3	5,400	2,038	0.38	Α	3,211	0.60	Α
	Camino Real (to Loker Ave)	WB	3	5,400	3,191	0.59	Α	2,441	0.45	Α

Source: Transportation Impact Analysis McClellan-Palomar Airport Plan Update (Linscott Law & Greenspan, December 2017).

AM Peak Hour PM Peak Hour # of Roadway Segment Direction Capacity Lanes V/C LOS Volume V/C LOS Volume EB 3 2,260 West of 5,400 0.42 Α 1,760 0.33 Α Camino Vida Roble (to WB 3 5,400 1,433 0.27 Α 2,279 0.42 Α College Blvd) Camino Vida 3 5,400 1,806 0.46 EΒ 0.33 Α 2,466 Α Roble to **Palomar** 3 WB 5.400 1,677 0.31 Α 1,775 0.33 Α **Airport** Yarrow Drive Yarrow Drive Road EΒ 3 5,400 1,534 0.28 Α 2,517 0.47 Α to El Camino 3 WB 5,400 Α Α 2,507 0.46 1,847 0.34 Real 3 5,400 East of El EΒ 2,044 0.38 Α 3,221 0.60 Α Camino Real WB 3 5,400 0.59 Α Α 3,201 2,451 0.45 (to Loker Ave)

Table 4.19 - Roadway Segment Analysis - Build-out 2036 Forecast with PAL 2 Activity

Source: Transportation Impact Analysis McClellan-Palomar Airport Plan Update (Linscott Law & Greenspan, December 2017).

Review of **Table 4.17** indicates that under Existing Conditions, each roadway segment is currently operating at Level of Service A during both peak hours. The volume of traffic on each roadway segment is well within the roadway capacity, and satisfies the City's Level of Service standard of LOS C or better.

Review of **Tables 4.18** and **4.19** indicates that with the Build-out 2036 forecast traffic demand, each roadway segment would continue to operate at Level of Service A during both peak hours. The forecasted traffic growth would result in peak hour volumes that would still be well within the roadway capacity in the vicinity of the Airport. Furthermore, with the addition of traffic associated with the ultimate PAL 1 and PAL 2 passenger activity levels, each roadway segment would continue to operate at Level of Service A during both peak hours.

It should be noted that the Transportation Impact Analysis McClellan-Palomar Airport Plan Update (2017) also identified impacts associated with intersection delay based on projected levels of activity described in PAL 1 and PAL 2. The entire document is presented in its entirety in Appendix 3.

4.6 PASSENGER TERMINAL FACILITY REQUIREMENTS

The passenger terminal building at the Airport was constructed in 2009 and has an interior area of approximately 12,590 square feet. The total terminal complex includes awnings and outdoor space for the baggage claim, restaurant, Customs, rental car, and hold room that when included with the passenger terminal building footprint, encompasses a total area of approximately 22,139 square feet. However, for the purposes of passenger terminal facility requirements, the interior space that is contained within the passenger terminal building (12,590 square feet) is evaluated for existing and projected passenger demand. General areas of the terminal building and their sizes are shown in **Table 4.20**.

Table 4.20 - Passenger Terminal Facilities

Facility	Area (SF)
Ticketing/Check-In	2,996
TSA Baggage Screening	558
TSA Passenger Screening	1,552
Hold rooms*	2,507
Baggage Claim*	1,800
Passenger Circulation	1,367
Airline Office Space	1,918
Auxiliary Space**	1,602
Restrooms	569
Total Terminal Building	12,590

Source: FAA Advisory Circular 150/5300-13A, Change 1; Prepared by: Kimley-Horn, 2017.
*Notes: Baggage claim is located outside of the terminal and is not included in the existing terminal building calculation. Hold room includes 479 square feet of exterior space that is not included in the existing terminal building calculation but is used in determination of facility needs.
** Auxiliary Space includes non-Airline office space, janitorial space, electrical, employee break room, and wall space.

Landside facilities will be evaluated for adequacy for both existing conditions as well as for PAL 1 and PAL 2. This will provide the Airport with spatial needs in the event that commercial service increases significantly in the 20-year planning period.

4.6.1 BOARDING GATE DEMAND

Boarding gates provide areas for passengers awaiting flights. Typically, gates include seating areas/hold rooms, airline counters, doorways, and jet bridges. At the Airport, jet bridges are not used so the gate area consists of a hold room, an airline counter, and doorways to the aircraft on the ramp. The number of gates required is determined based on the number of flights that will depart during the design hour. These figures are identified using the design hour passenger enplanement figures described in the previous section and are compared to the anticipated types of aircraft that are projected to be used in the future (EMB 135 and CRJ 700/EMB 170). Hourly gate demand is based on design hour enplanement figures identified previously in **Table 4.13**. It is assumed that gate turnaround time is 1 hour, meaning that one hour of time is needed to process passengers arriving, waiting, and departing for a flight. Projections of gate demand are shown in **Table 4.21**.

Table 4.21 – Passenger Gate Requirements

ltem	Existing (2016)	PAL 1	PAL 2
Annual Enplanements	N/A	304,673	575,000
Design Hour Enplanements	N/A	63	165
Design Hour Operations	N/A	1	3
Boarding Gates Required	N/A	1	3

Sources: ACRP Report 25. Airport Passenger Terminal Planning and Design.

Notes: Assumes 0 operations during "quiet hours." N/A=Not applicable.

Prepared by: Kimley-Horn, 2017.

As shown, it is anticipated that the existing gate can accommodate demand generated under PAL 1; however, two additional gate areas will be required to meet the demand projected in PAL 2. Economies of scale can be achieved by utilizing one large hold room with multiple airline counters. The Airport does not use jet bridges; therefore, passengers boarding different flights may be able to utilize the same door to board aircraft. However, if airline activity increases and more than 2 flights depart per hour, (as is the case with PAL 2) multiple doors for boarding flights may be needed to avoid confusion and maintain efficiency. The Airport should continue to monitor airline operations to determine if additional gate capacity is needed. The existing boarding gate is anticipated to accommodate projected levels of demand under PAL 1, unless airlines need to cluster flights around typical high demand periods to remain in operation.

4.6.2 HOLD ROOMS

The existing hold room at the Airport is approximately 2,028 square feet in size with an additional 479 square feet of exterior space available for waiting passengers that equates to a total of 2,507 square feet of total hold room area. Hold room needs have been developed using planning parameters identified in ACRP Report 25, "Airport Passenger Terminal Planning and Design," and are identified in **Table 4.22**. The following assumptions have been incorporated into the spatial requirements of the hold room area:

- 8 square feet of space is required for standing passengers, 9 square feet of space is required for seated passengers;
- 50 percent of passengers will be seated; 50 percent will be standing;
- 92 square feet of space is required for each podium and associated queuing area;
- 150 square feet of space is required for each boarding corridor area; and
- The number of podiums and boarding corridors is equal to the number of corresponding boarding gates required as shown in Section 4.6.2.

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ltem	Existing (2016)	PAL 1	PAL 2
Design Hour Passengers	N/A	63	165
Seating and Standing Area (sf)	2,107	610	1,590
Podium and Queuing Area (sf)	200	92	276
Boarding Corridor Area (sf)	200	300	450
Hold room Area Required (sf)	N/A	1,002	2,316

Table 4.22– Passenger Hold room Requirements

Sources: ACRP Report 25. Airport Passenger Terminal Planning and Design. Note: N/A=Not applicable. Prepared by: Kimley-Horn, 2017.

As shown, it is anticipated that the overall size of the existing hold room and exterior hold room area is adequate to accommodate passenger demand for both PAL 1 and PAL 2: however, reconfiguration of the interior hold room area may be needed if multiple flights depart within an hour timeframe and additional podium and boarding corridor areas are needed.

4.6.3 TICKETING/CHECK-IN AREA

The ticketing and check-in area provides the immediate interface between the passenger and the airline. This area includes airline counter positions and passenger queuing areas. The eight counter positions and area around them account for approximately 700 square feet, while the queuing area is approximately 2,296 square feet in size. Spatial requirements for the ticketing and check-in area are determined using the Spreadsheet Models for Terminal Planning and Design for ACRP Report 25. This model incorporates the following assumptions:

- A queuing (LOS "C," which is optimal, is achieved by providing 14 square feet per passenger.
 (A LOS of "A" or "B" indicates that facilities are underutilized while a LOS of "D" or "F" suggests that facilities are insufficient.
- The average processing time once a passenger reaches a counter is 4 minutes.
- The maximum time a passenger should wait in the queuing area is 15 minutes.
- The number of counter positions required is determined by maintaining the 4-minute processing and no more than 15-minute processing times.
- The average space per ticket counter required is 87.5 square feet, which is the same size as existing counter positions at the Airport.
- The percentage of design hour passengers who arrive at the ticketing/check-in area during a peak 30-minute period is 50 percent.
- The percentage of passengers who utilize the ticket counter is 75 percent.

Ticketing/check-in facility needs are shown in Table 4.23.

Table 4.23 – Ticketing and Check-In Requirements

Item	PAL 1	PAL 2
Design Hour Enplanements	63	165
Peak 30 Min. Enplaned Passengers Utilizing Ticket-Counter	24	62
Counter Positions Required	3	6
Counter Area Required (SF)	263	525
Queuing Area Required(SF)	331	868
Total Area Required (SF)	593	1,393

Sources: ACRP Report 25 Airport Passenger Terminal Planning and Design.

Prepared by: Kimley-Horn, 2017.

As shown, the existing ticketing and check-in areas are sufficiently sized to meet passenger demand for PAL 1 and PAL 2. With the number of passengers who print out boarding passes at home or check-in online increasing, this figure could actually decline in the future. Airport Management should monitor passenger activity and counter utilization to identify any capacity constraints in the future.

4.6.4 AIRLINE OFFICE SPACE

The passenger terminal building at the Airport holds 9 rooms used by airlines for office and supply/storage purposes. These rooms encompass approximately 1,918 square feet of space. There are no known planning parameters to determine the total office space needed by airlines; however, it is logical to assume that office space required would mimic ticketing and check-in areas. In other words, the change in passenger demand is assumed to impact the space needed for airline office areas at the same rate as it impacts passenger ticketing and check-in areas. Airline office space requirements are shown in **Table 4.24**.

Table 4.24 – Airline Office Space Requirements

Item	PAL 1	PAL 2
Design Hour Enplanements	63	165
Airline Office Space Required (SF)	380	892

Source: ACRP Report 25 Airport Passenger Terminal Planning and Design. Kimley-Horn, 2017.

As shown, the existing 1,918 square feet of airline office space at the Airport is sufficient to meet projected demand for both PAL 1 and PAL 2.

4.6.5 TRANSPORTATION SECURITY ADMINISTRATION (TSA) BAGGAGE SCREENING

Checked baggage is loaded from the airline ticketing counters onto a conveyor where it is screened manually by TSA personnel. The screening area inside the terminal building that includes the scanning machine encompasses a total of approximately 582 square feet. TSA Baggage Screening requirements are shown in **Table 4.25** These calculations incorporate the following assumptions:

- 75 percent of passengers check baggage, an average of 1.0 bags per person.
- A TSA surge factor is applied based on recommendations identified in ACRP Report 25.
- Processing rate per scanner is 400 bags/hour.

Table 4.25 - Baggage Screening Requirements

Item	PAL 1	PAL 2
Design Hour Enplanements	63	165
Bags to Process*	47	124
TSA Surge Factor	1.71	1.44
Oversize Bags (not passible through Scan Unit)	2	5
Bags to pass through Scan Unit	78	173
Screening Units Required	1	1
Area Required (SF)	558	558
Courses, ACDD Depart Of Aircost December Terrainal Dispuise and Decima Kirolay Harr. 2017		

Sources: ACRP Report 25 Airport Passenger Terminal Planning and Design. Kimley-Horn, 2017.

The existing screening area and equipment is adequate to accommodate existing levels of passenger demand for both PAL 1 and PAL 2. As the screening equipment can accommodate 400 bags per hour, it is likely that existing facilities are suited to accommodate passenger activity throughout the 20-year planning horizon.

4.6.6 BAGGAGE MAKEUP AREA

After checked luggage is screened, it continues down a conveyor belt that leads to the exterior of the passenger terminal building's north side. Baggage is temporarily stored outside before it is transferred onto departing aircraft. Based on conversations with Airport management, it has been determined that there is enough space to accommodate typical amounts of passenger baggage. However, despite the favorable climate of the Carlsbad/San Diego area, storing luggage outside is not ideal as the bags themselves are exposed to the elements, often for extended periods of time. Although the Airport doesn't have a designated baggage makeup area, it is recommended that one be planned for in the future, especially if passenger demand increases. Baggage makeup spatial requirements are based off recommendations identified in ACRP Report 25, and are shown in **Table 4.26**. The following assumptions are incorporated into spatial needs for a baggage makeup area:

- 2 staged carts are required per gate in use.
- The number of gates in use is obtained from Table 4.21.
- ACRP Report 25 recommends 1,500-2,200 square feet of makeup area per gate in use. For the purposes of this Airport Master Plan Update, 1,500 square feet per gate is recommended.

^{*}Note: Adjusted for oversize bags and surge rate factor peak 10 minute/hour

Table 4.26 – Baggage Makeup Area Requirements

Item	PAL 1	PAL 2
Design Hour PAX	63	165
Boarding Gates in Use	1	3
Average Makeup Area/Gate	1,500	1,500
Makeup Area Required (SF)	1,500	4,500

Sources: ACRP Report 25 Airport Passenger Terminal Planning and Design. Kimley-Horn, 2017.

Although it is likely that the Airport can continue to operate without an indoor baggage makeup area through PAL 1, such a facility is desirable to protect luggage from rain, heat, etc. As such, it is recommended that the Airport plan for such a facility. For the purposes of this Airport Master Plan, facilities that are desirable, but not essential for operation such as a baggage makeup area will be recommended, but will not be identified in overall spatial requirements for the passenger terminal building. If flights are staged according to the Airport's timing and tempo limits, one baggage makeup area should be able to accommodate one incoming and one outgoing flight within an hour.

4.6.7 Transportation Security Administration (TSA) Passenger Screening

Prior to entering the secure portion of the terminal, passengers must pass through the TSA screening area. The passenger screening area, 1,552 square feet in size, is comprised of two components: the queuing area and the checkpoint area. The existing queuing area is 481 square feet in size, while the checkpoint is a single lane with a metal detector for passengers and a Rapidscan620DV scanner for baggage. The checkpoint area accounts for 780 square feet and an additional 291 square feet of office and private screening areas. The required space for these areas is directly tied to the number of passengers that pass through the facility during a particular time period. Spatial requirements for the TSA screening area are shown in **Table 4.27** and are based on recommendations identified in ACRP Report 25 and incorporate the following assumptions:

- The scanning and throughput rate for equipment and personnel can accommodate 135 passengers per hour.
- The queuing area should be sized for 280 square foot per security lane. This is based on the International Air Transport Association (IATA) standard LOS "D" of 8.6 square feet per queued passenger.
- Maximum queue time is 10 minutes.
- Peak 30-minute passenger period is ½ design hour passengers.

Table 4.27 - TSA Passenger Screening Requirements

	<u> </u>	<u> </u>
ltem	PAL 1	PAL 2
Design Hour PAX	63	165
Peak 30 Min. PAX	32	83
Lanes Required	1	2
Queuing Area Required (SF)	280	560
Checkpoint Area Required (SF)	938	1,876
Total Area Required (SF)	1,218	2,436
Additional Area Required (SF)	N/A	1,175

Sources: ACRP Report 25 Airport Passenger Terminal Planning and Design. Kimley-Horn, 2017.

As shown, the total area designated for TSA passenger screening area is anticipated to accommodate demand through PAL 1. It should be noted that the recommended 938 square feet for the checkpoint area under PAL 1 represents a typical layout that includes tables, equipment, and search area. A second lane with scanning capabilities is not needed until reaching the passenger levels associated with the PAL 2. As

such, additional TSA screening equipment, queuing area, or checkpoint area over the next 20 years is not required.

4.6.8 BAGGAGE CLAIM

Currently, the 1,800-square foot baggage claim area is located outside the passenger terminal building and includes an airside baggage drop, tug movement area, baggage claim devices, and queuing and waiting areas. Similar to baggage makeup, although having an interior baggage claim facility is not essential to the functionality of the passenger terminal, it is desirable to have an indoor facility so luggage and passengers are not exposed to the outdoor elements. Although the existing facility may be acceptable for current levels of passenger activity, any significant increase in passenger enplanements should trigger an examination of an indoor baggage claim facility. **Table 4.28** presents recommended sizes for a typical baggage claim facility based on parameters identified in ACRP 25. The following assumptions are incorporated into these requirements:

- A typical baggage claim for smaller commercial airports is often T-shaped with room for baggage carts on the exterior of the building. Each "T" segment is sized approximately 90 linear feet and 2,700 square feet not including additional passenger queuing area.
- According to ACRP Report 25, a LOS "C" for the queuing area is achieved by providing 12 square feet per waiting passenger.
- 50 percent of passengers deplane in the peak 20-minute period.
- 75 percent of passengers check baggage.

PAL 1 PAL 2 Item **Design Hour Deplanements** 63 165 **Total Deplaning Passengers** 52 20 at Baggage Claim PAX Queuing (SF) 240 624 **Baggage Unit Segments** 1 1 2.700 2.700 Baggage Unit (SF) **Total Baggage Claim (SF)** 2.940 3.324

Table 4.28 - Baggage Claim Facility Requirements

Sources: ACRP Report 25 Airport Passenger Terminal Planning and Design. Kimley-Horn, 2017.

As shown, by PAL 1, one baggage claim unit with 240 square feet of queuing area for a total footprint of 2,940 square feet is recommended. The existing baggage claim may be adequate for existing and projected levels of passenger activity through PAL 1; however, the Airport should monitor efficiency of baggage delivery and congestion if commercial operations increase. Signs of inefficiency could trigger the need to install an interior or enhanced baggage claim facility. For the purposes of the Airport Master Plan Update, it is recommended that the Airport examine options for an indoor baggage claim facility; however, spatial requirements for such a facility are not included in the overall terminal needs summary presented at the end of Section 4.6.

4.6.9 RESTROOM FACILITIES

Public restrooms should be provided in the main terminal locations (ticketing, baggage claim, and central concession areas) and the concourses. According to ACRP 25, observations of passenger activity indicate that deplaning passengers are the principal demand driver for concourse restrooms. Short-haul flights will also generally produce a greater demand for restrooms on arrival than long-haul flights.

Currently, the passenger terminal has one men's and one women's restroom in the post-security checkpoint portion of the building (concourse) that comprise a total of 116 square feet. There is also a pre-security checkpoint men's and women's restroom facility (terminal) with a vestibule that totals 459 square feet. The concourse restroom facility has two gender neutral restrooms.

ACRP Report 25, Terminal Building Facilities, identifies restroom requirements based on design hour passenger demand. For non-secure restrooms (terminal), the Report identifies a range of 2 to 2.5 square feet of restroom space per person during the design hour (passenger enplanements, deplanements, and well-wishers). For the purposes of this Master Plan Update, 2 square feet per person is used in conjunction with a 25 percent contingency for well-wishers. For concourse restroom facility needs, 2 square feet per person is also applied; however, because these facilities are on the secure side, there is no contingency for well-wishers.

Restroom facility requirements are shown in **Table 4.29**. As shown, secure (terminal) restroom facilities are anticipated to be adequate through PAL 1; however, non-secure restrooms are anticipated to need an additional 136 square feet of space. Re-configuration of existing non-secure areas of the terminal may negate any building footprint improvement needs. It is recommended that the Airport continue to monitor passenger activity in non-secure areas to identify if restroom enhancements may be needed in the future.

Table 4.29 – Restroom Facility Requirements

Item	PAL 1	PAL 2
Secure Side Restrooms		
Design Hour Persons	158	413
Space Required (SF)	315	827
Additional Space Required (SF)	(144)	368
Non-Secure Side Restrooms		
Design Hour Persons	126	331
Space Required (SF)	252	661
Additional Space Required (SF)	136	545
Total Area Required (SF)	567	1,488
Total Additional Area Required (SF)	N/A	913

Sources: ACRP Report 25 Guidebook for Airport Passenger Terminal Planning and Design. Kimley-Horn, 2017.

4.6.10 Passenger Circulation

Passenger circulation elements provide the necessary public, non-public, and sterile links to tie the functional elements of the terminal together. Secure circulation typically consists of the main corridor of the concourses, plus the security checkpoints. General public circulation includes the vertical circulation elements of all of the corridors and other architectural spaces, which tie the public functional elements of the terminal together. Non-public circulation provides access to airline operations, airport administration areas, concession support, and other areas typically not used by the traveling public.

The provision of ample circulation space, especially a calculated over-provision for the design flows, allows a terminal building to accommodate unforeseen changes in use. Approximately 1,367 square feet of the existing passenger terminal building is dedicated for passenger circulation. This accounts for approximately 11 percent of the overall passenger terminal building footprint. Based on passenger utilization and observed traveler patterns, it is estimated that this ratio of passenger circulation square footage to overall building footprint is adequate for projected levels of demand. As such, circulation space for the Airport is determined by applying this ratio to the total spatial requirements for all elements identified in this section. Recommended circulation space is identified in **Table 4.30**.

Table 4.30 - Passenger Circulation

Item	PAL 1	PAL 2
Total Terminal Space Required (less circulation and auxiliary space) (SF)	4,318	9,083
Circulation Area Required (SF)	614	1,291

Source: Kimley-Horn, 2017.

As shown, the existing circulation space in the passenger terminal is adequate to accommodate demand through PAL 1 and PAL 2. The Airport should continue to monitor hourly peak passenger enplanements and deplanements to identify when planning for additional circulation area may be needed.

4.6.11 AUXILIARY SPACE

For the purposes of this Airport Master Plan Update, auxiliary space includes non-airline office space, non-circulation hallways, employee break rooms, public concessions, electrical rooms, janitor closets, communications rooms, and all wall and utility space in the passenger terminal. In total, the areas of the passenger terminal building that are designated auxiliary space account for 1,602 square feet. Because these are primarily support facilities to ensure the functionality of the terminal, it is assumed that the demand for these areas will be consistent with the overall footprint of the passenger terminal building. As such, to estimate auxiliary space needs, it is assumed that the current proportion of auxiliary space compared with the terminal building as a whole will remain constant throughout the projection period. It is estimated that auxiliary space occupies approximately 13 percent of the total building footprint, and should continue to compose this proportion in the future. Auxiliary space requirements are shown in **Table 4.31**. As shown, it is anticipated that the existing auxiliary space for the passenger terminal building is adequate to meet passenger demand for both PAL 1 and PAL 2. The Airport should continue to monitor hourly peak passenger enplanements and deplanements to identify when planning for additional auxiliary space area is needed.

Table 4.31 – Auxiliary Space

Item	PAL 1	PAL 2
Total Terminal Space Required (less circulation and auxiliary space) (SF)	4,318	9,083
Auxiliary Space Required (SF)	719	1,512

Source: Kimley-Horn, 2017.

*Note: Calculations are based on Terminal Space Required less Passenger Circulation and Auxiliary Space

4.6.12 PASSENGER TERMINAL SUMMARY

Table 4.32 Provides a summary of existing and recommended passenger terminal facility requirements for PAL 1 and PAL 2. As noted previously, it is not anticipated that passenger demand will exceed PAL 1 during the 20-year planning horizon. In order for the Airport to experience PAL 1 passenger enplanement levels of activity, significant increases in airline operations will be needed. Considering the scarcity of developable land at the Airport, and based on a comparison of other passenger terminal facilities that experience similar levels of activity as described in PAL 1 and PAL 2, it is recommended that the Airport preserve space for potential terminal enhancements that may be needed in the future should activity exceed the levels presented in this Airport Master Plan Update.

^{*}Note: Calculations are based on Terminal Space Required less Passenger Circulation and Auxiliary Space.

Item **Existing** PAL 1 PAL 2 304.673 575,000 **Annual Enplanements** N/A **Design Hour Enplanements** N/A 63 165 **Passenger Boarding Gates** 3 1 1 518 **Public Parking Spaces** 600 274 **Employee Parking Spaces** 25 144 76 270 64 165 **Curb front (Linear Feet)** Ticketing/Check-In (SF) 2,996 593 1,393 2,507 1,002 2,316 **Hold rooms** 892 Airline Office Space (SF) 1.918 380 558 TSA Baggage Screening (SF) 558 558 **Baggage Makeup Area** N/A 1,500 4,500 TSA Passenger Screening (SF) 1.552 1,218 2,436 1,800 2,700 2,700 Baggage Claim Facility (SF) (exterior) Passenger Circulation (SF) 1,367 1,291 614 719 **Auxiliary Space (SF)** 1,602 1,512 569 567 Restrooms (SF) 1,488 12,590 5,651 11,886 Total Terminal Building (SF)

Table 4.32 – Passenger Terminal Facility Requirements - Summary

Sources: ACRP Report 25 Guidebook for Airport Passenger Terminal Planning and Design. Kimley-Horn, 2017.

Notes: Exterior spaces are not included in the total terminal building area calculations. Terminal spatial requirements do not include baggage make-up area or interior baggage claim. N/A=Not applicable.

Based on an analysis of existing passenger terminal building facilities, it is estimated that the existing square footage of the terminal building can accommodate projected levels of demand through PAL 1. However, as noted previously, there are facilities including an interior baggage makeup area and baggage claim that although are not necessarily essential to the functionality of the terminal building, would enhance the overall operational capability of the terminal. As such, while there are no passenger terminal improvements that would alter the footprint of the building under PAL 1, it is recommended that adjacent areas currently occupied by the ARFF facility that is slated for relocation, and portions of the outdoor seating area of the restaurant be preserved for potential long-term terminal improvements.

The following facility requirements are recommended to meet the passenger demand projected in PAL 1:

- Baggage makeup area:
 - It is anticipated that a facility sized for 1,500 square feet would be adequate for the design hour passenger forecast under PAL 1 and should be planned for as a long-term improvement. While the current system of keeping baggage outside is functional, an indoor area for baggage storage prior to flights is recommended. This recommendation is not a specific improvement for the passenger terminal; however, it is a desired facility that should be included as a development option.
- Additional restroom space (specifically in the post-security portion of the terminal):
 While the overall space of the passenger terminal dedicated to restroom facilities is adequate
 through PAL 1, additional space may be needed for the secure portion of the concourse as
 hourly passenger demand increases. It is recommended that the Airport consider
 reconfiguration/enhancement of the non-secure restroom facilities as passenger demand
 increases.
- Indoor baggage claim:

As with baggage makeup, an indoor baggage claim sized 2,700 square feet in size is recommended to protect baggage and passengers from the elements. An interior baggage claim facility is not required for the terminal to function; however, as passenger demand increases, it will aid terminal capacity and throughput capabilities. This recommendation is not a specific improvement for the passenger terminal, however, it is a desired facility that should be included as a development option if passenger demand approaches PAL 1.

One additional boarding gate:
 The Airport's timing and tempo limits identify acceptable frequencies of commercial operations at the Airport. However, in the future, airlines may wish to cluster flights during high-demand periods to take advantage of traveler behavior. The Airport should be cognizant of this, and may need to preserve space for an additional boarding gate to accommodate peak levels of activity.

4.7 SUPPORT FACILITY REQUIREMENTS

Airport support facilities include those needed to ensure the airport continues operating in an efficient and safe manner. These facilities include CBP, rental car, ARFF, Airport maintenance, and fueling facilities.

4.7.1 U.S. CUSTOMS AND BORDER PROTECTION

The building immediately west of the passenger terminal houses the CBP facility, which processes passengers who arrive from destinations outside the U.S. The area of the building dedicated to CBP facilities encompasses approximately 1,490 square feet and includes a waiting room, search room, office and lab space, electrical and IT rooms, restrooms, and auxiliary space. Although passenger enplanements and aircraft operations are anticipated to increase throughout the 20-year planning horizon, it is anticipated that the existing CBP facilities can accommodate future demand.

4.7.2 RENTAL CAR FACILITIES

Rental car facilities are located in the same building as the CBP and occupy a space approximately 260 square feet in size. Currently, there are three rental car vendors in operation, Hertz, Budget and Avis. Arriving passengers pick-up their vehicles at the short-term and long-term parking lot. Departing customers with rental cars are directed to park in the long-term parking lot and walk to the terminal. Approximately seven of the short-term parking lot spaces in front of the terminal building are presently allocated to the rental car operation. The remaining rental car vehicles are stored in the long-term parking lot.

The three existing rental car companies are sufficient to accommodate existing and projected demand. However, compared with other airports of similar size and passenger activity levels identified PAL 1 and PAL 2, the County may want to consider reserving space for one additional vendor.

Furthermore, as passenger enplanements are anticipated to increase, the need for rental car parking will increase as well. It is anticipated that the long-term parking lot can accommodate such an increase, but the short-term lot will need enhancement. The two logical locations for enhancement/relocation would be either in the existing lot, which would require removal of landscaping, or relocation to the parking lot adjacent to the short-term lot to the west that is currently part of the Airport. Because it would not disturb existing tenants and the roadway infrastructure is already in place, it is recommended that the existing short-term lot be enhanced to accommodate future demand. This enhancement would likely result in the loss of a few on-street parking spaces along the Airport Access Road.

4.7.3 AIRCRAFT RESCUE AND FIREFIGHTING

The Airport has an onsite ARFF facility. This facility is located directly adjacent to the passenger terminal, and is a canopy structure which houses two ARFF vehicles, one primary and one backup, allowing direct apron access. The FAA identifies the ARFF as Index "B." An Index "B" classification requires an ARFF facility to accommodate air carrier aircraft (scheduled or non-scheduled) up to 90-126 feet in length. According to the FAA, "Except as provided in §139.319(c), if there are five or more average daily departures of air carrier aircraft in a single Index group serving that airport, the longest aircraft with an average of five or more daily departures determines the Index required for the airport. When there are fewer than five average daily departures of the longest air carrier aircraft serving the airport, the Index required for the airport will be the next lower Index group than the Index group prescribed for the longest aircraft."

The requirements for Index "B" ARFF equipment are:

- (a) Index B. Either of the following:
 - (1) One vehicle carrying at least 500 pounds of sodium-based dry chemical, halon 1211, or clean agent and 1,500 gallons of water and the commensurate quantity of AFFF for foam production.
 - (2) Two vehicles—
 - (i) One vehicle carrying the extinguishing agents as specified in paragraphs (a)(1) or (a)(2) of this section; and
 - (ii) One vehicle carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by both vehicles is at least 1,500 gallons.

While existing response times are adequate, the existing building is not in an ideal location, especially if there is a need to enhance the passenger terminal building. Because there is very little land available for terminal footprint enhancement, the ARFF building, should be examined for a new location that would provide adequate response time and enough space for vehicles and equipment. Options for relocation will be addressed in the Alternatives Section of this Airport Master Plan Update. According to general parameters outlined in *FAA AC 150/5210-15A*, *Aircraft Rescue and Firefighting Station Building Design*, a future ARFF building at the Airport should include the following elements:

- 2 Vehicle Bays
- Watch Room 130 Square Feet
- 1st Aid Room 120 Square Feet
- Self-Contained Breathing Apparatus (SCBA) room 200 Square Feet
- Administration Room/Kitchen/Break Room 500 Square Feet
- Restroom 50 Square Feet

According to *FAA AC 150/5210-15A*, the vehicle bays should be designed to accommodate clearances of 5 feet from the front of vehicles to the bay doors, 6 feet between vehicles and all walls, 8 feet between vehicles, and 7 feet between the vehicles and the ceiling. The typical dimensions of Index "B" ARFF vehicles that carry 1,500 gallons of water are 30 feet long, 10.2 feet wide, and 12.5 feet high. When adjusted for safety clearances, the ARFF building area that contains the vehicle bays should be designed to be 40.4 feet wide, 46 feet long, and 17.2 feet high. This results in a footprint of 1,858 square feet, and 31,964 cubic feet. The overall ARFF building footprint with the recommended rooms and vehicle bays should be sized approximately 2,858 square feet.

It should be noted that several of the recommended areas and equipment identified in *FAA AC 150/5210-15A* are already located in the Airport's Maintenance and Operations Building. Therefore, some of the recommended areas identified in the AC are not deemed necessary.

According to *FAA AC 150/5210-15A*, the ARFF apron must be at least equal to the distance between the outermost left and right vehicle bay door openings plus 3 feet to each side. This distance is estimated to be 34.4 feet. The apron length must extend from the vehicle bay doors at full-width for at least 1.5 vehicle lengths of the longest vehicle. This distance is estimated to be 52.5 feet. The minimum apron size for the ARFF should be 1,806 square feet.

The recommended minimum employee parking area is one space per person on duty. It is anticipated that an Index "B" ARFF facility have 2 persons on duty. However, there is ample parking at the nearby Maintenance and Operations Building; therefore, auto parking is not recommended as a component of an ARFF facility. There is also auto parking available in nearby lots that may be able to accommodate ARFF employees.

Below is a summary of recommended ARFF facility requirements:

- Vehicle Bay Area 1,858 Square Feet
- Admin/Storage Rooms 1,000 Square Feet
- ARFF Vehicle Apron 1,806 Square Feet
- Total ARFF Building and Apron 4,664 Square Feet

Potential locations for a future ARFF facility will be identified in the Alternatives Section of this Master Plan.

4.7.4 AIRPORT OPERATIONS AND MAINTENANCE BUILDING

The Airport has one airport operations and maintenance building located south of the passenger terminal along the north side of Palomar Airport Road. This building is approximately 9,500 square feet and houses a wide variety of equipment for performing airport operations and maintenance, including trucks, tool equipment, a wheel loader, backhoe, and various other machines. The Airport has its own maintenance staff, which handles nearly all of the routine airport maintenance needs at the Airport including maintaining airport lighting, airport pavement, and facilities. Based on projections of aviation demand and conversations with Airport Staff, it is anticipated that the existing operations and maintenance facility is equipped to accommodate future activity.

4.7.5 AIRCRAFT FUELING

There are several fueling facilities located at the Airport. Each fuel provider at the Airport maintains its own fuel storage, inventory, and distribution system. There are no fuel distribution lines at the Airport; all fuel is delivered to the storage tanks by tanker truck.

Based on estimates identified in Section 2.8 of this Master Plan Update, it is estimated that the Airport has the capacity for approximately 140,000 gallons of Jet "A" fuel and 80,000 gallons of AvGas. There is no common use fuel storage facility or fuel distribution system maintained by the Airport; however, it is anticipated that the existing aircraft fueling facilities are projected to accommodate future demand.

4.8 DEMAND CAPACITY/FACILITY REQUIREMENTS SUMMARY

The preceding analysis of airport and landside capacity under both PAL 1 and PAL 2 scenarios establishes a basis for airport facility requirements. The capacity analysis incorporates demands and design standards for the existing aircraft fleet as well as the projected operating fleet. The airport and

landside facility requirements analysis provides basic planning parameters that should be accommodated for near-term and long-term planning purposes. The facility needs identified in this section include:

Airport Facilities:

- Extension of Runway 06-24 (up to 800')
- Shift Runway 06-24 to satisfy runway-taxiway separation standards and be in compliance with D-III FAA design criteria
- Relocation of approach lighting in conjunction with improvements to Runway 06-24
- Equip Runway 06-24 with 20-foot-wide paved shoulders
- Improve taxiway system to accommodate ADG III/TDG 2 aircraft and/or receive MOS from FAA

Landside and Terminal Facilities:

- Construct an indoor baggage makeup area (1,500 square feet in size). This is recommended, but not required for functionality of the passenger terminal.
- Construct an indoor baggage claim (2,700 square feet in size). This is recommended, but not required for functionality of the passenger terminal.
- Reconfiguration or enhancement of restroom facilities on the secure side.

Support Facilities:

- Enhance short-term auto parking to accommodate anticipated increase of rental car activity.
- Relocate ARFF facility. Building should be sized approximately 2,800 square feet, with an additional 1,800 square feet for apron space.

Locations and development scenarios for specific facility requirement recommendations will be addressed in Section 5.

Section 5 - ALTERNATIVES ANALYSIS

5.1 INTRODUCTION

This Section presents development alternatives that accommodate the facility requirements described in Section 4 of this Airport Master Plan Update. The overall goal of the Alternatives Analysis is to provide a balanced airport complex that not only satisfies projected airport demand, but also successfully integrates with the community in which it lies. Development alternatives described in this Section are categorized as airside (runways, taxiways, safety areas) and landside (passenger terminal, aircraft rescue, and ARFF facilities). In order to compare alternative development concepts and identify the preferred strategy, this Section addresses the following:

- Review of previous Airport plans
- Identification of on-and off-airport land use considerations
- Identification of airport and landside alternatives that meet the projected aviation demand as well as maintain a safe aviation environment in and around the Airport
- Comparison of the various alternatives based on evaluation criteria that reflect the priorities and concerns of the Airport, County, and surrounding community
- Identification of the preferred development concept

Each development alternative as it pertains to the Airport and the community that it serves is evaluated based on economic feasibility, environmental and safety impacts, and ability to accommodate projected aviation-related demand.

5.2 REVIEW OF PREVIOUS AIRPORT PLANS

The 1997 Airport Master Plan Update for the Airport evaluated facility requirements through the 2015 planning horizon and identified the following recommended improvements:

- Design and improve Runway 06-24 to Aircraft Design Group (ADG) D-III standards
- Extend runway length to 6,000 feet
- Installation of high-speed exit taxiways
- Additional aircraft storage hangar and apron space
- Enhancement of the passenger terminal and general aviation terminal buildings
- Enhancement of auto parking facilities
- Land acquisition for Runway Protection Zones

The 2013 Feasibility Study identified several runway extension alternatives that were technically feasible, fiscally responsible, and economically viable. The options that satisfied these evaluation criteria included:

- A runway extension of 200 feet, for a total length of approximately 5,100 feet maintaining the
 existing ARC of B-II, minimal impact to the unlined landfill
- A runway extension of 900 feet, for a total length of approximately 5,800 feet, maintaining the
 existing ARC of B-II, best meet the forecasted demand for runway length

5.3 ALTERNATIVES DEVELOPMENT AND EVALUATION

The process for formulation and refinement of airport development alternatives requires an assessment of future airport requirements and generation of a series of reasonable alternatives that satisfy those requirements. These include but are not limited to the Airport's runway, passenger terminal and auto parking, and aircraft support facilities including Aircraft Rescue and Firefighting.

Based on an analysis of existing facilities inventory at the Airport, forecasts of aviation activity, and facility requirements, development alternatives for the following categories have been identified for the Airport:

- Airport Alternatives (Runway 06-24 and associated taxiways)
- Passenger Terminal and Auto Parking Alternatives
- ARFF Facility Alternatives

Within each of these categories, development options have been identified and evaluated based on the following criteria:

- Ability to accommodate projected demand
- Impact on existing facilities
- Ability of improvements to remain on Airport-owned property
- Environmental impacts
- Implementation cost
- Safety Considerations
- Impacts to surrounding environs including businesses, roadways and neighborhoods
- Airport development potential
- Eligibility for FAA funding

It should be noted that some of the facility requirements and resultant development alternatives are based on resumption of scheduled passenger service at the Airport, which is currently provided by Cal Jet by Elite Airways. Regardless of the current state of commercial service at the Airport, it is assumed that the Airport market area has the potential for the initiation of new service during the planning period and that the proposed alternatives should be developed with that potential in mind. It is also important to identify that recommended airport improvements are solely based on accommodating existing and projected aircraft operations and are not contingent on scheduled commercial activity in any way. As noted in several sections of this Airport Master Plan Update, general aviation aircraft exceeding the Airport's B-II RDC currently operate, and are anticipated to continue to operate at the Airport in the future.

5.4 EXISTING CONDITIONS

Runway 06-24 at CRQ is currently designated with an RDC of B-II. The Airport is being financed by the FAA and the County of San Diego Department of Public Works, Airports Division. Until April 2015, the Airport accommodated more than 10,000 annual passengers and remains classified as a Primary Airport in the National Plan of Integrated Airport Systems.

Since the Airport was first developed in the late 1950s, the facility has undergone significant improvements. The runway has been extended and widened, taxiways have been installed, FAA facilities and safety features have been constructed, and most recently a new 12,590 square foot terminal building was opened in 2009.

The airside facilities at the Airport consist of Runway 06-24, two parallel taxiways: Taxiway "A" to the south of the runway and Taxiway "N" to the north, nine connecting taxiways, aircraft parking aprons on the north and south of the Airport, navigational aids, communication equipment, and Airport lighting. When it was first opened, Runway 06-24 was 3,700 feet long and 100 feet wide. Today, the runway is 4,897 feet long and 150 feet wide with a strength rating of 80,000 pounds for dual-wheel loading and 110,000 pounds for dual-tandem wheel loading. The runway is capable of supporting the weight of aircraft that currently use it, but it is not long enough to allow certain based aircraft or future commercial aircraft to operate at maximum capacity.

Throughout the 1960s and 1970s, airport marking aids, runway lighting, an Airport Traffic Control Tower, an Instrument Landing System (ILS), and approach lighting were installed to aid with Airport identification and navigation. High intensity approach lighting was added during the 1990s and additional navigation systems at the Airport today include an airport beacon with optical system, lighted wind cones, taxiway lighting, visual approach slope indicators, threshold lights, pavement markings, and others.

Landside facilities at the Airport consist of accommodations for pilots, passengers, and aircraft while they are on the ground. These facilities include aircraft hangars, parking aprons, fuel storage tanks, vehicle parking areas, and the passenger terminal building. Landside services also include fuel and oil sales, emergency aircraft removals, inspections, and facilities for aircraft cleaning, maintenance, and storage. Enhancements and improvements to the current landside facilities at the Airport will do little to increase the capacity of the Airport. These systems need to be continuously monitored and maintained to ensure that they remain in good working order, but there is not a significant need to pursue any upgrades in the near future.

5.4.1 CURRENT CONSTRAINTS

The facility requirements analysis indicated that an increase in runway length, addressing a change in design standards and the resultant dimensional changes that occur, and addressing landside and support facility capacity and capability is necessary for the long term economic viability of the Airport. There are several constraints on the potential project area that limit development options. These constraints include but are not limited to surrounding development, restrictions on land use and zoning around the Airport, environmental regulations, safety concerns, and limitations on aircraft operations. The following subsections provide a description of these.

Runway Design Standards – Aircraft Approach Category (AAC) and Aircraft Design Group (ADG)

As noted in previous sections, at the Airport, several based and itinerant aircraft with AAC and ADG classifications that exceed the current airport design group operate on a regular basis. Several thousand operations occur annually by aircraft with AAC approach C and D with approach speeds that exceed those associated with the current approach category B designation. Nearly 1,000 operations conducted by aircraft whose wingspans range in the ADG III and IV categories occur annually at the Airport, higher than the current II designation.

The existing runway length often limits takeoff capabilities of types of departing aircraft. For commercial operations, this has resulted in passenger load limits, while corporate general aviation aircraft are often forced to make fuel stops before reaching a final destination that would not be required with sufficient runway length at the Airport. It is important to note that airports that do not meet FAA design standard guidelines for a particular classification of aircraft are not necessarily unsafe for operations by those aircraft. Unless an airport is determined to be inherently unsafe by the FAA, the final decision to use an airport is up to the pilot.

Runway-Taxiway Separation Criteria

Another major factor to consider in the development of airport alternatives is the non-standard separation between Runway 06-24 and Taxiway A if the runway designation changes from an Approach Category B to a Category C or D and the design group were changed from an ADG-II to an ADG-III facility. Approach Category C and D coupled with ADG III standards require 400 feet of separation between a runway and a parallel taxiway. This is a 160-foot increase from the ADG II design standard of 240 feet. The existing separation between Runway 06-24 and Taxiway N is 300 feet and between Runway 06-24 and Taxiway A, this distance is 297 feet. Achieving these separation distances and the affiliated runway and taxiway

safety areas associated with a potential ADG III designation is difficult on a constrained airport such as McClellan-Palomar Airport.

5.4.2 ENVIRONMENTAL FACTORS

FAA Order 1050.1E and Environmental Desk Reference for Airport Actions describe the resource/impact categories that must be considered in an FAA environmental review. Though not evaluated to the level of detail required for official NEPA processing, the following explores the potential for impacts resulting from the recommended Airport development program within the various environmental categories.

In addition to being subject to environmental approval under both the NEPA and the CEQA, any Airport construction project must be proven to be economically practical and feasible in order to be eligible for FAA funding. This requirement creates a difficult situation at the Airport as it was built on top of a mesa with steep vertical drops on almost all sides and a closed landfill beneath the ground surface of the eastern end, which substantially increases construction costs in these areas.

The landfill material underneath the east side of the Airport is unsuitable to use as a stabilized base due to issues with settlement. Special considerations must be made to mitigate these issues before any construction over the landfill area may be considered feasible. The landfill area is equipped with a methane gas extraction system that consists of extraction wells, header piping, and condensate pumps—all of which may require reconstruction, protection, or relocation, depending on which improvement alternative is selected.

In addition to issues related to methane gas, the presence of the landfill underneath the airport also creates constraints with future ground settlement. Conceptual settlement mitigation options that were considered include structural options—bridging of the landfill or a structural slab supported by driven piles; soil improvement options—fill supported on stone columns, fill supported on drilled displacement columns, accelerated settlement by surcharging, deep dynamic compaction, injection grouting, and excavation and backfilling of the landfill material; and maintenance options—placing lightweight or standard fill to grade with periodic asphalt concrete overlays.

Each of the landfill mitigation options was thoroughly analyzed according to how well they addressed current and future settlement issues, impacts to operations, and initial and future life cycle costs. It was determined that drilled displacement columns (DDC) would be the best option to mitigate the landfill underneath the airport. DDCs would provide the most cost effective ground improvement option for increasing the bearing capacity and load transfer capabilities of the underlying materials while reducing the potential for future settlement on the airport.

The 2013 Feasibility Study included a thorough evaluation of environmental impacts that would be incurred from an extension to Runway 06-24, Taxiway A, and Taxiway N. Much of the environmental documentation below has been taken from the 2013 Feasibility Study and updated because of the similarities between the proposed improvements evaluated in that Study and this Airport Master Plan.

5.4.2.1 General Environmental and Land Use Constraints

The Airport is situated on a mesa that was originally crossed by several canyons. These canyons were utilized as landfills by the County of San Diego until 1975. The filled canyons were then graded and capped and methane extraction facilities were installed along with monitoring wells. The landfills are unlined. Portions of the Airport, which are used for airport and aircraft parking, were then constructed on a portion of the previously closed municipal landfill. The Airport is surrounded primarily by light industrial and commercial development as well as a municipal golf course (The Crossings) directly to the west. Northeast of the Airport across El Camino Real is a natural canyon associated with Agua Hedionda

Creek. The area has moderate topography and is wooded with natural trees and other vegetation. The closest residential areas are more than 0.4 miles from the Airport.

Conditional Use Permit 172

Conditional Use Permit 172 (CUP-172) was issued by the City of Carlsbad for the Airport in 1980. Without waiving immunities provided by Government Code § 53090, et seq., CUP-172 was voluntarily obtained by the County as a means of coordinating County Airport planning with the City. In 2004, CUP-172 was amended by CUP-172(B) at the request of the County to allow an additional auto parking area at the Airport to be developed on adjacent industrial lots.

CUP-172, as amended to date, allows for the construction or modification of "[a]irport structures and facilities that are necessary to the operation of the airport and to the control of air traffic in relation thereto ..." The CUP further allows for a range of aeronautical activities, including airlines, air freight and supporting activities such as aircraft hangar, fueling and repair facilities. While certain components of CUP-172 have become obsolete such as the reference in the CUP to the no longer used design classification of "General Aviation Basic Transport", the operable components of CUP-172 remain sufficient to allow for changes in airport design necessary to accommodate existing and forecasted uses of the Airport up to a C-III or D-III design standard. The County will continue to voluntarily comply with CUP-172 without waiving any immunities, as long as compliance can be achieved consistent with the County's objectives and federal or state requirements.

CUP-172 does not define the term, "General Aviation Basic Transport," but this term was in use by the FAA at the time the CUP was adopted. The term was used by the FAA to identify design standards for airports based on the type of aircraft using a facility. The FAA no longer uses this classification and instead uses an alpha-numeric system to define the design classification of airports. The General Aviation Basic Transport standard included aircraft up to a D-III design classification. The maximum D-III design standard proposed by the Airport Master Plan Update is consistent with the "General Aviation Basic Transport" language in CUP-172.

In addition to voluntarily seeking input from the City through the City's use permit process, the County has remained mindful of the wishes of Carlsbad residents as reflected in Carlsbad Municipal Code § 21.53.01. In response to a proposal to expand the Airport by adding a second runway to the north, Carlsbad residents sponsored an initiative petition that, if passed, would have required a vote of the people for any expansion of the Airport. The City, on its own initiative, adopted Ordinance No. 9558 in August of 1980 to add Section 21.53.01 to the City's Municipal Code. This section provides, in pertinent part, that, "[t]he city council shall not approve a zone change, general plan amendment or any other legislative enactment necessary to authorize expansion of any airport in the city nor shall the city commence any action to spend any funds preparatory to or in anticipation of such approvals without having first been authorized to do so by a two-thirds vote of the qualified electors of the city voting at an election for such purposes."

Section 21.53.01 would only be applicable if the County were to expand the Airport beyond its current boundaries and a City legislative enactment or City expenditure in support of such an expansion were required. The County in developing the Master Plan Update has voluntarily avoided any property acquisition to support the expansion of airport facilities beyond current property boundaries. There is no proposal to build a second runway or expand the existing runway outside of the existing Airport footprint. All facilities needed to support existing and forecast aviation activities (e.g., runways, taxiways, hangars, terminal building, etc.) are proposed to remain on existing airport property. Moreover, no legislative enactment or funding is needed from the City to develop the Airport in accordance with the Master Plan. Accordingly, Section 21.53.01 does not prevent the County from meeting the objectives of the Master Plan Update.

5.4.2.2 <u>Air Quality</u>

Federal Clean Air Act and NEPA Compliance - The United States (U.S.) Environmental Protection Agency (EPA) has adopted air quality standards that specify the maximum permissible near-term and long-term concentrations of various air contaminants based on potential health effects. The National Ambient Air Quality Standards (NAAQS) consist of primary and secondary standards for six criteria pollutants, which include: ozone (O3), carbon monoxide (CO), sulfur dioxide (SO2), nitrogen oxide (NO), particulate matter (PM10 and PM2.5), and lead (Pb).

Potentially significant air quality impacts associated with an FAA project or action is demonstrated by the project or action exceeding one or more of the NAAQS for any of the time periods analyzed. To ensure that a federal action complies with the NAAQS, the *Clean Air Act* (CAA) establishes a General Conformity Rule for all general federal actions, including airport improvement projects, if the action is located within a nonattainment area.

In 2012, all of the County of San Diego, California was a nonattainment area for the 2008 federal 8-hour ozone standard and was classified as Marginal1. Therefore, a General Conformity analysis would be required for the proposed runway improvements. Under NEPA, the FAA requires that an air quality emissions inventory be prepared for federal actions at airports where forecast general aviation operations exceed 180,000. The Airport is forecast to have future total operations of 175,000 by the year 2035 if the runway improvements are constructed. Therefore, an operational air quality emissions inventory would not be required under NEPA at this time. Construction-related air quality impacts are discussed in the section on Construction Impacts.

California Ambient Air Quality Standards—In California, the California Air Resources Board (CARB) manages air quality, regulates mobile emissions sources, including aircraft and ground vehicles, and oversees the activities of county and regional air districts. CARB also regulates local air quality indirectly by establishing California Ambient Air Quality Standards (CAAQS) and vehicle emissions standards, and by conducting research, planning, and coordination activities. California has adopted ambient standards that are more stringent than the federal standards for the criteria air pollutants. The County of San Diego Air Pollution Control District (APCD) is comprised of all of the County of San Diego and is in nonattainment for ozone and particulate matter (CARB 2012).

Greenhouse Gases The impact of proposed projects on climate change is another issue of growing concern. Greenhouse gases (GHGs) are those that trap heat in the earth's atmosphere. Greenhouse gases can be either naturally occurring or anthropogenic (man-made) and include water vapor (H2O) and carbon dioxide (CO2). Several classes of halogenated substances that contain fluorine, chlorine, or bromine are also GHGs, but they are, for the most part, solely a product of industrial activities. All GHG inventories measure CO2 emissions, but beyond CO2, different inventories include different greenhouse gases (such as methane [CH4], nitrous oxide [N2O], and O3). No federal significance thresholds for the creation of GHGs have been promulgated to date. However, research has shown that there is a direct link between fuel combustion and GHG emissions. Therefore, sources that require fuel or power at an airport are the primary sources that would generate GHGs.

Aircraft jet engines, like many other vehicle engines, produce CO2, H2O, nitrogen oxides (NOx), CO, oxides of sulfur (SOx), unburned or partially combusted hydrocarbons (known as volatile organic compounds, VOCs), particulates, and other trace compounds. The scientific community is developing areas of further study in order to more precisely estimate aviation's effects on the global atmosphere. The FAA is currently leading or participating in several efforts intended to clarify the role that commercial aviation plays in greenhouse gases and climate changes. The most comprehensive and multi-year program geared towards quantifying climate change effects of aviation is the Aviation Climate Change

Research Initiative (AC- CRI) funded by the FAA and the National Aeronautics and Space Administration (NASA).

ACCRI hopes to reduce key scientific uncertainties in quantifying aviation-related climate impacts and provide timely scientific input to inform policy-making decisions. The FAA also funds Project 12 of the Partnership for Air Transportation Noise & Emissions Reduction (PARTNER) Center of Excellence research initiative to quantify the effects of aircraft exhaust and contrails on global and U.S. climate and atmospheric composition.

Although federal regulations under the *Clean Air Act* regarding the reduction of GHG emissions have yet to be approved, the State of California has adopted the following regulations related to GHG emissions: The *California Global Warming Act of 2006* (Assembly Bill [AB] 32)—establishes a state goal of reducing GHG emissions to 1990 levels by 2020. AB 32 Climate Scoping Plan—this plan, adopted by CARB in December 2008, provides a range of GHG- reducing actions. State Bill [SB] 97 amended CEQA to require an analysis of GHG emissions and their effects (effective July 1, 2009). The 2009 amendments to the CEQA guidelines (California Public Resources Code [PRC], Division 13, §15064.4) revised the guidelines to include a determination of the significance of GHG emissions. SB 375—identified regional councils as the agencies responsible for the establishment of goals for emissions-reduction at the local level.

The runway improvements at McClellan-Palomar Airport would improve the efficiency of business jets operating in the County of San Diego. Currently, due to the runway limitations, certain cross-country and international business jet flights must make fuel stops enroute. This requires an additional landing-takeoff cycle which increases the amount of fuel burned in reaching the destination. While the fuel stop could be at one of numerous locations enroute, in some cases, a business jet will depart the Airport and make the fuel stop at nearby San Diego International Airport, which has sufficient runway length. In these cases, the additional landing-takeoff cycle occurs locally in the County of San Diego Air Basin. With the runway improvements, the efficiency or "green benefits" of the project would help to offset overall fuel usage and, hence, greenhouse gas and other air quality emissions.

5.4.2.3 <u>Coastal Resources</u>

Federal activities involving or affecting coastal resources are governed by the *Coastal Barriers Resource Act* (CBRA), the *Coastal Zone Management Act of 1972* (CZMA), and Executive Order (E.O.) 13089, *Coral Reef Protection*. In California, CZMA (Title 16 United States Code [USC] §1451 et seq.) is implemented through the *California Coastal Act of 1976* (PRC §30000 et seq.). Protected habitats within Coastal Zones include intertidal and near shore waters, wetlands, bays and estuaries, riparian habitat, certain woods and grasslands, streams, lakes, and habitat for rare or endangered plants or animals.

The City of Carlsbad has a Local Coastal Program (LCP) that has been certified by the California Coastal Commission (1996, amended 2016). The Airport is located outside of the Coastal Zone and the City's LCP boundary. However, there is one area, located within the City LCP's Mello II segment which is located immediately adjacent to Airport property to the north. This parcel is part of the city-owned golf course and contains sensitive biological resources that are protected in the City's *Habitat Management Plan* (HMP) (2004), but would not be impacted by proposed improvements in this Airport Master Plan Update.

5.4.2.4 <u>Compatible Land Use/Noise</u>

The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the airport's noise impacts. Federal land use compatibility guidelines established under Title 14 CFR Part 150, *Airport Noise Compatibility Planning*, indicate that residential land uses and schools are

considered incompatible within a 65 decibel (dB) or higher noise contour. Other noise-sensitive land uses include hospitals and places of worship. FAA Orders 1050.1E and 5050.4B define a significant noise impact as one which would occur if the proposed action would cause noise-sensitive areas to experience an increase in noise of 1.5 dB or more at or above the 65 Day-Night Equivalency Level (DNL) noise contour when compared to a No Action alternative for the same timeframe.

In California, the FAA allows the use of CNEL rather than DNL to define a significant noise impact. Development of noise contours were developed for the 2013 Feasibility Study and in the 2017 Program EIR for the Airport Master Plan Update with a proposed runway extension, projected 65 dB noise contours would extend off the Airport to the north, south, and west; none of these contours, however, are located over noise-sensitive land uses. The closest noise-sensitive land uses to the east end of the Airport are a church (Holy Cross Episcopal Church) and a residential neighborhood, located approximately 0.3 to 0.4 mile southeast of the Airport off Gateway Road, respectively.

The closest noise-sensitive land uses to the west side of the Airport are more than 0.5 mile away. If the runway is extended to the east, the noise contours would also shift to the east. In this scenario, the 65 dB noise contour would extend past the eastern Airport boundary very slightly. On the west side, the 65 dB would cover a smaller portion of the golf course than presently occurs. In all of the future scenarios considered, however, the Airport, both now and with the proposed runway extension, would remain a compatible land use within the area.

Compatible land use also addresses nearby features that could pose a threat to safe aircraft operations. These features include land uses that attract wildlife (for example, active landfills and water features) or structures within approach and departure zones. Existing land use near the Airport includes a golf course and commercial and light industrial development. There are no land uses that would pose a safety hazard to the Airport. The closest water features to the Airport are a pond, located approximately 0.5-mile north of the Airport within a light industrial area and two ponds located within the golf course approximately 0.65 mile to the west.

Airports inherently generate noise and although the Airport meets standards, it is acknowledged that noise may still be considered intrusive to those who may be within the flight path. In order to be a good neighbor, VNAP have been established to preserve quality of life for the community and place minimal voluntary restrictions on aircraft arriving and departing the Airport; the VNAP are presented in Exhibit 2.9

In addition, the City of Carlsbad has addressed development surrounding the Airport in its 2015 General Plan. To limit noise impacts on noise-sensitive land uses, the area surrounding the Airport is designated primarily as Planned Industrial with an Open Space designation over the golf course and a small area of General Commercial on the southwestern corner of El Camino Real and Palomar Airport Road. The Airport itself is identified as P, Public. Additionally, two areas are designated as Special Planning Considerations as the Airport Influence Area (AIA) Review Area 1 and Review Area 2.

The Airport itself is designated as a Government Facility in Carlsbad's General Plan. The City of Carlsbad Land Use & Community Design Element of the General Plan includes the following goals and policies related to the Airport:

 Land Use 2-G.9 - Accommodate a diversity of business establishments in appropriately-scaled settings, including large-scaled industrial and research and development establishments proximate to the McClellan-Palomar Airport, regionally-scaled shopping centers, and neighborhood-serving commercial centers with smaller-sized stores, restaurants and offices to meet shopping, recreation, and service needs of residents and visitors.

- Land Use 2-G.13: Maintain land use compatibility between McClellan-Palomar Airport and surrounding land uses, and encourage the airport's continued operations while ensuring it does not unduly impact existing neighborhoods and communities.
- Airport 2-P.37: Require new development located in the Airport Influence Area (AIA) to comply with applicable land use compatibility provisions of the McClellan–Palomar ALUCP through review and approval of a site development plan or other development permit. Unless otherwise approved by City Council, development proposals must be consistent or conditionally consistent with applicable land use compatibility policies with respect to noise, safety, airspace protection, and overflight notification, as contained in the McClellan-Palomar ALUCP. Additionally, development proposals must meet FAA requirements with respect to building height as well as the provision of obstruction lighting when appurtenances are permitted to penetrate the transitional surface (a 7:1 slope from the runway primary surface). Consider SDCRAA Airport Land Use Commission recommendations in the review of development proposals.
- Airport 2-P.38: Coordinate with the SDCRAA Land Use Commission, and the FAA to protect
 public health, safety and welfare by ensuring the orderly operation of the airport and the adoption
 of land use measures that minimize the public's exposure to excessive noise and safety hazards
 within areas around the airport.
- Airport 2-P.39: Prohibit approval of any zone change, general plan amendment or other legislative action that authorizes expansion of McClellan-Palomar Airport, unless authorized to do so by a majority vote of the Carlsbad electorate. (Section 21.53.015, Carlsbad Municipal Code.)
- Community Character 2-P.45(k): Evaluate each discretionary application for development of property with regard to consistency with applicable provisions of the Airport Land Use Compatibility Plan for McClellan-Palomar Airport.

The City's *Public Safety Element* of the General Plan contains a discussion on Airport Hazards that reference the ALUCP's measures to minimize the public's exposure to excessive noise and safety hazards within areas around the airport such as the AIA, the Clear Zone, and the Flight Activity Zone, as illustrated in **Exhibit 5.1.** Other policies in the Carlsbad General Plan specific to the Airport include:

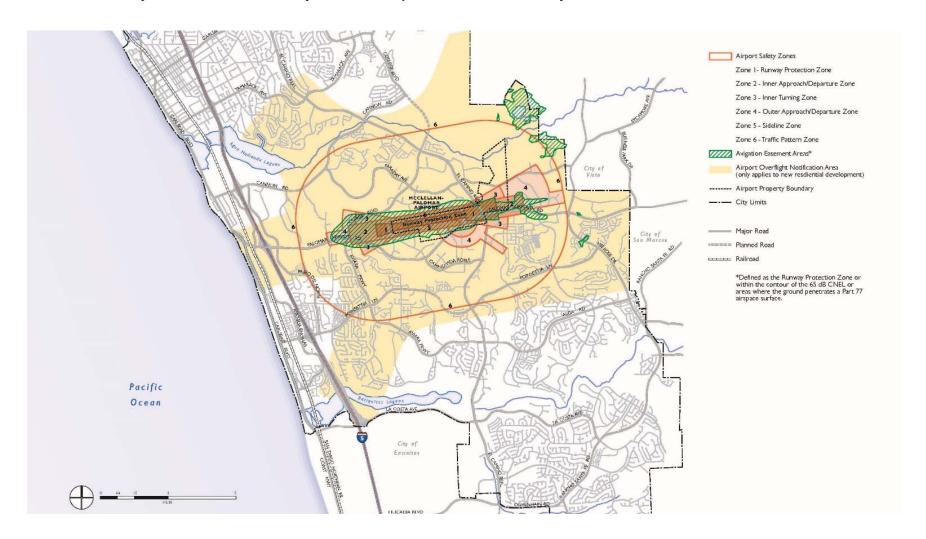
- 5-G.4: Ensure long-term compatibility between the Airport and surrounding land use
- 5-P.12: Use noise policies in the McClellan-Palomar Airport Land Use Compatibility Plan to
 determine acceptability of a land use within the Airport's Influence Area (AIA) as depicted in the
 ALUCP. Additional disclosure actions for new development in the AIA, such as avigation
 easements, deed restrictions, recorded notice, etc., are required of developers/sellers of noise
 impacted residential units.
- 5-P.13: For projects within the AIA, utilize the noise standards contained in the McClellan-Palomar ALUCP, as well as the noise standards contained in this element. However, reserve the right to overrule the ALUCP as provided for in State Public Utilities Code Section 21676.
- 5-P.14: Recognize that procedures for the abatement of aircraft noise have been identified in the Fly Friendly Program for McClellan-Palomar Airport. The city expects the widespread dissemination of, and pilot adherence to, the adopted procedures.
- 5-P.15: Expect the airport to control noise (to the extent of its limited authority granted by the FAA
 to indirectly regulate aircraft noise through airport design and scheduling) while the city shall

- control land-use thus sharing responsibility for achieving and maintaining long-term noise/land-use compatibility in the vicinity of McClellan-Palomar Airport.
- 5-P.16: Require new nonresidential development to comply with the noise compatibility criteria in the ALUCP. Require dedication of avigation easements for new developments designated as conditionally compatible for noise in the ALUCP, and which are located within the 65 dB CNEL noise contour as mapped on Figure 5-4: Airport Noise Compatibility Policy Map.

ALUCP restrictions also implement land use controls to protect individuals below airspace and make sure buildings and other development are not located in areas where incidents could occur.

McClellan-Palomar Airport Airport Master Plan Update

Exhibit 5.1 City of Carlsbad Public Safety Element – Airport Influence Area/Safety Zones



The City requires review of all proposed development projects within the AIA through a site development plan that must be found consistent or conditionally consistent with the applicable land use compatibility policies with respect to noise, safety, airspace protection, and overflight, as listed in the ALUCP. Additionally, all development proposals are required to comply with FAA regulations concerning the construction or alteration of structures that may affect navigable airspace, such building heights and obstruction lighting. The following goals and policies are related to the Airport:

- 6-G.2: Minimize safety hazards related to aircraft operations in areas around the McClellan-Palomar Airport.
- 6-P.18: Ensure that development in the McClellan-Palomar Airport Influence Area is consistent
 with the land use compatibility policies contained in the McClellan-Palomar Airport Land Use
 Compatibility Plan.

The City's *Noise Element* of the General Plan, identifies several noise generators, including the Airport. The Plan bases the Airport's noise contours on the 2011 ALUCP, which had 289,100 annual aircraft operations. This volume of operations occurred in 1999/2000 and is not forecast to be reached again during the period covered by this Master plan. The following goals and policies are related to the Airport:

- 5-G.4: Ensure long-term compatibility between the airport and surrounding land use.
- 5-P.7: Mitigation Cost. The City of Carlsbad shall not fund mitigation of existing or future noise impacts from streets, railroad, airport or any other source for existing or future private development within the city.
- 5-P.12: Use the noise policies in the McClellan-Palomar Airport Land Use Compatibility Plan
 (ALUCP) to determine acceptability of a land use within the airport's influence area (AIA) as
 depicted in the ALUCP. Additional disclosure actions for new development in the AIA, such as
 avigation easements, deed restrictions, recorded notice, etc., are required of developers/sellers of
 noise impacted residential units.
- 5-P.13: For projects within the Airport Influence Area, utilize the noise standards contained in the McClellan-Palomar ALUCP, as well as the noise standards contained in this element. However, reserve the right to overrule the ALUCP as provided for in State Public Utilities Code Section 21676.
- 5-P.14: Recognize that procedures for the abatement of aircraft noise have been identified in the Fly Friendly Program for McClellan-Palomar Airport. The city expects the widespread dissemination of, and pilot adherence to, the adopted procedures.
- 5-P.15: Expect the airport to control noise (to the extent of its limited authority granted by the FAA
 to indirectly regulate aircraft noise through airport design and scheduling) while the city shall
 control land-use thus sharing responsibility for achieving and maintaining long-term noise/landuse compatibility in the vicinity of McClellan-Palomar Airport.
- 5-P.16: Require new nonresidential development to comply with the noise compatibility criteria in the ALUCP. Require dedication of avigation easements for new developments designated as conditionally compatible for noise in the ALUCP, and which are located within the 65 dB CNEL noise contour.

5.4.2.5 <u>Construction Impacts</u>

Airport construction impacts can include dust, air emissions, traffic, storm water runoff, and noise. Construction-related dust impacts are typically mitigated below a level of significance through the use of best management practices (BMPs), such as those identified in FAA Advisory Circular (AC) 150/5370-10F, Standards for Specifying Construction of Airports, Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation Control (FAA 2011).

A generalized list of BMPs is as follows:

Site Preparation and Construction

- Minimize land disturbance
- Suppress dust on traveled paths which are not paved through wetting, use of watering trucks, chemical dust suppressants, or other reasonable precautions to prevent dust from entering ambient air
- Cover trucks when hauling soil
- Minimize soil track-out by washing or cleaning truck wheels before leaving construction site
- Stabilize the surface of soil piles
- Create windbreaks

Site Restoration

- Revegetate or stabilize any disturbed land not used
- Remove unused material
- Remove soil piles via covered trucks or stockpile dirt in a protected area

In addition to the creation of dust, construction projects planned at the Airport could have temporary air quality impacts due to emissions from the operation of construction vehicles and equipment. Thus, air emissions inventories related to construction activities may be required for NEPA or CEQA documentation efforts.

Construction traffic impacts could occur when trucks or heavy equipment need to access a site through a residential neighborhood or other sensitive area or on already congested streets or intersections. In the case of the Airport, no construction traffic impacts would occur since access to the Airport does not involve residential neighborhoods or congested streets, but would occur directly from Palomar Airport Road or El Camino Real.

According to the Transportation Impact Analysis McClellan-Palomar Airport Plan Update (Linscott Law & Greenspan, August 2017), all roadway segment and intersections along El Camino Real and Palomar Airport Road near the Airport operate at acceptable levels of service (i.e., LOS A, B or C), even in the A.M. and P.M. peak hours. Water quality concerns could occur if there are storm events during the construction period.

The Clean Water Act (CWA) requires that each state regulate point and nonpoint sources of water pollution, including storm water discharges. State water resources are also protected under California's Porter-Cologne Water Quality Control Act of 1967. This Act establishes regional water quality control boards (RWQCBs) to oversee water quality on a day-to-day basis at the regional/local level.

There are nine RWQCBs in California. The County of San Diego is under the administration of the San Diego RWQCB. The applicable water quality control plan for the County of San Diego is the updated *Water Quality Control Plan for the San Diego Basin* (Basin Plan), with amendments effective on, or before

April 4, 2011. The State of California and its RWQCB's work with the EPA to administer the National Pollutant Discharge Elimination System (NPDES) permit program, including the regulation of storm water.

The use of BMPs is a requirement of construction-related permits such as the NPDES Construction General Permit and is incorporated into approved storm water pollution prevention plans (SWPPPs). The Airport has a current SWPPP.

Construction projects at the Airport would result in temporary noise. The closest noise-sensitive receptors to the Airport that could be affected by construction noise are within a residential neighborhood located approximately 2,000 feet southeast of the east end of the Airport. Proposed development at the east end of the Airport includes the operational recommendation of an extension of the runway up to 800 feet and the potential construction of a full-length parallel taxiway on the south side. On the west end, the construction of an EMAS system is at least 2,500 feet from the closest noise-sensitive land uses.

According to the City of Carlsbad Noise Ordinance, Section 8.48.020, since there are no inhabited dwellings within 1,000 feet of proposed construction areas, there are no limitations on hours of construction, and construction noise is not expected to have adverse effects.

5.4.2.6 <u>Department of Transportation (DOT) Act: Section 4(f)</u>

Section 4(f) of the *Department of Transportation Act of 1966* (49 USC 303) protects against the loss of significant publicly-owned parks and recreation areas, publicly-owned wildlife and waterfowl refuges, and historic sites as a result of federally funded transportation projects. The Act states that a project which requires the "use" of such lands shall not be approved unless there is no "feasible and prudent" alternative and the project includes all possible planning to minimize harm from such use. In addition, the term "use" includes not only the physical taking of such lands, but "constructive use" of such lands. "Constructive use" of lands occurs when "a project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired" (23 CFR Part 771.135).

There are several publicly-owned recreational areas within proximity to the Airport. The closest of these public recreational areas is the city-owned golf course, The Crossings, located adjacent to the Airport on its western and northwestern ends. In addition, Aviara Community Park is just over 0.5 mile south of the Airport. There are also several neighborhood parks located from 0.5 to 1.0 mile southeast of the Airport within the Bressi Ranch residential development.

Currently, the 65 dB CNEL for the Airport, extends over a portion of The Crossings golf course. As a result of the proposed improvements, this CNEL would cover a slightly different area in the future. With a runway extension, the CNEL would cover less of the golf course than if the runway is not extended. Since the improvements would not increase the amount of Section 4(f) lands affected by noise levels between 65 and 70 CNEL, and may actually reduce the amount of Section 4(f) land affected by Airport noise, no loss of Section 4(f) land or its uses would occur.

5.4.2.7 Farmland

Based on the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service's Web Soil Survey map, most of the Airport is comprised of the following soils: HrD2, Huerhuero loam, 9 to 15 percent slopes; HuC, Huerhuero-Urban land complex, 2 to 9 percent slopes; and LvF3, Loamy alluvial land-Huerhuero complex, and 9 to 50 percent slopes.

These soils are not considered to be prime farmland or other farmland categories protected under the *Farmland Protection Policy Act* (FPPA) (7 USC 4201 et seq.). Other soils located along the northern Airport property, however, are considered to be farmland of statewide importance, (i.e., DaC, Diablo clay,

2 to 9 percent slopes, and HrC and HrC2, Huerhuero loams 2 to 9 percent slopes). Therefore, the USDA's Farmland Conversion Impact Rating (Form AD-1006) may need to be completed if potential airport development projects disturb soils located on northern portions of the Airport.

5.4.2.8 Fish, Wildlife, and Plants

Section 7 of the *Endangered Species Act* (ESA), as amended (16 USC 1531 et seq.), applies to federal agency actions and sets forth requirements for consultation to determine if a proposed action "may affect" a federally endangered or threatened species. If an agency determines that an action "may affect" a federally protected species, then Section 7(a) (2) requires the agency to consult with U.S. Fish and Wildlife Service (USFWS) to ensure that any action the agency authorizes, funds, or carries out is not likely to jeopardize the continued existence of any federally listed endangered or threatened species, or result in the destruction or adverse modification of critical habitat.

If a species has been listed as a candidate species, Section 7(a) (4) states that each agency must confer with USFWS. The *Fish and Wildlife Coordination Act* requires that agencies consult with the state wildlife agencies and the Department of the Interior concerning the conservation of wildlife resources where the water of any stream or other water body is proposed to be controlled or modified by a federal agency or any public or private agency operating under a federal permit.

The *Migratory Bird Treaty Act* (MBTA) prohibits private parties and federal agencies in certain judicial circuits from intentionally taking a migratory bird, their eggs, or nests. The MBTA prohibits activities which would harm migratory birds, their eggs, or nests unless the Secretary of the Interior authorizes such activities under a special permit. E.O. 13112, *Invasive Species*, directs federal agencies to use relevant programs and authorities, to the extent practicable and subject to available resources, to prevent the introduction of invasive species and provide for restoration of native species and habitat conditions in ecosystems that have been invaded.

The FAA is to identify proposed actions that may involve risks of introducing invasive species on native habitat and populations. "Introduction" is the intentional or unintentional escape, release, dissemination, or placement of a species into an ecosystem as a result of human activity. "Invasive species" are alien species whose introduction does, or is likely to, cause economic or environmental harm or harm to human health.

FAA Order 1050.1E, Appendix A, Paragraph 8.3, states that a significant impact to federally listed threatened or endangered species occurs when USFWS or National Marine Fisheries Service (NMFS) determines that the proposed action would likely jeopardize the continued existence of the species in question, or would result in the destruction or adverse modification of federally designated critical habitat in the affected area. Paragraph 8.3 also states that an action need not involve a threat of extinction to federally listed species to result in a significant impact; lesser impacts, including impacts on non-listed species, could also constitute a significant impact. Therefore, agencies or organizations having jurisdiction or special expertise concerning the protection and/or management of non-listed species can provide additional significance thresholds.

The Airport is located within the San Luis Rey quadrangle of the County of San Diego. Therefore, the California Natural Diversity Data Base (CNDDB) for this quadrangle was consulted to develop a list of federally listed and regionally protected species within the area. There are seven birds, two crustaceans, two fish, three mammals, and six plant species listed as endangered or threatened in the federal ESA that are known to occur within the San Luis Rey quadrangle; there are twelve birds, one mammal, and four plant species listed as endangered or threatened in the state ESA that are known to occur within the San Luis Rey quadrangle. It should be noted that nine of these are listed on both the federal and state ESA.

It is not likely that impacts to federal or state listed species would occur as a result of the proposed Airport improvements since the areas around the runway have been previously disturbed and graded and suitable habitat is not present. Potential impacts resulting from the relocation of runway lighting or other facilities to the east of the Airport runway as a result of a possible runway shift and/or extension have been studied and addressed in mitigation measures for this project. Proper procedures and best practices should be followed prior to any design or construction project.

Beyond the federal and state ESA, additional species are known to occur within the San Luis Rey quadrangle that are considered Fully Protected or Species of Special Concern by the California Department of Fish and Wildlife (CDFW) or are considered locally or regionally rare, threatened, or endangered on the California Native Plant Society's (CNPS) California Rare Plant Ranks. These species do not need to be listed on the federal or state ESA to be protected. CDFW designated species include 31 types of birds, three species of bats, San Diego black-tailed jackrabbit, three types of pocket mice, San Diego desert woodrat, American badger, western spadefoot (amphibian), and 12 species of reptiles.

Since there are numerous species known to occur in the area that are designated by the CDFW as Fully Protected or Special Species of Concern or listed as rare plants by the CNPS, biological resource surveys were completed as part of the required environmental documentation for proposed runway improvements. In addition, nesting surveys for migratory birds protected by the MBTA may be necessary depending on the time of year and the areas to be disturbed by grading. The proposed Airport projects would not control or modify any water resources; therefore, the *Fish and Wildlife Coordination Act* is not applicable. In addition, per E.O. 13112, no invasive species are likely to be introduced into native habitats as a result of airport development projects; any revegetation plans should utilize native plants to the extent feasible.

5.4.2.9 Floodplains

As defined in FAA Order 1050.1E, agencies are required to "make a finding that there is no practicable alternative before taking action that would encroach on a base floodplain based on a 100-year flood." E.O. 11988, *Floodplain Management*, directs federal agencies to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by the floodplains. Natural and beneficial values of floodplains include providing ground water recharge, water quality and maintenance, fish, wildlife and plants, open space, natural beauty, outdoor recreation, agriculture, and forestry. FAA Order 1050.1E (9.2b) indicates that "if the proposed action and reasonable alternatives are not within the limits of, or if applicable, the buffers of a base floodplain, a statement to that effect should be made" and no further analysis is necessary. The limits of base floodplains are determined by Flood Insurance Rate Maps (FIRMs) prepared by the Federal Emergency Management Agency (FEMA).

The Airport is mapped on FIRM map panels 06073C0768G and 06073C0769G, and is designated as Zone X, which includes areas of 0.2 percent annual chance of flood, areas of one percent annual chance flood with average depths of less than one foot or with drainage areas less than one square mile, and areas protected by levees from one percent annual chance flood. The closest 100-year floodway is associated with Agua Hedionda Creek, located north and east of the Airport (FEMA 2012).

5.4.2.10 <u>Hazardous Materials, Pollution Prevention, and Solid Waste</u>

There are four primary federal laws that govern the handling and disposal of hazardous materials, chemicals, substances, and wastes, all of which fall under the jurisdiction of the U.S. Environmental Protection Agency (EPA). The two statutes of most importance to the FAA in proposing actions to construct and operate facilities and navigational aids are the *Resource Conservation Recovery Act* (RCRA) (as amended by the *Federal Facilities Compliance Act of 1992*) and the *Comprehensive*

Environmental Response, Compensation, and Liability Act (CERCLA), as amended (also known as Superfund).

RCRA governs the generation, treatment, storage, and disposal of hazardous wastes; CERCLA provides for cleanup of any release of a hazardous substance (excluding petroleum) into the environment. Other laws include the *Hazardous Materials Transportation Act*, which regulates the handling and transport of hazardous materials and wastes, and the *Toxic Substances Control Act* (TSCA), which regulates and controls the use of polychlorinated biphenyls (PCBs) as well as other chemicals or toxic substances in commercial use.

Per FAA Order 1050.1E, Appendix A, thresholds of significance are typically only reached when a resource agency has indicated that it would be difficult to issue a permit for the proposed development. A significant impact may also be realized if the proposed action would affect a property listed on the National Priorities List (NPL). According to the EPA's EnviroMapper EJView Tool, there are no Superfund or NPL sites located at the Airport. There are also no hazardous waste and substances sites listed for the City of Carlsbad on the State's Site Cleanup (Cortese) List.

Construction of airport development projects would result in earthwork disturbances. These projects would primarily involve the reuse of paved or graded areas. Previous construction at the Airport has not resulted in the uncovering of hazardous materials; therefore, it is unlikely that future Airport development projects similar to what has been completed in the past would do so. The possibility of using drilled displaced columns or other features to bridge inactive landfill by placing structures into the landfill area have been studied as part of this project.

Pollution prevention at the Airport is regulated through several laws, including the hazardous materials regulations cited above and the CWA. As discussed previously in the Construction Impacts section, the use of BMPs is a requirement of construction-related permits such as the State's NPDES Construction General Permit and should be incorporated into the Airport's current SWPPP.

Solid waste in the City of Carlsbad is collected by Waste Management and is taken to the Palomar Transfer Station, located at 5960 El Camino Real, before being transported to one of the County's six sub regional landfills: Miramar, Sycamore, Otay/Otay Annex, Ramona, Borrego Springs, or Gregory Canyon landfill for solid waste disposal. The Airport is partially located over a closed Class III landfill, known as Landfill Unit 3, that operated from 1962 to 1975. A landfill gas control system was completed in 1995 to safely extract naturally occurring methane gas that is produced by closed landfills.

5.4.2.11 Historical, Architectural, Archaeological, and Cultural Resources

Historical, architectural, and archaeological resources as well as Native American cultural resources are protected by several different federal laws including, but not limited to, the *Archaeological Resources Protection Act* (ARPA) of 1979, the *National Historic Preservation Act of 1966*, and the *Native American Graves Protection & Repatriation Act*. In particular, Section 106 of the *National Historic Preservation Act* requires the FAA to consider the effects of proposed actions on sites listed on, eligible for listing on, or potentially eligible for listing on, the NRHP.

To assist with this determination, an area of potential effect (APE) is defined in consultation with the State Historic Preservation Officer (SHPO). The APE includes the areas that would be directly or indirectly impacted by proposed actions. Once the APE is defined, an inventory is taken of NRHP-eligible properties within the APE and an assessment of impacts is undertaken. The determination regarding significant impacts on protected resources occurs in consultation with the SHPO as well.

According to the National Register of Historic Places (NRHP), the closest listed resource on the NRHP, Ranchos de los Kiotes, is more than two miles from the Airport. It is not likely that there are significant

historic sites located on the Airport since the Airport was constructed partially over a closed municipal landfill. However, any runway improvements that would occur in previously undisturbed and un-surveyed areas should be subject to a cultural resources literature search and field survey to confirm this conclusion. No historic aboveground structures are present as the Airport was constructed in the late 1950s as a replacement for Del Mar Airport. However, any runway improvements that would occur in previously undisturbed and un-surveyed areas should be subject to a cultural resources literature search and field survey. Cultural resources impacts could occur if the proposed runway improvements disturb any cultural resource sites that have historical, architectural, archaeological, or Native American cultural resources. This would be monitored during any potential construction.

5.4.2.12 Light Emissions, and Visual Effects

Airport lighting is characterized as either airport lighting (i.e., runway, taxiway, approach and landing lights) or landside lighting (i.e., security lights, building interior lighting, parking lights, and signage). The following airport lighting is in place at the Airport:

- A rotating beacon located atop the Airport terminal
- HIRL
- REILs (i.e., strobe lights set to the side of the runway landing threshold on the approach to Runway 24)
- Precision approach path indicator lights (PAPI-P4L) serving both ends of the runway
- Medium-intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) at the end of Runway 24
- One lighted windsock located northwest of the Runway 24 threshold
- Lighted airport signs located throughout the Airport system.

Security and building lights are also present landside.

The Airport lighting runs consistently when the tower is open. There is also a pilot-controlled lighting system (PCL), which allows the pilot to turn on or increase the intensity of these lights from the aircraft using the aircraft's transmitter when the tower is closed. FAA significance thresholds for light emissions are generally when an action's light emissions create an annoyance that would interfere with normal activities. For example, if a high intensity strobe light, such as a REIL system, would produce glare on any adjoining site, particularly residential uses, this could constitute a significant adverse impact.

The visual sight of aircraft, aircraft contrails, or aircraft or airport lighting, especially from a distance that is not normally intrusive, is not assumed to be an adverse impact. For visual effects, an action is considered significant when consultation with federal, State, or local agencies, tribes, or the public shows that visual effects contrast with the existing environments and the agencies state that the effect is objectionable.

Visual and lighting impacts relate primarily to the presence of sensitive visual receptors in proximity to an airport. These would normally be residents or users of a designated scenic resource such as a scenic corridor. The Airport is located on a mesa that is bordered by Palomar Airport Road, El Camino Real, commercial and light industrial development, and a golf course. The existing slopes at the Airport are significant partially in part of the existence of a landfill on the eastern portion of the Airport. Both El Camino Real and Palomar Airport Road are categorized as Community Theme Corridors within the City of Carlsbad's General Plan Circulation Element (2015). The purpose of such corridors is to connect Carlsbad with adjacent municipalities and present the City of Carlsbad to persons entering and passing through the community. Proposed improvements described in this Section include potential runway and taxiway extensions that would alter existing slopes and likely require a retention wall. The City of Carlsbad Landscape Manual (February 2016) identifies policies and requirements that correspond with Community Theme Corridors. Due to the existing landfill and methane collection system, and steep

slopes associated with a potential retention wall, adherence to these policies and requirements may be challenging, however, they should be followed to the extent possible.

The primary visual and lighting changes proposed as a result of the runway improvements involve extending runway and taxiway lighting approximately up to 900 feet east from their current location. In addition, the existing MALSR for runway approaches from the east would need to be extended east to accommodate the proposed shift in the runway approach threshold. All but the last station would either be in-pavement or utilize an existing light station foundation as they are currently set 200 feet apart. Thus, it is estimated that with a runway extension, there would be one additional foundation 200 feet farther east. If the runway is shifted north, the MALSR would also shift to the north. This area where the MALSR would be located is currently open space owned by the Airport and is surrounded by industrial development.

On the west end of the runway, planned improvements involve the placement of an EMAS designed to accommodate the critical design aircraft, and the relocation of an existing localizer and vehicle service road on the west end. Again, a retaining wall and fill slopes would be necessary to support the EMAS, potential runway and taxiway improvements, and the relocated vehicle service roadway. While these improvements may not incur significant alterations to lighting effects, they would impact visual effects.

5.4.2.13 Natural Resources and Energy

The FAA considers an action to have a significant impact on natural resources and energy when an action's construction, operation, or maintenance would cause demands that exceed available or future (project year) natural resource or energy supplies. Therefore, in instances when proposed actions necessitate the enhancement of utilities, power companies or other suppliers of natural resources and energy would need to be contacted to determine if the proposed project demands can be met by existing or planned facilities.

San Diego Gas and Electric (SDG&E) Company provides natural gas and electricity to the Carlsbad area, including the Airport. The use of energy and natural resources at the Airport would occur both during construction of planned facilities and during operation of the Airport as it grows. However, none of the planned airport improvement projects are major or are anticipated to result in significant increases in the demand for natural resources or energy consumption beyond what is readily available by SDG&E.

5.4.2.14 Secondary (Induced) Impacts

FAA Order 1050.1E, Appendix A, states that secondary impacts should be addressed when the proposed project is a major development proposal that could involve shifts in patterns of population movement and growth, public service demands, and changes in business and economic activity due to airport development. The City of Carlsbad's General Plan Land Use Plan updated in 2015 discusses in detail the impact that the Airport has on business development in the northern part of San Diego: Factor 3: Regional Employment Center. As a result of the nonresidential nature required of the lands surrounding the Airport, Carlsbad has designated and zoned most of these lands for industrial and, to a lesser degree, office development.

The size of the affected acreage is very substantial, with the result that Carlsbad has created one of the largest inventories of aggregated industrial land and, correspondingly, one of the largest potential employment generators in North San Diego County. When fully developed, this generator will provide jobs not only in Carlsbad, but in the entire region as well. This role as regional employment generator will increasingly have major implications for the City's identity, its role in the region, and its future development patterns.

However, the proposed runway improvements at the Airport would not be considered major development nor would they involve shifts of population movement or growth. Rather, they would involve the phased

extension and shift of the runway and parallel taxiway on existing Airport property to allow the runway to fully meet C-III and D-III standards. EMAS would be installed on the west and possibly the east end of the runway to improve safety at the Airport. The proposed runway improvements themselves are not anticipated to specifically generate additional aircraft operations had they not been constructed in the first place. The amount of annual growth anticipated in aircraft activity at the Airport in the future years is not anticipated to result in secondary impacts on the County or the City of Carlsbad.

As discussed in Section 4 of this Airport Master Plan Update, the proposed improvements would not significantly affect ground traffic or change traffic patterns. Construction-related work generated by planned Airport improvements would provide economic benefits to the County and City in the form of increased employment and income.

5.4.2.15 <u>Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health</u> and Safety Risks

Socioeconomic impacts known to result from airport improvements are often associated with relocation activities or other community disruptions. These impacts can include alterations to surface transportation patterns, division or disruption of existing communities, interferences with orderly planned development, or an appreciable change in employment related to the project. Social impacts are generally evaluated based on areas of acquisition and/or areas of significant project impact, such as noise sensitive areas encompassed by noise levels in excess of 65 DNL.

Per FAA Order 1050.1E, Appendix A, the thresholds of significance for this impact category are reached if the project negatively affects a disproportionately high number of minority or low-income populations or if children would be exposed to a disproportionate number of health and safety risks. E.O. 12898, Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations and the accompanying Presidential Memorandum, and DOT Order 5610.2, Environmental Justice requires the FAA to provide for meaningful public involvement by minority and low-income populations as well as analysis that identifies and addresses potential impacts on these populations that may be disproportionately high and adverse.

Pursuant to E.O. 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, federal agencies are directed to identify and assess environmental health and safety risks that may disproportionately affect children. These risks include those that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products to which they may be exposed. The acquisition of residences and farmland is required to conform with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* (Uniform Act). These regulations mandate that certain relocation assistance services be made available to homeowners and tenants of effected properties. This assistance includes help finding comparable and decent substitute housing for the same cost, moving expenses, and in some cases, loss of income.

The U.S. Census, most recently taken in 2010, provides information regarding socioeconomic conditions in the County of San Diego. Approximately 10.5 percent of the households in the same census tract as the Airport are living below the poverty rate. (The 2010 Census does not provide poverty rate data by block group.) This includes residential neighborhoods to the southwest and northwest of the Airport. The closest residential neighborhood to the Airport is actually located to the southeast in a different census tract than the Airport. This census tract has only 6.5 percent of its population living below the poverty rate. Approximately 20 percent of the population in the block group that contains the Airport is from minority groups. Population in the block group directly south of the Airport is approximately 33 percent from minority groups. The nearest such neighborhood to the Airport is located almost 0.5 mile to the south and west.

Since the proposed runway improvements do not involve expanding airport operations beyond the existing Airport boundaries, the relocation of housing or businesses would not be necessary to implement the proposed project. While there could be some impact on a small portion of some adjacent business uses as a result of changes in Runway Protection Zones (RPZ), those impacts can be limited by planning for runway extensions that allow RPZ to be placed in a way that avoids adjacent structures as much as possible and by limited RPZ to the size needed for the selected design critical aircraft. Existing communities, transportation patterns, and planned development would not be disrupted. The Airport's projected annual growth in the future would not significantly change future growth in the Carlsbad area or have disproportionate adverse impacts on minority, low-income, or child populations. Therefore, no socioeconomic impacts would be associated with improvements proposed in this Airport Master Plan Update.

5.5 AIRPORT ALTERNATIVES

The following section describes five airport alternatives that have been developed for the Airport, based upon the facility requirements from Section 4, while taking into account the site constraints that were alluded to earlier in this Section. Prior to identification of these final alternatives, an initial group of multiple development scenarios were developed. These scenarios were reviewed by the planning team and the Airport sponsor, discussed in general with an advisory group, presented at a public workshop, and refined into a final list of options to move forward for detailed evaluation. In short, a very standard process of alternatives development and refinement consistent with industry practice was undertaken to arrive at five options for detailed review. A no-build or "do nothing" alternative was examined as part of this Airport Master Plan Update, to gain perspective of what impacts would arise from taking no action and to provide a baseline condition for subsequent environmental analysis. Because this option did not accommodate projected levels of aviation demand nor did it enhance airport safety, (notably not addressing standards issues affecting both existing and projected operations by ARC C-III and D-III aircraft), it was not examined further.

The Airport development alternatives are described in the following sections of this document. The descriptions are accompanied by visual depictions and discussion of the potential issues associated with the proposed improvements. These alternatives include:

- Alternative 1 B-II Enhanced Facility
- Alternative 2 D-III Full Compliance
- Alternative 3 D-III Modified Standards
- Alternative 4 D-III On Property
- Alternative 5 D-III Modified Standards Compliance
- Alternative 6 C-III Modified Standards Compliance

Specific evaluation criteria have been developed and are used to determine the feasibility of implementing the proposed alternatives. The overall objective of this Section is to identify a preferred development alternative that best fits the evaluation criteria. The evaluation criteria are listed below:

- <u>Safety</u> The preferred alternative must preserve and/or enhance the safety of Airport users. Airport users include passengers, pilots, Airport staff, tenants, and other operators. Safety criteria encompass FAA airport design standards, State and local regulations, and account for the operational functionality of aircraft and Airport users.
- <u>Financial Feasibility</u> The preferred development alternative must address the near and long-term Airport needs in a manner that is financially achievable, financially responsible, and environmentally and operationally sustainable.

- Avoid Impacts to Airport Businesses Avoid operational or physical changes to Airport tenants and leaseholds in order to avoid disruptions to Airport businesses.
- Ability to Accommodate Existing and Future Demand Forecasts of aviation-related demand have been developed for this Airport Master Plan Update. These forecasts are used as a gauge to determine what Airport improvements will be required to maintain or expand service at the Airport and at what point in time improvements should be implemented. The preferred alternative should be able to accommodate projected levels of aviation demand as warranted.
- Ability of Facility Improvements to Remain on Airport-owned Property Despite existing
 physical constraints at the Airport, it is desirable to keep all facility improvements within
 the existing airport fence line. This minimizes project cost and the potential for
 environmental and land use impacts.
- <u>Environmental Impacts</u> A goal of recommended alternatives is to minimize impacts to the environment. This includes on and off-Airport impacts.
- Offsite Impacts to Surrounding Environs Including Businesses and Roadways Major reconstruction of existing businesses, infrastructure, and transportation systems can have significant impacts on an airport and the surrounding area. Such projects add cost, impact operations, capacity, and can have unintended environmental impacts. The preferred alternative should minimize changes to the surrounding community and infrastructure.
- <u>Eligibility for FAA Funding</u> Proposed improvements should adhere to FAA design criteria and be financially reasonable in order to be eligible for FAA grant funding for design and construction.

5.6 AIRPLANE DESIGN GROUP (ADG) II AIRPORT ALTERNATIVES

As noted previously the Airport is currently designed in conformity with ARC of B-II. This section describes the attributes and constraints of a development alternative that maintains FAA B-II design standards with an extension to Runway 06-24 in its existing location. Existing conditions at the Airport that have been granted modifications to standards for a B-II facility include:

- Runway 06-24 to Taxiway "A" Separation = 296.5', B-II Design Standard = 300'
- Portions of the Runway Safety Area extending beyond Runway End 06 and blast pad exceed grade limitations for B-II design standards.

It should be noted that all airport alternatives presented in the following subsections depict ultimate conditions and do not include any interim actions required to achieve these conditions.

5.6.1 AIRPORT ALTERNATIVE 1 – B-II ENHANCED FACILITY

Proposed improvements outlined in Airport Alternative 1 have been developed to meet FAA B-II design standards (see **Exhibit 5.2**) and to meet other key airport facility needs noted under the Facility Requirements analysis. It has been determined that aircraft that exceed the B-II designation regularly operate at the Airport. Therefore, based on large corporate activity and commercial aircraft already operating at the Airport, Alternative 1 includes the installation of a 350 ft. x 150 ft. Engineered Materials Arresting System (EMAS) serving Runway 24 designed to accommodate aircraft such as a CRJ-700 (ARC C-II) and similar models. An EMAS constructed to these specifications would support projected corporate jet aircraft activity at the Airport, but would not be designed to accommodate larger commercial aircraft such as the Boeing 737 or similar models.

An EMAS is a bed of engineered materials built at the end of a runway. Engineered materials are defined in FAA Advisory Circular 150/5220-22A as "high energy absorbing materials of selected strength, which will reliably and predictably crush under the weight of an aircraft." The purpose of an EMAS is to stop an aircraft overrun with no human injury and minimal aircraft damage. The aircraft is slowed by the loss of energy required to crush the EMAS material. Although an EMAS is not a substitute for additional runway length, it does enhance safety by minimizing the impact of an aircraft overrun.

The proposed location of the EMAS starts 35 feet beyond Runway End 06 to provide clearance for aircraft operations under standard operating procedures without wing overhang of the EMAS. This provides a total length of 350 feet for the EMAS bed beyond the end of the runway. A retaining wall to provide support for fill has been proposed 10 feet to the west of the relocated localizer. This wall would wrap around both the north and the south edges of the existing runway to allow for the relocation of the Vehicle Service Road (VSR) while remaining out of the runway safety area. The retaining wall is proposed to be approximately 1,020 feet long and 12 feet tall at its highest point. In addition to the installation of the EMAS and retaining wall, the existing ground to the north of the runway is proposed to be re-graded to achieve slope requirements outlined in FAA Advisory Circular 150/5300-13A within the runway safety area. West side upgrades will also include the installation of new drainage facilities and revegetation of the entire project area.

The proposed action would alleviate areas, including those on the blast pad on Runway End 06, that currently exceed grade limitations for B-II design standards. The proposed action would not, however, mitigate any other non-conformities to ARC B-II design standards outlined at the beginning of this section. This alternative allows for a feasible extension of up to 900' (200' near-term, plus 700' long-term) while keeping critical safety areas associated with B-II design requirements on-Airport property.

McClellan-Palomar Airport

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COLLEGE BLVD 200' RUNWAY **EXTENSION** RUNWAY CENTERLINE REMAINS IN CURRENT 700' RUNWAY EXTENSION LOCATION RUNWAY EMAS 24 350' LENGTH 300' RWY-TWY SEPARATION RETAINING RUNWAY 6-24 WALL 297' RWY-TWY SEPARATION TAXIWAY A EXISTING RUNWAY END TAXIWAY CENTERLINE REMAINS IN CURRENT LOCATION Legend EXISTING PAVEMENT RUNWAY EXTENSION PROPOSED EMAS AIRPORT PROPERTY LINE RUNWAY OBJECT FREE AREA TAXIWAY OBJECT FREE AREA GRAPHIC SCALE RUNWAY SAFETY AREA (IN FEET)

Exhibit 5.2 Airport Alternative 1 – B-II Facility [Revised exhibit deleting Runway Protection Zones which are described in greater detail in Exhibit 5.2b]

Prepared by: Kimley-Horn, 2017

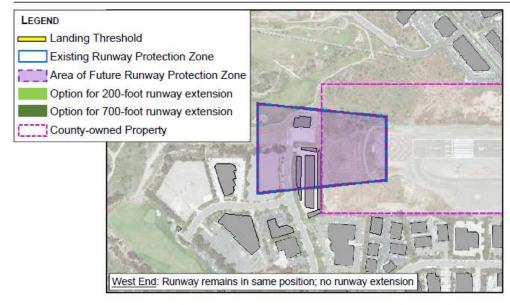
McClellan-Palomar Airport

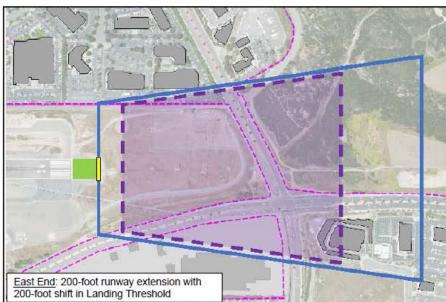
Airport Master Plan Update

Exhibit 5.2b Airport Alternative 1 – B-II Facility

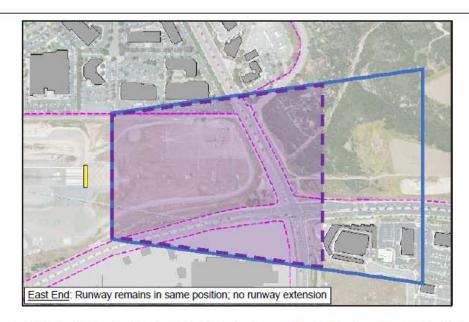
For illustrative purposes only - exhibits are not engineering drawings, are not to scale

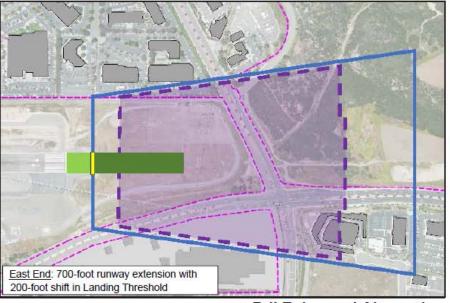
Runway	Criteria	Existing B-II		Alternative 1 – B-II Enhanced Facility		
	Cinteria	Approach RPZ	Departure RPZ	Approach RPZ	Departure RPZ	
06	Visibility Minimums	Not Lower than 1 mile	Not Lower than 1 mile	Same	Same	
	RPZ Dimensions	1000' x 500' x 700'	1000' x 500' x 700'	Same	Same	
24	Visibility Minimums	Not Lower than ¾ mile	Not Lower than ¾ mile	Same	Same	
	RPZ Dimensions	2500' x 1000' x 1750'*	1000' x 500' x 700'	Smaller - 1700' x 1000' x 1510'	Same	
* The existing Approach RPZ for Runway 24, as drawn on the current Airport Layout Plan, is oversized for the visibility minimums at the airport (see page Section 4.4.4.1, Page 4-18)						











B-II Enhanced Alternative Runway Protection Zones

Exhibit 5.2b

Airport Alternative 1 also maintains the existing runway width of 150', which has been noted as being in excess of design requirements, however, based on meetings with tenants and Airport users was also identified as a desirable asset. The width design standard for a B-II runway with approach minimums not less than ¾ miles is 75 feet. Added runway width is beneficial for aircraft and pilot safety, however, because it actually exceeds design standards, the FAA may decide to withhold AIP funding for improvements to the percentage of the facility that exceeds that standard. The following points summarize the benefits and constraints of Airfield Alternative 1. Since there is no shift of the runway proposed with this alternative, there is no corresponding shift in the Runway Protection Zone or other safety zones to the north. This minimizes land use impacts to properties around the Airport.

5.6.1.2 Benefits of Airport Alternative 1

- Construction of EMAS enhances airport safety
- Lower estimated construction cost as runway maintains existing configuration
- Improves areas at Runway End 06, including areas on blast pad that exceed B-II grading design standards
- Improvements remain on Airport property, minimal adverse impact to landside or off-Airport activity
- Minimal impact (encroachment) on general aviation/FBO operations
- Satisfies Airport users who have identified that maintaining existing runway width is extremely important
- The alternative does not impact existing North Ramp area or aircraft parking in that area
- No increase in the size of Runway Protection Zones
- No direct impacts to immediately adjacent offsite development or roadways
- Avoids land use concerns associated with change in Runway Protection Zones to accommodate runway shift

5.6.1.3 <u>Constraints Regarding Airport Alternative 1</u>

- Maintaining B-II standards at a facility that regularly experiences operations conducted by aircraft with higher ARCs than B-II does not address an increase in separation distance between the runway and taxiway to accommodate existing and future demand, regardless of a proposed EMAS and regardless of the pilot in command decision to operate at CRQ.
- Remaining a B-II facility may have negative impacts on large corporate and regional air carrier operations. FAA could impose operational restrictions on the airport for aircraft larger than B-II, such as prohibiting certain classes of aircraft operating on the runway and taxiway simultaneously.
 - For general aviation aircraft operators, it is at the discretion of the pilot to determine the safety of an airport and whether or not to utilize that facility.
 - For commercial operators, an aircraft whose design criteria exceeds an airport's design standards may be prohibited from operating at that facility. Although, the FAA has authorized commercial aircraft exceeding the Airport design standard to use the Airport and is anticipated to continue to do so.
- The applicability of higher FAA design standards was identified in the 1997 Airport Master Plan and has again been identified in this Airport Master Plan Update.

5.7 AIRPLANE DESIGN GROUP (ADG) III AIRPORT ALTERNATIVES

Based on a representative sample of 2016 operational data compared with forecasts presented in Section 2 of this Airport Master Plan Update, the future critical aircraft for the Airport was determined to be the

Gulfstream G650, which has an ARC of D-III. A recommendation to classify the Airport as a D-III facility was made in the 1997 Airport Master Plan. The 1997 Plan sought the following modifications to FAA design standards to accommodate aircraft that were already in operation at the Airport:

- Permit an RSA for Runway 24 to extend only 200 feet beyond the runway end where 1,000 feet are required. To reduce the distance required in the modification, the runway threshold will be displaced 300 feet and an additional 100 feet will be filled and graded. A modification to Standards would be required for the remaining 400 feet.
- Permit an OFA for Runway 24 of 700 feet where 1,000 feet are required.
- Permit a runway-taxiway separation of 287.5 feet where 400 feet are required.
- Permit an RSA width of 440 feet where 500 feet are required.
- Permit an OFA width of 740 feet where 800 feet are required.
- Permit a runway centerline to aircraft parking separation of 370 feet where 500 feet are required.
- Permit a taxiway OFA of 136 feet where 186 feet are required. This is to accommodate a proposed drainage project which would eliminate the drainage curb.

On May 14, 1997, the FAA conditionally approved the ALP including these seven Modifications to Standards. Subsequent to the approval of the ALP, new standards, and criteria were issued by the FAA that specifically removed all modifications to design standards for Runway Safety Areas and precluded the granting of Modifications to Standard for RSAs. Thus, any future Modification of Standards associated with any RSA at the Airport for a D-III ARC is no longer possible. Based on existing and projected levels of aircraft activity, six airport alternatives with an ultimate condition of ADG III have been developed.

5.7.1 AIRPORT ALTERNATIVE 2 - D-III FULL COMPLIANCE

Airport Alternative 2 maintains all existing services at the Airport and fully adheres to ARC D-III design standards (see **Exhibit 5.3**) with a modification of standard for the ROFA length, which would be alleviated by the installation of EMAS on both ends of the runway. Additionally, the FAA would need to approve the installation of a retaining wall within the Taxiway A TOFA.. This alternative will accommodate current and projected needs for general aviation and existing and future commercial activity at the Airport. Alternative 2 expands the Airport property boundary northward to ensure that all projected levels of demand can be accommodated. This would provide for unconstrained forecasted growth and provide for full FAA design standards compliance.

This alternative shifts the centerline of Runway 06-24 104 feet to the north and narrows the Runway to 100 feet (ADG III standard). Taxiway A would remain in its existing location, while Taxiway N would be relocated approximately 200 feet north to establish 400 feet of separation between Runway 06-24 and Taxiway N. This results in the full removal of the existing aircraft parking on the North Ramp.

In order to keep critical safety areas on-Airport property, and to accommodate projected aircraft parking needs, this alternative also includes the acquisition of approximately 22 acres of land and eight buildings zoned light industrial that total approximately 473,000 square feet. The land acquired would be used for lost aircraft parking on the North Ramp area and keep Taxiway N and associated safety areas on Airport property. This alternative includes a runway extension of up to 800 feet to the east of Runway 24 end.

Depending on the length of the runway extension implemented, the RPZ would impact different portions of buildings to the north of the Airport as the RPZ is shifted with the runway. The affects are reduced by longer runway extensions because the County owns more property east of El Camino Real – so that the closer the end of the runway is to this road, the more only County property is within the RPZ. However, shorter runway extensions are more financially feasible because there would be less need to build over inactive landfill.

The maximum runway extension is 100 feet shorter than Airport Alternative 1 due to the ARC D-III design standards which require greater separation and both longer and wider safety areas and object free areas. Any extension greater than 800 feet to the east would require relocation of El Camino Real and any extension to the west would require massive infill as the Airport topography drops significantly off Runway End 06. Both of these options would likely present significant financial and environmental costs. Airport Alternative 2 also includes the installation of 350 foot long EMAS systems on both ends of Runway 06-24 to enhance safety. These systems would be sized to accommodate the Airport's critical design aircraft.

Even with only an 800-foot extension to the east, this alternative has the most significant cost of all proposed alternatives that have been developed for this Airport Master Plan Update. This development option is not necessarily feasible for implementation; rather, it is intended to identify all of the aspects and costs that would be incurred to accommodate projected levels of aviation-related activity at the Airport while adhering to ARC D-III design standards. The following points summarize the benefits and constraints of Airport Alternative 2.

5.7.1.1 <u>Benefits of Airport Alternative 2</u>

- Compliant with FAA D-III design standards with exception of TOFA on east end of TWY A
- Safety enhancements with EMAS systems on both ends of Runway 06-24
- Accommodates projected levels of aviation-related activity
- Would not require MOS for runway-taxiway separation
- Consolidation and construction of connector taxiways to improve airport safety and capacity

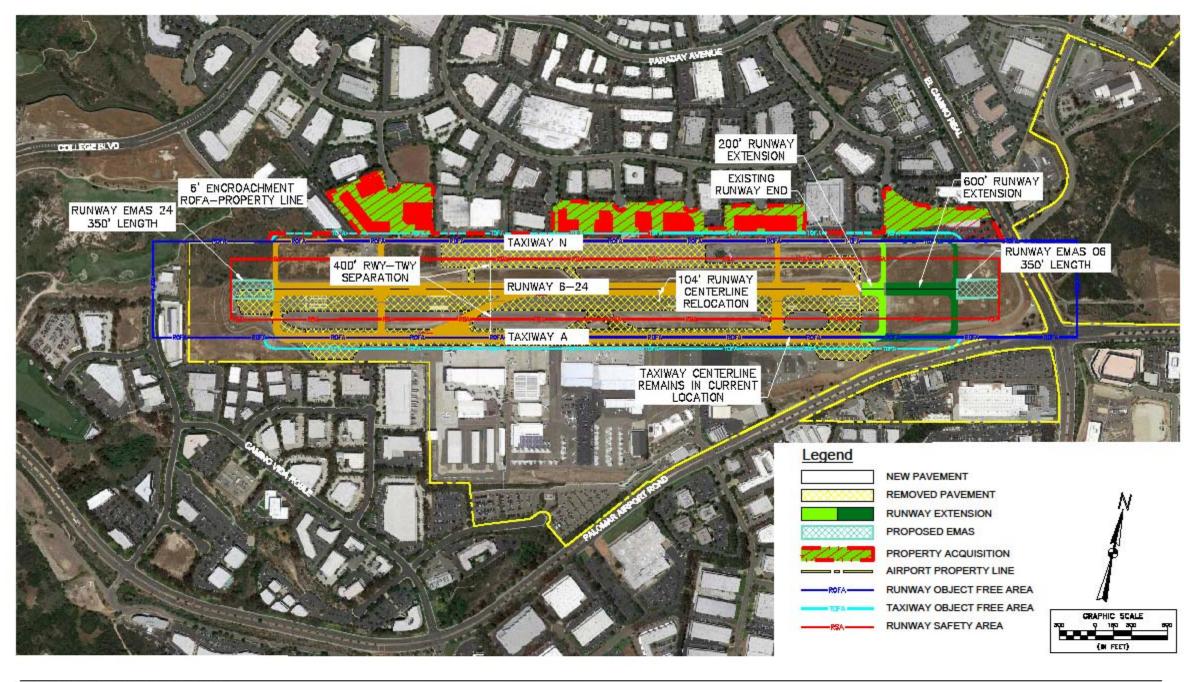
5.7.1.2 <u>Constraints Regarding Airport Alternative 2</u>

- Requires significant land and building acquisition with affiliated acquisition and relocation impacts and cost
- Improvements would have significant environmental impacts and impacts to surrounding community
- Runway relocation poses significant potential for operational impacts for current tenants during construction including potential for extended airport closure
- Enhancement and operational recommendation of runway extension would occur over existing landfill requiring special construction techniques and increased cost of construction
- Would require relocation of the approach lighting system
- Negates airport perimeter roadway
- Structures already within the RPZ will require coordination with FAA Airports Planning and Environmental Division (APP-400)
- Significant expansion of Airport facilities could adversely affect relationship with City of Carlsbad
- High cost of EMAS on both ends along with ongoing maintenance costs
- Shift in runway moves RPZ northward, potentially affecting industrial property to the north of the Airport depending on length of runaway extension implemented
- Requires modification of standard for ROFA length alleviated by the installation of EMAS on both runway ends

McClellan-Palomar Airport

Airport Master Plan Update

Exhibit 5.3 Airport Alternative 2 -D-III Full Compliance Facility



repared by: Kimley-Horn and Associates, Inc. September 20

Kimley »Horn

MODIFICATION OF STANDARD:
1. ROFA LENGTH AT BOTH RUNWAY ENDS

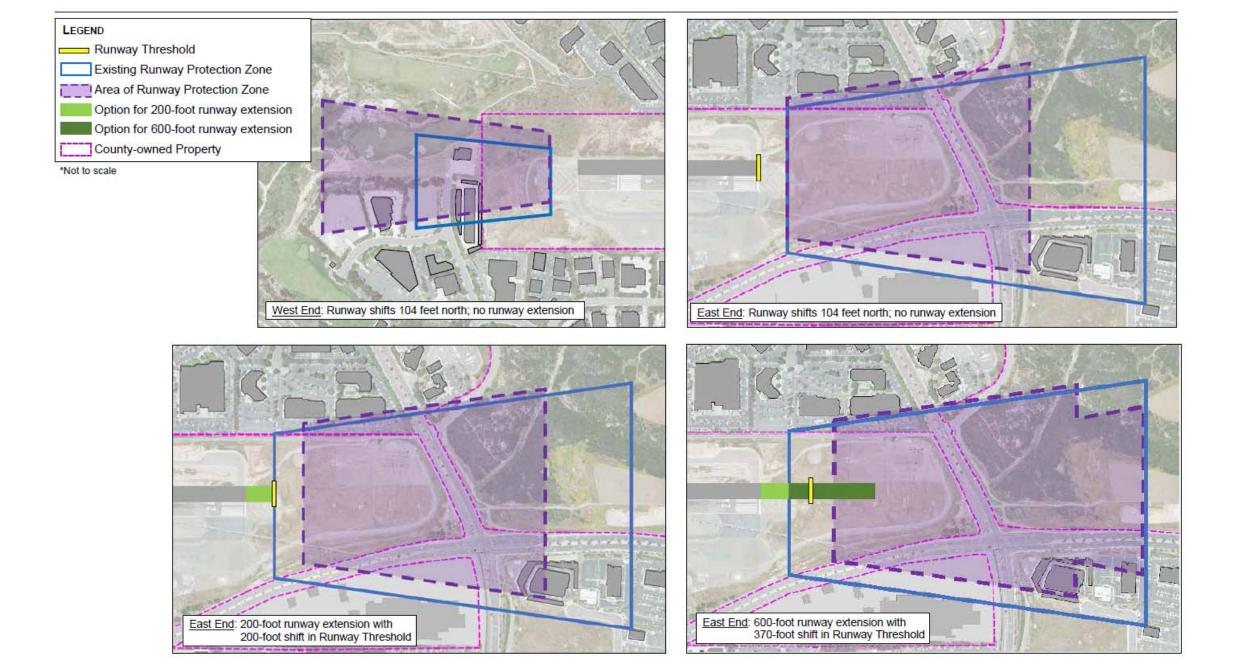
ALTERNATIVE 2

Prepared by: Kimley-Horn, 2018

Exhibit 5.3b – Alternative 2 D-III Full Compliance

For illustrative purposes only - exhibits are not engineering drawings, are not to scale

		Existing B-II		Alternative 2 D-III Full Compliance		
		Approach RPZ	Departure RPZ Approach RPZ		Departure RPZ	
06	Visibility Minimums	Not Lower than 1 mile	Not Lower than 1 mile	Same	Same	
UO	RPZ Dimensions	1000' x 500' x 700'	1000' x 500' x 700'	Larger – 1700' x 500' x 1010'	Larger – 1700' x 500' x 1010'	
24	Visibility Minimums	Not Lower than ¾ mile	Not Lower than ¾ mile	Same	Same	
24	RPZ Dimensions	2500' x 1000' x 1750'*	1000' x 500' x 700'	Smaller - 1700' x 1000' x 1510'	Larger – 1700' x 500' x 1010'	
* The existing	ng Approach RPZ for Runway	24, as drawn on the current Airpo	rt Lavout Plan, is oversized for the	visibility minimums at the airport (see pag	e Section 4.4.4.1. Page 4-18)	



5.7.2 AIRPORT ALTERNATIVE 3 - D-III MODIFIED STANDARDS

Airport Alternative 3 represents an option that attempts to meet FAA safety criteria, specifically the RSA and ROFA while enhancing the lateral separation between Runway 06-24 and Taxiway A. This alternative also recognizes the reality posed by the limited available land area that surrounds the Airport. This option proposes limited modifications to design standard for ROFA length and runway-taxiway separation similar to Modifications to Standard currently in place at other airports where similar taxiway separation issues exist. The FAA would also need to approve the implementation of a retaining wall within the Taxiway A TOFA, though this is not considered a Modification of Standards. This option would minimize on-site impacts to developed facilities and not create any improvements beyond the current Airport footprint (see **Exhibit 5.4**).

This alternative shifts the centerline of Runway 06-24 75 feet to the north and the centerline of Taxiway A 4 feet to the north to establish 367.5 feet of runway-taxiway separation. In order to achieve this, a Modification of Standards is required as the FAA requires a runway-taxiway separation of 400 feet. Modification of Standards is also required for ROFA length, which is alleviated by the installation of EMAS on both runway ends. Additionally, coordination with the ATCT and receipt of concurrence that this option maintains an acceptable level of operational safety (similar to what has been done at other airports) would be sought. Under this scenario, the runway object free area (ROFA) expands from 500 feet in width to 800 feet; as such the ROFA would be situated approximately 23 feet to the south of the northern property boundary, which would eliminate aircraft parking on the North Ramp area but provide adequate space for the vehicle service road (VSR) and navigational aids. Furthermore, the northward shift of the runway would move the runway's primary surface (FAR Part 77) more significantly onto the existing aircraft parking on the North Ramp area. Airport Alternative 3 would also narrow the width of Runway 06-24 to 100 feet, which is the FAA standard for a D-III facility.

The proposed change to the taxiway system from accommodating ADG-II aircraft to ADG-III aircraft has a resultant change in the associated safety areas. For this alternative, the taxiway object free area increases from 131 feet (ADG-II) to 186 feet (ADG-III) which encroaches onto existing FBO parking. Although most leaseholds would largely be unaffected, the encroachment onto the existing Magellan leasehold is approximately 15 feet. This encroachment would be mitigated by the existing zipper line.

In addition to the shift of the runway and taxiway, this alternative includes the installation of EMAS systems on both the east and west ends of Runway 06-24, which allows for a potential extension of up to 800 feet on the eastern end of the runway. These measures, when combined, would appropriately accommodate D-III aircraft as a result of the enhanced conformity with the appropriate airport design standards, greater lateral separation between the runway and Taxiway A, and through the provision of added length to the runway for departures.

5.7.2.1 Runway-Taxiway Separation Criteria

Under current ADG-III criteria for runway-taxiway separation, the distance between the edge of the Runway Safety Area and the boundary of the Taxiway Object Free Area (TOFA) nearest the runway is 57 feet, which assumes full ADG III aircraft can operate simultaneously on the runway and the taxiway. The maximum allowable wingspan under ADG-III is 117.99 feet.

It is assumed that simultaneous ADG III operations on Runway 06-24 and parallel Taxiway A are not possible at the current runway separation and would likely only be allowed with a full 400' separation.

To provide a defensible basis for a reduced lateral separation between Runway 06-24 and Taxiway A, the 57-foot separation between the RSA and TOFA identified was applied as an FAA acceptable safety margin that could be used for simultaneous ADG III/ADG II operations. With this value applied to an ADG II on the Taxiway with ADG III on the runway, the resultant lateral distance between runway and taxiway can be reduced to 367.5 feet.

This action is viable for the following reasons:

- It is based on a separation distance that currently exists within a FAA lateral separation standard.
- It is based on lateral separation standards for full ADG III aircraft and the Airport is not projected nor expected to employ a fleet mix with full ADG III wingspans (such as large commercial ADG III aircraft).
- ADG III aircraft activity at CRQ is anticipated to remain driven by general aviation business jet
 models such as the Gulfstream G500/550/650 and Bombardier Global Express. The largest
 of these have a wing span of just under 105 feet (Global 7000/8000).
- Commercial service aircraft having the potential to operate at the Airport are projected to consist of models such as the CRJ-700 and the Embraer EMB 170/175 or 190. (EMB 170/175 85.33-foot wingspan, EMB 190 94.25-foot wingspan).
- While the TOFA for ADG III taxi operations is larger than that for ADG II, it is anticipated that
 this is offset by the smaller wingspans for ADG II (no more than 79') when operating on the
 runway despite the 250' RSA requirement.

If runway development options are based on the 105' wingspan, this provides an added margin of approximately 13 additional feet. As mentioned previously, the 367.5 feet would still maintain a separation of 57 feet between the Runway Safety Area and the Taxiway Object Free Area. In the event of a commercial ARC D-III aircraft operating on Runway 06-24 or Taxiway A, the pilot would be required to obtain clearance from ATCT personnel before proceeding. Such an agreement would require approval from the FAA, the Airport, and the ATCT. It should be noted that such an operational agreement has been sought at other U.S. airports that face similar constraints as McClellan-Palomar Airport.

The following points summarize the benefits and constraints of Airport Alternative 3.

5.7.2.2 Benefits of Airport Alternative 3

- Compliant with FAA D-III design criteria with Modifications to Standards including runway to taxiway separation and both ROFA and TOFA on the east end of the field
- Safety enhancements with EMAS systems on both ends of Runway 06-24
- Improvements remain on Airport property-no direct impacts to off-site development
- Allows for commercial operations by ADG-III aircraft (with operational conditions)
- Consolidation and construction of connector taxiways to improve airport safety and capacity
- Provides sufficient space for vehicle service road and navigational aids north of Runway 06-24

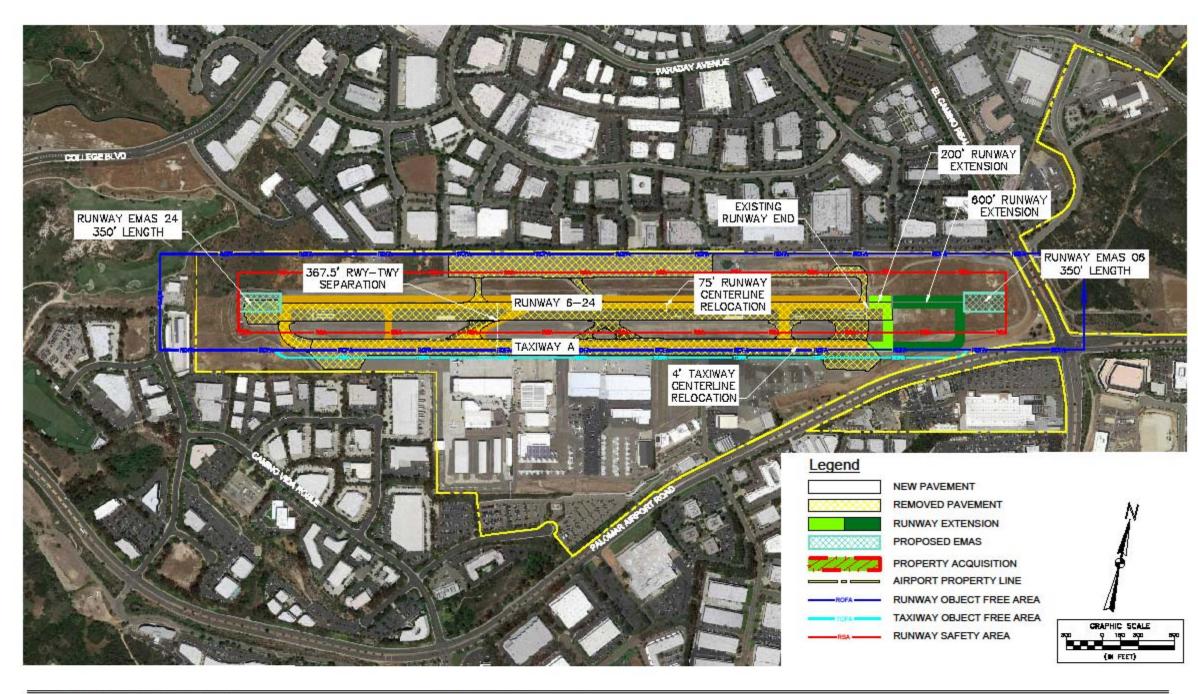
5.7.2.3 <u>Constraints Regarding Airport Alternative 3</u>

- Eliminates North Ramp aircraft parking, reducing accommodation of projected levels of aviation demand
- Requires runway centerline relocation and full runway reconstruction
- Runway relocation poses significant potential for operational impacts for current tenants during construction including potential for extended airport closure
- Minor impacts to FBO/leasehold areas
- High cost of EMAS on both ends along with ongoing maintenance costs
- Would require relocation of the approach lighting system
- Environmental concerns associated with construction on landfill and special construction requirements add to alternative cost

- Structures already within the RPZ will require coordination with FAA Airports Planning and Environmental Division (APP-400)
- FAA approval needed for separation of runway and taxiway
- Shifting the runway north could result in varying affects from Runway Protection Zones on industrial parcels to the north of the Airport depending on length of runway extension implemented
- Requires modification of standard for ROFA length alleviated by the installation of EMAS on both runway ends

It is important to note that this alternative was presented to the FAA and the feedback received identified that although the specific conditions outlined in the proposed development have been utilized at other facilities, it would not be a preferable course of action at the Airport. The FAA concluded that granting a Modification of Standards for the Runway Object Free Area on the north side of the runway was preferable to granting a Modification of Standards for runway-taxiway separation. This understanding led to the development of Airport Alternative 4 and 5 presented in subsequent sections of this Airport Master Plan Update.

Exhibit 5.4 Airport Alternative 3 – ARC D-III Modified Standards



Prepared by: Kimley-Horn and Associates, Inc. September 2018



MODIFICATION OF STANDARD:

- 1. ROFA LENGTH AT BOTH RUNWAY ENDS
- 2. ROFA WIDTH NORTH OF RUNWAY 6-24
- 3. RUNWAY TO TAXIWAY € SEPARATION

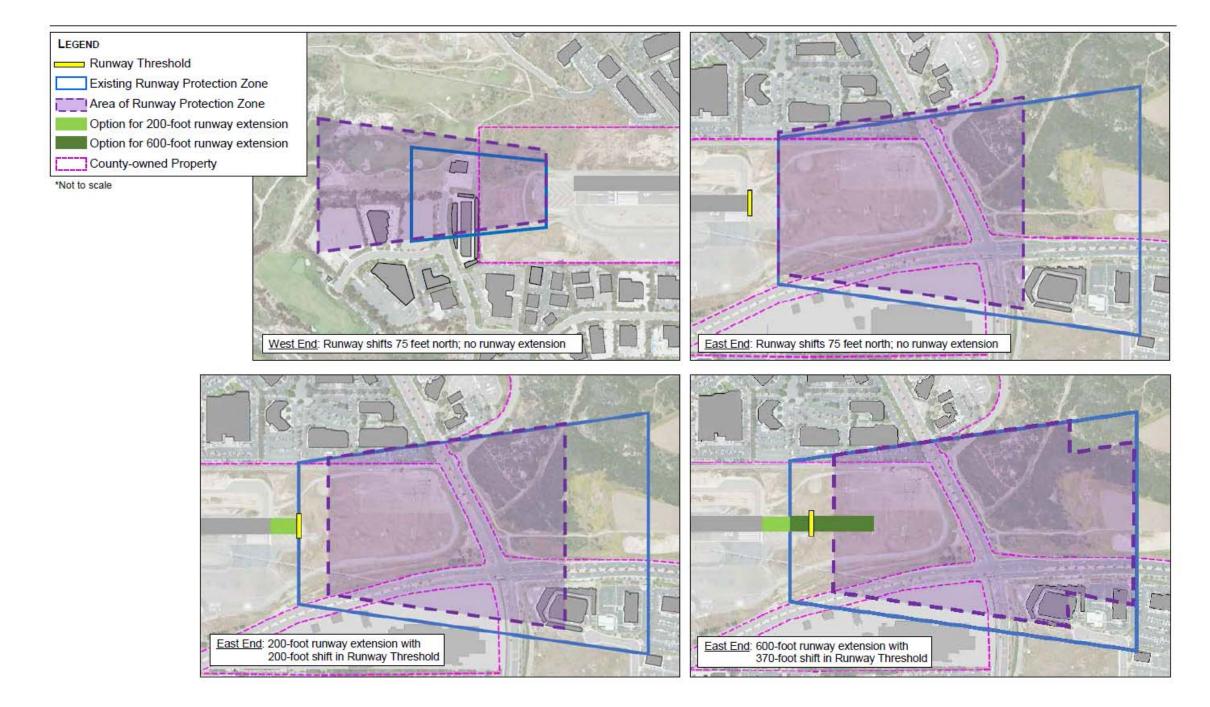
ALTERNATIVE 3

Prepared by: Kimley-Horn, 2018

Exhibit 5.4b – Alternative 3 D-III Modified Standards

For illustrative purposes only - exhibits are not engineering drawings, are not to scale

Runway	Criteria	Existin	ng B-II	Alternative 3 – D-III Modified Standards		
	Criteria	Approach RPZ	Departure RPZ	Approach RPZ	Departure RPZ	
	RPZ Dimensions	1000' x 500' x 700'	1000' x 500' x 700'	Larger – 1700' x 500' x 1010'	Larger – 1700' x 500' x 1010'	
24	Visibility Minimums	Not Lower than ¾ mile	Not Lower than ¾ mile	Same	Same	
24	RPZ Dimensions	2500' x 1000' x 1750'*	1000' x 500' x 700'	Smaller - 1700' x 1000' x 1510'	Larger – 1700' x 500' x 1010'	
* The existin	g Approach RPZ for Runway	24, as drawn on the current Airport	Layout Plan, is oversized for the	existing visibility minimums at the airport ((see page Section 4.4.4.1, Page 4-18)	



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5.7.3 AIRPORT ALTERNATIVE 4 - D-III - ON PROPERTY

Airport Alternative 4 adheres to FAA design criteria for a D-III facility with two Modifications to Standards for the Runway Object Free Area length and width. It also keeps all recommended improvements on the existing Airport property. The proposed action would shift the centerline of existing Runway 06-24 70 feet to the north and shift the centerline of Taxiway A 34 feet to the south. This results in 400 feet of lateral separation between Runway 06-24 and Taxiway A (see **Exhibit 5.5**). Achieving this separation would allow commercial ADG III aircraft to operate on Runway 06-24 and Taxiway A simultaneously without a Modification of Standard for runway-taxiway separation.

Under this scenario however, a Modification of Standards would be needed for a small segment of the Runway Object Free Area (approximately 1/10th of an acre) that would extend over Palomar Airport Road, and a second Modification of Standards for ROFA length, which is alleviated by the installation of EMAS on both runway ends. The FAA would also need to approve the implementation of a retaining wall within the Taxiway A TOFA, though this is not considered a Modification of Standards. It should be noted that in addition to the environmental complications that would arise from extending the runway and taxiway over existing landfill areas, a taxiway extension with a 34-foot southern shift would require significant grading and soil retention measures as the extension itself is proposed over an area that has an approximate drop-off of 50 feet from the Airport.

Similar to Airport Alternative 3, shifting the runway 70 feet to the north would place the existing north aircraft parking apron within the runway's primary surface and Runway Object Free Area. In order to accommodate ADG III design criteria and still remain on existing Airport property, the north aircraft parking ramp would require removal. This action would trigger the need to accommodate the 30+ aircraft that currently use the North Ramp somewhere in the southern portion of the Airport, which is already crowded, or these uses would need to relocate to another facility.

Also, similar to the previous alternative, Airport Alternative 4 includes EMAS systems to both Runway End 06 and 24 and up to an 800-foot extension to increase operational capability and enhance safety. Alternative 4 would also reduce the width of Runway 06-24 to 100 feet and increase the ROFA from 500 feet in width to 800 feet. This would result in a separation of approximately 27 feet between the ROFA and the Airport property line on the north side of the Airport, which provides sufficient space for the vehicle service road and relocation of required navigational aids.

One of the major differences between Airport Alternative 4 and the other proposed development scenarios is the impact to aircraft parking and FBO leaseholds south of Runway 06-24. Relocating Taxiway A 34 feet to the south and updating the facility to accommodate ARC D-III aircraft would shift the TOFA onto areas that are currently leased by FBOs for transient and corporate general aviation aircraft parking. It should be noted, however, that these ramp areas to the north of the FBO buildings are within the Part 77 Primary Surface and as a result the parking of aircraft in these areas technically violates the primary surface criteria. Because the Airport already has a constricted land envelope in which to occupy and operate, Airport Alternative 4 cannot provide additional aircraft parking for the amount of displaced apron space that would be lost. The expanded TOFA would encroach on existing FBO leaseholds by 35 feet in some areas, and as much as 53 in others. Although leasehold dimensions and rates can be negotiated, the loss of useable apron would be permanent. This action would likely limit the size and number of aircraft that the existing FBOs could accommodate, which could severely impact not only revenues generated by aircraft parking, but fueling as well. The following points summarize the benefits and constraints of Airport Alternative 4.

5.7.3.1 Benefits of Airport Alternative 4

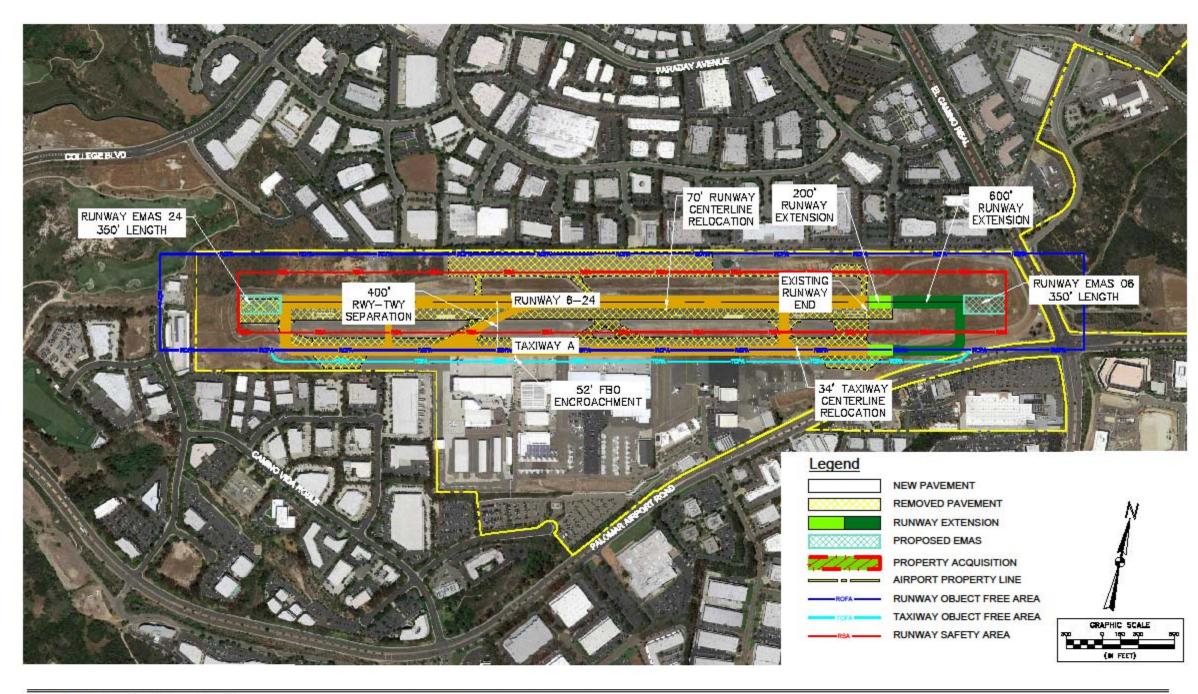
 Conforms to FAA D-III design criteria except requires Modifications to Standard for ROFA and TOFA

- Keeps all proposed improvements on existing Airport property
- Accommodates corporate and potential regional commuter aircraft
- Safety enhancements with EMAS systems on both ends of Runway 06-24
- Allows for up to an 800-foot extension to runway, which enhances safety and increases airport capability
- Consolidation and construction of connector taxiways between Taxiway A and Runway 06-24 to improve airport safety and capacity
- Provides adequate space for VSR and navigational aids north of Runway 06-24

5.7.3.2 Constraints Regarding Airport Alternative 4

- Eliminates North Ramp aircraft parking, reducing accommodation of projected levels of aviation demand
- Significant costs associated with construction over existing landfill areas, as well as earthwork and soil retention measures required for extension of Taxiway A
- Significant impacts to FBO leaseholds and aircraft parking aprons south of Runway 06-24
- 800' extension only viable with construction of EMAS on both ends
- EMAS on both ends adds considerably to the cost of the alternative both from an initial capital perspective and from ongoing EMAS maintenance
- Requires shifting the approach lighting system
- 800-foot extension would require modification of standards for ROFA and TOFA over existing Palomar Airport Road
- Runway relocation poses significant potential for operational impacts for current tenants
 during construction including potential for extended airport closures. Shifting the runway north
 could result in industrial properties to the north of the Airport being within Runway Protection
 Zones to a varying degree depending on runway extensions implemented
- Requires Modification of Standard for ROFA length, alleviated by the installation of EMAS on both runway ends

Exhibit 5.5 Airport Alternative 4 – ARC D-III – On Property



Prepared by: Kimley-Horn and Associates, Inc. September 2018

Kimley »Horn

MODIFICATION OF STANDARD:

- 1. ROFA LENGTH AT BOTH RUNWAY ENDS
- 2. ROFA WIDTH NORTH OF RUNWAY 6-24

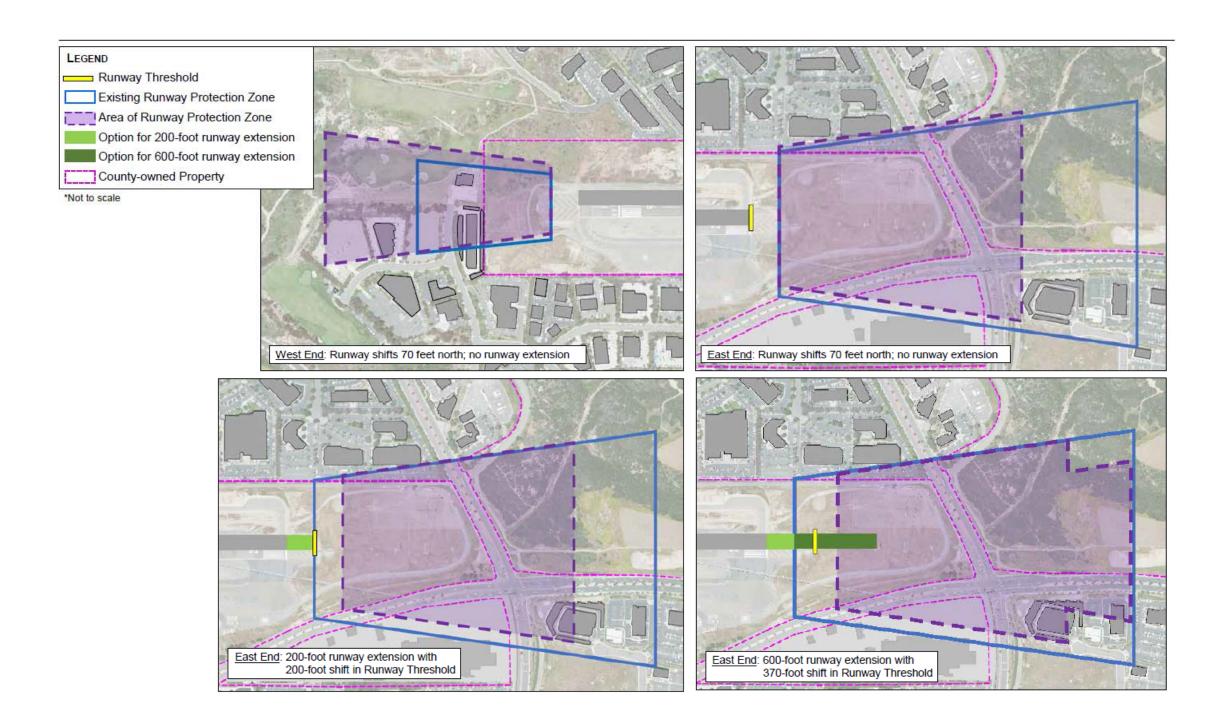
ALTERNATIVE 4

Prepared by: Kimley-Horn, 2018

Exhibit 5.5b _ Alternative 4 D-III On Property

For illustrative purposes only - exhibits are not engineering drawings, are not to scale

		Existing B-II		Alternative 4 D-III On Property		
		Approach RPZ	Departure RPZ Approach RPZ		Departure RPZ	
06	Visibility Minimums	Not Lower than 1 mile	Not Lower than 1 mile	Same	Same	
UO	RPZ Dimensions	1000' x 500' x 700'	1000' x 500' x 700'	Larger – 1700' x 500' x 1010'	Larger – 1700' x 500' x 1010'	
24	Visibility Minimums	Not Lower than ¾ mile	Not Lower than ¾ mile	Same	Same	
24	RPZ Dimensions	2500' x 1000' x 1750'*	1000' x 500' x 700'	Smaller - 1700' x 1000' x 1510'	Larger – 1700' x 500' x 1010'	
* The existing	ng Approach RP7 for Runway 24	as drawn on the current Airport Lavoi	it Plan is oversized for the existing	o visibility minimums at the airport (see page	Section 4 4 4 1 Page 4-18)	



5.7.4 AIRPORT ALTERNATIVE 5 - D-III MODIFIED STANDARDS COMPLIANCE

Alternative 5 meets all D-III design criteria with the exception of one item that would require four Modifications of Standards. Airport Alternative 5 shifts the centerline of Runway 06-24 123 feet to the north, and the centerline of Taxiway A 19 feet north in order to establish 400 feet of separation between the runway and Taxiway A, which satisfies the runway-taxiway separation standard for a D-III runway (see Exhibit 5.6). The non-standard components of this alternative are that it does not meet design criteria for the ROFA to the north, east or west of Runway 06-24, and does not meet runway-aircraft parking separation criteria to the south. The standard width of the Runway Object Free Area for a D-III runway is 800 feet (400 feet either side of runway centerline). In its proposed location, Alternative 5 provides a 762-foot-wide Runway Object Free Area, 362 feet to the north of the runway centerline and 400 feet south of the runway centerline on the east end of Runway 06-24. ROFA length requires Modification of Standards but is alleviated by the installation of EMAS on both runway ends. The standard runway-aircraft parking separation distance is 500 feet. The proposed distance for runway-aircraft parking is 493 feet. As such, Alternative 5 requires approval of four Modifications of Standards from the FAA two of which had been sought at the time this Airport Master Plan Update was prepared. The FAA would also need to approve the installation of a retaining wall within the Taxiway A TOFA, though this is not considered a Modification of Standards.

Alternative 5 maintains the existing runway width of 150 feet, which is the design standard for a D-III runway with approach minimums not lower than ¾ of a mile. This runway width is adequate for large corporate aircraft as well as regional commercial aircraft.

The proposed alternative does not introduce any new impacts to existing FBO leaseholds south of Runway 06-24. The TOFA will abut existing FBO leasehold lines closest to Taxiway A. Alternative 5 does however eliminate the north aircraft parking due to the enhancement of the ROFA and would require finding a location for the 30+ aircraft that currently operate from this location. Alternative 5 also requires removal of the self-service fuel facility on the north side of the Airport.

This alternative also includes a recommended extension of the runway of up to 800 feet off the east end of Runway 24 and Taxiway A, as well as EMAS systems on both runway ends, which enhances safety. It also removes Taxiway N as it would be within the ROFA and with the removal of the North Ramp the need for a partial parallel runway on this side of the field no longer exists.

Based on discussions with the County and the FAA, Alternative 5 has been identified as the most feasible airport development option that adheres to most D-III criteria. The following points summarize the benefits and constraints of Airport Alternative 5.

5.7.4.1 Benefits of Airport Alternative 5

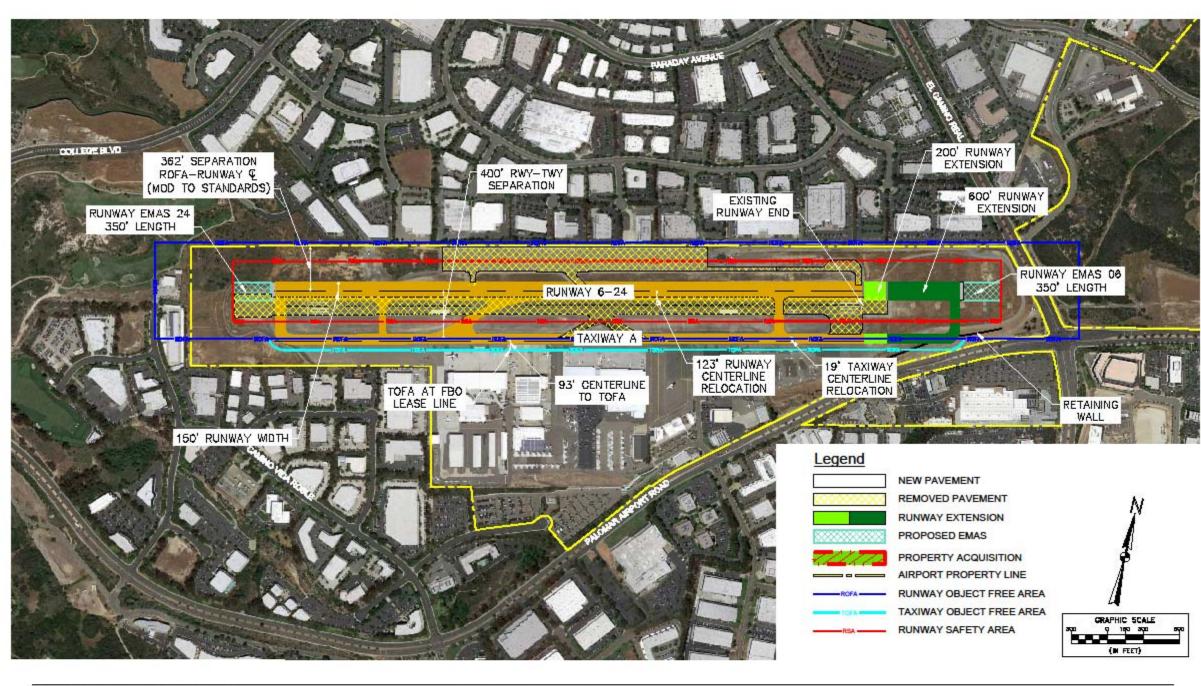
- Compliant with FAA D-III design criteria with Modifications to Standard for ROFA
- Accommodates both the current corporate fleet and potential regional commuter aircraft
- EMAS systems to both Runway End 06 and 24 enhances safety
- Allows for up to an 800-foot extension to runway, which enhances safety and increases airport capability
- Consolidation and construction of connector taxiways between Taxiway A and Runway 06-24 to improve airport safety and with proper placement can enhance operational capacity
- No impacts to existing FBO leaseholds

5.7.4.2 <u>Constraints Regarding Airport Alternative 5</u>

 Eliminates north aircraft parking, reducing accommodation of projected levels of aviation demand

- Significant costs and environmental impacts for extensions of Runway 06-24 and Taxiway A over existing landfill areas, earthwork, retaining wall for taxiway
- Requires shifting the approach lighting system
- Requires relocation of existing NAVAIDs
- FAA approval needed for Modification of Standards
- 800' runway extension only viable with EMAS at both runway ends
- Runway relocation poses significant potential for operational impacts for current tenants during construction including potential for extended airport closure
- High cost of EMAS on both ends along with ongoing maintenance costs
- Shifting the runway north could place industrial properties to the north of the Airport in Runway Protection Zones depending on runway extension implemented
- Requires Modification of Standard for ROFA length alleviated by the installation of EMAS on both runway ends

Exhibit 5.6 Airport Alternative 5 – ARC D-III Modified Standards Compliance



Prepared by: Kimley-Horn and Associates, Inc. September 2018

Kimley »Horn

MODIFICATION OF STANDARD:

- 1. ROFA LENGTH AT BOTH RUNWAY ENDS
- 2. ROFA RUNWAY & TO AIRCRAFT PARKING SOUTH SIDE OF RUNWAY 6-24
- 3. ROFA WIDTH NORTH OF RUNWAY 6-24

ALTERNATIVE 5

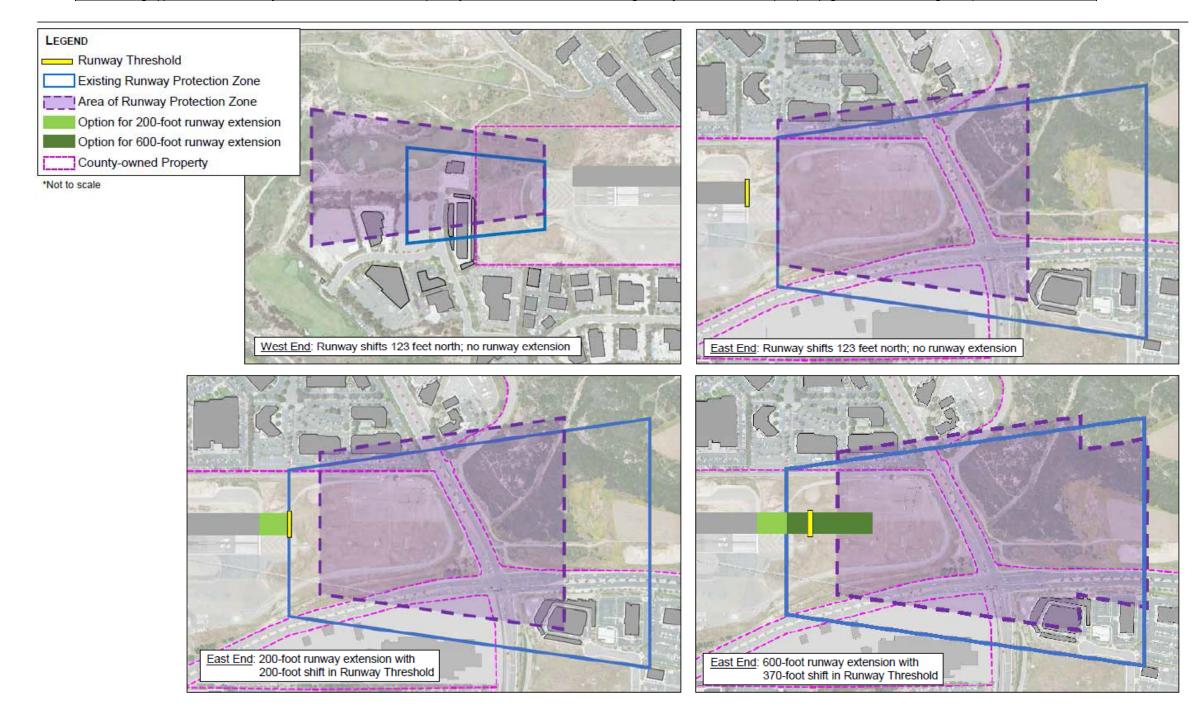
Prepared by: Kimley-Horn, 2018

Exhibit 5.6b – Alternative 5 D-III Modified Standards Compliance

For illustrative purposes only - exhibits are not engineering drawings, are not to scale

		Existing B-II Approach RPZ Departure RPZ		Alternative 5 D-III Modified Standards Compliance		
				Approach RPZ	Departure RPZ	
06	Visibility Minimums	Not Lower than 1 mile	Not Lower than 1 mile	Same	Same	
UO	RPZ Dimensions	1000' x 500' x 700'	1000' x 500' x 700'	Larger – 1700' x 500' x 1010'	Larger – 1700' x 500' x 1010'	
24	Visibility Minimums	Not Lower than ¾ mile	Not Lower than ¾ mile	Same	Same	
24	RPZ Dimensions	2500' x 1000' x 1750'*	1000' x 500' x 700'	Smaller - 1700' x 1000' x 1510'	Larger – 1700' x 500' x 1010'	
* The evictin	Annroach DD7 for Dunway 24, as draw	in an the current Airport Lavout Dia	n is aversized for the evicting visit	hility minimums at the airport (see page Costic	n 4 4 4 1 Dogg 4 10\	

^{*} The existing Approach RPZ for Runway 24, as drawn on the current Airport Layout Plan, is oversized for the existing visibility minimums at the airport (see page Section 4.4.4.1, Page 4-18)



5.7.5 AIRPORT ALTERNATIVE 6 - C-III MODIFIED STANDARDS COMPLIANCE

As defined in FAA Advisory Circular 150/5300-13A, runway design standards for C-III and D-III aircraft are identical. Accordingly, although Alternative 6 is intended to meet the safety requirements of C-III aircraft, this alternative provides separation distances and protection zones functionally equivalent to the D-III Alternative 5. It also generally follows the same airport layout as Alternative 5. Because both Alternative 5 and Alternative 6 provide safety enhancements for the "III" classification for wingspan width, the runway design, safety area, object free area, Runway Protection Zones and runway separation distances are identical. The exact sizing of EMAS at the end of runways would be based on the designation of a design critical aircraft for the "C" ADG, but would be very similar to the dimensions in Alternative 5. As noted in Section 2.2.1, aircraft with an ADG (the letter component of the ARC) of C have approach speeds between 121 and 140 knots while aircraft with an ADG of D have approach speeds between 141 knots and 165 knots. Despite the slight difference in approach speed, FAA's runway safety requirements are consistent between the "C" and "D" classification.

The Airport's design standards are defined by the classification of the most demanding aircraft that has over 500 annual operations. Alternative 6 provides safety improvements to the Airport using the same FAA design standards as the long-term forecast but does not classify the Airport as meeting the "D" standard. The Airport would be improved to accommodate the anticipated forecast for the intermediate term, and meet the needs of foreseeable commercial operations. Because the runway safety improvements are identical between C-III and D-III, the Airport would maximize safety to the current and future users.

As such, Alternative 6 includes a shift of the centerline of Runway 06-24 123 feet to the north, and the centerline of Taxiway A 19 feet north in order to establish 400 feet of separation between the runway and Taxiway A (see Exhibit 5.7). As with Alternative 5, four Modification of Standards (identified in Section 5.7.4 Airport Alternative 5 – D-III-Modified Standards Compliance) would be needed in Alternative 6 for the ROFA north of Runway 06-24, ROFA length, and for the runway-aircraft parking separation to the south. Similar to Alternative 5, the FAA would need to approve the installation of a retaining wall within the Taxiway A TOFA, though this is not considered a Modification of Standards.

The following summarizes the benefits and constraints of Airport Alternative 6:

5.7.5.1 Benefits of Airport Alternative 6

- Compliant with FAA C-III design criteria with Modifications to Standard for ROFA and runway- aircraft parking
- EMAS systems to both Runway End 06 and 24 enhances safety
- Allows for up to an 800-foot extension to runway, which enhances safety and increases airport capability
- Consolidation and construction of connector taxiways between Taxiway A and Runway 06-24 to improve airport safety and with proper placement can enhance operational capacity
- No impacts to existing FBO leaseholds
- Runway design, safety area, object free area, Runway Protection Zones and runway separation distances dimensions are identical to Alternative 5

5.7.5.2 Constraints Regarding Airport Alternative 6

 Eliminates North Ramp aircraft parking, reducing accommodation of projected levels of aviation demand

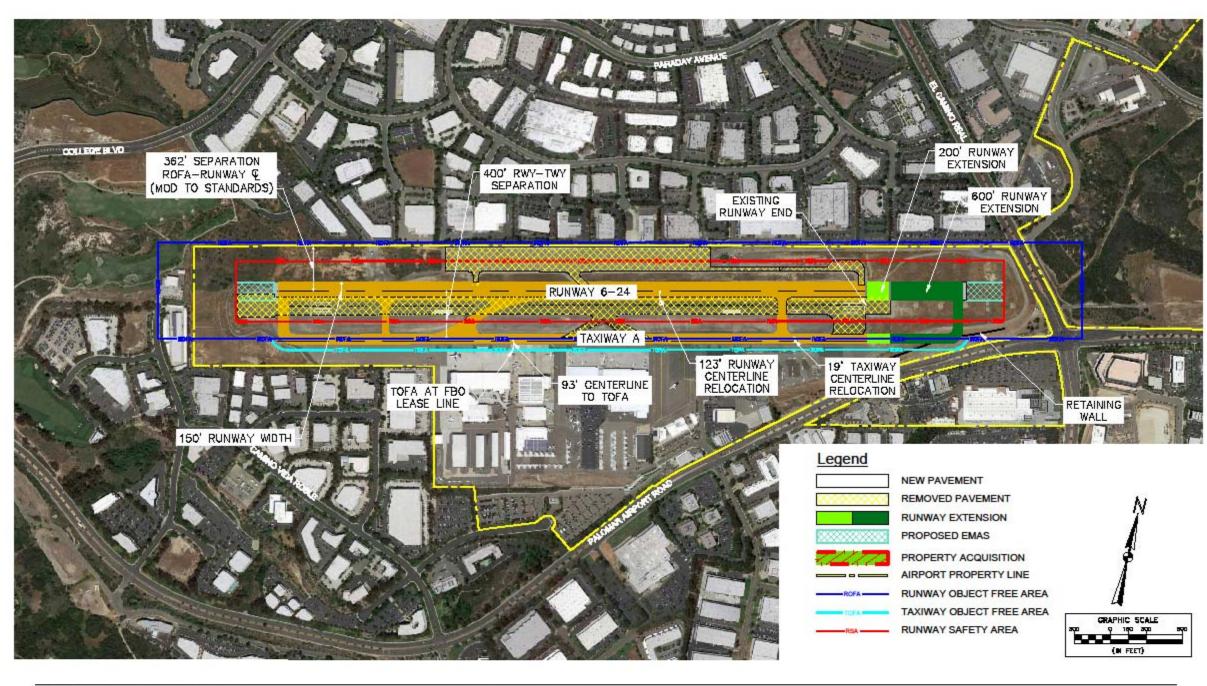
- Does not accommodate long-term projected classification of the Airport to accommodate D-III aircraft, but could modify C-III in the future to achieve D-III EMAS standards.
- Significant costs and environmental impacts for extensions of Runway 06-24 and Taxiway A over existing landfill areas
- Requires shifting the approach lighting system
- Requires relocation of existing NAVAIDs
- FAA approval needed for Modification of Standards
- 800' runway extension only viable with EMAS at both runway ends
- Runway relocation poses significant potential for operational impacts for current tenants during construction including potential for extended airport closure
- High cost of EMAS on both ends along with ongoing maintenance costs
- Shifting the runway north could cause properties to the north of the Airport to be within Runway Protection Zones depending on runway extension implemented
- Requires Modification of Standards for ROFA length alleviated by the installation of EMAS on both runway ends

The following summarizes the difference between Alternative 5 and Alternative 6:

Criteria	Alternative 5: D-III Modified Alternative 6: C-III M Standards Compliance Standards Compli			
Runway Design	Identical			
Runway Protection	Identical			
Runway Separation	Identical			
EMAS	D-III slightly larger*			
Impacts to FBOs	Identical			
Stay within Airport Property	Ider	ntical		

*Note: EMAS is designed to stop the design aircraft that departs the runway travelling at 70 knots. D-III aircraft typically weigh more than C-III aircraft, which impacts the design criteria of the EMAS.

Exhibit 5.7 Airport Alternative 6 – ARC C-III Modified Standards Compliance



Prepared by: Kimley-Horn and Associates, Inc. September 2018

Kimley »Horn

MODIFICATION OF STANDARD:

- 1. ROFA LENGTH AT BOTH RUNWAY ENDS
- 2. ROFA RUNWAY & TO AIRCRAFT PARKING SOUTH SIDE OF RUNWAY 6-24
- 3. ROFA WIDTH NORTH OF RUNWAY 6-24

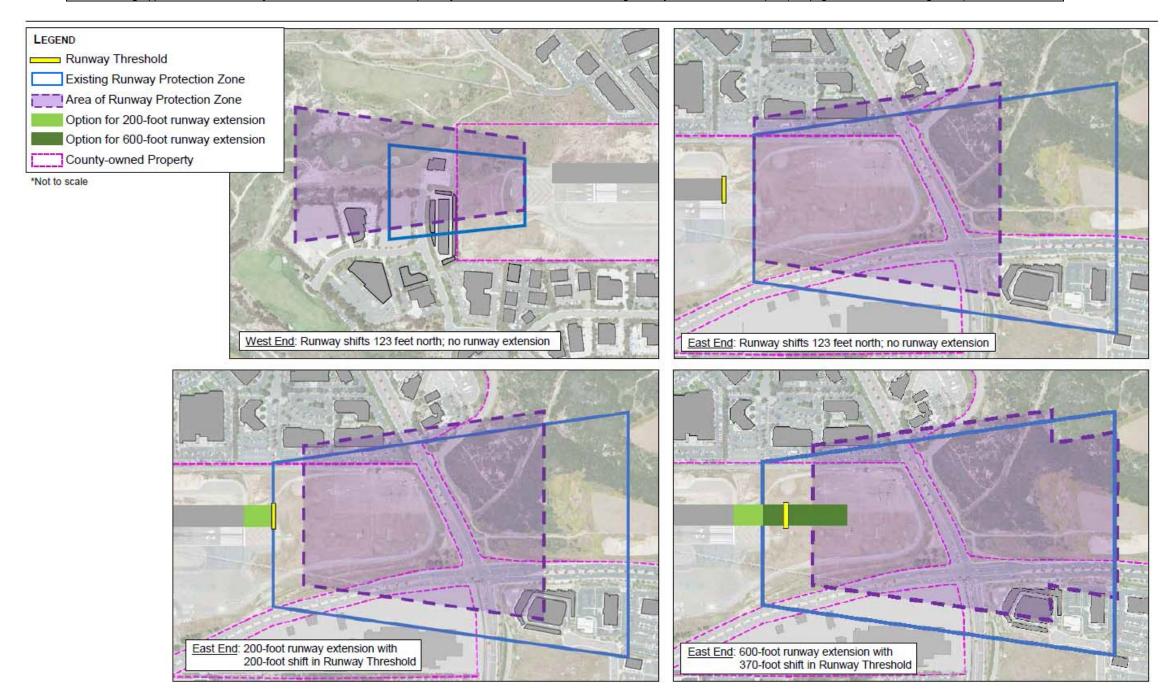
ALTERNATIVE 6

Prepared by: Kimley-Horn, 2018

Exhibit 5.7b Alternative 6 – C-III Modified Standards Compliance

For illustrative purposes only - exhibits are not engineering drawings, are not to scale

		Existing B-II		Alternative C-III Modified standards Compliance		
		Approach RPZ	Departure RPZ	Approach RPZ	Departure RPZ	
06	Visibility Minimums	Not Lower than 1 mile	Not Lower than 1 mile	Same	Same	
UO	RPZ Dimensions	1000' x 500' x 700'	1000' x 500' x 700'	Larger – 1700' x 500' x 1010'	Larger – 1700' x 500' x 1010'	
24	Visibility Minimums	Not Lower than ¾ mile	Not Lower than ¾ mile	Same	Same	
2 4	RPZ Dimensions	2500' x 1000' x 1750'*	1000' x 500' x 700'	Smaller - 1700' x 1000' x 1510'	Larger – 1700' x 500' x 1010'	
* The existin	* The existing Approach RPZ for Runway 24, as drawn on the current Airport Layout Plan, is oversized for the existing visibility minimums at the airport (see page Section 4.4.4.1, Page 4-18)					



5.7.6 PREFERRED AIRPORT ALTERNATIVE

Based on the analysis of the airfield alternatives presented in this Airport Master Plan Update as well as an examination of other potential development alternatives that were eliminated because they did not adequately meet the evaluation criteria identified at the beginning of this Section, it has been determined that Airfield Alternative 5 with an extension of Runway 06-24 and Taxiway A is the recommended development option for CRQ.

The proposed improvements identified in Alternative 5 allow the Airport to accommodate D-III aircraft operations with the need for only two minimal Modifications of Standards for the ROFA north of Runway 06-24 and runway-aircraft parking south of Runway 06-24. For long-term development, an 800-foot runway extension should be considered to provide adequate length for corporate and potential commercial operations without the necessity of significant weight restrictions. As documented in Section 4 of this Airport Master Plan Update, several corporate aircraft that commonly operate at CRQ such as the Gulfstream 450, 550, Cessna Citation X, cannot operate at maximum takeoff weight due to the existing length of Runway 06-24. The same is true for regional commuter aircraft such as the EMB-175 and CRJ-700, both of which could operate at maximum takeoff weight at the Airport with an additional 800 feet of runway.

In order to adhere to FAA design standards including a 1,000-foot RSA and ROFA, an EMAS must be installed on the east end of Runway 06-24 or declared distances must be implemented. Both of these options are reasonable, and feasible; however, the FAA must provide concurrence on a preferred option. Both options have pros and cons. While an EMAS is more expensive, it provides greater usable runway length. Conversely, obtaining federal funding for improvements that introduce declared distances can be difficult because the actualized investment is not fully realized as the usable pavement is limited.

A comparison of declared distances for the preferred alternative that includes EMAS on just the west end of Runway 06-24 and on both ends of the runway is shown in the table below. As shown, takeoff distance available is equal for both options. Based on the runway length analysis presented in Section 4.4.2.1, the landing distances available for both options are anticipated to satisfy projected fleet mix demand.

Preferred Alternative Declared Distances with and Without East EMAS

Distance	Runway 06 with East and West EMAS	Runway 24 With East and West EMAS	Runway 06 West EMAS Only	Runway 24 West EMAS Only
Takeoff Distance Available (TODA)	5,697'	5,697'	5,697'	5,697'
Takeoff Run Available (TORA)	5,697'	5,697'	5,040'	5,697'
Accelerated Stop Distance Available (ASDA)	5,697'	5,697'	5,040'	5,697'
Landing Distance Available (LDA)	5,397'	5,097'	4,740'	5,267

Note: Distances assume landing threshold on Runway 24 370' east of existing location to avoid approach RPZ impacting industrial buildings north of the Airport.

Sources: County of San Diego, Kimley-Horn

This Airport Master Plan Update identifies recommendations for a 20-year planning period. In order to achieve all of the proposed actions of Alternative 5, a phased approach is recommended that addresses

action items that can be completed in the near-term (0-7 years), intermediate-term (8-12 years), and long-term (13-20 years). For example, while it is recommended that the Airport Layout Plan depict an ultimate relocation and extension of 800 feet to Runway 06-24, depending on funding availability, it may be prudent to pursue an initial 200-foot extension, followed by the remainder of the needed length as AIP or State grant dollars become available.

Of significant importance is the issue of ownership and control of safety areas that extend off existing Airport property, specifically as it pertains to RPZs. The FAA issued a Memorandum in September 2012 clarifying the agency's policy on land uses within the RPZ that notes, "Airport owner control over the RPZ land is emphasized to achieve the desired protection of people and property on the ground. Although the FAA recognizes that in certain situations the airport sponsor may not fully control land within the RPZ, the FAA expects airport sponsors to take all possible measures to protect against and remove or mitigate incompatible land uses."

Per FAA AC 150/5300-13A, "Land acquisition to protect all possible airspace intrusions is generally not feasible, and is usually supplemented by local zoning, easements, or other means to mitigate potential incompatible land uses and potential obstacle conflicts."

From FAA AC 150/5100-17 Land Acquisition and Relocation Assistance for Airport Improvement Program (AIP) Assisted Projects: "On AIP-assisted projects, the sponsor must acquire real property rights of such nature and extent that are adequate for the construction, operation, and maintenance of the grant-assisted project. Normally the sponsor will acquire fee title to all land within the airport boundaries and for the runway protection zone (RPZ). If fee acquisition for the RPZ is not practical, then an avigation easement is required. This easement must secure the right of flight with inherent noise and vibration above the approach surface, the right to remove existing obstruction, and a restriction against the establishment of future obstructions.

It is a specific recommendation of this Airport Master Plan Update that the Airport to the maximum extent feasible obtain avigation easements or ownership of parcels within existing and ultimate RPZs, and if possible, obtain avigation easements for existing and ultimate departure RPZs. It is also recommended that the Airport pursue land acquisition for any and all existing and ultimate RPZs although this action may not be determined as practical. Pursuance of land acquisition for RPZ parcels will likely be extremely expensive and could prove infeasible if property owners are unwilling to sell sufficient property interests. At a minimum, the Airport should demonstrate that it is taking all steps possible to protect land uses within existing and ultimate RPZs. These actions are not an "expansion" or "enlargement" of the Airport as those terms used in Carlsbad Municipal Code § 21.53.015 or Public Utilities Code § 21661.6 because no airport improvements will be constructed outside the current Airport footprint.

5.7.6.1 Near-Term Improvements for Alternative 5

Preceding the implementation of the proposed development alternative, there are smaller, less expensive actions that can be taken in order to meet FAA design criteria in the near- and intermediate-term. Accomplishing these action items will demonstrate the County's willingness to address the issue of larger, more demanding aircraft regularly operating at the Airport. These include:

- Relocation of the lighting vault north of Runway 06-24
- Removal of the North Apron Area fuel farm
- Relocation of the glideslope building north of Runway 06-24
- Relocation of the wind cone equipment and segmented circle
- Relocation of the Vehicle Service Road (ATCT Controlled)

The items listed here should be considered a precursor to the proposed actions of the preferred airfield alternative as they enable long-term airfield improvements to occur. The specific purpose for their relocation/removal is because they will be located within the RSA of Runway 06-24 when the runway is

shifted 123 feet to the north. As such, it is recommended that they be accomplished within the near-term (0-7 years) timeframe. These and all other airport development alternatives and their recommended timeframes of completion are shown in **Exhibit 5.9** at the end of this Section.

Based on the environmental overview conducted in the 2013 Feasibility Study, the proposed improvements identified in the preferred airfield alternative are not anticipated to have significant environmental impacts. It should be noted however, that any change to the existing layout of the airfield will require an Environmental Assessment to be eligible for FAA AIP funding.

5.7.7 INTERIM AIRPORT ALTERNATIVE

The preferred alternative described in Section 5.7.5 has been developed as a long-term improvement in the phasing plan (Section 5.11), meaning that its implementation is recommended 13-20 years from the approval date of this Airport Master Plan Update. The County has identified that an interim airfield alternative be included in the Airport Master Plan Update as a near-term (within 7 years) solution to address issues pertaining to the existing runway length. As such, this section outlines a preferred Interim Airport Alternative that incorporates the same evaluation criteria as previously documented alternatives, but with a shorter implementation timeframe.

As noted, aircraft with designations greater than B-II regularly operate at McClellan-Palomar Airport. Often, these aircraft must takeoff with reduced weights or make fuel stops before reaching their final destination. In order to reduce takeoff weight penalties and frequency of fuel stops, the Interim Airport Alternative proposes a 200-foot extension to Runway End 24 and the east end of Taxiway A, while maintaining the existing widths of those facilities. This action does not impact the displaced threshold on Runway End 06.

This alternative is similar in principle to Airport Alternative 1 (Remain B-II); however, the intent of the Interim Airfield Alternative is to provide additional takeoff length as a temporary placeholder while the Airport transitions to a D-III facility. Furthermore, this alternative allows the Airport to incrementally implement the pre-alternative action items described in the previous section as well as an EMAS on Runway End 06 without significantly interfering with the operational functionality of the airfield. It should be noted that because the extensions to Runway 06-24 and Taxiway A are not direct improvements based on D-III FAA design standards reflects the ultimate recommended ARC for the Airport, they may not be eligible for FAA AIP funding.

The following points summarize the benefits and constraints of the Interim Airport Alternative:

5.7.7.1 Benefits of Interim Airport Alternative

- Enhances safety by providing additional runway length for existing and future users
- Allows for phased improvements to occur without interference
- Improvements remain on Airport property
- No change in size of runway or taxiway protection areas
- No encroachment on existing general aviation/FBO operations

5.7.7.2 <u>Constraints Regarding Interim Airport Alternative</u>

- Although the proposed actions are temporary in nature, this alternative does not satisfy FAA
 D-III design standards
- Proposed action may not be eligible for FAA AIP funding
- Similar to Alternative 1, the proposed action may have significant impacts to large corporate and commercial aircraft operators:

- For general aviation aircraft operators, it is at the discretion of the pilot to determine the safety of an airport and whether or not to utilize that facility.
- o For commercial operators, an aircraft whose design criteria exceeds an airfield's design standards may be prohibited from operating at that facility. Although, the FAA has permitted commercial aircraft exceeding a B-II ARC to operate at the Airport and is expected to continue to do so.

Based on an examination of the existing airport configuration, as well as the understanding that funding for a significant portion of the Preferred Airport Alternative presented in Section 5.7.5 may not be eligible for FAA or State grants, it is recommended that the Interim Airport Alternative be considered as a temporary solution to provide additional length for Runway 06-24 and Taxiway A. Although the proposed action does not permanently provide the ultimate desired runway length, nor does it directly adhere to ARC D-III design standards, it provides an incremental improvement that enhances the safety of the airport and would not interfere with ultimate plans to achieve the action items identified in the Preferred Airport Alternative. The Interim Airport Alternative and the Preferred Airport Alternative are presented graphically in **Exhibit 5.8** at the end of this Section.

5.8 PASSENGER TERMINAL ALTERNATIVES

The passenger terminal building at the Airport is a structure that was constructed in 2007 and encompasses approximately 12,590 square feet. At the time it was completed, the facility was designed to accommodate smaller commercial aircraft such as the 30-seat Embraer EMB 120 that have been phased out of many airlines' fleets. As identified in Section 4 of this Airport Master Plan Update, although the existing footprint of the passenger terminal building is anticipated to meet demand identified in both PAL 1 and PAL 2, it is recommended that the Airport preserve approximately 8,400 square feet of space for potential terminal improvements in the event that passenger activity exceeds forecasted demand. The County now owns Hangar 1, a 23,000 square-foot hangar adjacent to the passenger terminal. Hangar 1 sits on a 1.2-acre parcel that includes adjacent vehicle parking and an aircraft parking apron.

Several development alternatives for a new passenger terminal were initially examined that included a terminal relocation and a "no-build" alternative. A no-build option was determined to be non-feasible because it would not accommodate projected levels of passenger activity. Even in the event that projected passenger activity forecasts are not realized in the future, failure to reserve area for added terminal space could permanently jeopardize any commercial operations as airlines transition to larger, more fuel-efficient aircraft. As airlines attempt to maximize revenues by providing fewer flights aboard larger aircraft, passenger and airline facilities at several airports need to be improved accordingly, in order to satisfy changing trends.

A terminal relocation alternative was also examined early in the alternatives development process but was deemed infeasible. This finding was based on the lack of developable land on the existing Airport and because of the relative age of the existing passenger terminal building. A relocation of the passenger terminal building would require either significant land acquisition, which would incur significant cost, or would require the removal of existing facilities critical to the functionality of the Airport.

Since both a no-build and a relocation alternative for the passenger terminal building have been determined to be unfeasible, the only legitimate alternative is an enhancement of the existing facility. Keeping in mind that any development alternative should minimize negative impacts to existing facilities, three primary areas have been identified for potential terminal improvements.

Initially, improvements to the terminal building to the north toward Runway 06-24 was examined; however, it was determined that this action would reduce aircraft parking on the commercial apron and reduce the overall functionality of the Airport. Another option that was examined was enhancement of the

terminal building to the south; however, this action would require significant reconfiguration and reconstruction of the terminal access road, auto parking, and curb front areas.

Therefore, the preferred development alternative for improvements to the passenger terminal building entails "in-filling" areas to the east and west of the existing structure (see **Exhibit 5.7**). To the east, there is an area approximately 3,000 square feet in size that is currently occupied by an outdoor courtyard and seating area for the restaurant.

The second space available for terminal improvements is located immediately west of the terminal building and east of the Customs and Border Protection facility that also houses rental car counters. This triangular shaped parcel is a courtyard area that encompasses approximately 2,400 square feet, although an additional 600 square feet to the south may be utilized if needed. Although some reconfiguration of the passenger terminal interior would be likely, the existing layout of the building indicates that this area could provide added passenger circulation, auxiliary space, and restroom space.

The third parcel of land that could be utilized for terminal improvements is to the west of the CBP building that is currently occupied by the ARFF facility and apron. Use of this area requires relocation of the ARFF facility, which is described in the subsequent section. This area allows for an additional 5,200 square feet of terminal improvement space.

Another area potentially available for terminal improvements is the 1.2-acre County-owned parcel west of the current ARFF facility that houses Hangar 1. This parcel is occupied by an aircraft storage and office building, as well as by several small businesses with short term rental agreements. These businesses can be relocated into existing facilities at FBOs so the area can be redeveloped for passenger terminal use if needed. While it is not anticipated that this area will be required for passenger terminal improvements, it is recommended it be preserved as an option for potential long-term terminal improvements or additional vehicle parking in the event that passenger demand exceeds projected levels of activity.

The previously mentioned areas for terminal improvements total approximately 33,600 square feet. A limited amount of additional space is also available to the south of the existing passenger terminal building, although utilization of this area may reduce the width of the passenger walkway/access area. In order to maximize space and functionality, it is likely that some reconfiguration to the existing layout of the passenger terminal will be required if and when improvements become necessary.

The proposed action is not anticipated to incur any significant environmental impacts as improvements will occur on already graded/disturbed areas.

5.9 AUTO PARKING ALTERNATIVES

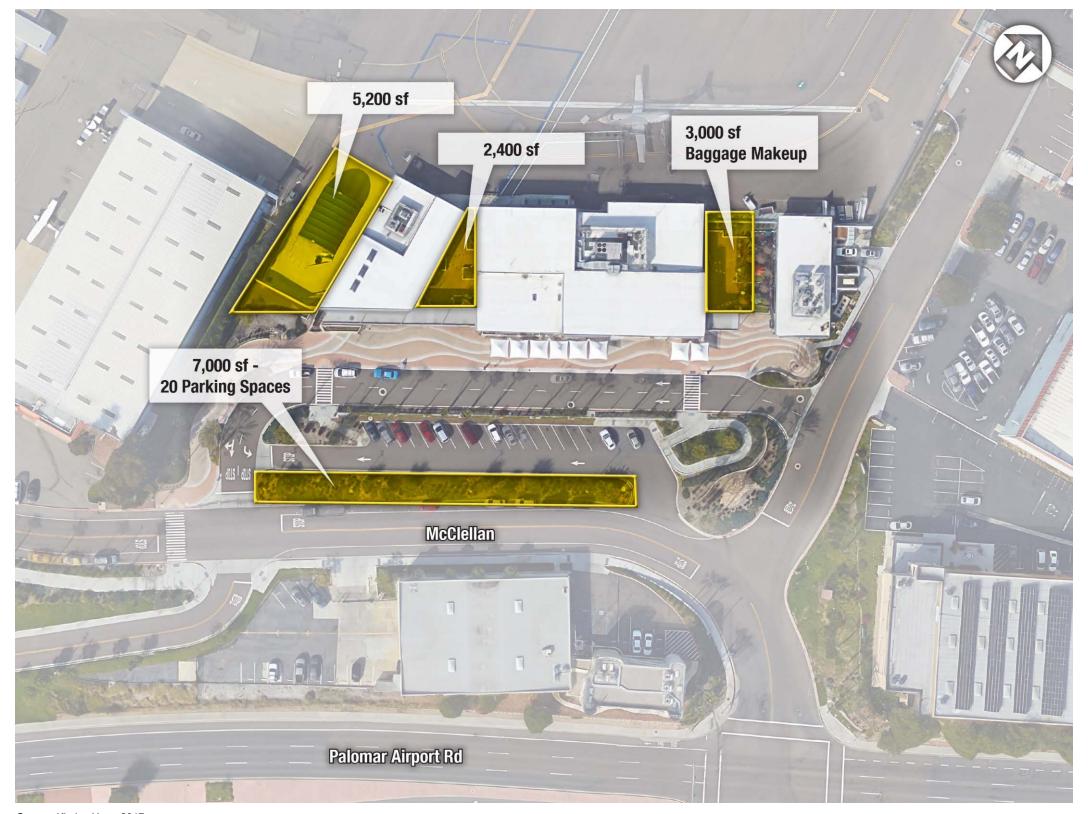
In conjunction with preserving space for potential improvements to the passenger terminal building, Section 4 similarly recommended preserving areas that could be used for short-term and rental car parking in the event that passenger activity exceeds projected levels of demand in the future.

Two alternatives for enhancement/relocation of auto parking were examined to accommodate projected demand. The first entails repurposing the previously mentioned lot owned by the County that houses Hangar 1. This option is not preferred in the near-term because this lot is currently utilized by small businesses operating in the adjacent hangar. This area could be used for parking as a long-term solution if the adjacent hangar is ultimately redeveloped and projected levels of passenger activity exceed what is forecasted in PAL 1.

The second alternative entails a southward enhancement of the existing short-term lot (see **Exhibit 5-6**). This option provides an additional area approximately 7,000 square feet in size (±20 parking spaces) and would not disturb existing tenants. Furthermore, access and roadway infrastructure is already in place to accommodate additional parking spaces. Improvements to this lot could result in the loss of a small number of existing on-street parking spaces though this could be mitigated by utilizing other available

parking areas or by striping the proposed enhancement area in a fashion that creates longer, more angular spaces. Because this alternative accommodates projected levels of passenger demand and does not impact other aviation uses, it is the preferred development alternative. The proposed action would increase impervious surface by approximately 7,000 square feet but is not anticipated to incur any significant environmental impacts as improvements will occur on already graded/disturbed areas.

Exhibit 5.8 Passenger Terminal and Short-Term Parking Improvements



Source: Kimley Horn, 2017

5.10 AIRCRAFT RESCUE AND FIREFIGHTING FACILITY

As noted in Section 4, one of the specific components of this Airport Master Plan Update is to identify alternatives for the relocation of the existing ARFF facility. The existing ARFF facility located on the western side of the Airport terminal is not designed to meet the forecasted aviation demand. While the facility, classified by the FAA as "Index B," as the appropriate equipment to accommodate "Index B" operations, the structure needs to be relocated to accommodate additional vehicle bays and associated parking areas per FAA Advisory Circular (AC) 150/5210-15A. The new facility should encompass approximately 4,664 square feet and be relocated south of the existing ATCT and east of the passenger terminal apron. The new facility should include two vehicles bays, watch room, first aid room, storage room, and administrative offices. The proposed relocation site is currently a parking lot and adjacent lots could accommodate the parking spaces lost to the relocation of the ARFF. Such a facility has been determined to require the following spatial components:

- Vehicle Bay Area 1,858 Square Feet
- Admin/Storage Rooms 1,000 Square Feet
- ARFF Vehicle Apron 1,806 Square Feet
- Total ARFF Building and Apron 4,664 Square Feet

5.10.1 FAA SITE SELECTION CRITERIA

Several areas on the Airport were initially examined for potential relocation of the ARFF facility. Site selection parameters for ARFF locations are identified in *FAA AC 150/5210-15-A*. These parameters include:

Operational Factors. The site should allow for:

- (1) Immediate, straight access to the Airport network.
- (2) Unimpeded access routes with a minimum of turns to the Airport network and aircraft aprons.
- (3) Direct access to the terminal aprons minimizing the crossing of active runways, taxiways, or difficult terrain.
- (4) Non-interference with the ATCT's line of sight (LOS).
- (5) Maximum surveillance of the Airport.
- (6) Adherence to the Building Restriction Line (BRL) as determined using AC 150/5300-13A, Airport Design.
- (7) Future expansion of the ARFF station without:
 - (a) Limiting or reducing airport surveillance.
 - (b) Blocking fire traffic lanes.
 - (c) Impacting adjacent roads, buildings, aircraft pavement and parking areas, and ATCT's unless the structure or paved area is to be eliminated for other reasons.
 - (d) Requiring significant structural changes to the ARFF station itself.
- (8) Planned airport improvements that will not create emergency response runs that will negatively impact FAR Part 139 response time requirements. However, in this event, an additional (satellite) ARFF station(s) may provide an alternative.

- (9) Non-interference by ARFF vehicles or the ARFF station's communications equipment or with navigational facilities.
- (10) Close proximity to a rescue boat launch facility for those airports with an aircraft water rescue program. This need is particularly important if the rescue boat is stored at the ARFF station, thus requiring a tow for launching.
- (11) Adherence to FAR Part 77.25, Civil Airport Imaginary Surfaces.
- (12) Minimum obstructions or interference from existing facilities or uses such as:
 - (a) Access roads.
 - (b) Aircraft fuel storage areas.
 - (c) Aircraft taxiing operations or parking areas.
- (13) Ease of connection to and integration with the Airport's security system.

Site Size. The site should allow for:

- (1) The accommodation of the ARFF station and future expansion(s) such as increasing the apparatus bays for larger ARFF apparatus or an increase in ARFF Index (as defined in FAR Part 139, Sub-part D) and/or personnel requiring larger living quarters, employee parking, etc.
- (2) Exterior amenities, such as employee parking, exterior patio, and ARFF vehicle resupply (water and/or foam) operation and servicing area.
- (3) ARFF apparatus apron to accommodate the largest current or anticipated vehicle.
- (4) Removal of trash.

Proximity to Utilities and Roads. The site should offer reasonable access to:

- (1) Electrical power and, if any, alternate energy sources, e.g., gas.
- (2) Essential communication and telecommunication networks, including proximity to fiber optic and copper network backbones. This is particularly critical for the ARFF station's security design components and integration with the airport's security system.
- (3) Existing and future airport access and airport service roads.
- (4) Existing and future water supply system and sanitary sewer hookups.

Topography and Station Orientation.

- (1) A level site is preferred, however, an irregular un-level site can at times be used if it is superior in other aspects (response times, etc.) and construction costs are reasonable.
- (2) Proper station orientation can help to reduce yearly energy operating costs by moderating the effects of the wind and the sun's rays. The design team should strive to earn Leadership in Energy and Environmental Design (LEED) certification from the U.S. Green Building Council (http://www.usgbc.org/), which is a voluntary national standard for designing high-performance and sustainable buildings.
- (3) Proper station orientation can help to mitigate exterior noise levels and associated costs for acoustical treatment.
- (4) The primary objective in locating and orienting an ARFF station is "to provide a timely response, protect life and property, and minimize the effects of an aircraft accident or incident or catastrophic event occurring primarily on airport property." (See Scope 1.2.) The factors identified in 2.3 Site Selection A

through C should be the operational priorities of the Site Selection phase. Section D provides important considerations but must be evaluated carefully against any impact with critical operational and performance issues that might add delays in response, compromise safety, or affect any mission critical objectives.

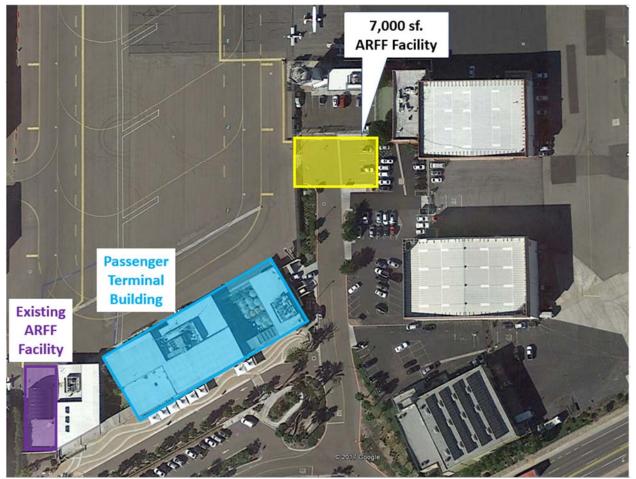
5.10.2 PREFERRED ALTERNATIVE FOR ARFF

The 2010 Approved Airport Layout Plan depicts the location of the future ARFF facility between the existing Airport Traffic Control Tower and Western Flight; however, this location does not provide enough space for an Index B ARFF facility without relocation of either the tower, auto or aircraft parking, or Western Flight. Two other options were initially examined as potential sites for relocation of the ARFF. The first was located immediately northwest of the control tower on an existing aircraft parking apron. Although this site provided optimal airport access, it eliminated aircraft parking on an already congested airport, and was therefore was dismissed from further evaluation.

The second site examined is located immediately north of the existing restaurant abutting an access road. Although this site provides adequate Airport access, it is constrained on the west side by the existing commercial aircraft parking apron and could impact taxiing operations in this area. As such, this option was also dismissed from further evaluation.

When all of the applicable site selection parameters are taken into account in conjunction with the congested Airport and lack of developable land, a preferred site was identified that could accommodate an ARFF facility without incurring negative impacts to other Airport uses such as aircraft parking or taxiways (see **Exhibit 5.8**). The recommended site is located south of the existing airport traffic control tower and west of an access road and encompasses approximately 7,000 square feet. This area is owned by the Airport and is currently occupied by a parking lot. Based on discussions with Airport Management, it was identified that this lot is underutilized and that adjacent lots could accommodate the parking spaces lost by relocation of the ARFF. The existing access road can also be modified to provide adequate access to the control tower and other tenants located in this area. Though environmental documentation such as an Environmental Assessment or more likely, a Categorical Exclusion (CATEX) would be needed prior to construction, relocation of the ARFF to this site is not anticipated to incur any significant environmental impacts as the site is currently paved and used as an auto parking lot.

Exhibit 5.9 ARFF Relocation



Source: Kimley Horn, 2017

5.11 PREFERRED DEVELOPMENT STRATEGY

With consideration of a 20-year planning horizon, projected aviation-related activity, and the interests of the County, the recommended facility improvements and development alternatives are presented as near-term (±0-7 years), intermediate-term (±8-12 years), and long-term (±13-20 years) projects. Cumulatively, these projects make up the *preferred development strategy* for the Airport.

In general, the strategy in the near-term (0-7 years) is to pursue action items that will enhance safety and allow for future improvements to the runway and taxiway system toward D-III design standards, as described in Section 5.7.5.1. These projects include clearing areas within runway and taxiway protection areas, relocating the ARFF facility, and constructing an EMAS system on Runway End 06 to accommodate aircraft departing Runway 24. This timeframe could also include the Interim Airfield Alternative, which proposes 200' extensions to Runway 06-24 and Taxiway A in their existing locations.

Intermediate-term improvement projects (8-12 years) include removal of the North Parking Ramp Area, and removal of the fuel farm on the North Ramp. At some point in the seven to ten-year period, an Airport Master Plan Update study may also be needed to confirm or adjust the recommendations and strategy described in this document.

The long-term improvement program (13-20 years) is focused on the relocation and extension of Runway 06-24 and Taxiway A, consolidation of the connector taxiway system, relocation of the EMAS on Runway End 06, and construction of an EMAS on Runway End 24 to accommodate aircraft departing Runway 06. It has been determined through a cost and safety evaluation that the initial construction of an EMAS system on Runway End 06 and a subsequent relocation of the facility is preferable to delaying construction of the EMAS as a long-term project. The proposed long-term improvement actions will require agency and public coordination, environmental approvals, design and any remaining land acquisition needs. This overall strategy, including the generalized phasing, is depicted in **Exhibit 5.10**.

Table 5-1 lists the various recommended improvement projects and development programs by phase. These listed projects form the basis of the Airport Capital Improvement Program (ACIP).

Table 5.1 - Preferred Development Strategy by Phase

Table 5.1 – Pre	Table 5.1 – Preferred Development Strategy by Phase							
Near-Term (±0-7 Years)	Project Description	Estimated Cost	Exhibit 5.9 #					
Relocation of Segmented Circle	Pavement Removal/Installation	\$150,000	2					
Relocation of the Lighting Vault	Building Relocation 100 SF	\$575,000	6					
Relocation of the Glideslope Building and Antenna	Building Relocation ±360 SF	\$350,000	1					
Relocation of Windsock Equipment	Pavement Removal ±760 SY	\$130,000	2					
Construction of EMAS System serving RWY 24 (Includes Relocation of the Vehicle Service Road)	EMAS ±580 SY VSR ±9,100 SY	\$25,000,000	4					
Relocation of ARFF Facility	±4,700 SF Facility	\$525,000	3					
200' Extension of Existing Runway 06-24 and Taxiway A (Interim condition)	±11,600 SY	\$14,320,500	7					
	Phase Subtotal	\$26,730,000						
	Phase Subtotal*	\$41,050,500						
Intermediate-Term (±8-12 Years)								
Removal of North Apron and Taxiway N	Pavement Removal ±43,000 SY	\$684,000	9					
Enhancement of Near-Term Auto Parking	±800 SY of pavement	\$232,000	11					
Removal of Fuel Farm on North Apron	±25,000 GAL	\$45,000	8					
Preservation of area reserved for GA aircraft parking	±3 acres	TBD	10					
Passenger/Admin/Parking Facility Improvements	±4 acres	TBD	11					
Phase Subtotal \$961,000								
Long-Term (±13-20 Years)		400.1,000						
800' Relocation/Extension of RWY 06-24 (if	.04.040.00	#07.050.000	40					
completed in one phase)	±81,610 SY	\$27,850,000	12					
Remove/Reconstruct Connector Taxiways	±13,000 SY	\$1,760,000	13					
Remove/Reconstruct TWY A	±39,070 SY	\$14,360,000	14					
Construction of EMAS System serving RWY 06	±580 SY	\$12,160,000	15					
Relocation of EMAS System serving RWY 24	±580 SY	\$11,240,000	16					
Relocation of NAVAIDS (ILS, GS, MALSR, PAPI)		\$2,800,000	12					
200' Relocation/Extension of Runway 06- 24 and Taxiway A (if completed in 2 phases)		\$9,366,000	12/14					
Additional 600' Relocation/Extension of Runway 06-24 and Taxiway A (if completed in 2 phases)		\$30,960,000	12/14					
Phase Subtotal (200' Extension plus 600' Extension) \$82,646,000								
	ase Subtotal (800' Extension)	\$70,170,000						
Phased Development Total Costs								
Total Estimated Program Cost (200' E		\$110,337,000						
	Program Cost (800' Extension)	\$97,861,000						
Total Estimated Program Cost (200' Ex		\$124,657,500						
Total Estimated Program Cost (800' Extension)* \$112,181,500								

Source: Kimley-Horn, 2017. * Includes interim 200' extension to existing Runway 06-24 and Taxiway A

Exhibit 5.10 Phased Development Exhibit

CONCEPTUAL DEVELOPMENT PHASES/FEATURES:

NEAR-TERM (0-7 YEARS)

- Relocation of the Glideslope Building and Antenna
- Relocation of the Segmented Circle and Windsock Equipment
- 3 Relocation of ARFF Facility
- Construction of EMAS System for RWY 24
- 6 Relocation of the Vehicle Service Road
- 6 Relocation of Lighting Vault
- 200' Extension of Existing RWY 06-24 and TWY A

INTERMEDIATE-TERM (8-12 YEARS)

- Removal of Fuel Farm on North Apron
- Removal of the North Apron and TWY N
- 10 Area Reserved for Future GA Parking
- Passenger/Admin/Parking Facility Improvements
- PHASE 3: LONG-TERM (13-20 YEARS)
- Relocation / 200'/600' Extension of RWY 06-24 (Includes REILs, PAPIs, Localizer Antennae and MALSRs)
- Removal/Reconstruction of Existing Connector Taxiways
- Removal/Reconstruction of Existing TWY A (Includes Lighting)
- (5) Construction of EMAS System for RWY 06
- Relocation of EMAS System for RWY 24



Section 6 - AIRPORT CAPITAL IMPROVEMENT PLAN (ACIP)

The previous analysis within this Airport Master Plan Update evaluated the Airport's forecasted needs to the existing infrastructure to develop a recommended development plan. From this recommended development plan, an ACIP can be formulated. An ACIP displays the recommended development plan in a tabular format with information on the individual project titles, phases, funding sources, timing, and environmental approvals. It is important to document the recommended development plan in such a way that it can be updated regularly to reflect new goals, priorities, opportunities, and constraints as well as assist other funding agencies by providing them information to determine their funding allocation and involvement. This Airport Master Plan Update ACIP will span the same 20-year planning horizon as the aviation forecasts, with more detailed information for the near-term projects.

In developing the ACIP, care must be taken to provide adequate lead-time for detailed planning, permitting, and construction to ensure that the proposed facilities are operational when warranted by the user demands. It is also important to minimize any disruptive scheduling where a portion of one facility may become inoperative due to the construction of another or to prevent extra costs resulting from improper project scheduling. An unrealistic or unusable plan can cause the airport to fall behind schedule quickly, which may jeopardize priority projects or future funding.

The actual timing or phasing of specific projects, or project elements, may change in response to tenant/user demands, unforeseen business opportunities, changes in the regulatory environment and availability of federal/state/local funds. Actual project costs may also vary from initial ACIP estimates as project designs progress and detailed engineering estimates are developed. All airports receiving federal AIP funding are required to update their ACIP with the FAA on an annual basis.

6.1 FUNDING SOURCES

Potential funding sources for any proposed improvements at the Airport come in the form of federal grants, County funds and Airport revenue, and third party investment. The amount of funding available from these sources will depend primarily on future levels of aviation activity at the Airport and future federal funding reauthorizations. As a non-hub primary facility, the Airport is eligible for certain types of funding as described below.

6.1.1 FEDERAL GRANTS

AIP grants, administered by the FAA, are a critical capital funding source to implement the projects recommended in this Airport Master Plan Update. For the purpose of this Airport Master Plan Update, it is assumed that the AIP will continue to be authorized and appropriated at levels consistent with H.R. 658, the FAA Modernization and Reform Act of 2012.

The FAA's National Plan of Integrated Airport Systems (NPIAS) classifies the Airport as a non-hub primary airport. Therefore, the AIP formula stipulates that the Airport is entitled to receive 90 percent federal funding for AIP-eligible projects. AIP funds can be used for most Airport improvement needs, but not operating costs. However, AIP funds are typically not available for revenue-generating projects, so it may be difficult for the Airport Sponsor to use these funds for projects designated to generate revenue. The FAA's AIP consists of entitlement funds and discretionary funds, with entitlement funds being allocated before discretionary funds from the Congressional budget. Since 2005, the Airport has received approximately \$35.5 million in federal aid for various projects including pavement rehabilitation, acquisition of necessary equipment, land acquisition, terminal improvements, updating the master plan, a wildlife hazard assessment, and security enhancements. There are no open capital improvements project utilizing federal funding at this time.

6.1.1.1 Entitlement Grants

Entitlement funds are distributed through grants by a formula currently based on the number of enplanements at individual airports and the amount of AIP funding available in that year as determined based on the authorization level from Congress. In cases where entitlement funds are not used during the current federal fiscal year, these funds are redistributed to other airport sponsors as discretionary funds and become what is known as protected entitlement funding in the next federal fiscal year. Funds must be used within four years of apportionment or will be considered expired and unavailable for use.

In 2015, the Airport was apportioned \$1 million in primary entitlements as per the annual minimum in 49 USC § 47114(c)(1)(C). **Table 6.1** displays the potential entitlements that the Airport could be apportioned if passenger enplanement levels grew to the forecasted activity levels. To be conservative and ensure the Airport sponsor is prepared for future development costs, this ACIP assumes an entitlement of one million annually through the planning horizon. As noted, the additional grant money above \$1 million is calculated by a formula based on passenger enplanements in the AIP Handbook Order 5100-38D, with the assumption that more than \$3.2 billion of AIP funding is available in any given fiscal year.

2021 2026 2031 2036 Forecasted 172.244 233,929 279.670 304.673 **Enplanements Potential AIP** \$1,675,669 \$1,996,431 \$2,234,284 \$2,364,300 **Entitlements**

Table 6.1 - Potential AIP Entitlements

Source: County of San Diego. Federal Aviation Administration. Kimley-Horn, 2017

6.1.1.2 <u>Discretionary Grants</u>

At the beginning of each federal fiscal year, the FAA sets aside the amount of discretionary funds to cover the Letter of Intent (LOI) payment schedules. The total discretionary funds in all LOIs subject to future obligation are limited to approximately 50 percent of the forecast discretionary funds available for that purpose. The authorizing statute directs the FAA to allocate certain discretionary funding to specific airport types and set aside categories such as noise, reliever airports, military airport program and projects relating to capacity, safety, security and noise. However, the FAA has some discretion in funding specific projects within these discretionary funding set-aside categories. The FAA approves discretionary funds for use on specific projects, after consideration of project priority and other selection criteria. The Airport is eligible for discretionary funding.

6.1.1.3 Other Federal Programs

The sponsor should also review current non-FAA Federal grant programs for eligibility on future projects. While not applicable to the ACIP at this time, there are typically grants available for special programs such as treatment of invasive species through the US Fish and Wildlife, security grants through the Department of Homeland Security, historical preservation through the Historical Preservation Fund, or energy rebates through Energy Star.

For example, in 2013, the Airport was awarded \$119,600 from the Department of Homeland Security to acquire security enhancement requirements such as audio system, fingerprint scanners, hard drives, cameras lock upgrades, and electric gate motors.

6.1.2 PASSENGER FACILITY CHARGES (PFCs)

PFCs are authorized by Title 14 of the Code of Federal Regulations (CFR), Part 158 and are administered by the FAA. PFCs collected from qualified enplaned passengers are used to fund eligible

projects. An airport operator can impose a PFC of \$1, \$2, \$3, \$4, or \$4.50 per eligible, enplaned passenger. Once a PFC is imposed, it is included as part of the ticket price paid by passengers enplaning at the airport—collected by the airlines and remitted to the airport operator, less an allowance for airline processing expenses. The PFC legislation stipulates that if a medium to large hub airport institutes a PFC of less than \$3, they must forego 50 percent of their AIP entitlement funds. This increases to 75 percent if they charge a \$4 or higher PFC. Since the Airport is classified as a non-hub primary airport, it would not have to forego any of its annual AIP entitlement funds.

Projects must be approved by the FAA and preserve, enhance, or make a significant contribution to the safety, security, or capacity of the national air transportation system, reduce noise or mitigate noise impacts from the Airport, improvement local quality, enhance competition between air carriers, or reduce congestion. PFCs cannot be used for revenue-generating facilities at airports, such as restaurants and other concession space, rental car facilities, public parking facilities or construction of exclusively-leased space or facilities. **Table 6.2** displays the historical PFCs received by the Airport.

Table 6.2 – Historical Passenger Facility Charges (PFCs)

	2011	2012	2013	2014	2015
PFCs	\$155,000	\$166,000	\$207,000	\$195,000	\$162,000

Source: County of San Diego. Kimley-Horn, 2017.

Table 6.3 displays the potential PFCs that the Airport could collect, minus airline administration fees, at a \$4.50 level if passenger enplanement levels grew to the forecasted activity levels.

Table 6.3 – Potential Passenger Facility Charges (PFCs)

	2021	2026	2031	2036
Forecasted Enplanements	172,244	233,929	279,670	304,673
Potential PFCs	\$775,098	\$1,052,681	\$1,258,515	\$1,371,029

Source: County of San Diego. Kimley-Horn, 2017

6.1.3 STATE GRANTS

Caltrans' mission in aviation is to foster and promote the development of a safe, efficient, dependable, and environmentally compatible air transportation system. As such, they provide funding through grants and loans as funds are available. The State funding programs are supported by the Aeronautics Account in the State Transportation Fund which is financed through taxes on fuel.

6.1.3.1 <u>Annual Credit</u>

Caltrans provides up to \$10,000 annually for each eligible airport. Per Public Utilities Code (21682-21683.2), the Annual Credit is the first priority for distributing available funds. As the Airport is designated as a commercial service airport, it is not eligible for this credit.

6.1.3.2 <u>State Matching Grant</u>

Caltrans provides matching grants up to five percent of the total project cost on a first come, first serve basis to the FAA AIP grants. As a commercial service airport, the Airport is not eligible for this grant.

6.1.3.3 Acquisition & Development (A&D) Grants

A&D Grants provide up to 90 percent for eligible safety, capacity, and security construction projects from \$20,000 to \$500,000. ALUCPs may also be funded through A&D grants. The Airport would be eligible for this program. As this program is funded after state operations, annual credits, and AIP matching grants

have been funded, it has not been considered as a funding source in this ACIP. The Airport may apply for inclusion for specific projects to assist with funding projects ahead of FAA funding.

6.1.3.4 California Airport Loan Program

Caltrans provides discretionary loans to eligible airports for construction and land acquisition projects that benefit an airport and/or improve its self-sufficiency. Projects cannot accommodate scheduled air carriers, but may be a revenue-producing project. The amount of the loan will depend on the funds available and are required to be paid back within 17 years. The interest rate would be the same as State general obligation bonds.

6.1.4 COUNTY AND AIRPORT FUNDS

The County operates the Airport through an Airport Enterprise Fund along with the other seven airports in the County. Revenues are used to operate the Airport as well as provide the local share of capital improvement projects, along with bonds. These methods described below will need to be analyzed by the Sponsor's financial team prior to the start of each capital project to determine the best source of the local share.

6.1.4.1 Airport Operating Revenues & Expenses

Historical operating revenues through 2015 are shown in **Table 6.4** and range from \$3.3 million to \$4 million. Revenue is derived from interest, rent and concessions, aviation activities, royalties, customs, and other miscellaneous activities. Rents and concessions account for 72 percent of the revenue from 2011 to 2015. This category includes rents from the various tenants on the Airport and concessions from the rental cars and terminal.

Table 6.4 - Operating Revenues

Category	2011	2012	2013	2014	2015	Percent
PFCs	\$155,000	\$166,000	\$207,000	\$195,000	\$162,000	4.9%
Interest on						
Deposits &	\$152,000	\$134,000	\$129,000	\$117,000	\$104,000	
Investments						3.5%
Rents &	\$2,514,000	\$2,301,000	\$2,505,000	\$2,948,000	\$2,835,000	
Concessions	Ψ2,514,000	Ψ2,301,000	Ψ2,303,000	Ψ2,540,000	Ψ2,000,000	72.3%
Parking Lot Use	\$173,000	\$215,000	\$224,000	\$236,000	\$177,000	
Fee	Ψ173,000	Ψ2 13,000	·	Ψ230,000	Ψ177,000	5.7%
Tie Down Fees	\$1,000	\$3,000	\$3,000	\$1,000	\$2,000	0.1%
Landing Fees	\$27,000	\$43,000	\$45,000	\$46,000	\$43,000	1.1%
Royalties	\$154,000	\$174,000	\$178,000	\$182,000	\$180,000	4.8%
Other						
Misc./Permits/	\$26,000	\$15,000	\$10,000	\$15,000	\$27,000	
Reimbursements						0.5%
Customs	\$133,000	\$154,000	\$195,000	\$351,000	\$308,000	
Services	φ133,000	φ134,000	φ195,000	φ551,000	φ500,000	7.2%
Total	\$3,335,000	\$3,205,000	\$3,496,000	\$4,091,000	\$3,838,000	

Source: County of San Diego. Kimley-Horn, 2017.

Operating expenses at the Airport include salaries and employee benefits and services and supplies. **Table 6.5** shows the operating expenses for the past five years. At 81 percent of the expenditures, services and supplies cover the day to operations and maintenance of the Airport along with utilities, legal, and administration costs, and various other day to day activities that must be undertaken by the Airport.

Table 6.5 – Operating Expenses

Category	2011	2012	2013	2014	2015	Percent
Salaries & Employee Benefits	\$569,000	\$594,000	\$596,000	\$761,000	\$813,000	19%
Services & Supplies	\$2,835,000	\$2,262,000	\$2,940,000	\$3,258,000	\$3,290,000	81%
Total	\$3,404,000	\$2,856,000	\$3,536,000	\$4,019,000	\$4,103,000	

Source: County of San Diego. Kimley-Horn, 2017.

Table 6.6 Displays a comparison of the annual total for revenues and expenses for the past five years. The Airport appears to have a profit on an annual basis, but slipped in 2015 as operating expenses increased and revenue decreased slightly. This decrease is likely attributed to the loss of commercial service, which negatively impacts parking lot use fees, rents, and concessions.

Table 6.6 - Operating Revenues and Expenses

Category	2011	2012	2013	2014	2015
Operating Revenues	\$3,335,000	\$3,205,000	\$3,496,000	\$4,091,000	\$3,838,000
Operating Expenses	\$3,404,000	\$2,856,000	\$3,536,000	\$4,019,000	\$4,103,000
Difference	-\$69,000	\$349,000	\$40,000	\$72,000	-\$265,000

Source: County of San Diego. Kimley-Horn, 2017.

6.1.4.2 <u>Bonds</u>

Bonds are a financial mechanism commonly used by municipalities to finance long-term capital projects.

- General Obligation (GO) Backed by the creditworthiness and taxing power of the sponsor that usually requires voter approval. GO bonds typically have lower interest rates due to their high level of security.
- General Airport Revenue Bonds (GARB) Usually used at larger commercial service airports. The bond is based on the sponsor's revenues to repay the debt. GARBs are popular choices when revenue is available as they do not place debt on the taxpayers or affect the bonding capacity of the sponsor. Interest rates may be higher than GO bonds due to their higher risk.
- Special Facility Revenue Bonds (SFB) Customarily issued for construction of a facility and backed by the future revenue generated at the facility. SFBs are useful in developing special use or revenue producing not eligible for federal funding.

6.1.5 THIRD-PARTY OR PRIVATE FUNDS

Private funds include parties separate from the County. This is typically a company or an individual looking to partner with or do business at the Airport or sometimes aviation advocates hoping to assist the airport. Before accepting private funds, it is recommended to discuss any implications or restrictions with the FAA and FDOT to avoid any potential complications. It is important to note that the airport must still adhere to all federal and state regulations and standards when using these funds.

Funds provided by a third-party such as a developer or a tenant to finance a construction project, like corporate hangars, terminals, cargo facilities, etc. Typically, the third-party would lease the facility for a period of years in lieu of fees as they provided the funding for the project. It is important that the Airport sponsor retains ownership of the underlying property if on-airport and the facility ownership reverts to the airport sponsor upon expiration of the lease.

As none of these types of projects are in the current ACIP, private funds are not assumed to be a source of funding in the analysis.

6.2 AIRPORT CAPITAL IMPROVEMENT PLAN (ACIP)

Table 6.7 displays the ACIP, based on **Exhibit 5.10** - Recommended Development Plan, for this Airport Master Plan Update. The cost estimates are in 2015 dollars and include contingencies, design costs, and construction management costs. The ACIP does not constitute all expenditures the Airport may incur on other projects, maintenance, or operating expenses. Additionally, approval of this Airport Master Plan Update does not commit the County to construct any facilities, carry out any improvements, or financially obligate the County to complete the projects as listed.

As shown, **Table 6.7** displays the ACIP for each planning period with totals ranging between \$99 million and nearly \$126 million over the planning horizon depending on the construction of an interim 200' extension to Runway 06-24 and Taxiway A and the phasing of ultimate runway/taxiway improvements. Of this, the County may be responsible for between \$18 million to \$25 million or more depending on federal eligibility for various components. It should be noted that while **Table 6.7** identifies the ARFF facility as eligible for FAA funding only certain portions of the project will be eligible and must be discussed with the FAA at the time of the planning and design. Additionally, FAA funding for the 200-foot Runway 06-24 and Taxiway A extension in the near-term may be challenging as discussed in Section 5.

Based on the review of the operating revenue and expenses in Section 6.1.4.1, the County will need to look for additional sources of funding to cover the local share. Even though commercial service has returned to the Airport, additional revenue beyond PFCs will be needed to fund the local share of the capital improvement projects.

McClellan-Palomar Airport Airport Master Plan Update

Table 6.7 – ACIP

Table 6.7 – ACIP												
	Project			Federal Fur	nds		State Fu	ınds	Sponsor/Lo	cal Funds	Private Funds	Total Funds
Fiscal	No. on	Project Description	Primary En	titlement	Dis	scretionary		İ				
Year	Exhibit	Troject Description										
	5.8											
		Anticipated Entitlement Funding Available		\$7,000,000							-	
	1	Relocation of the Glideslope Building and Antenna	\$	315,000			\$	-	\$	35,000		\$ 350,000
	2	Relocation of Segmented Circle	\$	135,000			\$	-	\$	15,000		\$ 150,000
	2	Relocation of Windsock Equipment	\$	117,000			\$	-	\$	13,000		\$ 130,000
	3	Relocation of ARFF Facility (4,700SF) ⁽¹⁾ Including Catex	\$	472,500			\$	-	\$	52,500		\$ 525,000
0 to 7	-	Environmental Assessment for EMAS	\$	180,000			\$	-	\$	20,000		\$ 200,000
Years	4	Construction of EMAS System serving RWY 24	\$	5,263,000	\$	17,237,000	\$	-	\$	2,500,000		\$ 25,000,000
	5	Relocation of the Vehicle Service Road ⁽²⁾	\$	-			\$	-	\$	-		\$ -
	6	Relocation of the Lighting Vault	\$	17,500			\$	-	\$	57,500		\$ 575,000
	<u> </u>	Environmental Assessment for Runway Extension	\$	-			\$	-	\$	200,000		\$ 200,000
	7	200' Runway & Taxiway A Extension (Interim condition)	\$	-	\$	12,888,450	\$	-	\$	1,432,050		\$ 14,320,500
		Total Near-Term	\$	7,000,000	\$	30,125,450	\$	-	\$	2,893,000	\$ -	\$ 27,130,000
		Total Near-Term*	\$	7,000,000	\$	30,125,450	\$	-	\$	4,325,050	\$ -	\$ 41,450,500
		Anticipated Entitlement Funding Available	\$	4,000,000								
	8	Removal of Fuel Farm on North Apron	\$	40,500			\$	-	\$	4,500		\$ 45,000
	9	Removal of North Apron and Taxiway N	\$	615,600			\$	-	\$	68,400		\$ 684,000
8 to	11	Enhancement of Near-Term Auto Parking	\$	208,800			\$	-	\$	23,200		\$ 232,000
12	-	Airport Master Plan Review	\$	594,000			\$	-	\$	66,000		\$ 660,000
Years	=	Environmental Assessment for Airfield Improvements	\$	180,000			\$	-	\$	20,000		\$ 200,000
	10	Preservation of area reserved for GA Aircraft Parking										TBD
	11	Passenger/Admin/Parking Facility Improvements										TBD
		Total Intermediate-Term	\$	1,638,900	\$	-	\$	-	\$	182,100	\$ -	\$ 1,821,000
		Anticipated Entitlement Funding Available	\$	11,000,000								
	12	Relocation of NAVAIDS (ILS, GS, MALSR, PAPI)	\$	1,000,000	\$	1,520,000	\$	-	\$	280,000		\$ 2,800,000
13-20	13	Remove/Reconstruct Connector Taxiways	\$	1,000,000	\$	584,000	\$	-	\$	176,000		\$ 1,760,000
Years	14	Remove/Reconstruct TWY A	\$	1,000,000	\$	11,924,000	\$	-	\$	1,436,000		\$ 14,360,000
1 54.5	15	Construction of EMAS System serving RWY 06	\$	1,000,000	\$	9,944,000	\$	-	\$	1,216,000		\$ 12,160,000
	16	Relocation of EMAS System serving RWY 24	\$	1,000,000	\$	9,116,000	\$	-	\$	1,124,000		\$ 11,240,000
		Subtotal Long-Term	\$	5,000,000	\$	33,088,000	\$	-	\$	4,232,000	\$ -	\$ 42,320,000
	erm Runwa	ay Extension Options										
13 to	-	200' Extension Plus 600' of Runway 6/24 and Taxiway A	\$	3,000,000	\$	21,195,600	\$	-	\$	16,130,400		\$ 40,326,000
20 Years		800' Extension of Runway 6/24 and Taxiway A	\$	3,000,000	\$	13,710,000	\$		\$	11,140,000		\$ 27,850,000
		Total Long-Term (200' Extension plus 600' Extension)	\$	8,000,000	\$	54,283,600	\$	-	\$	20,362,400	\$ -	\$ 82,646,000
		Total Long-Term (800' Extension)	\$	8,000,000	\$	46,798,000	\$	-	\$	15,372,000	\$ -	\$ 70,170,000
	Grand	Total Long-Term (200' Extension plus 600' Extension)*	\$	16,638,900	\$	84,409,050	\$	-	\$	24,869,550	\$ -	\$125,917,500
		Grand Total Long-Term (800' Extension)*	\$	16,638,900	\$	76,923,450	\$	-	\$	19,879,150	\$ -	\$113,441,500
	Gran	d Total Long-Term (200' Extension plus 600' Extension)	\$	16,638,900	\$	71,520,600	\$	-	\$	23,437,500	\$ -	\$111,597,000
		Grand Total Long-Term (800' Extension)	\$	16,638,900	\$	64,035,000	\$	-	\$	18,447,100	\$ -	\$99,121,000
_	0	ounty of San Diego, Kimley-Horn, 2017										

Source: County of San Diego. Kimley-Horn, 2017.

Notes: (1) FAA Approval Required on Eligibility of Specific Components; (2) Cost included in Construction of EMAS (3) Final totals are different from Table on page ES-10 because this ACIP Table includes \$66,000 for a Master Plan Review

6-7 Airport Capital Improvement Plan

The County should provide adequate lead-time for detailed design, permitting, and construction to ensure that the proposed facilities are operational when warranted by the user demands. It is intended that ACIP be reviewed and updated on an annual basis under guidance of the Sponsor, Caltrans, and FAA to consider the most recent conditions, opportunities, constraints, and desires. Airport development should be based on actual activity rather than a specific timeframe. The Department of Public Works will seek approval from the County Board of Supervisors as individual projects are fully designed and funding becomes available. Environmental approvals through the NEPA and CEQA will be necessary prior to receipt of funding.

APPENDIX 1 – AIRPORT LAYOUT PLAN (DRAFT DOCUMENT IN PROGRESS)



Airport Master Plan Update

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APPENDIX 2 – GLOSSARY OF TERMS AND COMMON ACRONYMS

Glossary of Terms

Above Ground Level (AGL) A height above ground as opposed to MSL (height above

Mean Sea Level).

Advisory Circular (AC) Publications issued by the FAA to provide a systematic means

of providing non-regulator guidance and information in a

variety of subject areas.

Airport Improvement

Program (AIP)

The AIP of the Airport and Airways Improvement Act of 1982 as amended. Under this program, the FAA provides funding assistance for the design and development of airports and

airport facilities.

Aircraft Mix The number of aircraft movements categorized by capacity

group or operational group and specified as a percentage of

the total aircraft movements.

Aircraft Operation An aircraft takeoff or landing.

Airport An area of land or water used or intended to be used for

landing and takeoff of aircraft; includes buildings and facilities,

if any.

Airport Elevation The highest point of an airport's useable runways, measured in

feet above mean sea level.

Airport Hazard Any structural or natural object located on or near a public

airport, or any use of land near such airport, that obstructs the airspace required for flight of aircraft on approach, landing,

takeoff, departure, or taxiing at the airport.

Airport Land Use

Regulations

Are designed to preserve existing and/or establish new compatible land uses around airports, to allow land use not associated with high population concentration, to minimize exposure of residential uses to critical aircraft noise areas, to avoid danger from aircraft crashes, to discourage traffic congestion and encourage compatibility with non-motorized traffic from development around airports, to discourage expansion of demand for governmental services beyond reasonable capacity to provide services and regulate the area around the airport to minimize danger to public health, safety, or property from the operation of the airport, to prevent obstruction to air navigation, and to aid in realizing the policies of a County Comprehensive Plan and Airport Master Plan.

Airport Layout Plan (ALP)

A graphic presentation, to scale, of existing and proposed

airport facilities, their location on the airport, and the pertinent

applicable standards. To be eligible for AIP funding

assistance, an airport must have an FAA-approved ALP.

Airport Master Record,

Form 5010

The official FAA document, which lists basic airport data for

Airport Master Plan Update

reference and inspection purposes.

Airport Reference Code

(ARC)

The ARC is a coding system used to relate airport design criteria to the operational and physical characteristics of the

airplanes intended to operate at the airport.

Airport Reference Point

(ARP)

The latitude and longitude of the approximate center of the

airport.

Airspace Space above the ground in which aircraft travel is divided into

corridors, routes, and restricted zones.

Air Traffic Aircraft operating in the air or on an airport surface, excluding

loading ramps and parking areas.

Approach Reference Code (APRC) A code signifying the current operational capabilities of a

runway and associated parallel taxiway with regard to landing

operations.

Approach Surface A surface longitudinally centered on the extended runway

centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available

or planned for that runway end.

Automated Weather

Observing System (AWOS)

This equipment automatically gathers weather data from various locations on the airport and transmits the information directly to pilots by means of computer generated voice

messages over a discrete frequency.

Based Aircraft An aircraft permanently stationed at an airport.

Building Restriction Line A line, which identifies suitable building area locations on

airports.

Ceiling The height above the earth's surface of the lowest layer of

clouds or other phenomena which obscures vision.

Conical Surfaces A surface extending outward and upward form the periphery of

the horizontal surface at a slope of 20 to 1 for a horizontal

distance of 4,000 feet.

Controlled Airspace Airspace in which some or all aircraft may be subject to air

traffic control to promote safe and expeditious flow of air traffic.

Critical/Design Aircraft In airport design, the aircraft which controls one or more

design items such as runway length, pavement strength,

lateral separation, etc., for a particular airport. The same

aircraft need not be critical for all design items.

Day Night Level (DNL) 24-hour average sound level, including a 10-decibel penalty for

sound occurring between 10:00 PM and 7:00 AM

Decibel Measuring unit for sound based on the pressure level.

Departure Reference Code

(DPRC)

A code signifying the current operational capabilities of a

runway with regard to takeoff operations.

Design Type The design type classification for an airport refers to the type of

runway that the airport has based upon runway dimensions

and pavement strength.

Expansion City of Carlsbad: expand airport facilities beyond the current

Boundaries of CUP-172.

State of California: defined by State of California Public Utilities Code § 21664.5 such as acquisition property for runway protection zones, construction of a new runway, extension or realignment of an existing runway, or associated facilities.

Federal Aviation Administration (FAA) The federal agency responsible for the safety and efficiency of

the national airspace and air transportation system.

FAR Part 77 A definition of the protected airspace required for the safe

navigation of aircraft.

Fixed Base Operator (FBO)

An individual or company located at an airport and providing

commercial general aviation services.

Fuel Flowage Fees A fee charged by the airport owner based upon the gallons of

fuel either delivered to the airport or pump at the airport.

Global Positioning System

Hazard to Air Navigation

(GPS)

The global positioning system is a space-based navigation system, which has the capability to provide highly accurate three-dimensional position, velocity, and time to an infinite number of equipped users anywhere on or near the Earth. The typical GPS integrated system will provide: position, velocity, time, altitude, groundspeed, and ground track error, heading and variation. The GPS measures distance, which it uses to fix position, by timing a radio signal that starts at the satellite and ends at the GPS receiver. The signal carries with It data that discloses satellite position and time of transmission

and synchronizes the aircraft GPS system with satellite clocks.

An object which, as a result of an aeronautical study, the FAA determines will have a substantial adverse effect upon the safe

and efficient use of navigable airspace by aircraft, operation of air navigation facilities, or existing or potential airport capacity.

Horizontal Surface A horizontal plane 150 feet above the established airport

elevation, the perimeter which is constructed by swinging arcs of specified radii form the center of each end of the primary surface of each runway of each airport and connecting the

adjacent arcs by lines tangent to those arcs.

Imaginary Surfaces Surfaces established in relation to the end of each runway or

designated takeoff and landing areas, as defined in

paragraphs 77.25, 77.28, and 77.29 of FAR Part 77, Objects Affecting Navigable Airspace. Such surfaces include the approach, horizontal, conical, transitional, primary, and other

surfaces.

Itinerant Operations All operations at an airport, which are not local operations.

Jet Noise The noise generated externally to a jet engine in the turbulent

jet exhaust.

Knots Nautical miles per hour, equal 1.15 statute miles per hour.

Large Airplane An airplane of more than 12,500 pounds maximum certified

takeoff weight.

Local Operations Operations by aircraft flying in the traffic pattern or within sight

of the control tower, aircraft known to be arriving or departing from flight in local practice areas, or aircraft executing practice

instrument approaches at the airport.

Location Identifier A three-letter or other code, suggesting where practicable, the

location name that it represents.

Maneuvering Area That part of an airport to be used for the takeoff and landing of

aircraft and for the movement of aircraft associated with takeoff

and landing, excluding aprons.

Master Plan/

Airport Master Plan Update A planning document prepared for an airport, which outlines

directions and developments in detail for 5 years and, less specifically, for 20 years. The primary component of which is

the Airport Layout Plan.

Mean/Maximum

Temperature

The average of all the maximum temperatures, usually for a

given period of time.

Mean Sea Level (MSL) Height above sea level.

Medium Intensity Runway

Lights (MIRL)

For use on VFR runways or runway showing a non-precision

instrument flight rule (IFR) procedure for either circling or

straight-in approach.

Minimum Altitude That designated altitude below which an IFR pilot is not

allowed to fly unless arriving or departing an airport or for

specific allowable flight operations.

National Airspace System The common network of United States airspace, navigation

aids, communications facilities and equipment, air traffic control equipment and facilities, aeronautical charts and information, rules, regulations, procedures, technical

information and FAA manpower and material.

National Plan of Integrated Airport Systems (NPIAS) A plan prepared annually by the FAA which identifies, for the public, the composition of a national system of airports together with the airport development necessary to anticipate and meet the present and future needs of civil aeronautics, to meet requirements in support of the national defense and to meet the special needs of the Postal Service. The plan includes both new and qualitative improvements to existing airports to increase their capacity, safety, technological capability, etc.

NAVAID A ground based visual or electronic device used to provide

course or altitude information to pilots.

Noise Defined subjectively as unwanted sound. The measurement of

noise involves understanding three characteristics of sound:

intensity, frequency, and duration.

Noise Contours Lines drawn about a noise source indicating constant energy

levels of noise exposure. DNL is the measure used to

describe community exposure to noise.

Noise Exposure Level The integrated value, over a given period of time, of a number

of different events of equal or different noise levels and

durations.

Non-Precision Instrument A runway having an existing instrument approach procedure

utilizing air navigation facilities with only horizontal guidance for which a straight-in non-precision instrument approach

procedure has been approved.

Notice to Airmen (NOTAM) A notice containing information (not known sufficiently in

advance to publicize by other means concerning the

establishment, condition, or change in any component (facility, service, or procedure) of or hazard in the National Airspace System, the timely knowledge of which is essential to

personnel concerned with flight operations.

Object Includes, but is not limited to, above ground structures,

NAVAIDs, people, equipment, vehicles, natural growth, terrain,

and parked aircraft.

Object Free Area (OFA) A two-dimensional ground area surrounding runways,

taxiways, and taxilanes which is clear of objects, except for

objects whose locations are fixed by function.

Obstacle Free Zone (OFZ) The airspace defined by the runway OFZ and, as appropriate,

> the inner-approach OFZ and the inner-transitional OFZ, which is clear of object penetrations other than frangible NAVAIDs.

Obstruction An object which penetrates an imaginary surface described in

the FAA's Federal Aviation Regulations (FAR), Part 77.

An apron intended to accommodate parked aircraft. Parking Apron

Pattern The configuration or form of a flight path flown by an aircraft or

prescribed to be flown, as in making an approach to a landing.

Precision Approach Path

Indicators (PAPI)

The visual approach slope indicator system furnishes the pilot visual slope information to provide safe descent guidance. It provides vertical visual guidance to aircraft during approach and landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that they are "on path" if they see red/white, "above path," if they see white/white, and "below path," if they see red/red.

Primary Surface A surface longitudinally centered on a runway. When the

> runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway, but when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of

that runway.

Rotating Beacon A visual NAVAID operated at many airports. At civil airports,

alternating white and green flashes indicate the location of the

airport.

Runway A defined rectangular surface on an airport prepared or

suitable for the landing or takeoff of airplanes.

REILs are flashing strobe lights which aid the pilot in identifying Runway End Identifier

Lights (REIL) The runway end at night or in bad weather conditions.

Runway Gradient The average gradient consisting of the difference in elevation

> of the two ends of the runway divided by the runway length may be used provided that no intervening point on the runway profile lies more than five feet above or below a straight line joining the two ends of the runway. In excess of five feet, the

runway profile will be segmented and aircraft data will be

applied for each segment separately.

Runway Lighting System A system of lights running the length of a system that may be

either high intensity (HIRL), medium intensity (MIRL), or low

intensity (LIRL).

Runway Orientation The magnetic bearing of the centerline of the runway.

Runway Protection Zone

(RPZ)

An area off the runway end used to enhance the protection of

people and property on the ground.

Runway Safety Area (RSA) A defined surface surrounding the runway prepared or suitable

for reducing the risk of damage to airplanes in the event of an

undershoot, overshoot, or excursion from the runway.

Segmented Circle A basic marking device used to aid pilots in locating airports

and which provides a central location for such indicators and

signal devices as may be required.

Small Aircraft An airplane of 12,500 pounds or less maximum certified

takeoff weight.

Taxiway A defined path established for the taxiing of aircraft from one

part of an airport to another.

Terminal Area The area used or intended to be used for such facilities as

terminal and cargo buildings, gates, hangars, shops and other

service buildings, automobile parking, airport motels,

restaurants, garages, and automobile services, and a specific

geographical area within which control of air traffic is

exercised.

Threshold The beginning of that portion of the runway available for

landing.

Touch and Go Operations Practice flight performed by a landing touch down and

continuous takeoff without stopping.

Traffic Pattern The traffic flow that is prescribed for aircraft landing at, taxiing

on or taking off, from an airport. The usual components are the departure, crosswind, downwind, and base legs; and the final

approach.

Transitional Surface These surfaces extend outward and upward at right angles to

runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach

surfaces.

Universal Communications

(UNICOM)

A private aeronautical advisory communications facility for

purpose other than air traffic control. Only one such station is

authorized in any landing area. Services available are advisory in nature primarily concerning the airport services and airport utilization. Locations and frequencies of UNICOMs are listed on aeronautical charts and publications.

Visual Flight Rules (VFR)

Rules that govern flight procedures under visual conditions.

Visual Runway

A runway intended for visual approaches only with no straight-

tin

instrument approach procedure either existing or planned for

that runway.

Common Acronyms

AAC Aircraft Approach Category AAGR Average Annual Growth Rate

AC **Advisory Circular**

ACIP Airport Capital Improvement Plan ACM Airport Certification Manual

ACRP Airport Cooperative Research Program

ADG Airplane Design Group ADO Airports District Office

ADS-B Automatic Dependent Surveillance - Broadcast

ADT Average Daily Traffic AGL Above Ground Level

AIP Airport Improvement Program

ALP Airport Layout Plan

ALS Approach Lighting System

ALSF Approach Lighting System with Sequenced Flashing Lights

ALUCP Airport Land Use Compatibility Plans

AOA Aircraft Operations Area

APCD Air Pollution Control District (County of San Diego)

APRC Approach Reference Code

APV Approach Procedure with Vertical Guidance

ARC Airport Reference Code

ARFF Aircraft Rescue and Firefighting

ARP Airport Reference Point

ASDA Accelerate Stop Distance Available

ASDE Airport Surface Detection Equipment - (Radar)

ASOS Automated Surface Observing System

ASR Airport Surveillance Radar ASV Annual Service Volume

ATC Air Traffic Control

ATCT Airport Traffic Control Tower

AWOS Automated Weather Observing Systems

BLF **Boarding Load Factors BMPs** Best Management Practices BRL **Building Restriction Line**

CALTRANS California Department of Transportation

CARB California Air Resources Board

CAT Category

CBP Customs and Border Patrol

CEQA California Environmental Quality Act **CDFW** California Department of Fish and Wildlife

CFR Code of Federal Regulations CLUP Comprehensive Land Use Plan
CMC Carlsbad Municipal Code
CMG Cockpit to Main Gear Distance

CNEL City's Noise Element/Community Noise Equivalent Level

CNPS California Native Plant Society
CRQ McClellan-Palomar Airport
CUP Conditional Use Permit

Cw Weighted Peak Hour Capacity

CWA Clean Water Act

DME Distance Measuring Equipment
DNL Day-Night Equivalency Level
DPRC Departure Reference Code

DWL Dual Wheel Loading
EAT End-Around Taxiway

EMAS Engineered Materials Arresting System
EPA Environmental Protection Agency
FAA Federal Aviation Administration
FAR Federal Aviation Regulations
FATO Final Approach and Takeoff Area

FBO Fixed Base Operator

FEMA Federal Emergency Management Agency

FOD Foreign Object Debris

FSROR Federal Screening Resources and Other Requirements

DGL Guidance Light Facility

GARB General Airport Revenue Bonds
GIS Geographic Information System

GO General Obligation

GPS Global Positioning System
GQS Glide Path Qualification Surface

GS Glideslope

HATh Height Above Threshold
HIRL High Intensity Runway Lights
IAP Instrument Approach Procedures
IATA International Air Transport Association

IFRInstrument Flight RulesILSInstrument Landing SystemL18Fallbrook Community AirparkLASMcCarran International Airport

LDA Landing Distance Available

LEED Leadership in Energy and Environmental Design

LNAV Lateral Navigation

LOC Localizer

LOS Level of Service
LOS Line of Sight

LPV Localizer Performance with Vertical Guidance
MALS Medium Intensity Approach Lighting System

MALSF MALS with Sequenced Flashers

MALSR MALS with Runway Alignment Indicator Lights

MBTA Migratory Bird Treaty Act

MGW Main Gear Width

MIRL Medium Intensity Runway Lights

MSL Mean Sea Level

MTOW Maximum Takeoff Weight

MYF Montgomery-Gibbs Executive Airport
NAAQS National Ambient Air Quality Standards

NAVAID Navigation Aid

NCDC National Climatic Data Center
NDB Non-directional Beacon
NEM Noise Exposure Maps

NEPA National Environmental Protection Act
NextGen Next Generation Air Transportation System

NGS National Geodetic Survey
NPA Non-Precision Approach

NPIAS National Plan of Integrated Airport Systems

NPL National Priorities List

NVGS Non-Vertically Guided Survey
OAK Oakland International Airport

OFA Object Free Area
OFZ Obstacle Free Zone

OKB Oceanside Municipal Airport

PA Precision Approach
PAL Pilot Activated Lighting

PAPI Precision Approach Path Indicator

PARTNER Partnership for Air Transportation Noise & Emissions Reduction

PCBs Polychlorinated Biphenyls
PCN Pavement Condition Number
PCFC Passenger Facility Charge

PHX Phoenix Sky Harbor International Airport

PIR Precision Instrument Runways
POFZ Precision Obstacle Free Zone
RASP Regional Aviation Strategic Plan
RCRA Resource Conservation Recovery Act

RDC Runway Design Code

REIL Runway End Identifier Lighting

RNAV Area Navigation RNM Ramona Airport

RO Regional Airports Divisions
ROFA Runway Object Free Area
ROFZ Runway Obstacle Free Zone
RPZ Runway Protection Zone
RSA Runway Safety Area

RTP Regional Transportation Plan
RTR Remote Transmitter/Receiver

RVR Runway Visual Range

RW Runway

RWQCBs Regional Water Quality Control Boards

SAN San Diego International

SANDAG San Diego Association of Governments

SanGIS The San Diego Geographic Information Source SDCRAA San Diego County Regional Airport Authority

SDG&E San Diego Gas and Electric
SFB Special Facility Revenue Bonds

SJC Norman Y Mineta San Jose International Airport

SMF Sacramento International Airport

SOP Standard Operating Procedures

SWPPP Storm Water Pollution Prevention Plan

TAF Terminal Area Forecast

TERPS Terminal Instrument Procedures
TESM Taxiway Edge Safety Margin

TFMSC Traffic Flow Management System Counts

TH Threshold TL Taxilane

TODA Takeoff Distance Available

TOFA Taxiway and Taxilane Object Free Area

TORA Takeoff Run Available

TRACON Terminal Radar Approach Control Facility

TSA Taxiway/Taxilane Safety Area

TSA Transportation Security Administration

TSCA Toxic Substances Control Act
TSS Threshold Siting Surface

TW Taxiway

UAS Unmanned Aircraft Systems

USC United States Code
UHF Ultra-High Frequency

USDA U.S. Department of Agriculture USFWS U.S. Fish and Wildlife Service

USGS U.S. Geological Survey

V Visual

VASI Visual Approach Slope Indicator

VFR Visual Flight Rules

VGS Vertically Guided Survey

VGSI Visual Guidance Slope Indicator

VHF Very High Frequency

VNAP Voluntary Noise Abatement Procedures

VNAV Vertical Navigation

VOR VHF Omnidirectional Range

VORTAC VHF Omnidirectional Range Collocated Tactical Air

WAAS Wide Area Augmentation System



Airport Master Plan Update

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APPENDIX 3 – TRANSPORTATION IMPACT ANALYSIS



Airport Master Plan Update

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TRANSPORTATION IMPACT ANALYSIS

McClellan-Palomar Airport Master Plan Update

County of San Diego, California December 7, 2017

LLG Ref. 3-17-2772

Prepared by:
Charlene Sadiarin, P.E.
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TRANSPORTATION IMPACT ANALYSIS

McClellan-Palomar Airport Master Plan Update

County of San Diego, California December 7, 2017

1.0 Introduction

Linscott, Law & Greenspan Engineers (LLG) has been retained to assess the potential transportation impacts associated with the McClellan-Palomar Airport Master Plan Update ("Project"). The Project is a flexible, phased 20-year strategy to prioritize projects at the Airport that provide safety and operational enhancements. The Project is located within the municipal limits of the City of Carlsbad. Included in this transportation study are the following:

- Project Description
- Existing Conditions Discussion
- Analysis Approach and Methodology
- Significance Criteria
- Analysis of Existing Conditions
- Trip Generation/Distribution/Assignment
- Analysis of Existing + Project Scenarios
- Cumulative Projects Discussion
- Analysis of Near-Term Scenarios
- Analysis of Long-Term Scenarios
- Bicycle / Pedestrian / Transit Analysis
- Significant Impacts and Mitigation Measures

Figure 1–1 shows the vicinity map. Figure 1–2 shows a more detailed Project area map.

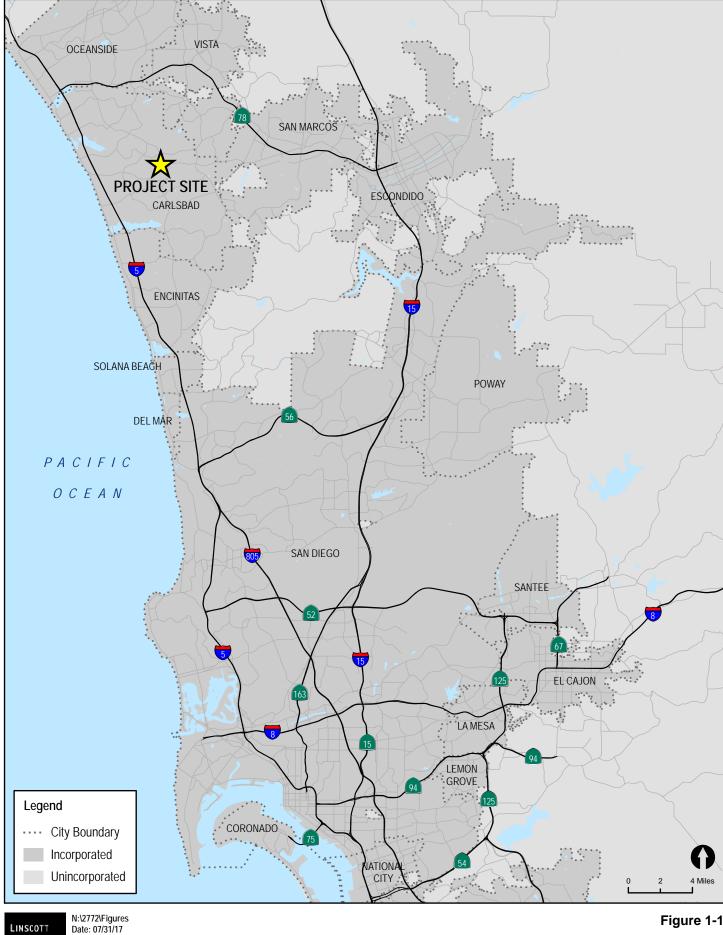
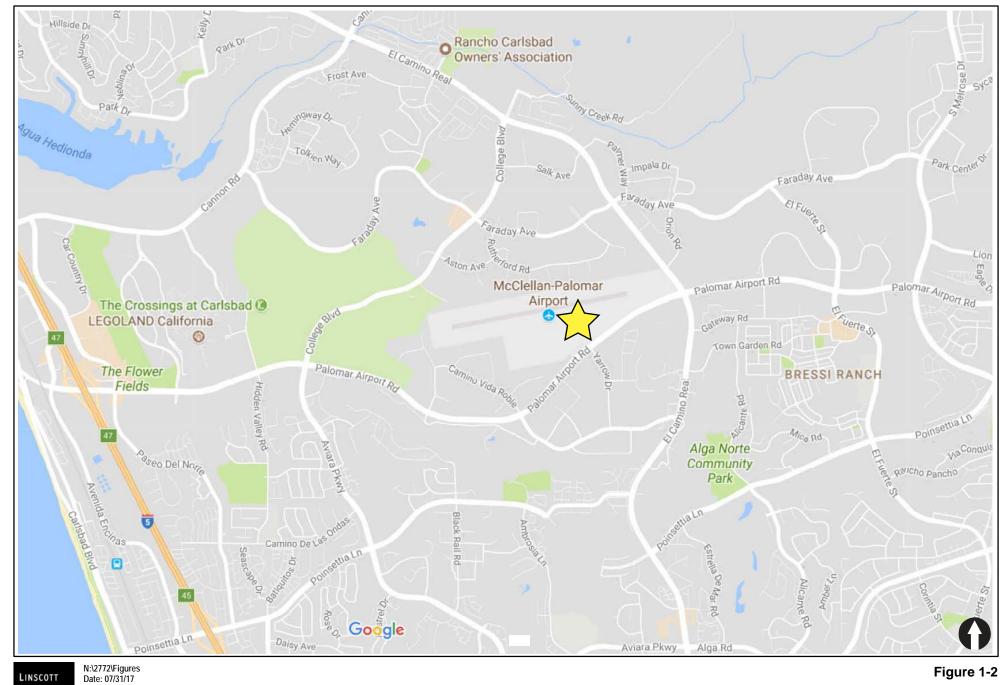




Figure 1-1

Vicinity Map



LINSCOTT LAW & GREENSPAN engineers

Project Area Map

2.0 PROJECT DESCRIPTION

The County of San Diego Department of Public Works (County) owns and operates McClellan Palomar Airport within the municipal boundary of the City of Carlsbad. Although the County's property in the vicinity totals approximately 450 acres, including aviation and non-aviation land, the approximately 250-acre Master Plan Project study area encompasses the active airfield, tenant leaseholds, aircraft and auto parking, passenger terminal building, and administrative facilities located north of Palomar Airport Road at Yarrow Drive.

The Master Plan is a flexible, phased 20-year strategy to prioritize projects at the Airport that provide safety and operational enhancements. The Project focuses on the "D-III Modified Standards Compliance" classification to meet the current and future needs at the airport.

The major objectives of the D-III Modified Standards Compliance design for the airport include:

- Meeting FAA-required safety areas around the runway and taxiways (requires shifting aircraft movement areas),
- Maintaining a 150-foot wide runway,
- Installation of Engineered Materials Arresting System (EMAS) as a safety enhancement to stop aircraft in overrun situations,
- Improvements to the capacity and efficiency of landside (i.e. emergency services and passenger/visitor administration) facilities.

A conceptual phasing plan for the Project is shown below.

Near-Term Projects (0-7 years):

- Elements to meet FAA's safety and design standards for the C/D-III airport classification, including the Runway Safety Area (RSA) of the existing runway/taxiway alignment
 - o Relocation of the glideslope building, segmented circle, windsock equipment
 - Relocation of the vehicle service road
- New EMAS on the western end of runway 06-24
- Aircraft Rescue & Fire Fighting (ARFF) facility relocation
- 200-foot extension of the current runway and taxiway "A"
- Landslide improvements to meet near-term aviation forecasts

Intermediate-Term Projects (8-12 years):

- Elements to clear the RSA and the Runway Object Free Area (ROFA) of the ultimate runway/taxiway alignment
 - o Removal of aircraft fueling tank and parking on north ramp
- Landslide improvements to meet intermediate aviation forecasts

Long-Term Projects (13-20 years):

- Movement of runway 06-24 123-foot to the north, and all associated actions
 - o Reconstruction/removal of connector taxiways
 - o Relocation of EMAS on western end of new runway alignment
 - o Relocation of navigational aids
 - o Additional 600-foot extension on the ultimate runway and taxiway "A"
- Landslide improvements to meet long-term aviation forecasts

Figure 2–1 shows the conceptual phasing plan for the Project. Access to the airport is provided via Yarrow Drive and Owens Avenue.

This transportation study focuses on the Project's long-term forecasted increase in commercial passenger enplanements and associated traffic impacts. An enplanement is measured by one commercial air service passenger boarding a scheduled flight. The Master Plan studies the potential for growth of commercial air service at the airport over a 20-year planning period. *Table 2–1* shows the operations/enplanements for the existing conditions as well as for two (2) Project alternatives called Passenger Activity Levels (PAL) forecasts, which have different enplanement projections (PAL1, PAL2).

TABLE 2–1
PROJECT OPERATIONS/ENPLANEMENTS

	Existing	PAL1	PAL2
Year	2016	2036	2036
Annual Aircraft Operations	149,029	192,860	194,300
Annual Enplanements	131	304,673	575,000
Design Hour Enplanements		63	165
Average Daily Enplanements		835	1,575

CONCEPTUAL DEVELOPMENT PHASES/FEATURES:

NEAR-TERM (0-7 YEARS)

Relocation of the Glideslope Building and Antenna

- 2 Relocation of the Segmented Circle and Windsock Equipment
- 3 Relocation of ARFF Facility
- 4 Construction of EMAS System for RWY 24
- Selocation of the Vehicle Service Road
- 6 Relocation of Lighting Vault
- 200' Extension of Existing RWY 06-24 and TWY A

INTERMEDIATE-TERM (8-12 YEARS)

- Removal of Fuel Farm on North Apron
- Removal of the North Apron and TWY N
- Area Reserved for Future GA Parking
- Passenger/Admin/Parking Facility Improvements

PHASE 3: LONG-TERM (13-20 YEARS)

- Relocation 123' North/Extension of RWY 06-24 (Includes REILs, PAPIs, Localizer Antennae and MALSRs)
- Removal/Reconstruction of Existing Connector Taxiways
- Removal/Reconstruction of Existing TWY A (Includes Lighting)
- (B) Construction of EMAS System for RWY 06
- (B) Relocation of EMAS System for RWY 24





N:\2772\Figures Date: 08/04/17 Figure 2-1

Conceptual Phasing Plan

3.0 Existing Conditions

Effective evaluation of the traffic impacts associated with the proposed Project requires an understanding of the existing transportation system within the Project area. The City of Carlsbad uses San Diego Traffic Engineers' Council (SANTEC) criteria to determine the traffic report study area. This criteria utilizes the 50 peak hour trip threshold meaning intersections and segments were included where the Project adds 50 or more peak hour trips. The standard of practice is to not include more minor intersections such as unsignalized intersections, private driveways, and intersections where the Project does not add right or left-turn movements. The specific study area includes the following intersections and street segments. *Figure 3–1* shows the intersections and street segments included in the study area. *Figure 3–2* shows an existing conditions diagram, including signalized intersections and lane configurations.

Intersections:

- 1. Canon Road / Faraday Avenue
- 2. El Camino Real / College Boulevard
- 3. College Boulevard / Faraday Avenue
- 4. El Camino Real / Faraday Avenue
- 5. I-5 Southbound (SB) Ramps / Palomar Airport Road
- 6. I-5 Northbound (NB) Ramps / Palomar Airport Road
- 7. Palomar Airport Road / Paseo Del Norte
- 8. Palomar Airport Road / Armada Drive
- 9. Palomar Airport Road / Hidden Valley Road
- 10. Palomar Airport Road / College Boulevard
- 11. Palomar Airport Road / Camino Vida Roble
- 12. Palomar Airport Road / Yarrow Drive
- 13. Palomar Airport Road / El Camino Real
- 14. Palomar Airport Road / Loker Avenue
- 15. Palomar Airport Road / El Fuerte Street
- 16. Palomar Airport Road / Melrose Drive
- 17. El Camino Real / Town Garden Road
- 18. El Camino Real Camino Vida Roble
- 19. El Camino Real / Poinsettia Lane

Segments:

Palomar Airport Road

I-5 Ramps to Paseo Del Norte

- Paseo Del Norte to Armada Drive
- Armada Drive to Hidden Valley Road
- Hidden Valley Road to College Boulevard
- College Boulevard to Camino Vida Roble
- Camino Vida Roble to Yarrow Drive
- Yarrow Drive to El Camino Real
- El Camino Real to Loker Avenue
- Loker Avenue to El Fuerte Street
- El Fuerte Street to Melrose Drive
- East of Melrose Drive

El Camino Real

- North of College Boulevard
- College Boulevard to Faraday Avenue
- Faraday Avenue to Palomar Airport Road
- Palomar Airport Road to Town Garden Road
- Town Garden Road to Camino Vida Roble
- Camino Vida Roble to Poinsettia Lane
- South of Poinsettia Lane

College Boulevard

Faraday Avenue to Palomar Airport Road

3.1 Existing Street Network

The following is a description of the existing street network in the study area.

Palomar Airport Road is classified as an Arterial Street according to the *City of Carlsbad Mobility Element*. Palomar Airport Road is currently constructed as a six-lane divided roadway throughout the study area. The posted speed limit eastbound is 35 mph between the I-5 ramps and Paseo Del Norte and 55 mph between Paseo Del Norte and Melrose Drive. The posted speed limit westbound is 55 mph between Melrose Drive and Armada Drive and 35 mph between Armada and the I-5 ramps. Street parking is not permitted along Palomar Airport Road.

El Camino Real is classified as an Arterial Street according to the *City of Carlsbad Mobility Element*. El Camino Real is currently constructed as a five-lane divided roadway between Jackspar Drive and College Boulevard and a six-lane divided roadway between College Boulevard and Alga Road. The posted speed limit is 55 mph in both directions throughout the study area. On street parking is not permitted along El Camino Real

College Boulevard is classified as an Arterial Street according to the *City of Carlsbad Mobility Element*. College Boulevard is currently constructed as four-lane divided roadway throughout the study area. The posted speed limit is 50 mph throughout the study area. Street parking is not permitted along College Boulevard.

Cannon Road is classified as an Arterial Street in the *City of Carlsbad Mobility Element*. Within the study area, Cannon Road is currently constructed as a four-lane divided roadway. The posted speed limit is 50 mph. Curbside parking is not permitted along Cannon Road.

Melrose Drive is classified as an Arterial Street according to the *City of Carlsbad Mobility Element*. Melrose Drive is currently constructed as a six-lane divided roadway. The posted speed limit is 55 mph in both directions throughout the study area. On street parking is not permitted along Melrose Drive.

Faraday Avenue is classified as an Employment/Transit Connector Street according to the *City of Carlsbad Mobility Element*. Faraday Avenue is currently constructed as a two-lane roadway that is divided from Cannon Road to a mile southeast of Cannon Road and undivided with a two way left turn lane from a mile southeast of Cannon Road to Oak Ridge Way. The posted speed limit is 40 mph throughout the study area. On street parking is not permitted along Faraday Avenue.

Poinsettia Lane is classified as an Employment/Transit Connector Street between Carlsbad Boulevard and College Boulevard, an Arterial Connector Street between College Boulevard and Paseo Escuela, and a School Street between Paseo Escuela and Melrose Drive according to the *City of Carlsbad Mobility Element*. Poinsettia Lane is currently constructed as a four-lane divided roadway throughout the study area. The posted speed limit is 50 mph. Street parking is not permitted along Poinsettia Lane.

Camino Vida Roble is classified as an Industrial Street according to the *City of Carlsbad Mobility Element*. Camino Vida Roble is currently a two-lane undivided roadway with a two way left turn lane. The posted speed limit is 40 mph. On Street parking is not permitted along Camino Vida Roble.

Yarrow Drive is classified as an Industrial Street according to the *City of Carlsbad Mobility Element*. Yarrow Drive is currently constructed as a 4 lane undivided roadway and its northern terminus serves as the main entrance to the airport. The posted speed limit is 40 mph. On street parking is not permitted along Yarrow Drive.

Town Garden Road is classified as an Industrial Street according to the *City of Carlsbad Mobility Element*. Town Garden Road is currently constructed as a four-lane undivided roadway east of El Camino Real and a two-lane undivided roadway west of El Camino Real. The posted speed limit is 40 mph east bound and 10 mph going west bound. On street parking is not permitted along Town Garden Road.

Paseo Del Norte is classified as a Neighborhood Connector Street according to the *City of Carlsbad Mobility Element*. Paseo Del Norte is currently constructed as four-lane divided roadway between Cannon Road and Car Country Drive and a four-lane undivided roadway with left turn pockets intermittently between Car Country Drive and Palomar Airport Road. South of Palomar Airport Road, Paseo Del Norte continues as a four-lane undivided roadway with a two way left turn lane. There is no posted speed limit. On street parking is not permitted along Paseo Del Norte

Armada Drive is classified as an Industrial Street according to the *City of Carlsbad Mobility Element*. Armada Drive is currently constructed as a four-lane divided roadway with a short segment having a two way left turn lane in between Fleet Street. The post speed limit is 40 mph. On street parking is not permitted along Armada Drive.

Hidden Valley Road is classified as a Local/Neighborhood Street according to the *City of Carlsbad Mobility Element*. Hidden Valley Road is currently constructed as a two lane undivided roadway with a two way left turn lane. The posted speed limit is 40 mph. On street parking is not permitted along Hidden Valley Road.

Loker Avenue is classified as an Industrial Street according to the *City of Carlsbad Mobility Element*. Loker Avenue is currently constructed as a two-lane undivided roadway. The posted speed limit is 35 mph. On street parking is permitted along Loker Avenue.

El Fuerte Street is classified as an Industrial Street between Faraday Avenue and Palomar Airport Road, a Neighborhood Connect Street between Palomar Airport Road and Bressi Ranch Way, and a School Street between Bressi Ranch Way and Poinsettia Lane. The posted speed limit is 45 mph. On street parking is not permitted along El Fuerte Street.

3.2 Existing Bicycle Network

Currently, there is a Class 2 bike lane provided along each roadway within the study area with the exceptions of the following:

- Palomar Airport Road, west of Paseo Del Norte
- Faraday Avenue, between El Camino Real & Palmer Way
- Armada Drive, south of Palomar Airport Road
- Hidden Valley Road, north of Palomar Airport Road
- Camino Vida Roble, north of Palomar Airport Road
- Yarrow Drive
- Town Garden Road, west of El Camino Real

3.3 Existing Transit Conditions

Transit service in the vicinity of the Project is provided by North County Transit District (NCTD). The following NCTD bus routes serve the area with nearby stops along Palomar Airport Road at Camino Vida Roble, Yarrow Drive, and El Camino Real.

- Route 309 Oceanside to Encinitas via El Camino Real provides service between Encinitas Station, El Camino Real SPRINTER Station, and San Luis Rey Transit Center primarily via El Camino Real. Route 309 generally provides service at 30 minute headways Monday through Saturday, with headways increasing to 60 minutes in the evening after the afternoon peak period. Sunday and holiday service is at approximately 60 minute headways for the full day.
- Route 444 Carlsbad Poinsettia COASTER Connection via Faraday Avenue & Rutherford Road provides service between Carlsbad Poinsettia COASTER station and Cannon Road & Ground Pacific Drive primarily via Palomar Airport Road, College Boulevard, and Faraday Avenue. Route 444 generally provides service at 80 minute headways Monday through Friday with headways decreasing to 30 minutes in the evening hours. Route 444 does not provide service on weekends or holidays.
- Route 445 Carlsbad Poinsettia COASTER Connection to Palomar College provides service between Carlsbad Poinsettia Station and Palomar College primarily via Palomar Airport Road and San Marcos Boulevard. Route 445 generally provides service at 80 minute headways Monday through Friday with headways decreasing to 30 minutes in the even hours. Route 445 does not operate on weekends or holidays.

3.4 Existing Traffic Volumes

LLG confirmed with City of Carlsbad staff that existing weekday AM and PM peak hour (7:00-9:00 AM and 4:00-6:00 PM) traffic volumes should be obtained for the circulation element intersections from the City of Carlsbad's 2016 Traffic Monitoring Program (TMP). The TMP collected traffic during July 2016. At locations where the City has not collected data, counts were commissioned on Wednesday, June 21, 2017.

Figure 3–3 shows the Existing Traffic Volumes. Appendix A contains the manual count sheets.

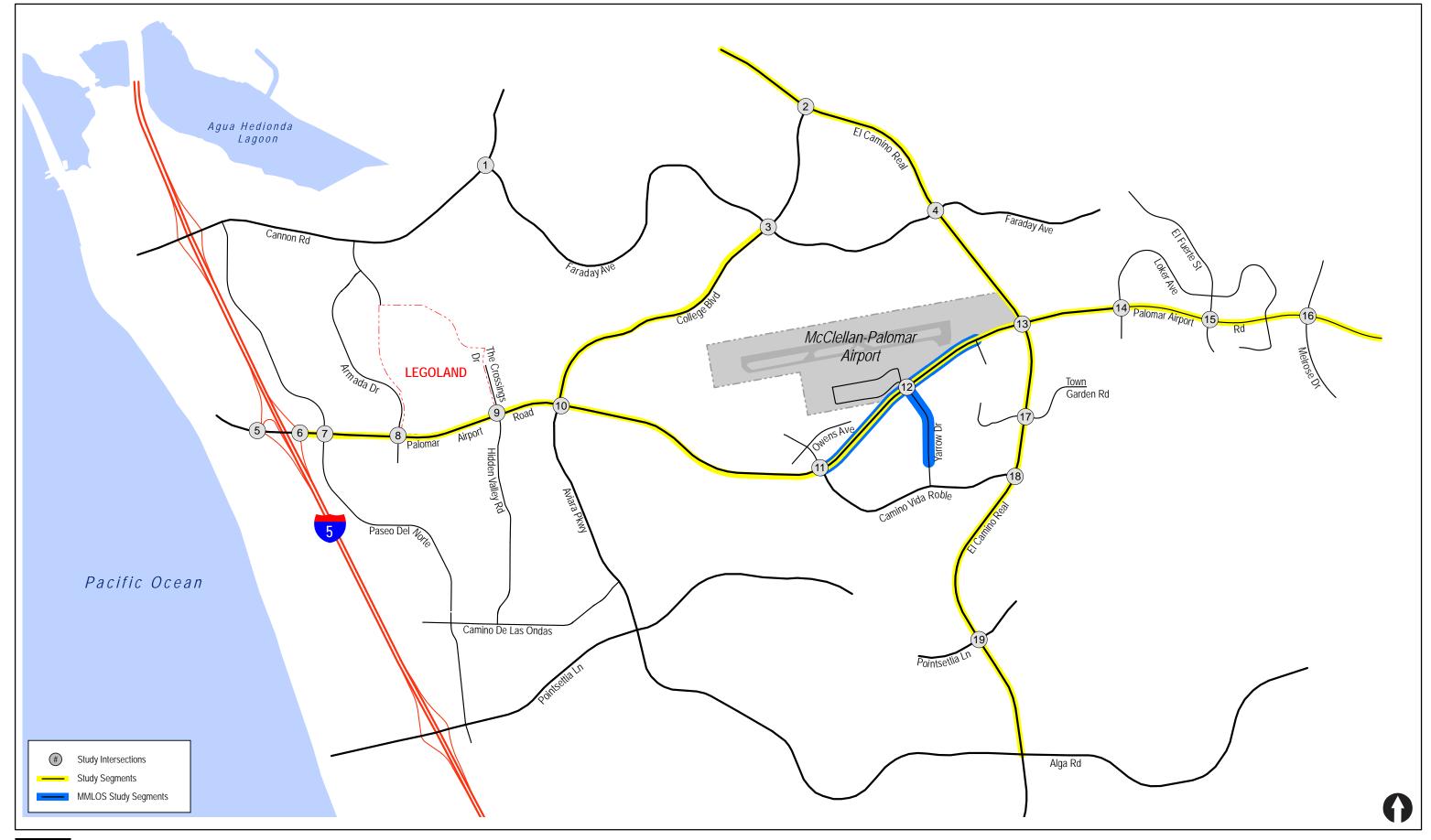
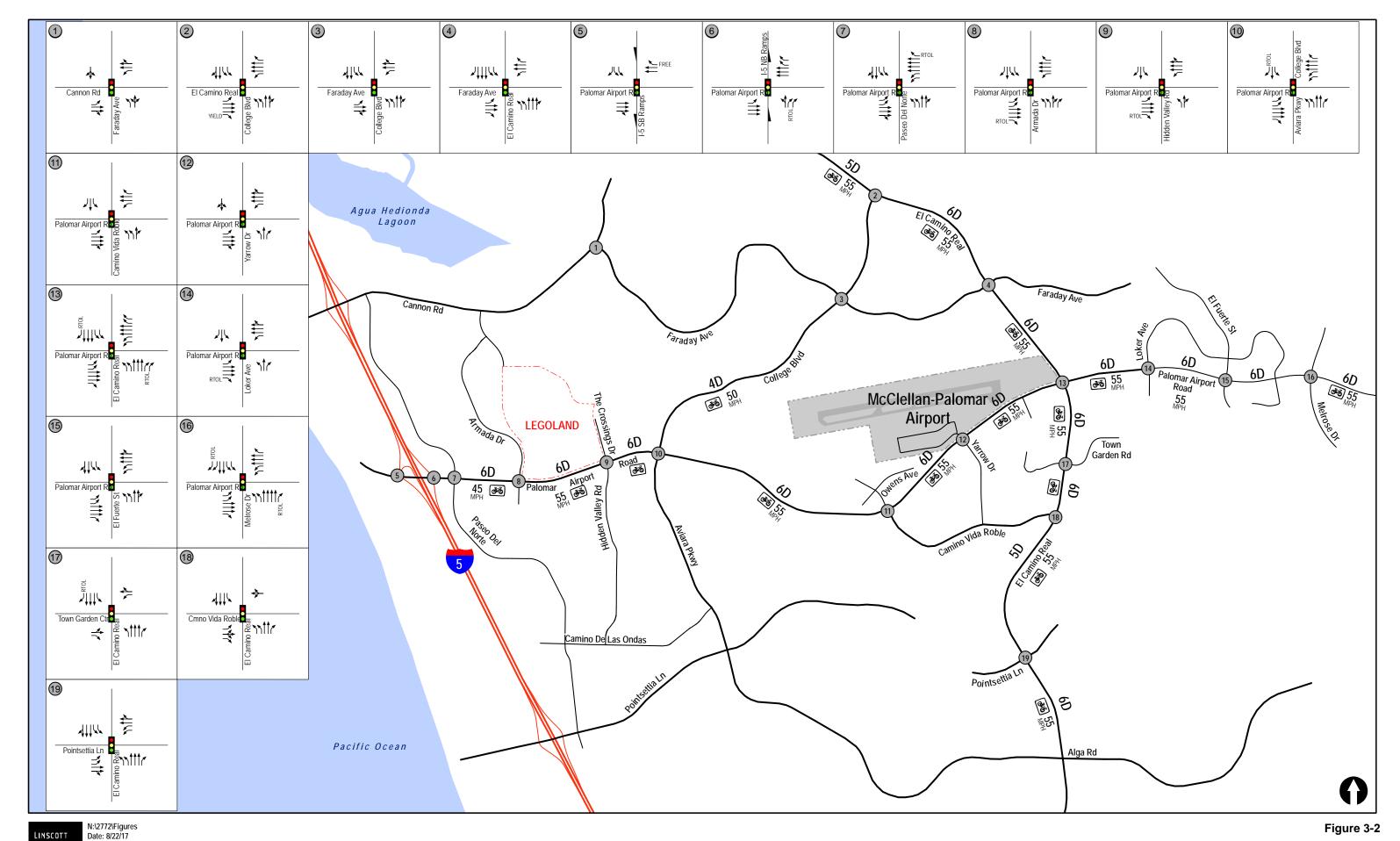




Figure 3-1



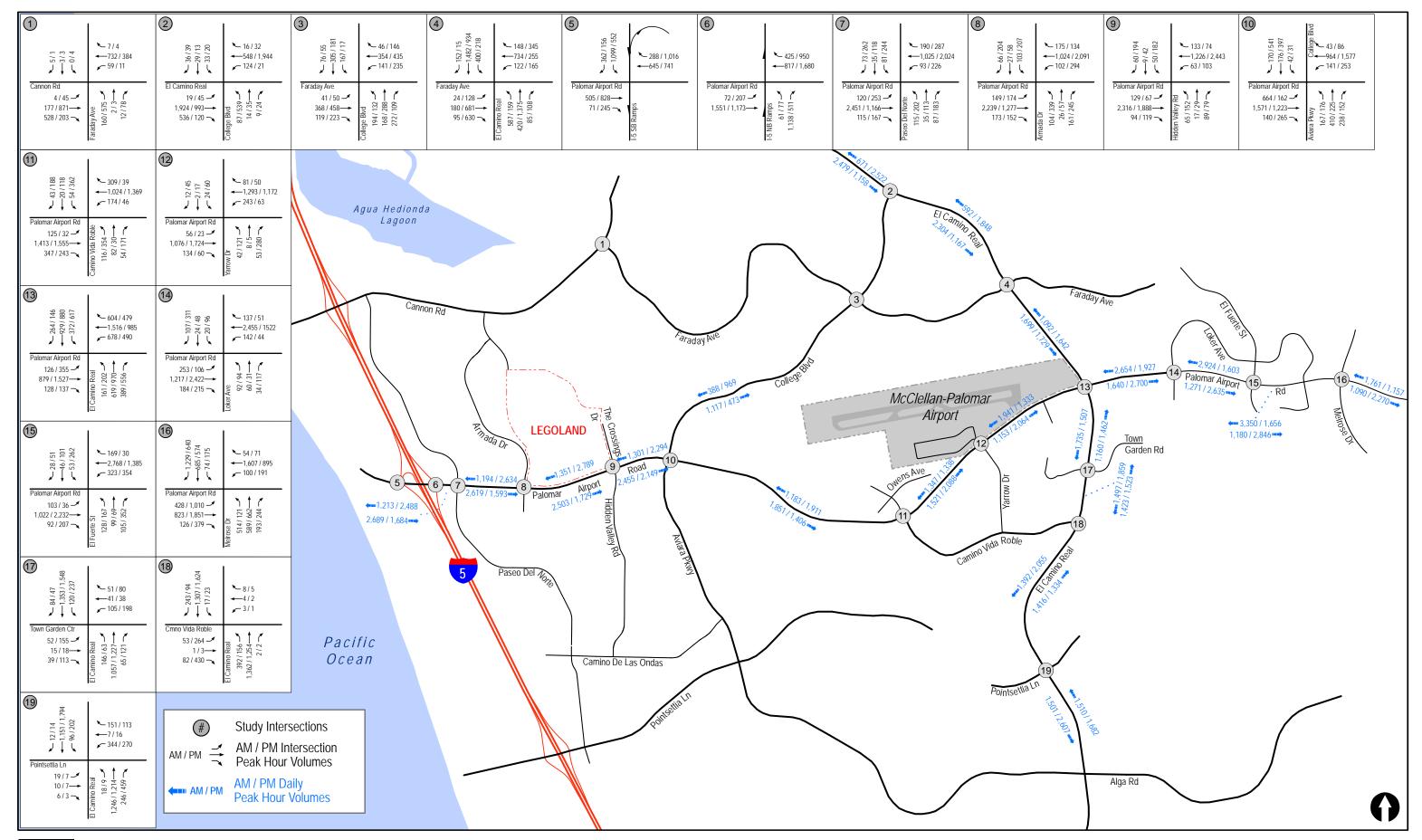




Figure 3-3

4.0 ANALYSIS APPROACH AND METHODOLOGY

Level of service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis taking into account factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level of service designation is reported differently for signalized and unsignalized intersections, as well as for roadway segments.

Since the intersections and roadways within the study area are located within the City of Carlsbad, this report utilizes Carlsbad analysis methodologies as described below and CEQA thresholds of significance.

4.1 Intersections

Per City of Carlsbad standards, the study intersections were analyzed using the *Intersection Capacity Utilization (ICU)* method for Existing and Existing with Project under AM and PM peak hour conditions.

The ICU procedure is based on an article in the Institute of Transportation Engineers Journal, August 1978 and assumes the traffic flow characteristics of signalized intersections. It computes the Level of Service (LOS) for the total intersection based upon a summation of volume to capacity (V/C) ratios for the key conflicting movements. The ICU numerical value represents the percent of signal green time, and thus, the capacity required to serve the traffic demand. The LOS for signalized intersections varies from A (free flow, little delay) to F ("heavy congestion" conditions). ICU methodology and calculation worksheets can be found in *Appendix B*.

Under Near-Term and Long-Term conditions, the study intersections were analyzed using the 2010 Highway Capacity Manual (HCM) methodology. Intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined utilizing the methodology found in Chapter 18 of the HCM, with the assistance of the Synchro (version 10) computer software. The delay values (represented in seconds) were then converted to a corresponding intersection LOS. Signalized intersection calculation worksheets and a more detailed explanation of the methodology are attached in Appendix B.

4.2 Street Segments

Per City of Carlsbad standards, the study street segments in the Project area were analyzed on a peak hour basis. The midblock peak hour volumes were utilized to calculate volume to capacity ratio (V/C) for each direction of the street segment. The City of Carlsbad assumes a one-direction capacity of 1,800 vehicles per hour per lane for through lanes. A LOS is determined by using V/C thresholds.

4.2.1 Pedestrians/Bicyclists/Transit

For pedestrian, bicycle, and transit level of service, only modes subject to multi-modal level of service (MMLOS) standards for a given segment need to be evaluated, as indicated in Table 3-1 of the City of Carlsbad Mobility Element. Segments to be analyzed for MMLOS are unique for each mode.

For pedestrian level of service, segments are to be defined from each pedestrian entry point from the project to the nearest intersection in both directions. In most cases, there will be two segments per entry point. LOS should be evaluated for the project side of the street only.

For bicycle level of service, segments are to be defined from each bicycle entry point from the project to the nearest intersection in both directions. Segments should be analyzed for both sides of the street and each side of the street should be assigned a separate level of service.

For transit level of service, segments are to be defined from each pedestrian entry point from the project to the nearest transit stop for both directions of transit service, up to ¼ mile.

In the case of the Project, the nearest intersections in either direction of the Project driveways are the intersections of Palomar Airport Road with Camino Vida Roble to the west and the Lowes Shopping Center driveway to the east. The location of the nearest transit stops are located on Yarrow Drive (200 feet south of Palomar Airport Road) and on Palomar Airport Road (200 feet east of Yarrow Drive). Thus, the applicable MMLOS study segments are as follows for the three modes and are illustrated in *Figure 3–1*:

Pedestrian

- Palomar Airport Road from Camino Vida Roble to Yarrow Drive
- Palomar Airport Road from Yarrow Drive to the Lowes Shopping Center Driveway (at 2501 Palomar Airport Road)

Bicycle

- Palomar Airport Road from Camino Vida Roble to Yarrow Drive
- Palomar Airport Road from Yarrow Drive to the Lowes Shopping Center Driveway (at 2501 Palomar Airport Road)

Transit

- Project frontage (northwest corner of intersection) to westbound transit stop on Yarrow Drive (200 feet south of Palomar Airport Road)
- Project frontage (northwest corner of intersection) to eastbound transit stop on Palomar Airport Road (200 feet east of Yarrow Drive)

Since Palomar Airport Road is classified as an Arterial Street, it is only subject to MMLOS standards for transit. Therefore this will be the only non-vehicular mode evaluated. Yarrow Drive is classified as an Industrial Street and is therefore subject to MMLOS standards for transit.

5.0 SIGNIFICANCE CRITERIA

This section provides significance criteria for vehicle-related traffic only. For a description and analysis of multimodal criteria, please refer to Section 12.0.

As outlined in the *City of Carlsbad's Growth Management Plan*, a traffic impact is considered to be significant if the addition of project traffic causes the intersection or street segment LOS to decrease to worse than (below) LOS D.

For intersections analyzed under the ICU methodology which are currently operating worse than LOS D, a project impact will be considered significant if the project causes the ICU value at an intersection to increase by more than 0.02. For street segments which are currently operating worse than LOS D, a project impact will be considered significant if the project causes the volume-to-capacity ratio at a segment to increase by more than 0.02. *Table 5–1* shows the thresholds. For intersections analyzed under the HCM methodology which are currently operating worse than LOS D, a project impact will be considered significant if the project causes the delay at an intersection to increase more than 2 seconds (see *Table 5–2*).

TABLE 5–1
CITY OF CARLSBAD
TRAFFIC IMPACT SIGNIFICANT THRESHOLDS (ICU) FOR EXISTING CONDITIONS

LOSa	Allowable Increase Due to Project Impacts								
without Project	Roadway Segments (V/C) ^b	Intersections (ICU) c							
A,B,C,D	A project's impact is deemed significant if	the LOS is degraded to LOS E or F							
E, F	0.02	0.02							

Footnotes:

a. LOS = Level of Service

b. V/C = Volume to Capacity Ratio
 c. ICU = Intersection Capacity Utilization

TABLE 5–2 TRAFFIC IMPACT SIGNIFICANT THRESHOLDS FOR INTERSECTIONS (HCM) FOR NEAR-TERM AND LONG-TERM CONDITIONS

LOS with Droineta	Allowable Increase Due to Project Impacts ^b
LOS with Project ^a	HCM Delay (sec.)
E & F	2

Footnotes:

- a. All level of service measurements are based upon HCM procedures for peak-hour conditions. The acceptable LOS for intersections is LOS "D" in the City of Carlsbad during peak periods.
- b. If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are deemed to be significant. These impact changes may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible mitigations (within the Transportation Impact Analysis [TIA] report) that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note a above), or if the project adds a significant amount of peak hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating significant impact changes.

General Notes:

- Delay = Average stopped delay per vehicle measured in seconds for intersections, or minutes for ramp meters.
- 2. LOS = Level of Service

The project may also trigger a significant impact should the increase in traffic be substantial in relation to the existing street or site-access capacity causing congestion, increased delays / queuing or result in an unsafe condition. The project's impact shall also be reviewed on a non-motorized basis to ensure the needs of all users of the roadway are met including pedestrians, bicyclists, users of public transit, children, the elderly, and the disabled.

6.0 Analysis of Existing Conditions

6.1 Peak Hour Intersection Levels of Service

AM and PM peak hour analysis of the study area intersections under existing conditions was performed using the ICU Methodology, consistent with the City's practice and their *Growth Management Plan*.

Table 6–1 shows that, under existing conditions, all study area intersections are calculated to currently operate at LOS D or better.

Appendix C contains the intersection analysis worksheets for the Existing scenario.

6.2 Peak Hour Street Segment Levels of Service

Analysis of the study area street segments was performed using the methodology outlined in *Section 5* of this report. *Table 6–2* shows that all of the study area street segments are calculated to operate at LOS B or better during both AM and PM peak hours.

Table 6–1
Existing Intersection Operations

Todayanadana	Control	Peak	Exis	ting
Intersection	Type	Hour	ICU ^a	LOS ^b
1. Canon Road / Faraday Avenue	Signal	AM PM	0.47 0.51	A A
2. El Camino Real / College Boulevard	Signal	AM PM	0.52 0.61	A B
3. College Boulevard / Faraday Avenue	Signal	AM PM	0.54 0.44	A A
4. El Camino Real / Faraday Avenue	Signal	AM PM	0.70 0.77	B C
5. I-5 SB Ramps / Palomar Airport Road	Signal	AM PM	0.57 0.44	A A
6. I-5 NB Ramps / Palomar Airport Road	Signal	AM PM	0.68 0.63	B B
7. Palomar Airport Road / Paseo Del Norte	Signal	AM PM	0.65 0.69	B B
8. Palomar Airport Road / Armada Drive	Signal	AM PM	0.61 0.70	B B
9. Palomar Airport Road / Hidden Valley Road	Signal	AM PM	0.62 0.75	B C
10. Palomar Airport Road / College Boulevard	Signal	AM PM	0.59 0.72	A C
11. Palomar Airport Road / Camino Vida Roble	Signal	AM PM	0.59 0.77	A C
12. Palomar Airport Road / Yarrow Drive	Signal	AM PM	0.49 0.67	A B
13. Palomar Airport Road / El Camino Real	Signal	AM PM	0.64 0.82	B D
14. Palomar Airport Road / Loker Avenue	Signal	AM PM	0.78 0.74	C C
15. Palomar Airport Road / El Fuerte Street	Signal	AM PM	0.69 0.84	B D
16. Palomar Airport Road / Melrose Drive	Signal	AM PM	0.90 0.70	D B

TABLE 6-1 **EXISTING INTERSECTION OPERATIONS**

Turkennesettern	Control	Peak	Existing		
Intersection	Type	Hour	ICU ^a	LOSb	
17. El Camino Real / Town Garden Road	Signal	AM	0.51	A	
17. El Callillo Real / Town Galden Road	Signal	PM	0.64	В	
18. El Camino Real / Camino Vida Roble	Signal	AM	0.51	A	
18. El Callillo Real / Callillo Vida Robie	Signal	PM	0.58	A	
10 El Camina Baal / Bainastia I and	C: on al	AM	0.44	A	
19. El Camino Real / Poinsettia Lane	Signal	PM	0.50	A	

Footnotes:

Intersection Capacity Utilization (see Appendix C)
Level of Service (see Appendix C)

ICU	LOS
$0.0 \le 0.60$	A
0.61 to 0.70	В
0.71 to 0.80	C
0.81 to 0.90	D
0.91 to 1.00	E
> 1.00	F

Table 6–2
Existing Street Segment Operations During Peak Hours

g, , g	C1 '6" 4'	D: 41	Capacity	AM	Peak Ho	ur	PN	M Peak Ho	our
Street Segment	Classification	Direction	(LOS E) a	Volume	LOS b	V/C	Volume	LOS	V/C
Palomar Airport Road									
L 5 Dames to Dages Del Neute	6-lane Prime Arterial	EB	5,400	2,689	A	0.498	1,684	A	0.312
I-5 Ramps to Paseo Del Norte	6-iane Prime Arteriai	WB	5,400	1,213	A	0.225	2,488	A	0.461
Paseo Del Norte to Armada Drive	6-lane Prime Arterial	EB	5,400	2,619	Α	0.485	1,593	A	0.295
Paseo Del None to Affiada Drive	6-rane Prime Arteriai	WB	5,400	1,194	Α	0.221	2,634	A	0.488
Armada Drive to Hidden Valley Ranch	6-lane Prime Arterial	EB	5,400	2,503	A	0.464	1,729	A	0.320
Armada Drive to Hidden Valley Ranch	6-rane Prime Arteriai	WB	5,400	1,351	A	0.250	2,789	A	0.516
Hidden Valley Ranch to College	6-lane Prime Arterial	EB	5,400	2,455	A	0.455	2,149	A	0.398
Boulevard	0-lane Finne Arterial	WB	5,400	1,301	A	0.241	2,294	A	0.425
College Boulevard to Camino Vida	6-lane Prime Arterial	EB	5,400	1,851	A	0.343	1,406	A	0.260
Roble	0-lane Finne Arterial	WB	5,400	1,183	A	0.219	1,911	A	0.354
Camino Vida Roble to Yarrow Drive	6-lane Prime Arterial	EB	5,400	1,521	A	0.282	2,088	A	0.387
Callillo Vida Robie to Tallow Drive	0-lane Filme Afterial	WB	5,400	1,347	A	0.249	1,338	A	0.248
Yarrow Drive to El Camino Real	6-lane Prime Arterial	EB	5,400	1,153	A	0.214	2,064	A	0.382
Tarrow Drive to El Callillo Real	0-lane Filme Alterial	WB	5,400	1,941	A	0.359	1,333	A	0.247
El Camino Real to Loker Avenue	6-lane Prime Arterial	EB	5,400	1,640	A	0.304	2,700	A	0.500
El Callillo Real to Lokel Avenue	0-lane Finne Arterial	WB	5,400	2,654	A	0.491	1,927	A	0.357
Loker Avenue to El Fuerte Street	6-lane Prime Arterial	EB	5,400	1,271	A	0.235	2,635	A	0.488
Lokel Avenue to El l'uelle Sueet	0-lane Finne Arterial	WB	5,400	2,924	A	0.541	1,603	A	0.297
El Fuerte Street to Melrose Drive	6-lane Prime Arterial	EB	5,400	1,180	A	0.219	2,846	A	0.527
El l'uelle Sileet lo Mellose Dilve	0-lane Finne Arterial	WB	5,400	3,350	В	0.620	1,656	A	0.307
East of Melrose Drive	6-lane Prime Arterial	EB	5,400	1,090	A	0.202	2,270	A	0.420
East of Meliose Drive	0-lane Finne Arterial	WB	5,400	1,761	A	0.326	1,157	A	0.214
El Camino Real									
North of College Boulevard	5-lane Prime Arterial	EB	3,600	2,479	В	0.689	1,158	A	0.322
Norm of Conege Doulevard	5-iane Prime Arterial	WB	5,400	671	A	0.124	2,522	A	0.467
College Boulevard to Faraday Avenue	6-lane Prime Arterial	NB	5,400	592	A	0.110	1,848	A	0.342
Conege Douievard to Faraday Avenue	0-iane finne Arterial	SB	5,400	2,034	A	0377	1,167	A	0.216

Table 6–2
Existing Street Segment Operations During Peak Hours

Stuggt Sagment	Classification	Direction	Capacity	AM	Peak Ho	ur	PI	M Peak Ho	our
Street Segment	Classification	Direction	(LOS E) a	Volume	LOS b	V/C	Volume	LOS	V/C
Faraday Avenue to Palomar Airport	6-lane Prime Arterial	NB	5,400	1,092	A	0.202	1,642	A	0.304
Road	0-faile Fiffile Afterial	SB	5,400	1,699	A	0.315	1,729	A	0.320
Palomar Airport Road to Town Garden	6-lane Prime Arterial	NB	5,400	1,160	A	0.215	1,462	A	0.271
Center	0-faile Fiffile Afterial	SB	5,400	1,735	A	0.321	1,507	A	0.279
Town Garden Center to Camino Vida	6-lane Prime Arterial	NB	5,400	1,423	A	0.264	1,523	A	0.282
Roble		SB	5,400	1,497	A	0.277	1,859	A	0.344
Camino Vida Roble to Poinsettia Lane	5-lane Prime Arterial	NB	3,600	1,416	A	0.393	1,334	A	0.371
Camino vida Robie to Fomsettia Lane	3-iane Finne Arteriai	SB	5,400	1,392	A	0.258	2,055	A	0.381
South of Poinsettia Lane	6-lane Prime Arterial	NB	5,400	1,510	A	0.280	1,682	A	0.311
South of Follisettia Lane	0-lane Filme Arterial	SB	5,400	1,501	A	0.278	2,067	A	0.383
College Boulevard									
Aston Avenue to Palomar Airport	4-lane Arterial	NB	3,600	1,117	A	0.310	473	A	0.131
Road	4-iane Alterial	SB	3,600	388	A	0.108	969	A	0.269

Footnotes:

- a. Capacities based on 1,800 vehicles per lane per hour
- b. Level of Service.
- c. Volume to Capacity.

7.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

The trip generation rate for the Project is based on the rate outlined in the Institute of Transportation Engineers (ITE) Journal¹, in addition to a review of trip generation methodologies at other similarly sized airports², which results in a rate of 2.67 daily trips per enplanement. Peak hour trip rates were not supplied in the ITE article and therefore SANDAG peak hour percentages were utilized. The trip generation rate accounts for traffic generated by passengers, employees, and airport operations associated with the increase in enplanements. The Project will not augment the non-commercial uses at the airport and therefore, non-commercial land uses did not need to be accounted for in the trip generation calculations.

7.1.1 Near-Term Project

For the purposes of this analysis, the near-term study year was determined to be Year 2020. Near-Term study years are typically chosen using the closest future 5 year increment year when additional project traffic will be generated. Therefore, the year 2020 was utilized as the Near-Term analysis year. To determine the forecasted near-term daily enplanements listed below, annual enplanements for each Project alternative were interpolated to Year 2020³ using the existing and Year 2036 annual enplanements shown in *Table 2–1*. As shown below in *Table 7–1*, PAL1 averages a year-over-year increase of 15,227 annual enplanements per year and PAL2 averages a year-over-year increase of 28,743 annual enplanements per year. By Year 2020, the Project is calculated to generate a total of 61,040 annual enplanements under the PAL1 alternative and 115,105 annual enplanements under the PAL2 alternative. These Year 2020 annual enplanements were then multiplied by approximately 0.274% to obtain the average daily enplanements. For the purposes of this transportation analysis, the following enplanements were calculated for analyzing Project impacts in the Existing (Section 8.0) and Near-Term (Section 10.0) scenarios:

TABLE 7–1
NEAR-TERM AVERAGE DAILY ENPLANEMENTS

Planning Scenario	Yearly Increase in Enplanements	Annual Enplanements at Year 2020	Ratio of Daily/Annual Enplanements *	Average Daily Enplanements at Year 2020
PAL 1	15,227	61,040	0.274%	168
PAL 2	28,743	115,105	0.274%	316

^{*}Ratio of 1÷365 days.

Note: rounded up to whole number.

¹ ITE Journal, Airport Trip Generation, May 1998 [2.67-2.74 ADT per enplanement for airports with less than 1 million passengers]

² San Luis Obispo County Regional Airport Master Plan Update, Final EA/EIR, July 2006 [2.67 ADT per enplanement]

Table 7–2 tabulates the near-term Project (PAL1) traffic generation. The near-term Project (PAL1) phase is calculated to generate approximately 449 ADT with 14 inbound / 9 outbound trips during the AM peak hour and 14 inbound / 13 outbound trips during the PM peak hour.

Table 7–3 tabulates the near-term Project (PAL2) traffic generation. The near-term Project (PAL2) phase is calculated to generate approximately 844 ADT with 26 inbound / 17 outbound trips during the AM peak hour and 26 inbound / 25 outbound trips during the PM peak hour.

TABLE 7–2
NEAR-TERM PROJECT (PAL1) TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)		AM Peak Hour				PM Peak Hour			
	Size	D 4 3	ate ^a Volume	% of	In:Out	Volume		% of	In:Out	Vol	ume
		Kate"		ADT ^b	Split	In	Out	ADT ^b	Split	In	Out
Airport	168 ENP	2.670 /ENP	449	5.0%	6:4	14	9	6.0%	5:5	14	13

Footnotes:

- a. Trip generation rates obtained from "Airport Trip Generation" (ITE Journal, 1998) and San Luis Obispo County Regional Airport Master Plan Update, Final EA/EIR, July 2006.
- b. Peak hour percentages obtained from SANDAG's (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (April 2002).

General Notes:

1. ENP = enplanements

TABLE 7–3
NEAR-TERM PROJECT (PAL2) TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)		AM Peak Hour				PM Peak Hour			
	Size	D 4 9	¥7. 1	% of	In:Out	Volume		% of	In:Out	Vol	ume
		Rate ^a Volu		ADT ^b	Split	In	Out	ADT ^b	Split	In	Out
Airport	316 ENP	2.670 /ENP	844	5.0%	6:4	26	17	6.0%	5:5	26	25

Footnotes:

- a. Trip generation rates obtained from "Airport Trip Generation" (ITE Journal, 1998) and San Luis Obispo County Regional Airport Master Plan Update, Final EA/EIR, July 2006.
- b. Peak hour percentages obtained from SANDAG's (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (April 2002).

General Notes:

1. ENP = enplanements

7.1.2 Long-Term Project

For the Long-Term Project scenario analysis, the Year 2036 annual enplanements shown in *Table 2–1* were utilized. For the purpose of this transportation analysis, the following enplanements were calculated for analyzing Project impacts in the Long-Term (Section 11.0) scenarios:

- PAL1 = 835 average daily enplanements
- PAL2 = 1,575 average daily enplanements

Table 7–4 tabulates the long-term Project (PAL1) traffic generation. The long-term Project (PAL1) phase is calculated to generate approximately 2,230 ADT with 67 inbound / 45 outbound trips during the AM peak hour and 67 inbound / 67 outbound trips during the PM peak hour.

Table 7–5 tabulates the long-term Project (PAL2) traffic generation. The long-term Project (PAL2) phase is calculated to generate approximately 4,206 ADT with 127 inbound / 84 outbound trips during the AM peak hour and 127 inbound / 126 outbound trips during the PM peak hour.

TABLE 7–4
LONG-TERM PROJECT (PAL1) TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)		AM Peak Hour				PM Peak Hour			
	Size	Rate ^a Volume	X 7 1	% of	In:Out	Volume		% of	In:Out	Vol	ume
			ADT ^b	Split	In	Out	ADT ^b	Split	In	Out	
Airport	835 ENP	2.670 /ENP	2,230	5.0%	6:4	67	45	6.0%	5:5	67	67

Footnotes:

- a. Trip generation rates obtained from "Airport Trip Generation" (ITE Journal, 1998) and San Luis Obispo County Regional Airport Master Plan Update, Final EA/EIR, July 2006.
- b. Peak hour percentages obtained from SANDAG's (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (April 2002).

General Notes:

1. ENP = enplanements

TABLE 7–5
LONG-TERM PROJECT (PAL2) TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)		AM Peak Hour				PM Peak Hour			
	Size	Rate ^a Volume	X 7 1	% of	In:Out	Volume		% of	In:Out	Vol	ume
			ADT ^b	Split	In	Out	ADT ^b	Split	In	Out	
Airport	1,575 ENP	2.670 /ENP	4,206	5.0%	6:4	127	84	6.0%	5:5	127	126

Footnotes:

- a. Trip generation rates obtained from "Airport Trip Generation" (ITE Journal, 1998) and San Luis Obispo County Regional Airport Master Plan Update, Final EA/EIR, July 2006.
- b. Peak hour percentages obtained from SANDAG's (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (April 2002).

General Notes:

1. ENP = enplanements

7.2 Trip Distribution/Assignment

Project-generated traffic was distributed and assigned to the street system based on existing and historical traffic counts, the distribution of traffic at the Project access point, the proximity of the Project to Interstate 5 and arterials, and locations of residences and places of employment.

Figure 7–1 depicts the AM/PM peak hour Project traffic distribution percentages. Figure 7–2 depicts the near-term Project (PAL1) assignment for the Existing + Project and Near-Term scenarios. Figure 7–3 depicts the near-term Project (PAL2) assignment for the Existing + Project and Near-Term scenarios. Figure 7–4 depicts the long-term Project (PAL1) assignment for the Long-Term scenarios. Figure 7–5 depicts the long-term Project (PAL2) assignment for the Long-Term scenarios.

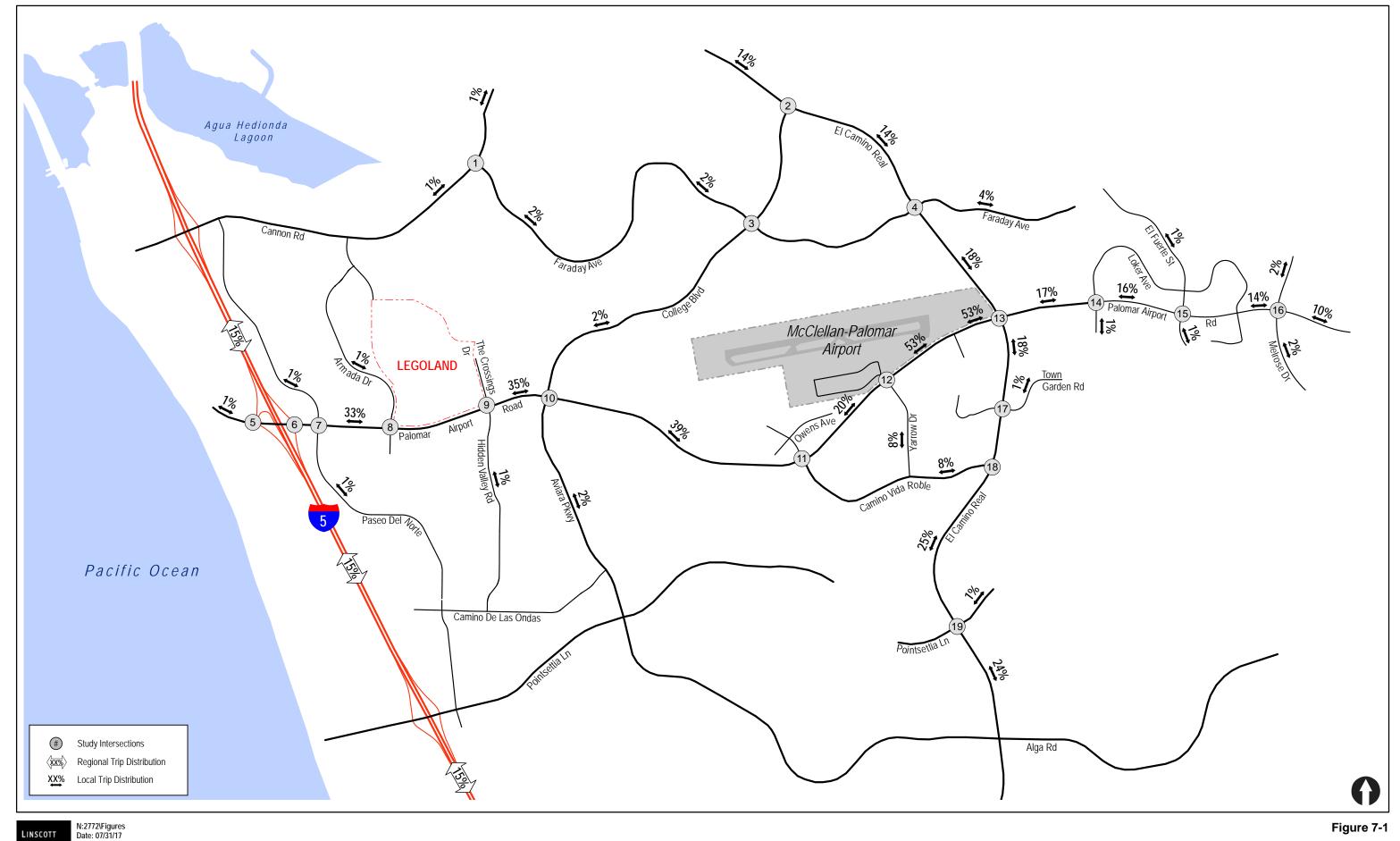
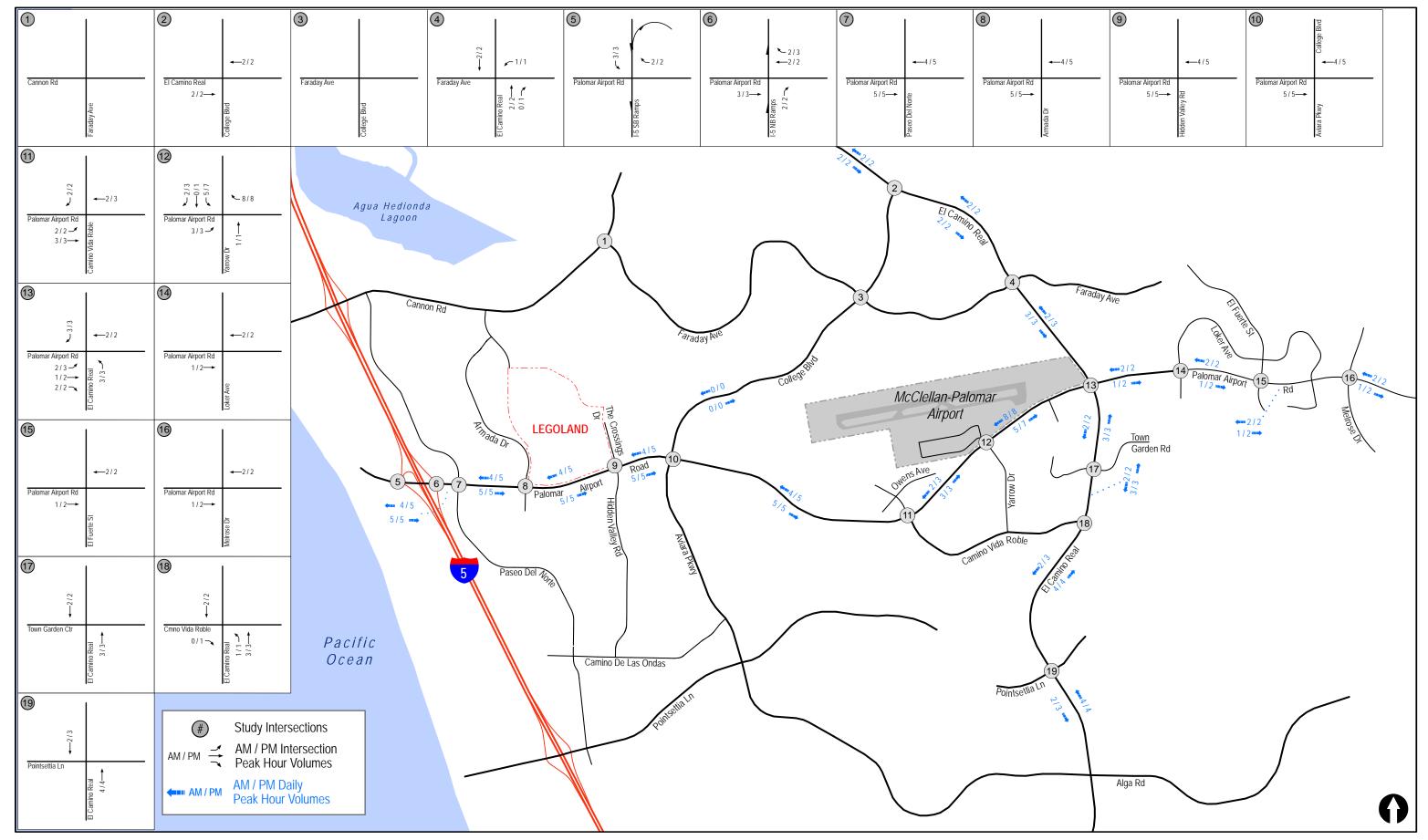
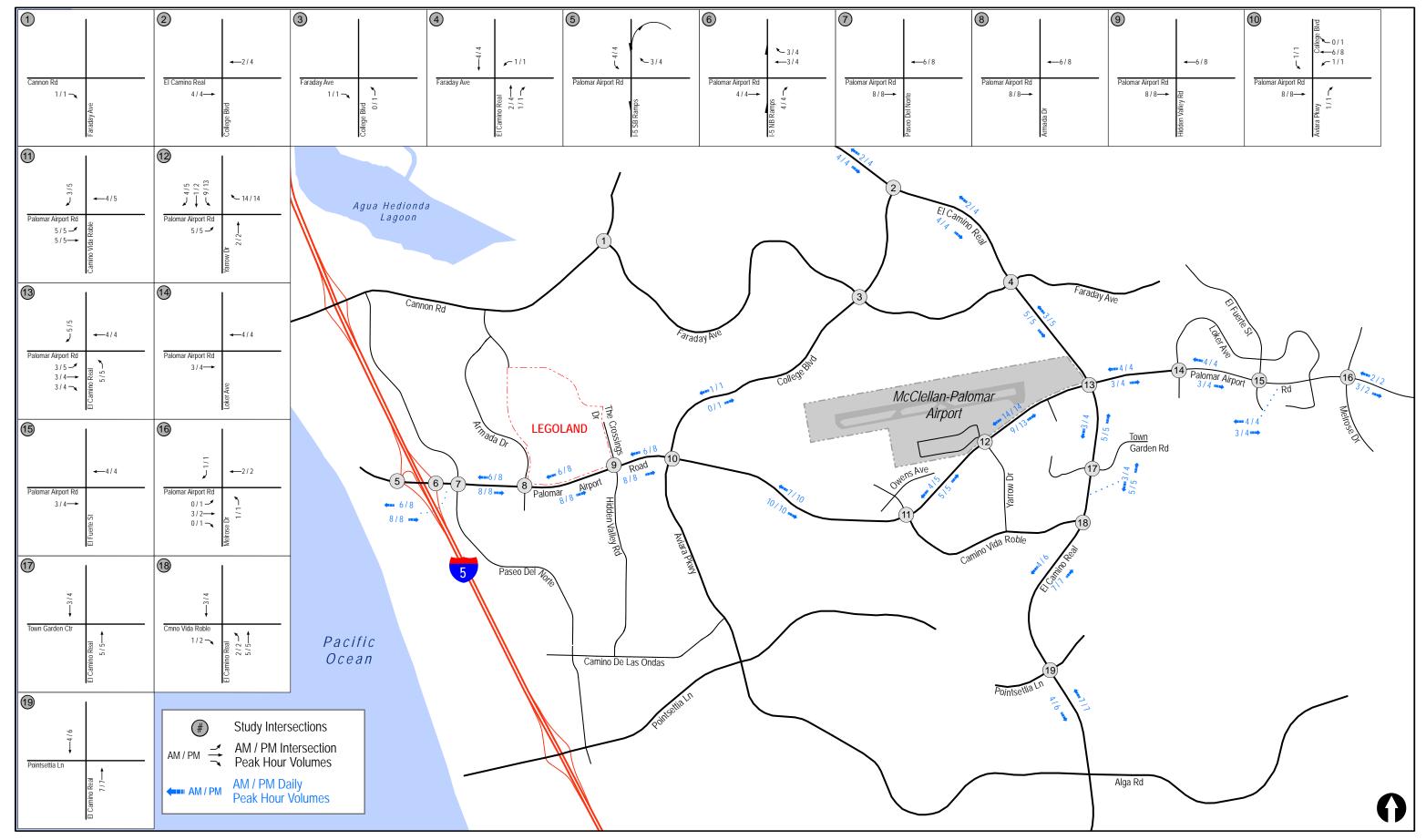
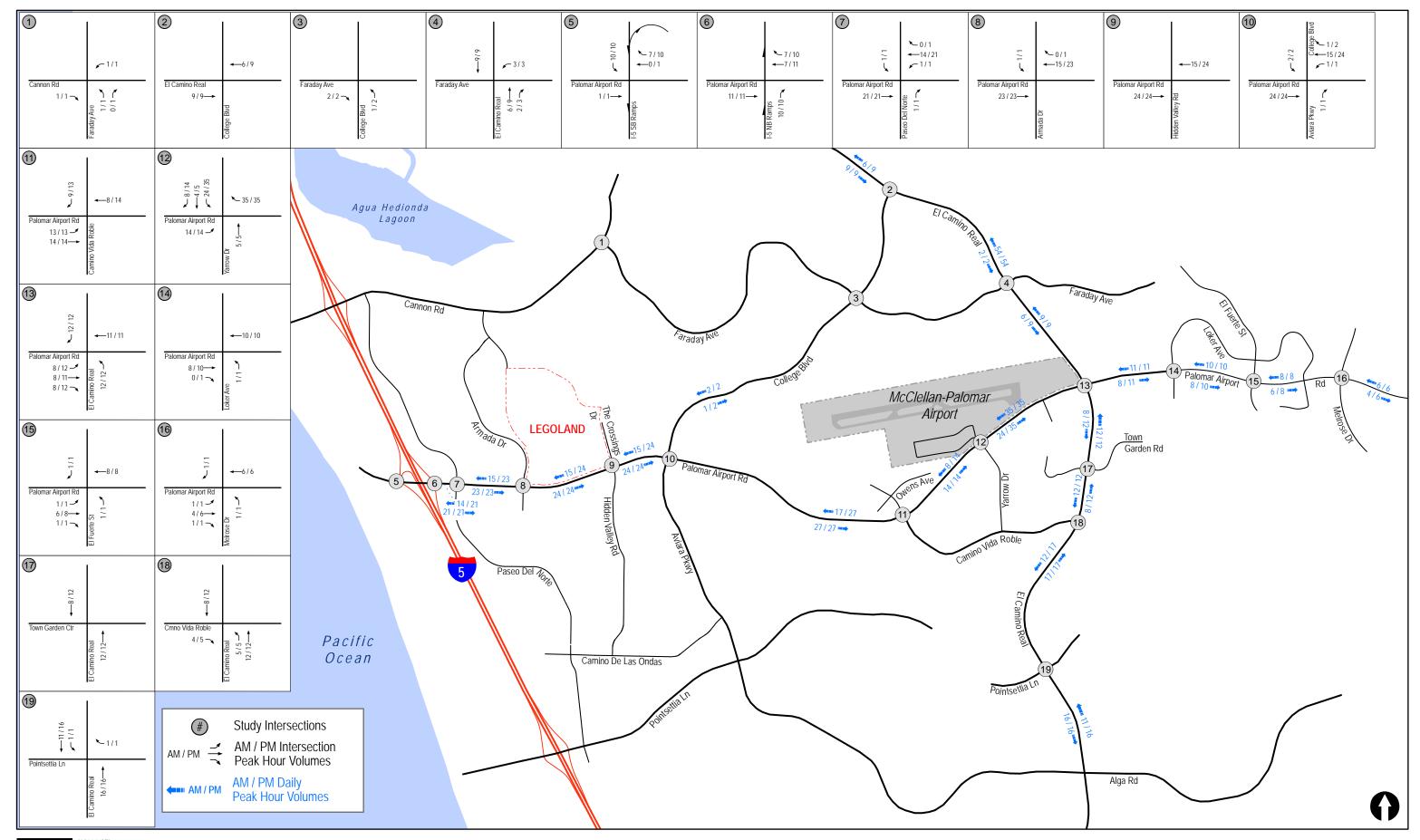




Figure 7-1







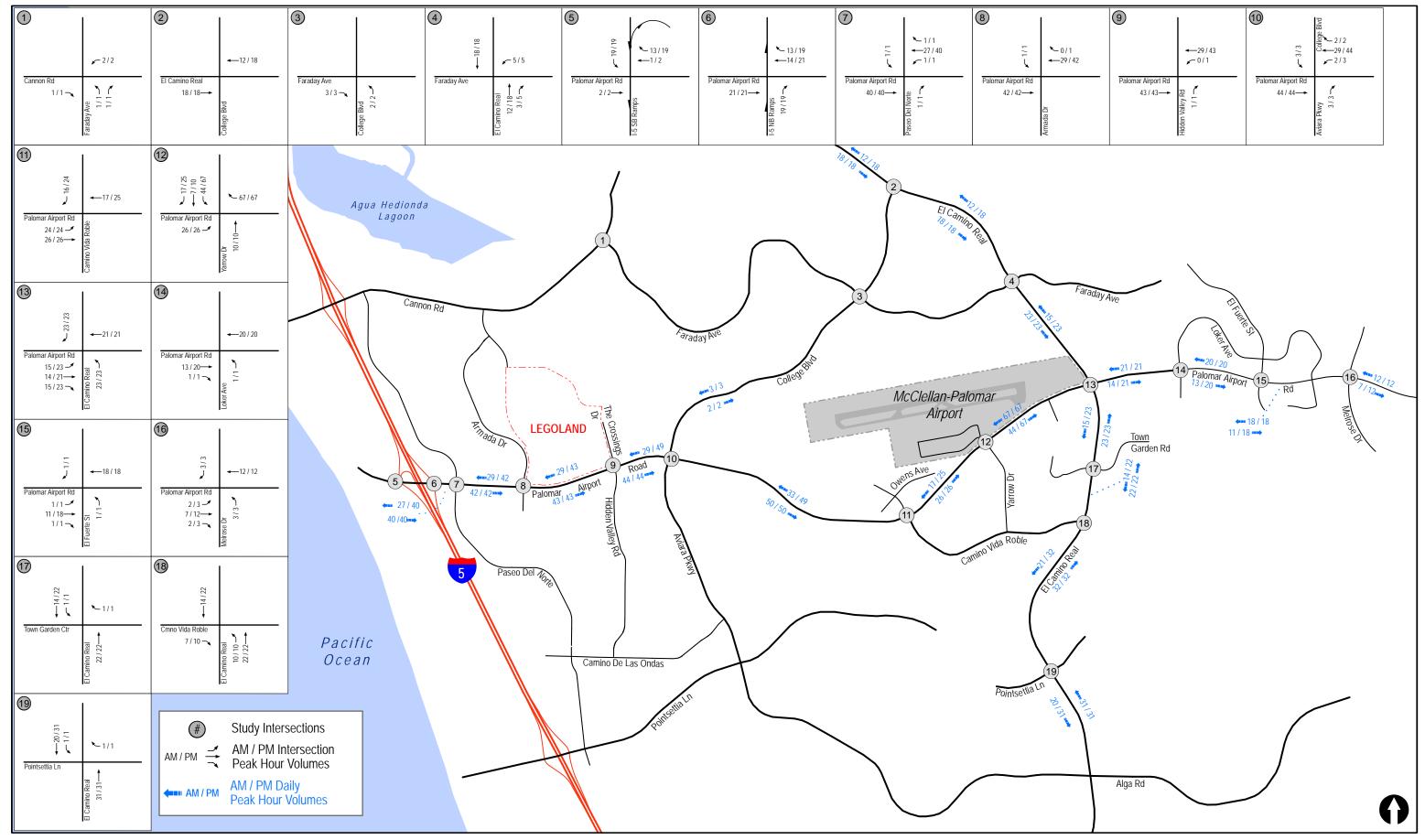




Figure 7-5

8.0 Analysis of Existing + Project Scenarios

8.1 Existing + Project (PAL1)

Figure 8–1 depicts the Existing + Near-Term (PAL1) Project traffic volumes.

8.1.1 Intersection Analysis

Intersection capacity analyses were conducted for the study intersections under Existing + Project conditions. *Table 8–1* reports the Existing + Project (PAL1) intersection operations during the AM and PM peak hours. As shown in *Table 8–1*, all of the study area intersections are calculated to continue operate at LOS D or better with the addition of Project (PAL1) traffic.

Based on the significance criteria, no intersection impacts are calculated since the Project (PAL1) contribution does not exceed a 0.02 ICU increase.

Appendix D contains the intersection analysis worksheets for the Existing + Project (PAL1) scenario.

8.1.2 Segment Operations

Table 8–2 summarizes the street segment operations under Existing + Project (PAL1) conditions. As shown in *Table 8*–2, the study area segments are calculated to continue to operate acceptably at LOS B or better.

Based on the significance criteria, no street segment impact is calculated since the study area street segments are all calculated to operate at acceptable LOS.

8.2 Existing + Project (PAL2)

Figure 8–2 depicts the Existing + Near-Term (PAL2) Project traffic volumes.

8.2.1 Intersection Analysis

Table 8–1 reports the Existing + Project (PAL2) intersection operations during the AM and PM peak hours. As shown in *Table 8–1*, all of the study area intersections are calculated to continue operate at LOS D or better with the addition of Project (PAL2).

Based on the significance criteria, no intersection impacts are calculated since the Project (PAL2) contribution does not exceed a 0.02 ICU increase.

Appendix D contains the intersection analysis worksheets for the Existing + Project (PAL2) scenario.

8.2.2 Segment Operations

Table 8–2 summarizes the street segment operations under Existing + Project (PAL2) conditions. As shown in *Table 8–2*, the study area segments are calculated to continue to operate acceptably at LOS B or better.

Based on the significance criteria, no street segment impacts are calculated since the study area street segments are all calculated to operate at acceptable LOS.

Table 8–1
Existing + Project Intersection Operations

Intersection	Control	Peak	Exis	sting	Exis	ting+ Pro (PAL1)	oject	Existing + Project (PAL2)			
	Type	Hour	ICU ^a	LOSb	ICU	LOS	Δ ^c	ICU	LOS	Δ	
1. Canon Road / Faraday Avenue	Signal	AM PM	0.47 0.51	A A	0.47 0.51	A A	0.00 0.00	0.47 0.51	A A	0.00	
2. El Camino Real / College Boulevard	Signal	AM PM	0.52 0.61	A B	0.52 0.61	A B	0.00	0.52 0.61	A B	0.00	
3. College Boulevard / Faraday Avenue	Signal	AM PM	0.54 0.44	A A	0.54 0.44	A A	0.00	0.54 0.44	A A	0.00	
4. El Camino Real / Faraday Avenue	Signal	AM PM	0.70 0.77	B C	0.70 0.77	B C	0.00	0.70 0.77	B C	0.00	
5. I-5 SB Ramps / Palomar Airport Road	Signal	AM PM	0.57 0.44	A A	0.57 0.44	A A	0.00	0.57 0.44	A A	0.00	
6. I-5 NB Ramps / Palomar Airport Road	Signal	AM PM	0.68 0.63	B B	0.68 0.64	B B	0.00 0.01	0.68 0.63	B B	0.00	
7. Palomar Airport Road / Paseo Del Norte	Signal	AM PM	0.65 0.69	B B	0.65 0.69	B B	0.00 0.00	0.65 0.69	B B	0.00 0.00	
8. Palomar Airport Road / Armada Drive	Signal	AM PM	0.61 0.70	B B	0.61 0.70	B B	0.00	0.61 0.70	B B	0.00 0.00	
9. Palomar Airport Road / Hidden Valley Road	Signal	AM PM	0.62 0.75	B C	0.62 0.75	B C	0.00	0.62 0.75	B C	0.00 0.00	
10. Palomar Airport Road / College Boulevard	Signal	AM PM	0.59 0.72	A C	0.59 0.72	A C	0.00	0.59 0.72	A C	0.00 0.00	
11. Palomar Airport Road / Camino Vida Roble	Signal	AM PM	0.59 0.77	A C	0.59 0.77	A C	0.00	0.59 0.77	A C	0.00 0.00	
12. Palomar Airport Road / Yarrow Drive	Signal	AM PM	0.49 0.67	A B	0.50 0.67	A B	0.01 0.00	0.50 0.68	A B	0.01 0.01	
13. Palomar Airport Road / El Camino Real	Signal	AM PM	0.64 0.82	B D	0.64 0.82	B D	0.00	0.64 0.83	B D	0.00 0.01	
14. Palomar Airport Road / Loker Avenue	Signal	AM PM	0.78 0.74	C C	0.78 0.74	C C	0.00	0.78 0.74	C C	0.00	
15. Palomar Airport Road / El Fuerte Street	Signal	AM PM	0.69 0.84	B D	0.69 0.84	B D	0.00 0.00	0.69 0.84	B D	0.00	

TABLE 8-1 **EXISTING + PROJECT INTERSECTION OPERATIONS**

Intersection	Control Peak		Exis	sting	Exis	ting+ Pro (PAL1)	oject	Existing + Project (PAL2)			
	Type	Hour	ICU ^a	LOSb	ICU	LOS	Δ^{c}	ICU	LOS	Δ	
16. Palomar Airport Road /	Signal	AM	0.90	D	0.90	D	0.00	0.90	D	0.00	
Melrose Drive	Signai	PM	0.70	В	0.70	В	0.00	0.70	В	0.00	
17. El Camino Real / Town		AM	0.51	A	0.51	A	0.00	0.51	A	0.00	
Garden Road	Signal	PM	0.64	В	0.65	В	0.01	0.65	В	0.01	
19 El Camina Baal / Camina		434	0.51		0.51		0.00	0.51		0.00	
18. El Camino Real / Camino	Signal	AM	0.51	A	0.51	A	0.00	0.51	A	0.00	
Vida Roble		PM	0.58	A	0.58	A	0.00	0.58	A	0.00	
19. El Camino Real / Poinsettia	G: 1	AM	0.44	A	0.44	A	0.00	0.44	A	0.00	
Lane	Signal	PM	0.50	A	0.50	A	0.00	0.50	A	0.00	

Footnotes:

- a. Intersection Capacity Utilization
 b. Level of Service
 c. Δ denotes a Project induced increase in ICU

ICU	LOS
0.0 < 0.60	A
0.61 to 0.70	В
0.71 to 0.80	C
0.81 to 0.90	D
0.91 to 1.00	E
> 1.00	F

Table 8–2
Existing + Project Street Segment Operations During Peak Hours

				+ PROJECT STREET SEGMENT OPERA					+ PAL1		Existing + PAL2				
Street Segment	Direction	Peak	Capacity (LOS E)		LOS	****									
· ·		Hour	a a	Volumes	b	V/C ^c	Volumes	LOS	V/C	Δ^{d}	Volumes	LOS	V/C	Δ	
Palomar Airport Road															
_	EB	AM	5,400	2,689	A	0.498	2,694	A	0.499	0.001	2,697	A	0.499	0.001	
I-5 Ramps to Paseo	LB	PM	5,400	1,684	Α	0.312	1,689	A	0.313	0.001	1,692	A	0.313	0.001	
Del Norte	WB	AM	5,400	1,213	A	0.225	1,217	A	0.225	0.001	1,219	A	0.226	0.001	
		PM AM	5,400 5,400	2,488 2,619	A A	0.461 0.485	2,493 2,624	A A	0.462 0.486	0.001 0.001	2,496 2,627	A A	0.462 0.486	0.001 0.001	
Paseo Del Norte to	EB	PM	5,400	1,593	A	0.465	1,598	A	0.486	0.001	1,601	A	0.400	0.001	
Armada Drive	MID	AM	5,400	1,194	A	0.221	1,198	A	0.222	0.001	1,200	A	0.222	0.001	
	WB	PM	5,400	2,634	A	0.488	2,639	A	0.489	0.001	2,642	A	0.489	0.001	
	EB	AM	5,400	2,503	Α	0.464	2,508	A	0.464	0.000	2,511	A	0.465	0.001	
Armada Drive to	LB	PM	5,400	1,729	Α	0.320	1,734	Α	0.321	0.001	1,737	Α	0.322	0.002	
Hidden Valley Ranch	WB	AM	5,400	1,351	A	0.250	1,355	A	0.251	0.001	1,357	A	0.251	0.001	
		PM AM	5,400 5,400	2,789 2,455	A A	0.516 0.455	2,794 2,460	A A	0.517 0.456	0.001 0.001	2,797 2,463	A A	0.518 0.456	0.002 0.001	
Hidden Valley Ranch	EB	PM	5,400	2,433	A	0.433	2,460	A	0.430	0.001	2,403	A	0.430	0.001	
to College Boulevard		AM	5,400	1,301	A	0.241	1,305	A	0.242	0.001	1,307	A	0.242	0.001	
	WB	PM	5,400	2,294	A	0.425	2,299	A	0.426	0.001	2,302	A	0.426	0.001	
	EB	AM	5,400	1,851	A	0.343	1,856	A	0.344	0.001	1,861	A	0.345	0.002	
College Boulevard to	ЕВ	PM	5,400	1,406	A	0.260	1,411	A	0.261	0.001	1,416	A	0.262	0.002	
Camino Vida Roble	WB	AM	5,400	1,183	A	0.219	1,187	A	0.220	0.001	1,190	A	0.220	0.001	
	W D	PM	5,400	1,911	A	0.354	1,916	A	0.355	0.001	1,921	A	0.356	0.002	
	EB	AM	5,400	1,521	A	0.282	1,524	A	0.282	0.000	1,526	A	0.283	0.001	
Camino Vida Roble	ЕВ	PM	5,400	2,088	A	0.387	2,091	A	0.387	0.000	2,093	A	0.388	0.001	
to Yarrow Drive	MID	AM	5,400	1,347	A	0.249	1,349	A	0.250	0.001	1,351	A	0.250	0.001	
	WB	PM	5,400	1,338	A	0.248	1,341	A	0.248	0.000	1,343	Α	0.249	0.001	
		AM	5,400	1,153	A	0.214	1,158	A	0.214	0.000	1,162	A	0.215	0.001	
Yarrow Drive to El	EB	PM	5,400	2,064	A	0.382	2,071	A	0.384	0.002	2,077	A	0.385	0.003	
Camino Real	WB	AM	5,400	1,941	Α	0.359	1,949	A	0.361	0.002	1,955	A	0.362	0.003	
	W D	PM	5,400	1,333	A	0.247	1,341	A	0.248	0.001	1,347	A	0.249	0.002	
	EB	AM	5,400	1,640	A	0.304	1,641	A	0.304	0.000	1,643	A	0.304	0.000	
El Camino Real to Loker Avenue		PM	5,400	2,700	A	0.500	2,702	A	0.500	0.000	2,704	A	0.501	0.001 0.001	
Lokel Avenue	WB	AM PM	5,400 5,400	2,654 1,927	A A	0.491 0.357	2,656 1,929	A A	0.492 0.357	0.001	2,658 1,931	A A	0.492 0.358	0.001	
		AM	5,400	1,271	A	0.235	1,272	A	0.337	0.000	1,274	A	0.336	0.001	
Loker Avenue to El	EB	PM	5,400	2,635	A	0.488	2,637	A	0.488	0.000	2,639	A	0.489	0.001	
Fuerte Street	WB	AM	5,400	2,924	A	0.541	2,926	A	0.542	0.001	2,928	A	0.542	0.001	
	WB	PM	5,400	1,603	A	0.297	1,605	A	0.297	0.000	1,607	A	0.298	0.001	
	EB	AM	5,400	1,180	Α	0.219	1,181	A	0.219	0.000	1,183	Α	0.219	0.000	
El Fuerte Street to Melrose Drive		PM	5,400	2,846	A	0.527	2,848	A	0.527	0.000	2,850	A	0.528	0.001	
Menose Drive	WB	AM PM	5,400 5,400	3,350 1,656	B A	0.620 0.307	3,352 1,658	B A	0.621 0.307	0.001 0.000	3,354 1,660	B A	0.621 0.307	0.001 0.000	
		AM	5,400	1,090	A	0.307	1,038	A	0.307	0.000	1,000	A	0.307	0.000	
East of Melrose	EB	PM	5,400	2,270	A	0.420	2,272	A	0.421	0.001	2,272	A	0.421	0.001	
Drive	WB	AM	5,400	1,761	A	0.326	1,763	A	0.326	0.000	1,763	A	0326	0.000	
	WB	PM	5,400	1,157	Α	0.214	1,159	A	0.215	0.001	1,159	A	0.215	0.001	
El Camino Real															
	EB	AM	3,600	2,479	В	0.689	2,481	В	0.689	0.000	2,483	В	0.690	0.001	
North of College		PM	3,600	1,158	A	0.322	1,160	A	0.322	0.000	1,162	A	0.323	0.001	
Boulevard	WB	AM	5,400	671	A	0.124	673	A	0.125	0.001	673	A	0.125	0.001	
		PM AM	5,400 5,400	2,522 592	A A	0.467 0.110	2,524 594	A A	0.467 0.110	0.000	2,526 594	A A	0.468 0.110	0.001 0.000	
College Boulevard to	NB	PM	5,400	1,848	A A	0.110	1,850	A	0.110	0.000	1,852	A	0.110	0.000	
Faraday Avenue	~-	AM	5,400	2,034	A	0.377	2,036	A	0.377	0.001	2,038	A	0.377	0.001	
	SB	PM	5,400	1,167	A	0.216	1,169	A	0.216	0.000	1,171	A	0.217	0.001	
Frank 1 A	NB	AM	5,400	1,092	A	0.202	1,094	A	0.203	0.001	1,095	A	0.203	0.001	
Faraday Avenue to Palomar Airport	140	PM	5,400	1,642	A	0.304	1,645	A	0.305	0.001	1,647	A	0.305	0.001	
Road	SB	AM	5,400	1,699	A	0.315	1,702	A	0.315	0.000	1,704	A	0.316	0.001	
		PM	5,400 5,400	1,729	A	0.320	1,732	A	0.321	0.001	1,734	A	0.321	0.001	
Palomar Airport	NB	AM PM	5,400 5,400	1,160 1,462	A A	0.215 0.271	1,163 1,465	A A	0.215 0.271	0.000	1,165 1,467	A A	0.216 0.272	0.001 0.001	
Road to Town		AM	5,400	1,462	A A	0.271	1,465	A A	0.271	0.000	1,467	A A	0.272	0.001	
Garden Road	SB	PM	5,400	1,507	A	0.321	1,737	A	0.322	0.001	1,738	A	0.322	0.001	
	ND	AM	5,400	1,423	A	0.264	1,426	A	0.264	0.000	1,428	A	0.264	0.001	
Town Garden Road to Camino Vida	NB	PM	5,400	1,523	A	0.282	1,526	A	0.283	0.001	1,528	A	0.283	0.001	
Roble	SB	AM	5,400	1,497	A	0.277	1,499	A	0.278	0.001	1,500	A	0.278	0.001	
		PM	5,400	1,859	Α	0.344	1,861	Α	0.345	0.001	1,863	A	0.345	0.001	

Table 8–2
Existing + Project Street Segment Operations During Peak Hours

	Peak		Capacity	E	xisting		I	Existing	+ PAL1		F	Existing	+ PAL2	
Street Segment	Street Segment Direction	Hour	(LOS E)	Volumes	LOS	V/C ^c	Volumes	LOS	V/C	Δ^{d}	Volumes	LOS	V/C	Δ
	NB	AM	3,600	1,416	A	0.393	1,420	A	0.394	0.001	1,423	A	0.395	0.002
Camino Vida Roble	ND	PM	3,600	1,334	A	0.371	1,338	A	0.372	0.001	1,341	A	0.373	0.001
to Poinsettia Lane	SB	AM	5,400	1,392	A	0.258	1,394	A	0.258	0.000	1,396	A	0.259	0.001
	SD	PM	5,400	2,055	A	0.381	2,058	A	0.381	0.000	2,061	A	0.382	0.001
	NB	AM	5,400	1,510	A	0.280	1,514	A	0.280	0.000	1,517	A	0.281	0.001
South of Poinsettia	ND	PM	5,400	1,682	A	0.311	1,686	A	0.312	0.001	1,689	A	0.313	0.002
Lane	SB	AM	5,400	1,501	A	0.278	1,503	A	0.278	0.000	1,505	A	0.279	0.001
		PM	5,400	2,067	A	0.383	2,070	A	0.383	0.000	2,073	A	0.384	0.001
College Road														
	Acton Avanua to NB	AM	3,600	1,117	A	0.310	1,117	A	0.310	0.000	1,117	A	0.310	0.000
Aston Avenue to Palomar Airport	ND	PM	3,600	473	A	0.131	473	A	0.131	0.000	474	A	0.132	0.001
Road	SB	AM	3,600	388	A	0.108	388	A	0.108	0.000	389	A	0.108	0.000
	SD	PM	3,600	969	A	0.269	969	A	0.269	0.000	970	A	0.269	0.000

Footnotes:

- a. Capacities based on 1,800 vehicles per lane per hour
- b. Level of Service.
- c. Volume to Capacity.
- d. $\quad \Delta$ denotes a project-induced increase in the Volume to Capacity Ratio

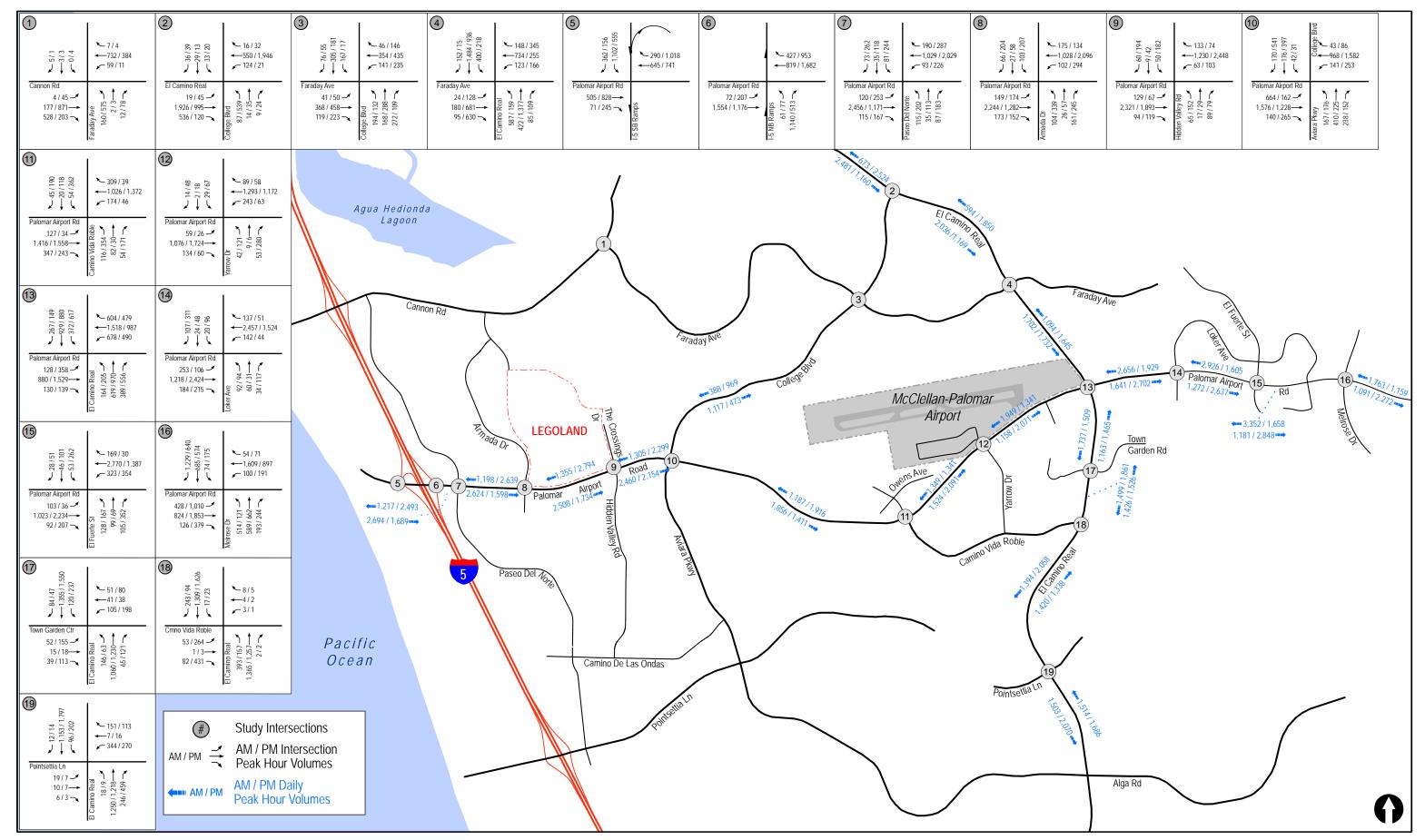




Figure 8-1

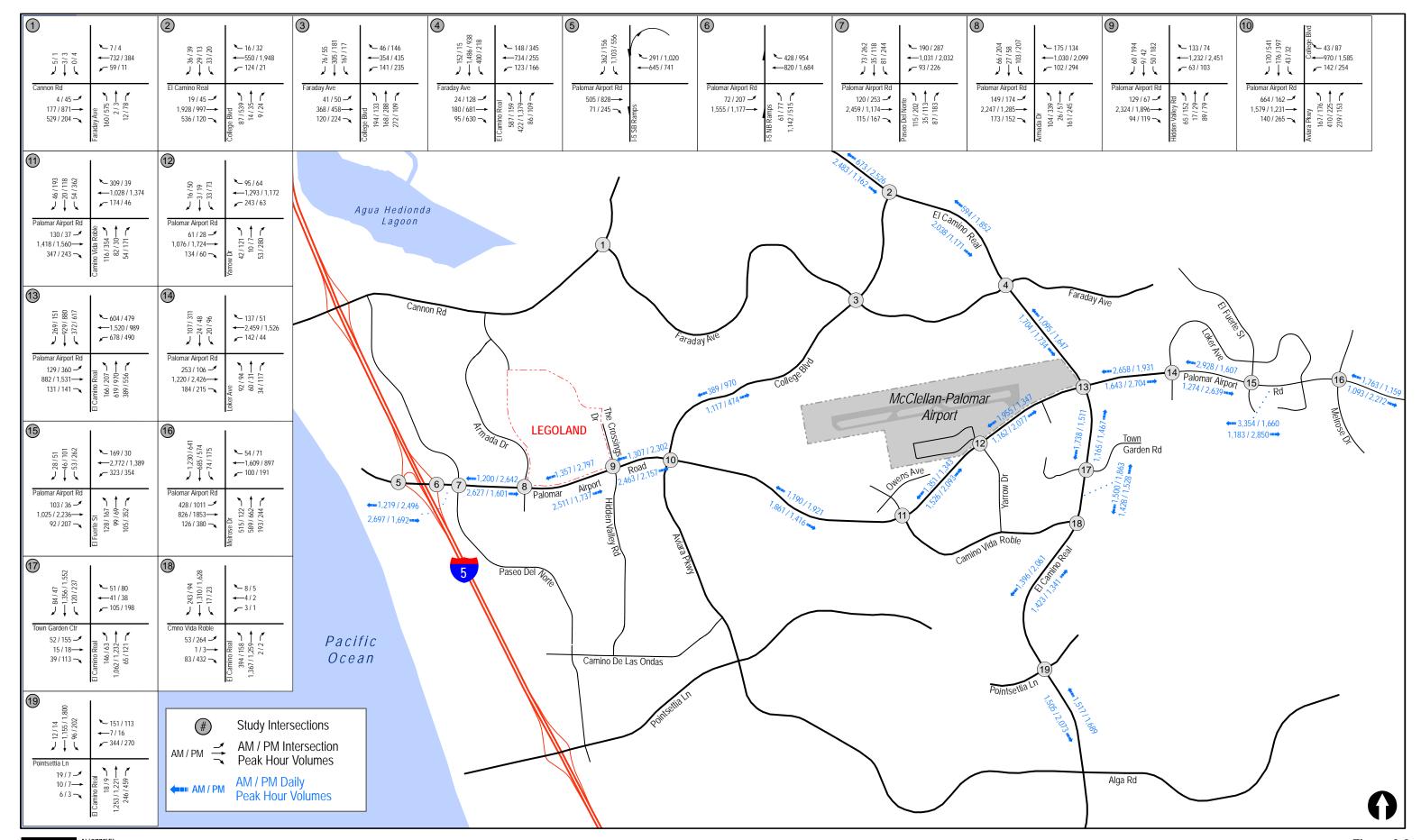




Figure 8-2

9.0 CUMULATIVE PROJECTS

To determine the Near-Term pre-Project (Existing + Cumulative) conditions in the Project study area, the forecasted traffic associated with several approved or pending projects was added to Existing traffic volumes. LLG coordinated with City staff to compile a list of relevant cumulative projects for inclusion in the analysis. Cumulative project traffic data through the study area is based on information from traffic impact studies prepared for the cumulative projects where available.

Table 9–1 lists the relevant cumulative projects that may add traffic to the study area locations. **Figure 9–1** shows the location of each cumulative project.

TABLE 9-1
CUMULATIVE PROJECTS LIST

Project Name	Project Description
Dos Colinas	A 47-acre site with a 309-unit continuing care facility plus 29 affordable housing units.
Rancho Milagro	22 estate single family units. The project is near College Boulevard, El Camino Real, and adjacent to Dos Colinas.
Robertson Ranch PA22/ Cannon Road Senior Housing	98 multi-family housing units. This project is located near El Camino Real and Cannon Road.
La Costa Town Square	A 284,400 square foot community shopping center with 128 condominium units, 64 single family units, and an additional 55,000 square feet designated for further residential use.
Viasat Campus	A 25 acre industrial project within the Bressi Ranch area. The project would be located east of El Camino Real between Gateway Road on the north and Town Garden Road to the south.
Quarry Creek Master Plan	This project includes 636 dwelling units, community facilities and a park and ride lot.
Poinsettia 61	140 single family dwelling units located on Poinsettia Lane just west of El Camino Real.
Uptown Bressi	This project consists of 17.7 acres of land proposed to be developed for mixed residential units and retail/commercial use.

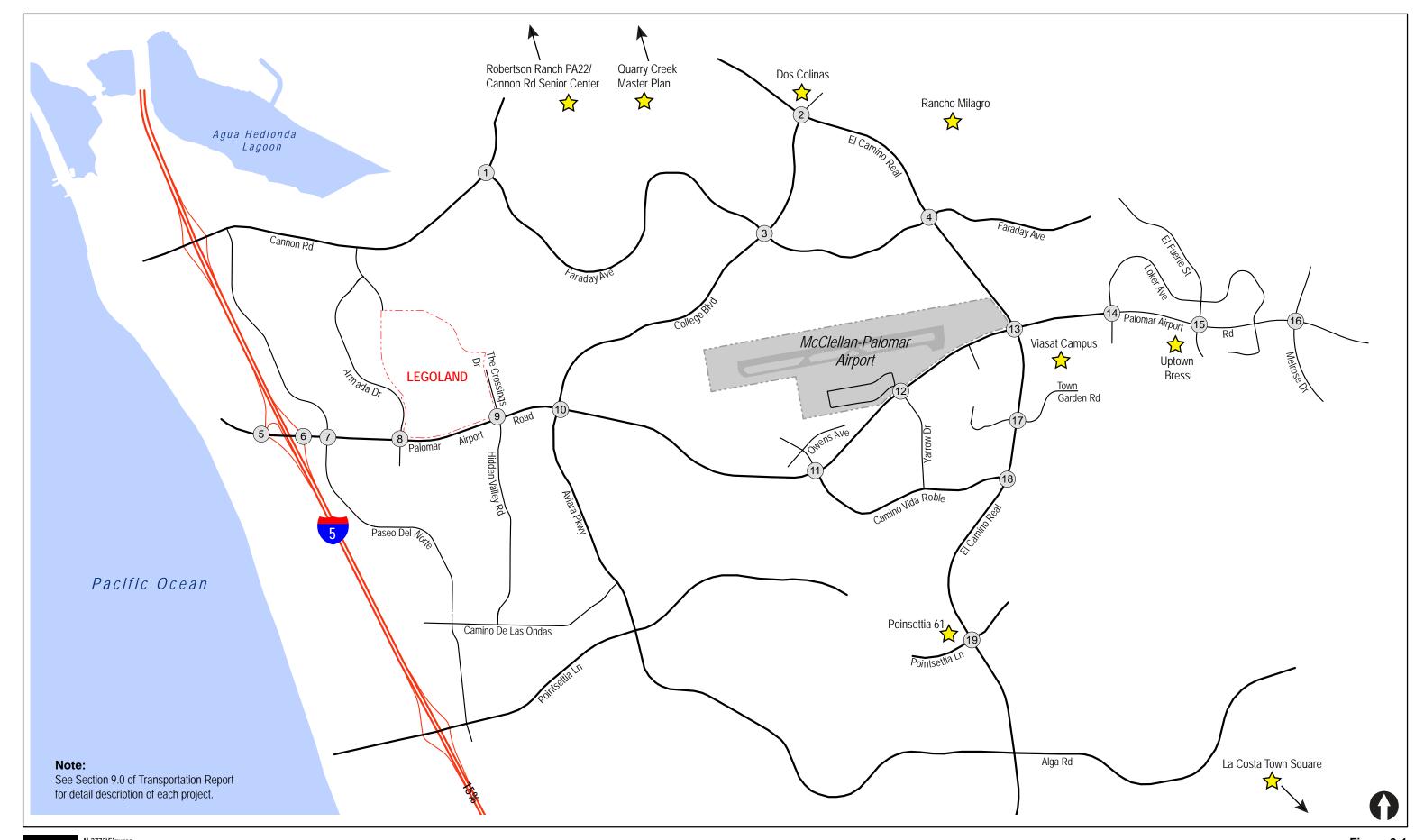




Figure 9-1

10.0 ANALYSIS OF NEAR-TERM SCENARIOS

This section discusses the Near-Term operations of the intersections and street segments in the Project study area.

10.1 Existing + Cumulative Projects

Based on the City of Carlsbad Mobility Element, scenarios including Cumulative trips were analyzed under HCM Methodology. Therefore, it should be noted that *Table 10–1* contains delays reported using HCM Methodology. *Figure 10–1* depicts the traffic volumes for the Existing + Cumulative Projects scenario.

10.1.1 Intersection Analysis

Table 10–1 reports the Existing + Cumulative Project intersection operations during the AM and PM peak hours. As shown in *Table 10–1*, all of the study area intersections are calculated to operate at LOS D or better except for the following intersections:

- El Camino Real / College Boulevard (LOS E during both the AM and PM peak hours)
- El Camino Real / Faraday Avenue (LOS E/F during the AM/PM peak hours)
- Palomar Airport Road / Camino Vida Roble (LOS E during the PM peak hour)
- Palomar Airport Road / El Camino Real (LOS F during both the AM and PM peak hours)
- Palomar Airport Road / Loker Avenue (LOS F/E during the AM/PM peak hours)
- Palomar Airport Road / El Fuerte Street (LOS F during the PM peak hour)
- Palomar Airport Road / Melrose Drive (LOS F/E during the AM/PM peak hours)
- El Camino Real / Town Garden Center (LOS E during both the AM and PM peak hours)
- El Camino Real / Camino Vida Roble (LOS F during the AM peak hour)

Appendix E contains the intersection analysis worksheets for the Existing + Cumulative Projects scenario.

10.1.2 Segment Operations

Table 10–2 summarizes the street segment operations under Existing + Cumulative Projects conditions during AM/PM peak hours in each direction. As shown in *Table 10–2*, the study are segments are calculated to operate acceptably at LOS C or better.

10.2 Existing + Cumulative Projects + Project (PAL1)

Figure 10–2 depicts the traffic volumes for the Existing + Cumulative Projects + Project (PAL1) scenario.

10.2.1 Intersection Analysis

Table 10–1 reports the Existing + Cumulative Projects + Project (PAL1) intersection operations during the AM and PM peak hours. As shown in *Table 10–1*, all of the study area intersections are calculated to continue operate at LOS D or better except for the following intersections:

- El Camino Real / College Boulevard (LOS E during both the AM and PM peak hours)
- El Camino Real / Faraday Avenue (LOS E/F during the AM/PM peak hours)
- Palomar Airport Road / Camino Vida Roble (LOS E during the PM peak hour)
- Palomar Airport Road / El Camino Real (LOS F during both the AM and PM peak hours)
- Palomar Airport Road / Loker Avenue (LOS F/E during the AM/PM peak hours)
- Palomar Airport Road / El Fuerte Street (LOS F during the PM peak hour)
- Palomar Airport Road / Melrose Drive (LOS F/E during the AM/PM peak hours)
- El Camino Real / Town Garden Center (LOS E during both the AM and PM peak hours)
- El Camino Real / Camino Vida Roble (LOS F during the AM peak hour)

Appendix E contains the intersection analysis worksheets for the Existing + Cumulative Projects + Project (PAL1) scenario.

Based on the significance criteria, no intersection impacts are calculated since the Project (PAL1) contribution does not exceed 2.0 seconds.

10.2.2 Segment Operations

Table 10–2 summarizes the street segment operations under Existing + Cumulative Projects + Project (PAL1) conditions. As shown in *Table 10–2*, the study area segments are calculated to continue to operate acceptably at LOS C or better.

Based on the significance criteria, no street segment impacts are calculated since the study area street segments are all calculated to operate at acceptable LOS.

10.3 Existing + Cumulative Projects + Project (PAL2)

Figure 10–3 depicts the traffic volumes for the Existing + Cumulative Projects + Project (PAL2) scenario.

10.3.1 Intersection Analysis

Table 10–1 reports the Existing + Cumulative Projects + Project (PAL2) intersection operations during the AM and PM peak hours. As shown in *Table 10–1*, all of the study area intersections are calculated to continue operate at LOS D or better except for the following intersections:

- El Camino Real / College Boulevard (LOS E during both the AM and PM peak hours)
- El Camino Real / Faraday Avenue (LOS E/F during the AM/PM peak hours)
- Palomar Airport Road / Camino Vida Roble (LOS E during the PM peak hour)

- Palomar Airport Road / El Camino Real (LOS F during both the AM and PM peak hours)
- Palomar Airport Road / Loker Avenue (LOS F/E during the AM/PM peak hours)
- Palomar Airport Road / El Fuerte Street (LOS F during the PM peak hour)
- Palomar Airport Road / Melrose Drive (LOS F/E during the AM/PM peak hours)
- El Camino Real / Town Garden Center (LOS E during both the AM and PM peak hours)
- El Camino Real / Camino Vida Roble (LOS F during the AM peak hour)

Appendix E contains the intersection analysis worksheets for the Existing + Cumulative Projects + Project (PAL2) scenario.

Based on the significance criteria, no intersection impacts are calculated since the Project (PAL2) contribution does not exceed 2.0 seconds.

10.3.2 Segment Operations

Table 10–2 summarizes the street segment operations under Existing + Cumulative Projects + Project (PAL2) conditions. As shown in *Table 10–2*, the study area segments are calculated to continue to operate acceptably at LOS C or better.

Based on the significance criteria, no street segment impacts are calculated since the study area street segments are all calculated to operate at acceptable LOS.

Table 10–1
Near-Term Intersection Operations

Intersection	Control Type	Peak Hour	Cumu	ing + ılative jects		Cumulativ Project) PA		0	- Cumulativ Project (PAI	•
			Delay ^a	LOS ^b	Delay	LOS	Δ^{c}	Delay	LOS	Δ
1. Canon Road / Faraday Avenue	Signal	AM PM	34.5 32.7	C C	34.5 32.7	C C	0.0 0.0	34.5 32.8	C C	0.0 0.1
2. El Camino Real / College Boulevard	Signal	AM PM	65.1 78.0	E E	65.3 78.0	E E	0.2 0.0	65.5 78.0	E E	0.4 0.0
3. College Boulevard / Faraday Avenue	Signal	AM PM	34.6 35.8	C D	34.6 35.8	C D	0.0 0.0	34.6 35.9	C D	0.0 0.1
4. El Camino Real / Faraday Avenue	Signal	AM PM	67.9 105.9	E F	68.2 105.9	E F	0.3 0.0	68.4 106.0	E F	0.5 0.1
5. I-5 SB Ramps / Palomar Airport Road	Signal	AM PM	11.3 8.0	B A	11.3 8.0	B A	0.0 0.0	11.3 8.0	B A	0.0 0.0
6. I-5 NB Ramps / Palomar Airport Road	Signal	AM PM	44.4 39.0	D D	44.5 39.2	D D	0.1 0.2	44.6 39.4	D D	0.2 0.4
7. Palomar Airport Road / Paseo Del Norte	Signal	AM PM	47.8 36.3	D D	47.9 36.3	D D	0.1 0.0	47.9 36.3	D D	0.1 0.0
8. Palomar Airport Road / Armada Drive	Signal	AM PM	28.8 38.6	C D	28.8 39.0	C D	0.0 0.4	28.8 39.2	C D	0.0 0.6
9. Palomar Airport Road / Hidden Valley Road	Signal	AM PM	27.9 48.0	C D	28.3 48.1	C D	0.4 0.1	28.6 48.1	C D	0.7 0.1
10. Palomar Airport Road / College Boulevard	Signal	AM PM	31.8 51.5	C D	31.9 51.7	C D	0.1 0.2	31.9 51.8	C D	0.1 0.3
11. Palomar Airport Road / Camino Vida Roble	Signal	AM PM	48.5 70.1	D E	48.5 70.1	D E	0.0 0.0	48.5 70.2	D E	0.0 0.1

Table 10–1
Near-Term Intersection Operations

Intersection	Control Type	Peak Hour	Cum	ing + ılative jects		Cumulativ Project) PA	•	_	- Cumulativ Project (PAI	•
			Delay ^a	LOSb	Delay	LOS	Δ^{c}	Delay	LOS	Δ
12. Palomar Airport Road / Yarrow Drive	Signal	AM PM	37.7 40.2	D D	38.0 40.4	D D	0.3 0.2	38.2 40.7	D D	0.5 0.5
13. Palomar Airport Road / El Camino Real	Signal	AM PM	139.3 106.1	F F	139.6 106.3	F F	0.3 0.2	139.9 106.6	F F	0.6 0.5
14. Palomar Airport Road / Loker Avenue	Signal	AM PM	82.1 65.1	F E	82.3 65.2	F E	0.2 0.1	82.6 65.3	F E	0.5 0.2
15. Palomar Airport Road / El Fuerte Street	Signal	AM PM	50.8 125.2	D F	51.0 125.4	D F	0.2 0.2	51.2 125.6	D F	0.4 0.4
16. Palomar Airport Road / Melrose Drive	Signal	AM PM	91.6 63.2	F E	91.7 63.2	F E	0.1 0.0	91.9 63.4	F E	0.3 0.2
17. El Camino Real / Town Garden Road	Signal	AM PM	70.8 70.2	E E	71.2 70.6	E E	0.4 0.4	71.4 70.8	E E	0.6 0.6
18. El Camino Real / Camino Vida Roble	Signal	AM PM	139.1 48.5	F D	139.8 48.8	F D	0.7 0.3	140.4 49.1	F D	1.3 0.6
19. El Camino Real / Poinsettia Lane	Signal	AM PM	39.9 41.7	D D	39.9 41.7	D D	0.0 0.0	39.9 41.7	D D	0.0 0.0

Footnotes:

a. Average delay expressed in seconds per vehicle.

b. Level of Service

c. Δ denotes an increase in delay due to Project.

SIGNAI	LIZED	UNSIGNA	ALIZED
DELAY/LOS T	HRESHOLDS	DELAY/LOS TI	HRESHOLDS
Delay	LOS	Delay	LOS
$0.0 \le 10.0$	A	$0.0 \le 10.0$	A
10.1 to 20.0	В	10.1 to 15.0	В
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

Table 10–2
Near-Term Street Segment Operations During Peak Hours

Street Segment	Direction	Peak	Capacit y	Existing P	+ Cum Projects	ulative			Cumulat oject (PA		Existing +		ulative P t (PAL2)	
Street Segment	Direction	Hour	(LOS E)	Volume	LOS	V/C	Volume	LOS	V/C	$\Delta^{\mathbf{d}}$	Volume	LOS	V/C	Δ
Palomar Airport Road														
	EB	AM	5,400	2,830	A	0.524	2,835	A	0.525	0.001	2,838	A	0.526	0.001
I-5 Ramps to Paseo Del	LD	PM	5,400	1,790	Α	0.331	1,795	A	0.332	0.001	1,798	A	0.333	0.001
Norte	WB	AM	5,400	1,290	A	0.239	1,294	A	0.240	0.001	1,296	A	0.240	0.001
	WD	PM	5,400	2,630	Α	0.487	2,635	A	0.488	0.001	2,638	A	0.489	0.001
	EB	AM	5,400	2,770	Α	0.513	2,775	A	0.514	0.001	2,778	A	0.514	0.001
Paseo Del Norte to	LD	PM	5,400	1,710	Α	0.317	1,715	A	0.318	0.001	1,718	A	0.318	0.001
Armada Drive	WB	AM	5,400	1,260	Α	0.233	1,264	A	0.234	0.001	1,266	A	0.234	0.001
	WD	PM	5,400	2,790	Α	0.517	2,795	A	0.518	0.001	2,798	A	0.518	0.001
	EB	AM	5,400	2,640	Α	0.489	2,645	A	0.490	0.001	2,648	A	0.490	0.001
Armada Drive to Hidden	ED	PM	5,400	1,850	Α	0.343	1,855	A	0.344	0.001	1,858	A	0.344	0.001
Valley Ranch	WB	AM	5,400	1,430	Α	0.265	1,434	A	0.266	0.001	1,436	A	0.266	0.001
	WD	PM	5,400	2,940	Α	0.544	2,945	A	0.545	0.001	2,948	A	0.546	0.001
	EB	AM	5,400	2,600	Α	0.481	2,605	A	0.482	0.001	2,608	A	0.483	0.001
Hidden Valley Ranch to	LD	PM	5,400	2,280	Α	0.422	2,285	A	0.423	0.001	2,288	A	0.424	0.001
College Boulevard	WB	AM	5,400	1,380	Α	0.256	1,384	A	0.256	0.001	1,386	A	0.257	0.001
	WD	PM	5,400	2,430	Α	0.450	2,435	A	0.451	0.001	2,438	A	0.451	0.001
	EB	AM	5,400	1,970	Α	0.365	1,975	A	0.366	0.001	1,980	A	0.367	0.002
College Boulevard to	ED	PM	5,400	1,520	Α	0.281	1,525	A	0.282	0.001	1,530	A	0.283	0.002
Camino Vida Roble	WB	AM	5,400	1,260	Α	0.233	1,264	A	0.234	0.001	1,267	A	0.235	0.001
	O W	PM	5,400	2,020	A	0.374	2,025	A	0.375	0.001	2,030	Α	0.376	0.002
	EB	AM	5,400	1,610	A	0.298	1,613	A	0.299	0.001	1,615	Α	0.299	0.001
Camino Vida Roble to	ED	PM	5,400	2,210	A	0.409	2,213	A	0.410	0.001	2,215	A	0.410	0.001
Yarrow Drive	WB	AM	5,400	1,490	A	0.276	1,492	A	0.276	0.000	1,494	A	0.277	0.001
		PM	5,400	1,590	A	0.294	1,593	A	0.295	0.001	1,595	A	0.295	0.001

Table 10–2
Near-Term Street Segment Operations During Peak Hours

Street Segment	Direction	Peak	Capacit y	Existing P	+ Cum rojects	ulative		_	Cumulat oject (P		Existing + Cumulative Projects + Project (PAL2)			
Street Segment	Direction	Hour	(LOS E)	Volume	LOS	V/C	Volume	LOS	V/C	$\Delta^{\mathbf{d}}$	Volume	LOS	V/C	Δ
	EB	AM	5,400	1,400	A	0.259	1,405	A	0.260	0.001	1,409	A	0.261	0.002
Yarrow Drive to El	ED	PM	5,400	2,230	A	0.413	2,237	A	0.414	0.001	2,243	A	0.415	0.002
Camino Real	WB	AM	5,400	2,110	A	0.391	2,118	A	0.392	0.001	2,124	A	0.393	0.003
	WD	PM	5,400	1,600	A	0.296	1,608	A	0.298	0.001	1,614	A	0.299	0.003
	EB	AM	5,400	1,930	A	0.357	1,931	A	0.358	0.000	1,933	A	0.358	0.001
El Camino Real to Loker	ED	PM	5,400	2,970	A	0.550	2,972	A	0.550	0.000	2,974	A	0.551	0.001
Avenue	WB	AM	5,400	2,850	A	0.528	2,852	A	0.528	0.000	2,854	A	0.529	0.001
	WD	PM	5,400	2,130	A	0.394	2,132	A	0.395	0.000	2,134	A	0.395	0.001
	EB	AM	5,400	1,370	A	0.254	1,371	A	0.254	0.000	1,373	A	0.254	0.001
Loker Avenue to El	ED	PM	5,400	2,830	A	0.524	2,832	A	0.524	0.000	2,834	A	0.525	0.001
Fuerte Street	WB	AM	5,400	3,090	A	0.572	3,092	A	0.573	0.000	3,094	A	0.573	0.001
	WD	PM	5,400	1,700	A	0.315	1,702	A	0.315	0.000	1,704	A	0.316	0.001
	EB	AM	5,400	1,340	A	0.248	1,341	A	0.248	0.000	1,343	A	0.249	0.001
El Fuerte Street to	ED	PM	5,400	3,170	A	0.587	3,172	A	0.587	0.000	3,174	A	0.588	0.001
Melrose Drive	WB	AM	5,400	3,610	В	0.669	3,612	В	0.669	0.000	3,614	В	0.669	0.001
	WD	PM	5,400	2,140	A	0.396	2,142	A	0.397	0.000	2,144	A	0.397	0.001
	EB	AM	5,400	1,160	A	0.215	1,161	A	0.215	0.000	1,163	A	0.215	0.001
East of Melrose Drive	ED	PM	5,400	2,400	A	0.444	2,402	A	0.445	0.000	2,402	A	0.445	0.000
East of Mellose Drive	WB	AM	5,400	1,860	A	0.344	1,862	A	0.345	0.001	1,862	A	0.345	0.001
	WD	PM	5,400	1,370	A	0.254	1,372	A	0.254	0.000	1,372	A	0.254	0.000
El Camino Real														
	EB	AM	3,600	2,640	C	0.733	2,642	C	0.734	0.001	2,644	C	0.734	0.001
North of College	ED	PM	3,600	1,280	A	0.356	1,282	A	0.356	0.001	1,284	A	0.357	0.001
Boulevard	WB	AM	5,400	760	A	0.141	762	A	0.141	0.000	762	A	0.141	0.000
	WD	PM	5,400	2,720	A	0.504	2,722	A	0.504	0.000	2,724	A	0.504	0.001

Table 10–2
Near-Term Street Segment Operations During Peak Hours

Street Segment	Direction	Peak	Capacit y	Existing P	+ Cum rojects	ulative			Cumulat oject (PA		Existing +		ulative P (PAL2)	
Street Segment	Direction	Hour	(LOS E)	Volume	LOS	V/C	Volume	LOS	V/C	Δ^{d}	Volume	LOS	V/C	Δ
	NB	AM	5,400	930	A	0.172	932	A	0.173	0.000	932	A	0.173	0.000
College Avenue to	NB	PM	5,400	2,070	A	0.383	2,072	A	0.384	0.000	2,074	A	0.384	0.001
Faraday Avenue	SB	AM	5,400	2,220	Α	0.411	2,222	A	0.411	0.000	2,224	A	0.412	0.001
	SD	PM	5,400	1,240	Α	0.230	1,242	A	0.230	0.000	1,244	A	0.230	0.001
	NB	AM	5,400	1,550	Α	0.287	1,552	A	0.287	0.000	1,553	A	0.288	0.001
Faraday Avenue to	NB	PM	5,400	1,760	A	0.326	1,763	A	0.326	0.001	1,765	A	0.327	0.001
Palomar Airport Road	SB	AM	5,400	1,790	Α	0.331	1,793	A	0.332	0.001	1,795	A	0.332	0.001
	SD	PM	5,400	2,070	Α	0.383	2,073	A	0.384	0.001	2,075	A	0.384	0.001
	NID	AM	5,400	1,490	Α	0.276	1,493	A	0.276	0.001	1,495	A	0.277	0.001
Palomar Airport Road to	NB	PM	5,400	1,660	Α	0.307	1,663	A	0.308	0.001	1,665	A	0.308	0.001
Town Garden Road	SB	AM	5,400	2,090	Α	0.387	2,092	A	0.387	0.000	2,093	A	0.388	0.001
	SD	PM	5,400	1,690	Α	0.313	1,692	A	0.313	0.000	1,694	A	0.314	0.001
	NB	AM	5,400	1,510	Α	0.280	1,513	Α	0.280	0.001	1,515	Α	0.281	0.001
Town Garden Road to	ND	PM	5,400	1,610	Α	0.298	1,613	A	0.299	0.001	1,615	A	0.299	0.001
Camino Vida Roble	SB	AM	5,400	1,620	Α	0.300	1,622	A	0.300	0.000	1,623	A	0.301	0.001
	SB	PM	5,400	1,980	Α	0.367	1,982	A	0.367	0.000	1,984	A	0.367	0.001
	NB	AM	3,600	1,500	Α	0.417	1,504	A	0.418	0.001	1,507	A	0.419	0.002
Camino Vida Roble to	NB	PM	3,600	1,410	Α	0.392	1,414	A	0.393	0.001	1,417	A	0.394	0.002
Poinsettia Lane	CD	AM	5,400	1,480	Α	0.274	1,482	A	0.274	0.000	1,484	A	0.275	0.001
	SB	PM	5,400	2,180	A	0.404	2,183	A	0.404	0.001	2,186	A	0.405	0.001
	NID	AM	5,400	1,600	A	0.296	1,604	A	0.297	0.001	1,607	A	0.298	0.001
Courtle of Doincottic Leave	NB	PM	5,400	1,790	A	0.331	1,794	A	0.332	0.001	1,797	A	0.333	0.001
South of Poinsettia Lane	CD	AM	5,400	1,590	A	0.294	1,592	A	0.295	0.000	1,594	A	0.295	0.001
	SB	PM	5,400	2,190	A	0.406	2,193	A	0.406	0.001	2,196	A	0.407	0.001

Table 10–2
Near-Term Street Segment Operations During Peak Hours

Street Segment	Direction	Peak	Capacit y	Existing P	+ Cum Projects				Cumulat oject (PA		Existing +		ulative P (PAL2)	•
Street Segment	Direction	Hour	(LOS E)	Volume	LOS	V/C	Volume	LOS	V/C	Δ^{d}	Volume	LOS	V/C	Δ
College Boulevard														
	NB	AM	3,600	1,190	A	0.331	1,190	A	0.331	0.000	1,190	A	0.331	0.000
Aston Avenue to	ND	PM	3,600	520	Α	0.144	520	A	0.144	0.000	521	A	0.145	0.000
Palomar Airport Road	SB	AM	3,600	420	A	0.117	420	A	0.117	0.000	421	A	0.117	0.000
	SD	PM	3,600	1,030	A	0.286	1,030	A	0.286	0.000	1,031	A	0.286	0.000

Footnotes:

- a. Capacities based on 1,800 vehicles per lane per hour
- b. Level of Service.
- c. Volume to Capacity.
- d. $\quad \Delta$ denotes a Project-induced increase in the Volume to Capacity Ratio

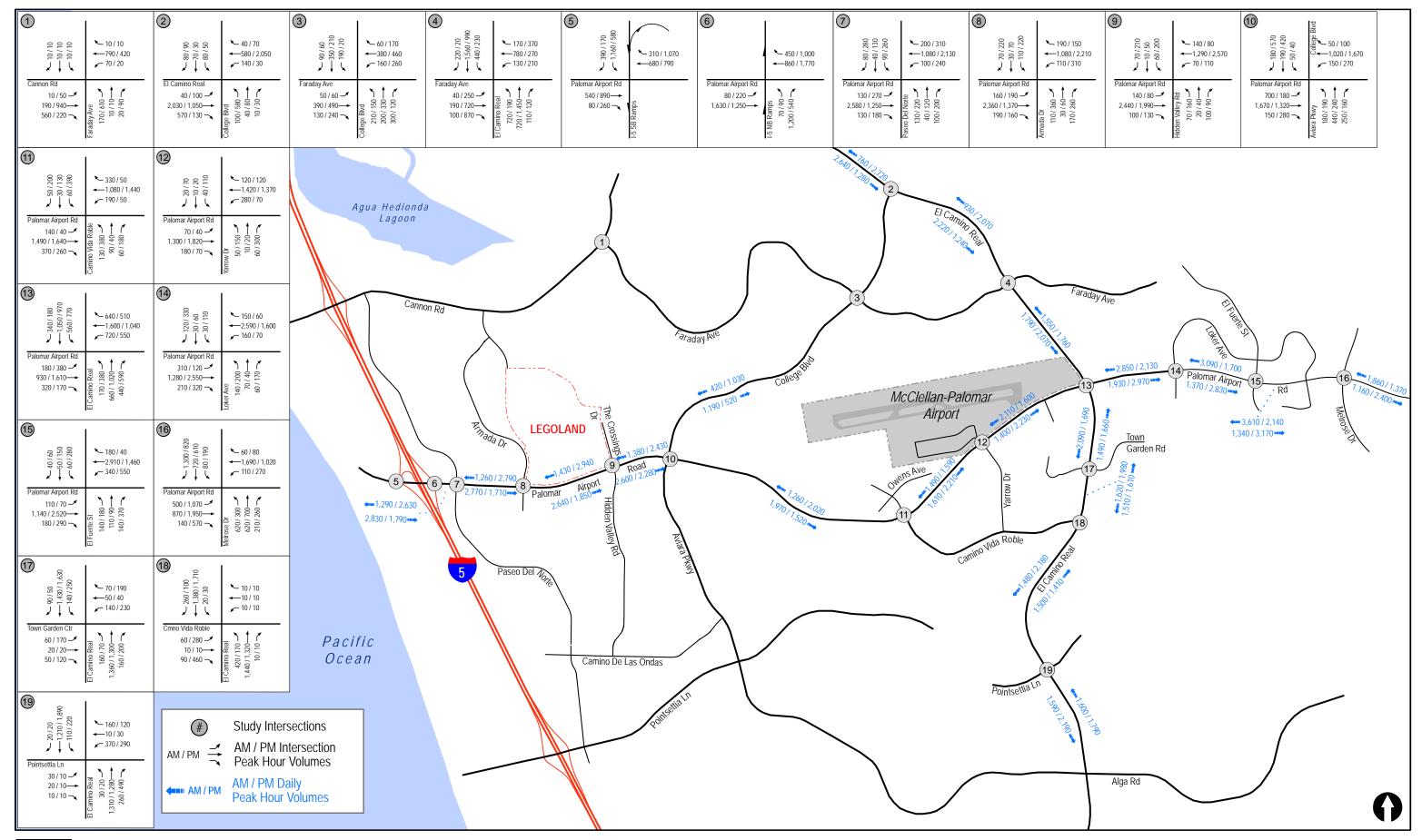
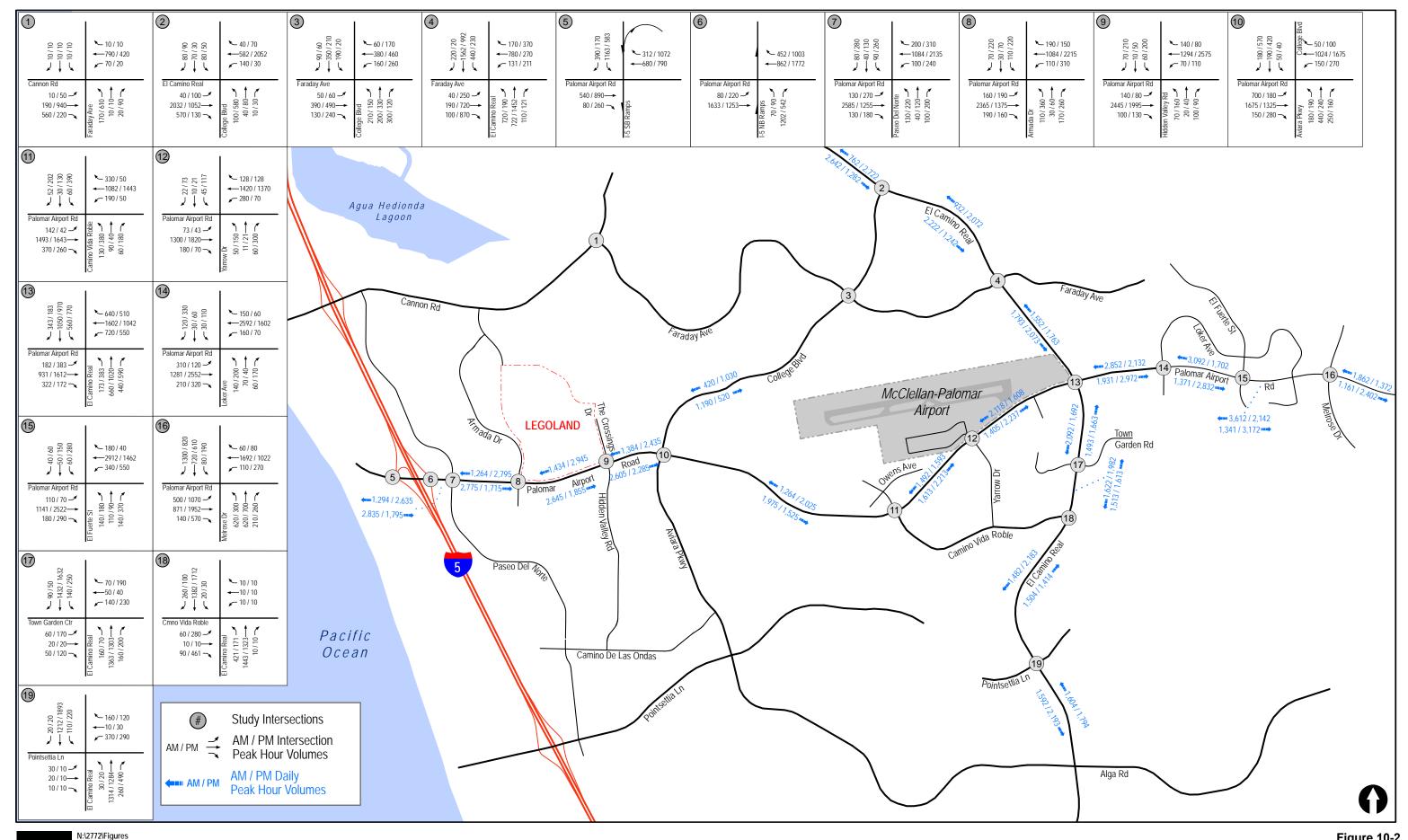
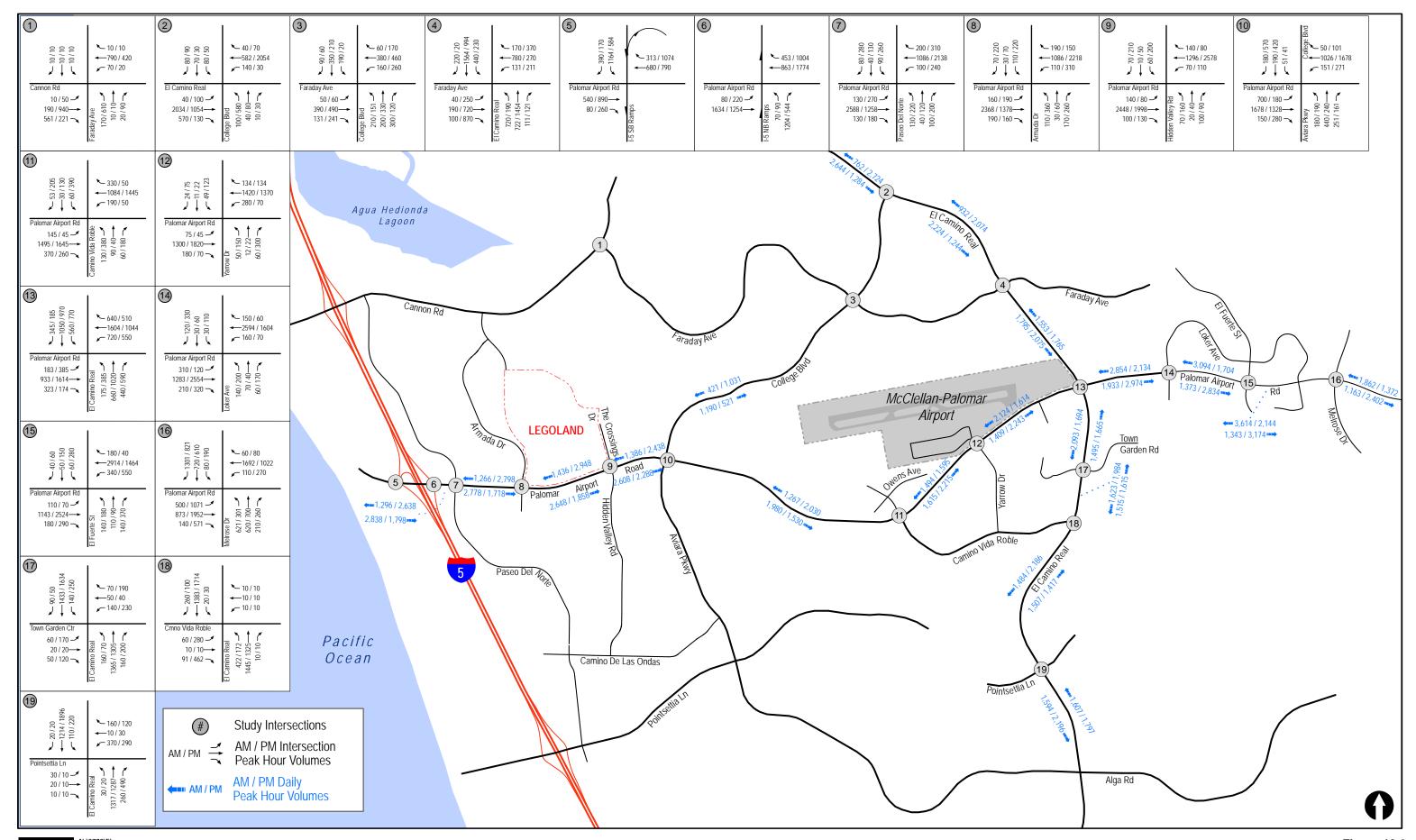




Figure 10-1









11.0 Analysis of Long-Term Scenarios

This section discusses the Long-Term (2036) operations of the intersections and street segments in the Project study area as required by the City of Carlsbad's *Growth Management Plan*.

11.1 Volumes Development

The SANDAG Series 13 Model forecast was used as the source to obtain long-term volumes for the study area locations. SANDAG forecasts volumes in 5-year increments and the Year 2035 volumes were chosen as the baseline to assess the Long-Term (Year 2036) potential impacts since it represents the closest forecast to the Project's long-term year. Peak hour volumes were estimated based on the model and partially on the existing relationship between ADT and peak hour volumes.

Several other traffic engineering principles and factors such as the K-factor (the proportion of daily volume that occurs during the peak period) and D-factor (the directional split of the traffic volumes) were also considered in the forecast analysis. The forecast volumes were also checked for consistency between intersections, where no driveways or roadways exist between intersections, and were compared to existing volumes for accuracy.

Figure 11–1 shows the Long-Term without Project traffic volumes. *Figure 11–2* shows the Long-Term with Project (PAL1) traffic volumes. *Figure 11–3* shows the Long-Term with Project (PAL2) traffic volumes.

11.2 Long-Term without Project

11.2.1 Intersection Analysis

Intersection capacity analyses were conducted for the study intersections under Long-Term conditions. *Table 11–1* reports the Long-Term intersection operations during the AM and PM peak hours. As shown in *Table 11–1*, the following intersections are calculated to operate at LOS D or better. All other locations are calculated to operate at LOS E or F.

- Cannon Rd / Faraday Avenue (LOS D during the AM peak hour)
- I-5 SB Ramps / Palomar Airport Road (LOS B/A during the AM/PM peak hours)
- I-5 NB Ramps / Palomar Airport Road (LOS D during both the AM and PM peak hours)
- Palomar Airport Road / Paseo Del Norte (LOS D during the PM peak hour)
- Palomar Airport Road / Armada Drive (LOS C during the AM peak hour)
- Palomar Airport Road / College Boulevard (LOS D during the AM peak hour)
- Palomar Airport Road / Camino Vida Roble (LOS D during the AM peak hour)
- Palomar Airport Road / Yarrow Drive (LOS D during both the AM and PM peak hours)
- Palomar Airport Road / Poinsettia Lane (LOS D during both the AM and PM peak hours)

Appendix F contains the intersection analysis worksheets for the Long-Term scenario.

11.2.2 Segment Operations

Long-Term street segment analyses were conducted for the study roadways. *Table 11–2* summarizes the street segment operations under Long-Term conditions. As shown in *Table 11–2*, the study area segments are calculated to operate at an acceptable LOS.

11.3 Long-Term + Project (PAL1)

11.3.1 Intersection Analysis

Table 11–1 reports the Long-Term + Project (PAL1) intersection operations during the AM and PM peak hours. As shown in *Table 11–1*, the following intersections are calculated to operate at LOS D or better:

- Cannon Rd / Faraday Avenue (LOS D during the AM peak hour)
- I-5 SB Ramps / Palomar Airport Road (LOS B/A during the AM/PM peak hours)
- I-5 NB Ramps / Palomar Airport Road (LOS D during both the AM and PM peak hours)
- Palomar Airport Road / Paseo Del Norte (LOS D during the PM peak hour)
- Palomar Airport Road / Armada Drive (LOS C during the AM peak hour)
- Palomar Airport Road / College Boulevard (LOS D during the AM peak hour)
- Palomar Airport Road / Camino Vida Roble (LOS D during the AM peak hour)
- Palomar Airport Road / Yarrow Drive (LOS D during both the AM and PM peak hours)
- Palomar Airport Road / Poinsettia Lane (LOS D during both the AM and PM peak hours)

Appendix F contains the intersection analysis worksheets for the Long-Term + Project (PAL1) scenario.

Based on the significance criteria, no intersection impacts are calculated since the Project (PAL1) contribution does not exceed 2.0 seconds.

11.3.2 Segment Operations

Long-Term street segments analyses were conducted for the study roadways. *Table 11-2* summarizes the street segment operations under Long-Term conditions. As shown in *Table 11-2*, the study area segments are calculated to operate at an acceptable LOS.

Based on the significance criteria, no street segment impacts are calculated since the study area street segments are all calculated to operate at acceptable LOS.

11.4 Long-Term + Project (PAL2)

11.4.1 Intersection Analysis

Table 11–1 reports the Long-Term + Project (PAL2) intersection operations during the AM and PM peak hours. As shown in *Table 11–1*, the following intersections are calculated to operate at LOS D or better:

- Cannon Rd / Faraday Avenue (LOS D during the AM peak hour)
- I-5 SB Ramps / Palomar Airport Road (LOS B/A during the AM/PM peak hours)
- I-5 NB Ramps / Palomar Airport Road (LOS D during both the AM and PM peak hours)
- Palomar Airport Road / Paseo Del Norte (LOS D during the PM peak hour)
- Palomar Airport Road / Armada Drive (LOS C during the AM peak hour)
- Palomar Airport Road / College Boulevard (LOS D during the AM peak hour)
- Palomar Airport Road / Camino Vida Roble (LOS D during the AM peak hour)
- Palomar Airport Road / Yarrow Drive (LOS D during both the AM and PM peak hours)
- Palomar Airport Road / Poinsettia Lane (LOS D during both the AM and PM peak hours)

Appendix F contains the intersection analysis worksheets for the Long-Term + Project (PAL2) scenario.

Based on the significance criteria, cumulative impacts are calculated at the following intersections because the Project's (PAL2) contribution would cause an increased delay of more than 2.0 seconds:

- Palomar Airport Road / Camino Vida Roble
- Palomar Airport Road / El Camino Real

11.4.2 Segment Operations

Long-Term street segments analyses were conducted for the study roadways. *Table 11-2* summarizes the street segment operations under Long-Term conditions. As shown in *Table 11-2*, the study area segments are calculated to operate at an acceptable LOS.

Based on the significance criteria, no street segment impacts are calculated since the study area street segments are all calculated to operate at acceptable LOS.

Table 11–1
Long-Term Intersection Operations

Intersection	Peak	Long- with Pro	out	L	ong-Term +	Project (PAL	1)	L	ong-Term +	Project (PAL	2)
	Hour	Delay ^a	LOSb	Delay ^a	LOSb	Delay Increase	Sig?c	Delay ^a	LOS ^b	Delay Increase	Sig?c
1. Canon Road / Faraday	AM	43.1	D	43.2	D	0.1	No	43.3	D	0.2	No
Avenue	PM	63.1	Е	63.5	Е	0.4	No	63.5	Е	0.4	No
2. El Camino Real /	AM	255.2	F	255.6	F	0.4	No	255.9	F	0.7	No
College Boulevard	PM	457.2	F	457.3	F	0.1	No	457.3	F	0.1	No
3. College Boulevard /	AM	65.7	Е	66.0	Е	0.3	No	66.2	Е	0.5	No
Faraday Avenue	PM	77.2	Е	77.6	Е	0.4	No	77.7	Е	0.5	No
4. El Camino Real /	AM	108.6	F	108.8	F	0.2	No	109.4	F	0.8	No
Faraday Avenue	PM	116.0	F	116.0	F	0.0	No	116.0	F	0.0	No
5. I-5 SB Ramps /	AM	15.5	В	15.7	В	0.2	No	15.9	В	0.4	No
Palomar Airport Road	PM	8.7	A	8.8	A	0.1	No	8.8	A	0.1	No
6. I-5 NB Ramps /	AM	50.4	D	51.1	D	0.7	No	51.8	D	1.4	No
Palomar Airport Road	PM	46.0	D	47.0	D	1.0	No	48.0	D	2.0	No
7. Palomar Airport Road / Paseo Del Norte	AM PM	63.4 40.5	E D	64.2 40.6	E D	0.8 0.1	No No	64.8 40.6	E D	1.4 0.1	No No
									_		
8. Palomar Airport Road / Armada Drive	AM PM	32.6 72.5	C E	32.9 72.7	C E	0.3 0.2	No No	32.9 74.3	C E	0.3 1.8	No No
9. Palomar Airport Road / Hidden Valley Road	AM PM	62.0 69.8	E E	62.1 70.0	E E	0.1 0.2	No No	62.6 71.3	E E	0.6 1.5	No No

Table 11–1
Long-Term Intersection Operations

Intersection	Peak Hour	Long- with Pro	out	L	ong-Term + 1	Project (PAL	1)	Lo	ong-Term +	Project (PAL	2)
	nour	Delay ^a	LOSb	Delay ^a	LOS ^b	Delay Increase	Sig?c	Delay ^a	LOS ^b	Delay Increase	Sig?c
10. Palomar Airport Road / College Boulevard	AM PM	37.2 74.0	D E	38.0 74.0	D E	0.8	No No	38.8 75.5	D E	1.6 1.5	No No
11. Palomar Airport Road / Camino Vida	AM	53.9	D	54.0	D	0.1	No	54.2	D	0.3	No
Roble	PM	92.9	F	94.2	F	1.3	No	95.4	F	2.5	Impact
12. Palomar Airport	AM	38.8	D	40.3	D	1.5	No	42.1	D	3.3	No
Road / Yarrow Drive	PM	41.7	D	43.0	D	1.3	No	46.0	D	4.3	No
13. Palomar Airport	AM	168.4	F	169.8	F	1.4	No	171.1	F	2.7	Impact
Road / El Camino Real	PM	126.2	F	127.9	F	1.7	No	130.9	F	4.7	Impact
14. Palomar Airport	AM	114.9	F	115.9	F	1.0	No	116.8	F	1.9	No
Road / Loker Avenue	PM	91.7	F	92.7	F	1.0	No	93.3	F	1.6	No
15. Palomar Airport	AM	85.6	F	86.4	F	0.8	No	87.3	F	1.7	No
Road / El Fuerte Street	PM	138.1	F	138.8	F	0.7	No	139.7	F	1.6	No
16. Palomar Airport	AM	118.5	F	118.7	F	0.2	No	118.8	F	0.3	No
Road / Melrose Drive	PM	82.3	F	82.6	F	0.3	No	82.7	F	0.4	No
17. El Camino Real /	AM	112.2	F	112.8	F	0.6	No	113.4	F	1.2	No
Town Garden Road	PM	88.0	F	88.5	F	0.5	No	88.9	F	0.9	No
18. El Camino Real /	AM	173.5	F	174.0	F	0.5	No	174.1	F	0.6	No
Camino Vida Roble	PM	59.6	E	60.0	E	0.4	No	60.9	E	1.3	No

TABLE 11–1 LONG-TERM INTERSECTION OPERATIONS

Intersection	Peak Hour	Long- with Pro	out	L	ong-Term +]	Project (PAL	1)	L	ong-Term + l	g-Term + Project (PAI LOSb Delay Increase D 0.4	2)
	nour	Delay ^a	LOSb	Delay ^a	LOS ^b	Delay Increase	Sig?c	Delay ^a	LOSb	_ •	Sig?c
19. El Camino Real /	AM	44.5	D	44.7	D	0.2	No	44.9	D	0.4	No
Poinsettia Lane	PM	51.4	D	52.4	D	1.0	No	53.2	D	1.8	No

Footnotes:

Average delay expressed in seconds per vehicle. Level of Service

 Δ denotes an increase in delay due to Project.

SIGNALIZ	ED	UNSIGNAL	IZED
DELAY/LOS THR	ESHOLDS	DELAY/LOS THR	ESHOLDS
Delay	LOS	Delay	LOS
$0.0 \le 10.0$	A	$0.0 \le 10.0$	A
10.1 to 20.0	В	10.1 to 15.0	В
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

Table 11–2
Long-Term Street Segment Operations During Peak Hours

		Peak	Capacity	Long-Ter	m without	Project	Long	-Term +	Project (PA	AL1)	Long-	Term +	+ Project (PA) 0.593 0.381 0.275 0.546 0.578 0.358 0.270 0.584 0.552 0.393 0.305 0.610 0.543 0.473 0.298 0.512 0.419 0.326 0.265 0.422 0.334 0.456 0.311 0.329	L2)
Street Segment	Direction	Hour	(LOS E) a	Volume	LOS b	V/C	Volume	LOS	V/C	${f \Delta}^{f d}$	Volume	LOS		$\Delta^{ m d}$
Palomar Airport Road														
	EB	AM	5,400	3,160	A	0.585	3,181	A	0.589	0.004	3,200	A	0.593	0.008
I-5 Ramps to Paseo	LD	PM	5,400	2,020	A	0.374	2,041	A	0.378	0.004	2,060	A	0.381	0.007
Del Norte	WB	AM	5,400	1,460	A	0.270	1,474	A	0.273	0.003	1,487	A	0.275	0.005
	WD	PM	5,400	2,910	A	0.539	2,931	A	0.543	0.004	2,950	A	0.546	0.007
	EB	AM	5,400	3,080	A	0.570	3,103	A	0.575	0.005	3,122	A	0.578	0.008
Paseo Del Norte to	LD	PM	5,400	1,890	A	0.350	1,913	A	0.354	0.004	1,932	A	0.358	0.008
Armada Drive	WB	AM	5,400	1,430	A	0.265	1,445	A	0.268	0.003	1,459	A	0.270	0.005
	WD	PM	5,400	3,110	A	0.576	3,133	A	0.580	0.004	3,152	A	0.584	0.008
	EB	AM	5,400	2,940	A	0.544	2,964	A	0.549	0.005	2,983	A	0.552	0.008
Armada Drive to Hidden Valley	ED	PM	5,400	2,080	A	0.385	2,104	A	0.390	0.005	2,123	A	0.393	0.008
Ranch	WB	AM	5,400	1,620	A	0.300	1,635	A	0.303	0.003	1,649	Α	0.305	0.005
Runen	WD	PM	5,400	3,250	В	0.602	3,274	В	0.606	0.004	3,293	В	0.610	0.008
	EB	AM	5,400	2,890	A	0.535	2,914	A	0.540	0.005	2,934	Α	0.543	0.008
Hidden Valley	EB	PM	5,400	2,510	A	0.465	2,534	A	0.469	0.004	2,554	Α	0.473	0.008
Ranch to College Boulevard	WB	AM	5,400	1,580	A	0.293	1,595	A	0.295	0.002	1,609	A	0.298	0.005
Douicvara	WB	PM	5,400	2,720	A	0.504	2,744	A	0.508	0.004	2,764	A	0.512	0.008
	ED	AM	5,400	2,210	A	0.409	2,237	A	0.414	0.005	2,260	Α	0.419	0.010
College Boulevard to Camino Vida	EB	PM	5,400	1,710	A	0.317	1,737	A	0.322	0.005	1,760	A	0.326	0.009
Roble	WB	AM	5,400	1,400	A	0.259	1,417	A	0.262	0.003	1,433	A	0.265	0.006
Route	w B	PM	5,400	2,230	A	0.413	2,257	A	0.418	0.005	2,279	A	0.422	0.009
	EB	AM	5,400	1,780	A	0.330	1,794	A	0.332	0.002	1,806	Α	0.334	0.004
Camino Vida	ЕВ	PM	5,400	2,440	A	0.452	2,454	A	0.454	0.002	2,466	Α	0.456	0.004
Roble to Yarrow		AM	5,400	1,660	A	0.307	1,668	A	0.309	0.002	1,677	A	0.311	0.004
Drive	WB	PM	5,400	1,750	A	0.324	1,764	A	0.327	0.003	1,775	A	0.329	0.005

Table 11–2
Long-Term Street Segment Operations During Peak Hours

				Long-Torr	Long-Term without Project Long-Term + Project (PAL1)							Long-Term + Project (PAL2)				
Street Segment	Direction	Direction P	Direction	Peak	Capacity	Long-ren	n wimout	Troject	Long	- 1 erini +	1 Toject (PA	1L1)	Long-	Term +	1 Toject (PA	1112)
Street Segment	Direction	Hour	(LOS E) a	Volume	LOS b	V/C	Volume	LOS	V/C	$\Delta^{ m d}$	Volume	LOS	V/C	$\Delta^{\mathbf{d}}$		
	EB	AM	5,400	1,490	A	0.276	1,514	A	0.280	0.004	1,534	Α	0.284	0.008		
Yarrow Drive to El	EB	PM	5,400	2,450	A	0.454	2,485	Α	0.460	0.006	2,517	Α	0.466	0.012		
Camino Real	WB	AM	5,400	2,440	A	0.452	2,475	A	0.458	0.006	2,507	Α	0.464	0.012		
	WD	PM	5,400	1,780	A	0.330	1,815	A	0.336	0.006	1,847	A	0.342	0.012		
	EB	AM	5,400	2,030	A	0.376	2,038	A	0.377	0.001	2,044	A	0.379	0.003		
El Camino Real to	ED	PM	5,400	3,200	A	0.593	3,211	Α	0.595	0.002	3,221	Α	0.596	0.003		
Loker Avenue	WB	AM	5,400	3,180	A	0.589	3,191	A	0.591	0.003	3,201	Α	0.593	0.004		
	WB	PM	5,400	2,430	A	0.450	2,441	Α	0.452	0.002	2,451	Α	0.454	0.004		
	EB	AM	5,400	1,580	A	0.293	1,588	A	0.294	0.001	1,593	A	0.295	0.002		
Loker Avenue to El	ED	PM	5,400	3,240	В	0.600	3,250	В	0.602	0.002	3,260	В	0.604	0.004		
Fuerte Street	WB	AM	5,400	3,470	В	0.643	3,480	В	0.644	0.001	3,490	В	0.646	0.003		
		PM	5,400	1,940	A	0.359	1,950	A	0.361	0.002	1,960	Α	0.363	0.004		
	EB	AM	5,400	1,470	A	0.272	1,476	Α	0.273	0.001	1,481	Α	0.274	0.002		
El Fuerte Street to		PM	5,400	3,330	В	0.617	3,338	В	0.618	0.001	3,348	В	0.620	0.003		
Melrose Drive	WB	AM	5,400	3,890	C	0.720	3,898	C	0.722	0.002	3,908	C	0.724	0.004		
		PM	5,400	2,120	A	0.393	2,128	A	0.394	0.001	2,138	Α	0.396	0.003		
	EB	AM	5,400	1,290	A	0.239	1,294	Α	0.240	0.001	1,297	Α	0.240	0.001		
East of Melrose		PM	5,400	2,650	A	0.491	2,656	A	0.492	0.001	2,662	Α	0.493	0.002		
Drive	WB	AM	5,400	2,090	A	0.387	2,096	Α	0.388	0.001	2,102	Α	0.389	0.002		
	WB	PM	5,400	1,400	A	0.259	1,406	A	0.260	0.001	1,412	A	0.261	0.002		
El Camino Real																
	ED	AM	3,600	3,150	D	0.875	3,159	D	0.878	0.003	3,168	D	0.880	0.005		
North of College	EB	PM	3,600	1,830	A	0.508	1,839	Α	0.511	0.003	1,848	A	0.513	0.005		
Boulevard		AM	5,400	1,180	A	0.219	1,186	Α	0.220	0.001	1,192	A	0.221	0.002		
	WB	PM	5,400	3,430	В	0.635	3,439	В	0.637	0.002	3,448	В	0.639	0.004		
College Boulevard	NID	AM	5,400	970	A	0.180	976	Α	0.181	0.001	982	D	0.182	0.002		
to Faraday Avenue	NB	PM	5,400	2,510	A	0.465	2,519	A	0.466	0.002	2,528	A	0.468	0.003		

LINSCOTT, LAW & GREENSPAN, engineers

Table 11–2
Long-Term Street Segment Operations During Peak Hours

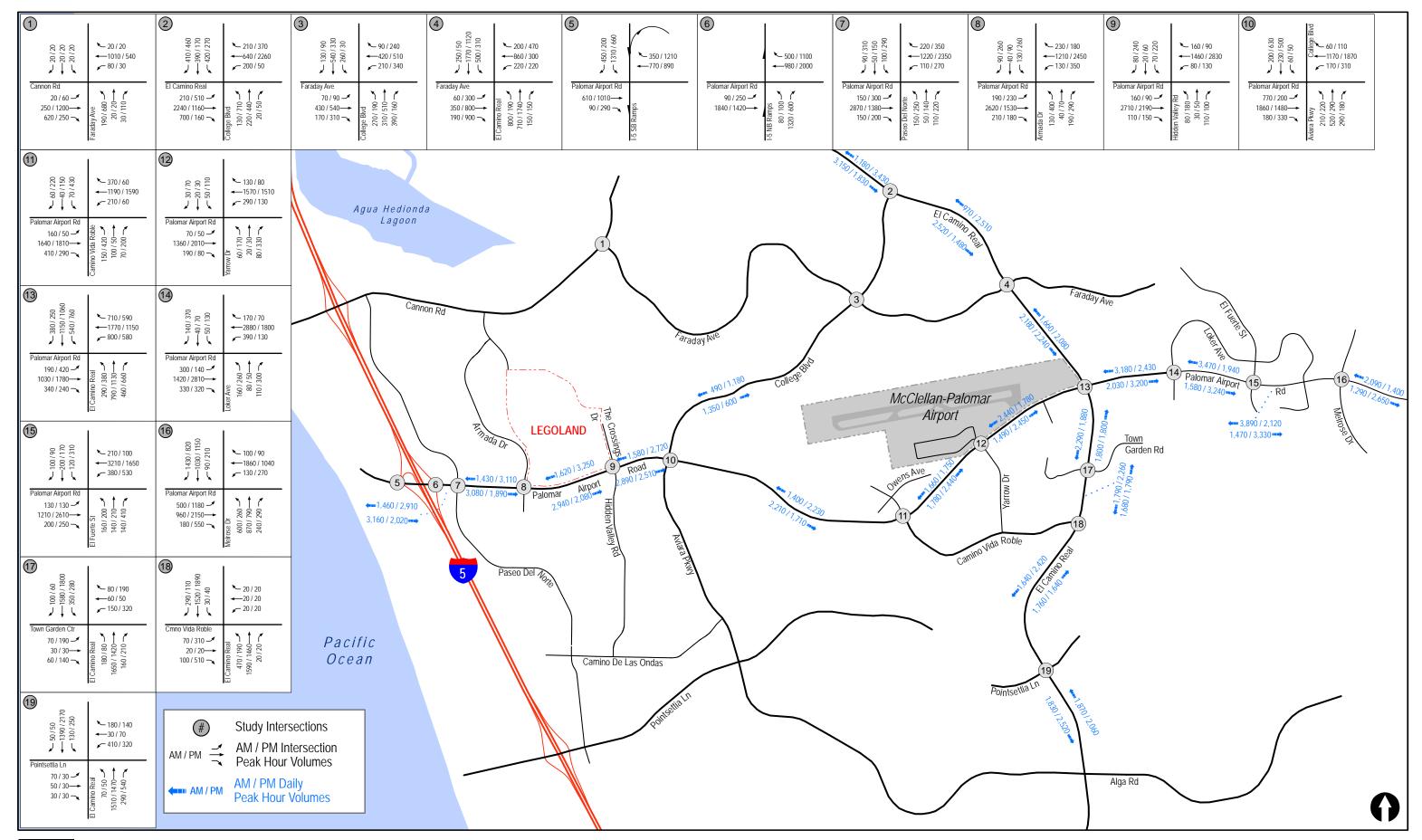
		D Peak		Capacity	Long-Terr	m without	Project	Long	-Term +	Project (PA	A L1)	Long-	Term +	Project (PA	L2)
Street Segment	Direction	Hour	(LOS E) a	Volume	LOSb	V/C	Volume	LOS	V/C	${f \Lambda}^{f d}$	Volume	LOS	V/C	Δ^{d}	
	SB	AM	5,400	2,520	A	0.467	2,529	A	0.468	0.002	2,538	A	0.470	0.003	
	SD	PM	5,400	1,480	A	0.274	1,489	Α	0.276	0.002	1,498	В	0.277	0.003	
	NB	AM	5,400	1,660	A	0.307	1,668	Α	0.309	0.002	1,675	A	0.310	0.003	
Faraday Avenue to	ND	PM	5,400	2,080	A	0.385	2,092	Α	0.387	0.002	2,103	A	0.389	0.004	
Palomar Airport Road		AM	5,400	2,180	A	0.404	2,192	Α	0.406	0.002	2,203	A	0.408	0.004	
11040	SB	PM	5,400	2,240	A	0.415	2,252	A	0.417	0.002	2,263	A	0.419	0.004	
		AM	5,400	1,800	A	0.333	1,812	A	0.336	0.003	1,823	A	0.338	0.005	
Palomar Airport Road to Town	NB	PM	5,400	1,800	A	0.333	1,812	A	0.336	0.003	1,823	A	0.338	0.005	
Garden Road	SB	AM	5,400	2,290	A	0.424	2,298	A	0.426	0.002	2,305	A	0.427	0.003	
		PM	5,400	1,880	A	0.348	1,892	A	0.350	0.002	1,903	A	0.352	0.004	
	NB	AM	5,400	1,680	A	0.311	1,692	A	0.313	0.002	1,702	A	0.315	0.004	
Town Garden Road to Camino Vida		PM	5,400	1,790	A	0.331	1,802	A	0.334	0.003	1,812	A	0.336	0.005	
Roble	SB	AM	5,400	1,790	A	0.331	1,798	A	0.333	0.002	1,804	A	0.334	0.003	
		PM	5,400	2,260	A	0.419	2,272	A	0.421	0.002	2,282	A	0.423	0.004	
	NB	AM	3,600	1,760	A	0.489	1,777	A	0.494	0.005	1,792	A	0.498	0.009	
Camino Vida	ND	PM	3,600	1,640	A	0.456	1,657	A	0.460	0.004	1,672	A	0.464	0.008	
Roble to Poinsettia Lane		AM	5,400	1,640	A	0.304	1,652	A	0.306	0.002	1,661	A	0.308	0.004	
Lane	SB	PM	5,400	2,420	A	0.448	2,437	A	0.451	0.003	2,452	A	0.454	0.006	
		AM	5,400	1,870	A	0.346	1,886	A	0.349	0.003	1,901	A	0.352	0.006	
South of Poinsettia	NB	PM	5,400	2,060	A	0.381	2,076	A	0.384	0.003	2,091	A	0.387	0.006	
Lane		AM	5,400	1,830	Α	0.339	1,841	A	0.341	0.002	1,850	A	0.343	0.004	
	SB	PM	5,400	2,520	A	0.467	2,536	A	0.470	0.003	2,551	A	0.472	0.005	

Table 11–2
Long-Term Street Segment Operations During Peak Hours

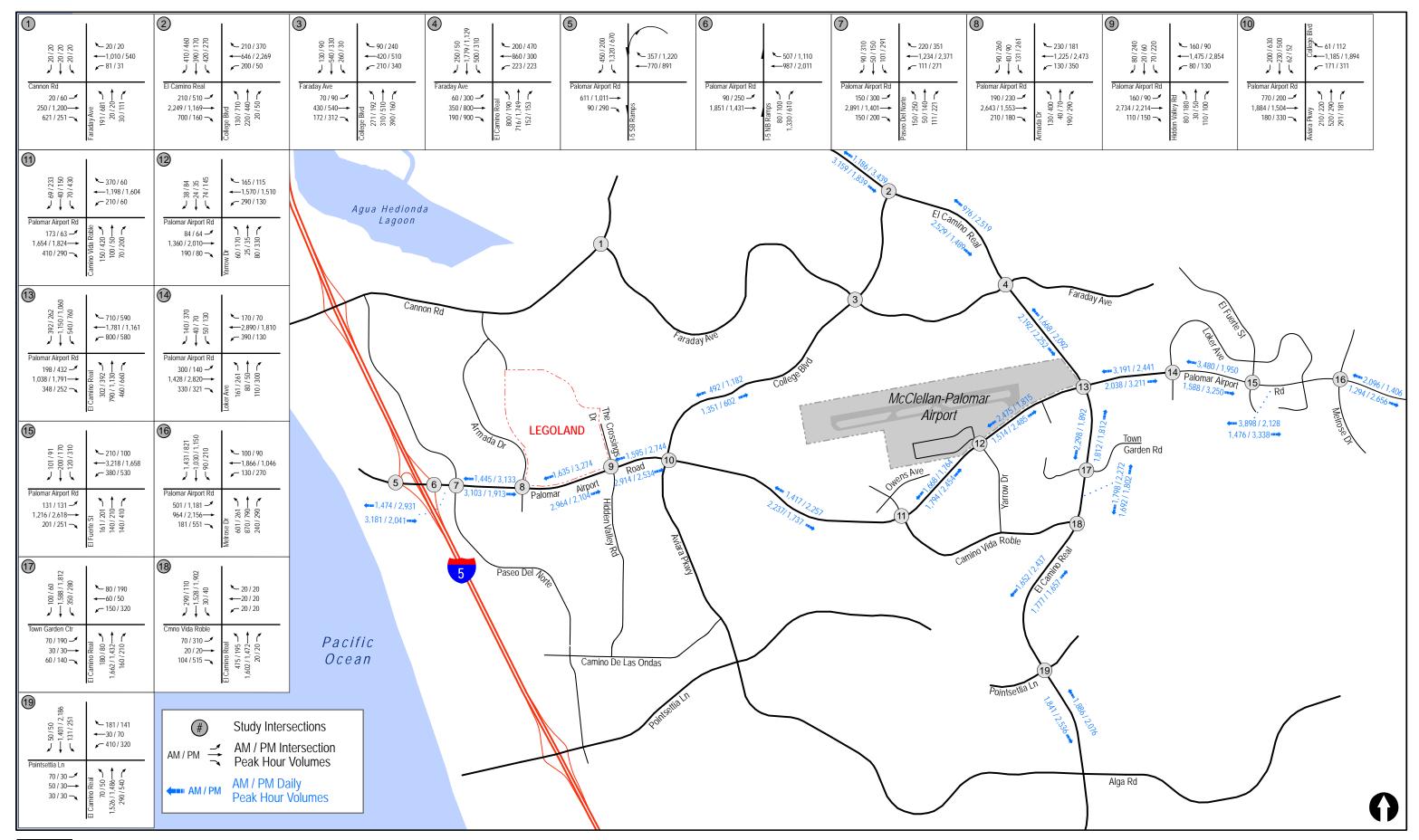
	Peak		Capacity	Long-Term without Project			Long-Term + Project (PAL1)				Long-Term + Project (PAL2)			
Street Segment	Direction	Hour	(LOS E) a	Volume	LOS b	V/C	Volume	LOS	V/C	$\Delta^{ m d}$	Volume	LOS	V/C	Δ^{d}
College Boulevard														
	NID	AM	3,600	1,350	A	0.375	1,351	Α	0.375	0.000	1,352	A	0.376	0.001
Faraday Avenue to	NB	PM	3,600	600	A	0.167	602	A	0.167	0.000	602	A	0.167	0.000
Palomar Airport Road	SB	AM	3,600	490	A	0.136	492	A	0.137	0.001	493	A	0.137	0.001
11000	SB	PM	3,600	1,180	A	0.328	1,182	A	0.328	0.000	1,183	A	0.329	0.001

Footnotes:

- a. Capacities based on 1,800 vehicles per lane per hour
- b. Level of Service.
- c. Volume to Capacity
- d. $\quad \Delta$ denotes a Project-induced increase in the Volume to Capacity Ratio









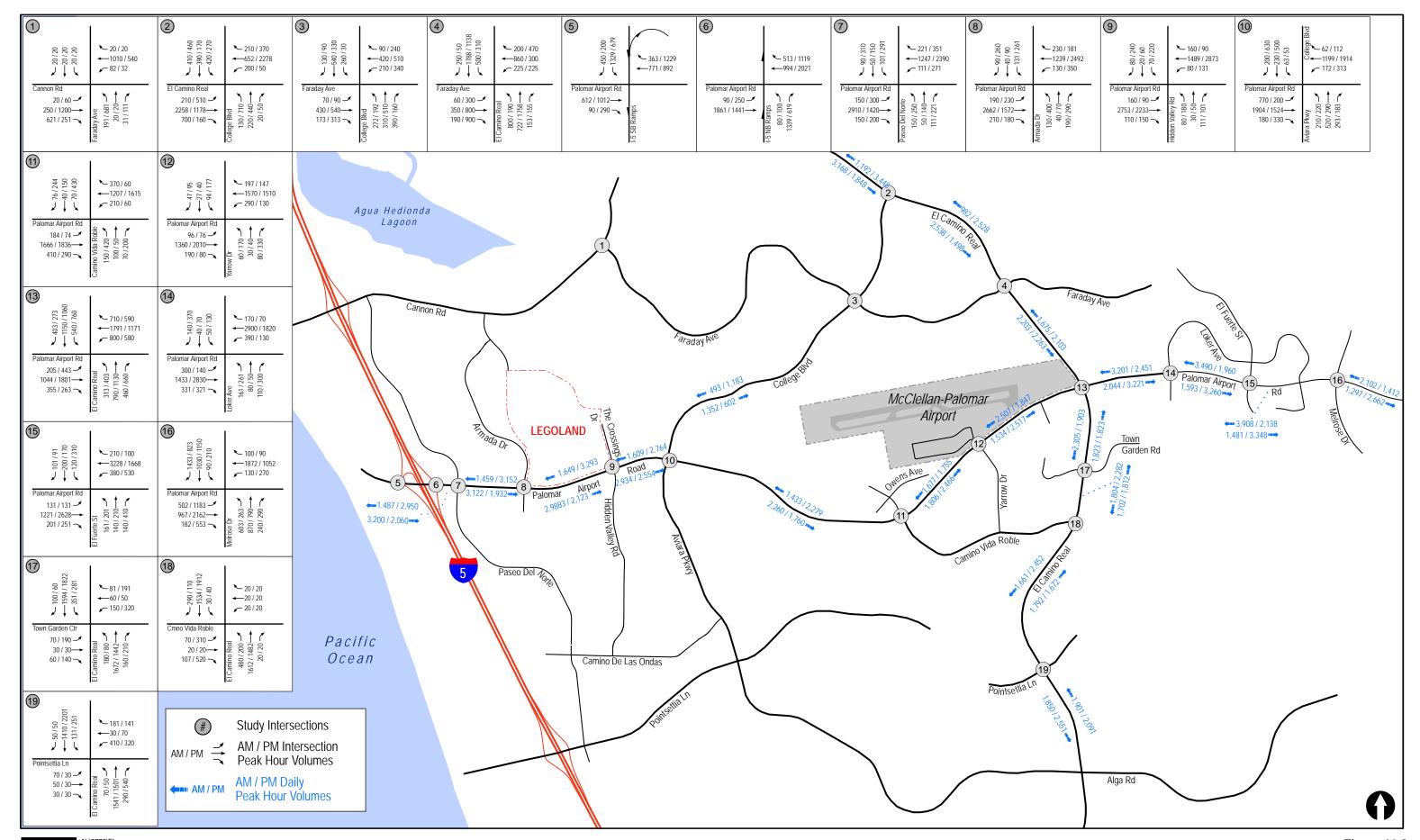




Figure 11-3

12.0 PEDESTRIAN / BICYCLE / TRANSIT ANALYSIS

12.1 Overview

The City of Carlsbad requires multimodal level of service (MMLOS) evaluation for pedestrian, bicycle and transit/rideshare users of the public roadway system. The city organizes the street network by a system of "typologies," as defined by the City of Carlsbad Mobility Element. As seen in Table 3-1 of the City of Carlsbad Mobility Element, depending on the typology, different streets may require different MMLOS evaluations. For each roadway user set (pedestrian, bicycle, transit), general criteria groups have been identified. *Table 12–1* shows a summary of the criteria for each roadway user set based on the City of Carlsbad's MMLOS methodology.

TABLE 12–1
MULTIMODAL LEVEL OF SERVICE CRITERIA

Roadway Users							
Pedestrian	Bicycle	Transit/Ridesharing					
Accessibility & Functionality	Street Characteristics	Access					
Street Characteristics	Facility (each side of street)	Connectivity					
Crossing Characteristics	Bikeway Design	Transit Priority					
Other Elements	Connectivity/Contiguity	Service					
_	Adjacent Vehicle Parking	Amenities					
_	Other Elements.	Bicycle Accommodations					
_	_	Ridesharing Potential					

Source: Extracted from the City of Carlsbad MMLOS Scoring Criteria

Each roadway typography is evaluated for the particular set of roadway users based on sub-criteria, which is assigned "typology points". For example, within the "*Pedestrian-Accessibility and Functionality*" general criteria group, the following sub-criteria (with corresponding points) are considered:

- *Sidewalk meets ADA unobstructed width requirements (25 points)*
- Ramps and landings within segment meet ADA requirements (20 points)
- Sidewalk segments meet ADA requirements (cross slopes and trip hazards) (15 points)
- Meets recommended sidewalk width for typology and adjacent land uses along frontage according to Mobility Element (10 points)

The MMLOS analysis evaluates each of the sub-criteria, totals the points for the subject street typology, and compares the points to the City's MMLOS Point System and LOS Rating, shown in *Table 12–2*. This table assigns a qualitative LOS to several ranges of points, similar to the application of LOS to ranges in delay for intersection operations.

TABLE 12–2
MMLOS POINT SYSTEM & LOS RATING

Point Score	LOS
90-100	A
80-90	В
70-80	С
60-70	D
50-60	E
0-50	F

Source: City of Carlsbad General Plan: Mobility Element

The City's Mobility Element calls for each street typology to achieve LOS D (equivalent to 60 points) or better operations for each general criteria group. It should be noted that scores in excess of 100 points can be achieved.

12.2 Project Roadway Evaluation

The City of Carlsbad identified the following roadways in the study area for MMLOS evaluation:

Palomar Airport Road is identified in the Mobility Element as an "Arterial Street". Based on the City's criteria for MMLOS evaluation, arterial streets are not subject to pedestrian or bicycle MMLOS standards. Therefore, only the following MMLOS "LOS D Standard" and corresponding analysis is required:

Transit & Ridesharing MMLOS Criteria

Thus, Palomar Airport Road is to be evaluated <u>between the northwest corner of the Project frontage intersection</u> and the <u>eastbound transit stop located 200 feet east of Yarrow Drive</u>.

Yarrow Drive is identified in the Mobility Element as an "Industrial Street". Based on the City's criteria for MMLOS evaluation, industrial streets are not subject to pedestrian or bicycle MMLOS standards. Therefore, only the following MMLOS "LOS D Standard" and corresponding analysis is required:

Transit & Ridesharing MMLOS Criteria

Thus, Yarrow Drive is to be evaluated <u>between the northwest corner of the Project frontage</u> intersection and the westbound transit stop located 200 feet south of Palomar Airport Drive.

12.3 MMLOS Results

12.3.1 Palomar Airport Road – Transit and Ridesharing results

Table 12–3 shows the Transit and Ridesharing MMLOS scoring criteria provided by the City of Carlsbad. As seen in *Table 12–3*, the existing transit amenities are identified based on street segment classification and proximate to the site as highlighted in yellow. When combined, these amenities

achieve 100 points' worth of criteria in five (5) of the six (6) broad Transit and Ridesharing categories. This is sufficient to meet the minimum standard of 60 points.

12.3.2 Yarrow Drive – Transit and Ridesharing results

Table 12–3 shows that the existing transit amenities proximate to the site achieve 95 points' worth of criteria in five (5) of the six (6) broad Transit and Ridesharing categories. This is sufficient to meet the minimum standard of 60 points.

12.4 Conclusion

As discussed above, the City of Carlsbad requires MMLOS evaluation for pedestrian, bicycle, and transit/rideshare users of the public roadway system. Based on the City of Carlsbad Mobility Element and in consultation with City staff, a MMLOS study area was identified for the Project. Based on the significance criteria, analysis of pedestrian and bicycle MMLOS was not required. Upon evaluating the Project under the transit and ridesharing criteria, no MMLOS street segment impacts are calculated since the study area street segments are all calculated to operate at acceptable LOS.

TABLE 12–3
TRANSIT AND RIDESHARING MMLOS CRITERIA

I RANSIT AND RIDESHARING MMLOS CRITERIA												
		"MMLOS = D" Standard Applies			"MMLOS = D" Standard Does Not Apply							
		Typology	Arterial Streets	Employment/ Transit Connector Street	Industrial Streets	Identity Streets	Village Streets	Arterial Connector Streets	Neighborhood Connector Street	Coastal Streets	School Streets	Local/ Neighborhood Street
	Criteria	Points										
	I		Existing Transit I	Route Located with	in 1/4 Mile Walk	from Roadway						
	No greater than 1/4 mile walk to the nearest transit stop	<mark>40</mark>	<u>◇</u>	♦	<u> </u>	♦	\Q	\Q	♦	\Q	\Q	◊
Access	No greater than 1/2 mile walk to the nearest transit stop	20	♦	♦	♦	♦	\Diamond	♦	♦	\Diamond	♦	◊
1100055	No greater than 1 mile bicycle ride to the nearest transit stop	10	\Diamond	\Diamond	♦	♦	◊	\Diamond	\Diamond	♦	\Diamond	\Diamond
	ADA compliant connections to transit stops	20	♦	♦	\Diamond	♦	\Diamond	\Q	◊	\Diamond	\Diamond	◊
	Multiple transit routes stop on segment	10	♦	\Diamond	<mark>◊</mark>	♦	\Diamond	\Diamond	\Diamond	\Diamond	\Diamond	♦
Connectivity	Route provides a direct link to a COASTER station or mobility hub	<mark>30</mark>	<mark>♦</mark>	\Diamond	<u> </u>	♦	♦	♦	◊	♦	♦	♦
	Route provides for a single transfer to reach a COASTER station or mobility hub	15	♦	♦	◊	♦	♦	◊	\Diamond	♦	\Q	◊
Transit priority	Dedicated right of way	5	♦	\Diamond	\Diamond	*	*	*	*	*	*	*
Transa prioray	Transit priority during peak hours		*	*	*	*	*	*	*	*	*	*
	Headways of- 15 minutes between 6:30-8:30 am and 4-6 pm on weekdays	20	♦	♦	◊	♦	♦	◊	◊	♦	◊	♦
	Headways of 30 minutes between 6:30-8:30 am and 4-6 pm on weekdays	10	♦	\Diamond	<mark>♦</mark>	♦	\Diamond	\Diamond	\Diamond	\Diamond	\Diamond	♦
Service	Headways of 1 hour between 6:30-8:30 am and 4-6 pm on weekdays	5	♦	♦	♦	♦	♦	\Diamond	\Diamond	♦	♦	\Diamond
	No more than 2 hour headways between 6 am and 7 pm on weekdays	<mark>5</mark>	<mark>◊</mark>	\Diamond	<mark>◊</mark>	♦	\Diamond	◊	\Diamond	\Diamond	\Diamond	◊
	No more than 2 hour headways between 9 am and 5 pm on weekends	5	♦	◊	◊	♦	♦	♦	\Diamond	♦	♦	♦
	Covered bus stops	20	<u> </u>	♦	♦	♦	\Q	◊	♦	♦	\(\)	*
	Bench	<mark>20</mark>	<mark>♦</mark>	♦	♦	♦	\Diamond	\Q	♦	\Diamond	\Diamond	♦
Amenities	Well-lit stop that provides a sense of security	20	◊	♦	♦	♦	♦	\Q	♦	\Q	♦	◊
	Trash cans	5	<mark>◊</mark>	♦	◊	♦	♦	\Q	◊	\Q	\Q	*
	Bus stop located within a block of commercial services	<u>5</u>	<u> </u>	♦	<u> </u>	♦	♦	♦	♦	♦	♦	♦
Bicycle Accommodations	Bike parking available at the bus stop	10	♦	◊	♦	♦	\(\)	\Q	◊	\Q	◊	*
Accommodutions	Buses that provide on-board bike racks))	<u> </u>	♦	<u>V</u>	\	\(\)	\rangle	\Q	\Q	\Q	\Q
	No Existing T Documented TDM measures are in place that promote			1/4 Mile Walk from								
Ridesharing	ridesharing	60	♦	◊	◊	♦	◊	◊	◊	♦	♦	◊
Potential	On demand service is subsidized for trips to transit service	60	♦	\(\)	\lambda		\lambda	\Q	♦	\lambda	\lambda	♦
Source: City of Carlshad	Segment within FLEX service area	60	♦	♦	♦	♦	\Q	\Q	◊	\Q	\Q	◊

Source: City of Carlsbad

13.0 VEHICLE MILES TRAVELED (VMT) ANALYSIS

In 2013, California Governor Jerry Brown signed into law Senate Bill 743 (SB 743), which created a new statewide approach to transportation and land use planning. A key aspect of this new approach looks at the relationship between new development and the number of "vehicle miles traveled" (VMT) generated by a development. Since SB 743 was passed, the state Office of Planning & Research (OPR) has been working to prepare draft revisions to the State's CEQA Guidelines. At the time of this writing, evaluation of transportation impacts using the VMT metric is not required by the State or County CEQA Guidelines, and LOS is the official metric for identifying impacts and mitigation. However, for informational purposes only, this section presents a voluntary evaluation of the potential VMT that could be generated by the Project.

In an effort to provide an evaluation of VMT, an analysis was conducted to document the Project's potential VMT and Average Vehicle Trip Length (ATL) per assigned vehicle trip. SANDAG's April 2002 (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region reports an ATL of 12.5 miles for any airport and states "trip lengths are average weighted for all trips to and from the land use site." The SANDAG trip length is for any given airport, which could range from large commercial hub (e.g., international) airports to nonprimary reliever or general aviation airports. Based on the fact that the Project will not provide as many services as a large commercial hub airport but is still in relative proximity to other airports, and the fact that McClellan-Palomar Airport will generate most of its trips from cities and communities located in northern San Diego County, an ATL of 6.25 miles was estimated for the Project. In addition, the availability of other general aviation airports such as Montgomery-Gibbs and Gillespie Field will shorten the distance patrons need to drive to the McClellan-Palomar Airport.

Table 13–1 shows the VMT calculations for both Project alternatives (PAL1 and PAL2). Using the estimated ATL, the total daily VMT generated by the Project was calculated by multiplying the Project ATL by the Project trip generation.

TABLE 13–1
PROJECT-GENERATED VEHICLE MILES TRAVELED

Project Scenario	Average Trip Length (miles)**	Average Daily Vehicle Trips	Daily Vehicle Miles Traveled (miles)*
Near-Term Project (PAL1)	6.25	449	2,807
Near-Term Project (PAL2)	6.25	844	5,275
Long-Term Project (PAL1)	6.25	2,230	13,938
Long-Term Project (PAL2)	6.25	4,206	26,288

^{*}Rounded up to whole number.

^{**} Trip length is the average of all trips generated by the airport, including employees, patrons, deliveries, etc.

14.0 SIGNIFICANCE OF IMPACTS AND MITIGATION MEASURES

Per City of Carlsbad significance thresholds and the analysis methodology presented in this report, no significant direct impacts are calculated. Two (2) significant cumulative impacts are calculated. The following section lists the significant impacts and provides recommendations for mitigation measures to address operating deficiencies. Also included is the results of a phasing analysis to determine the amount of enplanements that could occur before the impacts would occur.

14.1 Significance of Impacts

Based on the applied significance criteria, the following significant cumulative impacts were calculated at the following locations:

Intersections

- a. Palomar Airport Road / Camino Vida Roble (cumulative impact)
- b. Palomar Airport Road / El Camino Real (cumulative impact)

Segments

Based on the applied significance criteria, the Project was calculated to have no significant impacts at any of the study area street segments in the near-term or long-term conditions.

14.2 Phasing Analysis

An analysis was conducted to determine the amount of traffic which can be added to each intersection before the significant impact would be triggered using City criteria. Those volumes were then correlated to the amount of enplanements that would produce that volume. Based on the City of Carlsbad's significance criteria, the Project would have a significant impact once the Project increases the intersection delay by more than 2.0 seconds.

Using the Project trip generation and trip distribution, the amount of peak hour traffic that would cause a 2.0 second delay increase was calculated. This amount of peak hour traffic was then correlated to the daily and peak hour enplanements using the trip generation factors. *Appendix G* contains the calculation sheets. The significant impact at the Palomar Airport Road / Camino Vida Roble intersection would occur at 1,260 daily enplanements and the impact at the Palomar Airport Road / El Camino Real intersection would occur at 670 daily enplanements.

14.3 Mitigation

The following mitigation measures are recommended to mitigate the significant impacts. Both mitigation measures recommend the payment of a fair share amount. Using the standard fair share formula of [Project traffic/(Long-Term – Existing traffic)], fair share percentages were calculated. *Appendix H* shows the fair share calculations:

Per the City of Carlsbad's Mobility Element, Palomar Airport Road from Interstate-5 to College Boulevard and from El Camino Real to Melrose Drive are exempt from City LOS standards. Therefore, the City plans to implement transportation demand management, transportation system management, and livable streets techniques to better manage the transportation system as a whole.

Transportation System Management (TSM) strategies can include implementation of advanced signal timing procedures that use real-time traffic data to adjust signals to events that cannot be anticipated by traditional time-of-day plans, such as accidents and road construction. TSM strategies include enhanced multimodal traffic signal operations, enhanced traffic incident management, and transit signal priority.

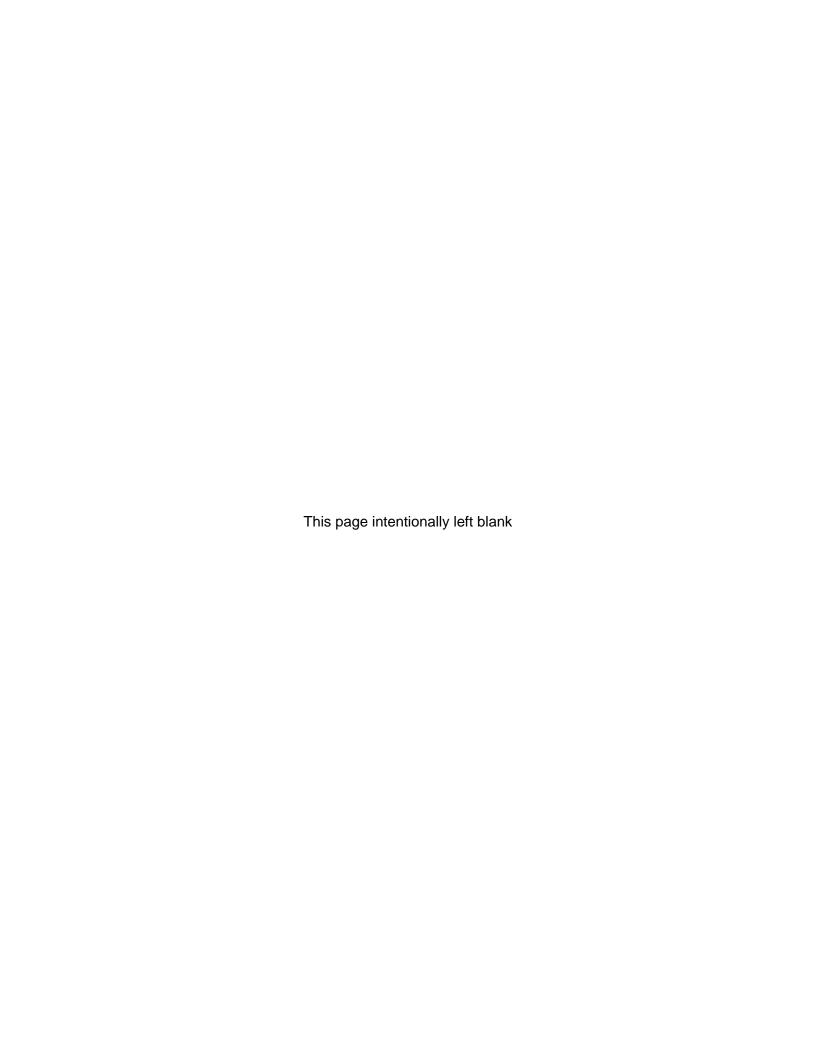
It is recommended that the Project contribute a fair share towards the implementation of TSM strategies along Palomar Airport Road. The following are the specific mitigation measures.

a. Palomar Airport Road / Camino Vida Roble

Paying a fair share (10.7%) towards the installation of TSM strategies that improve signal operations along Palomar Airport Road that would include this intersection would mitigate the significant cumulative impact.

b. Palomar Airport Road / El Camino Real

Paying a fair share (7.5%) towards the installation of TSM strategies that improve signal operations along Palomar Airport Road that would include this intersection would mitigate the significant cumulative impact.







TECHNICAL APPENDICES

McClellan-Palomar Airport Master Plan Update

County of San Diego, California December 7, 2017

LLG Ref. 3-17-2772

APPENDICES

APPENDIX

- A. Intersection and Segment Manual Count Sheets
- B. ICU and HCM Intersection Analysis Methodologies
- C. Existing Intersection Analysis Calculation Worksheets
- D. Existing + Project Intersection Analysis Calculation Worksheets
- E. Near-Term Intersection Analysis Calculation Worksheets
- F. Long-Term Intersection Analysis Calculation Worksheets
- G. Mitigation Measure Phasing Information
- H. Fair Share Calculations

	APPENDIX A
	INTERSECTION & SEGMENT MANUAL COUNT SHEETS
LINSCOTT, LAW & GREENSPAN, engineers	LLG Ref. 3-17-2772
,	McClallan Palomar Airnort Master Plan Undata

City of Carlsbad Traffic Monitoring Program Summer 2016



Intersection Analysis Summary

Intersection Number: 39

Intersection Location: Cannon Rd. & Faraday Ave.

Contents:

A.M. Peak Hour ICU Analysis and Turn Movement Diagram
Page 1

P.M. Peak Hour ICU Analysis and Turn Movement Diagram
Page 2

A.M./P.M. Peak Period Intersection Turning Movement Count Data Page 3



5050 Avenida Encinias, Ste 260 Carlsbad, CA 92008 Address Line 3 Address Line 4

O: 760.476.9196 F: 760.476.9198 Email: someone@example.com

Cannon Road at Faraday Avenue

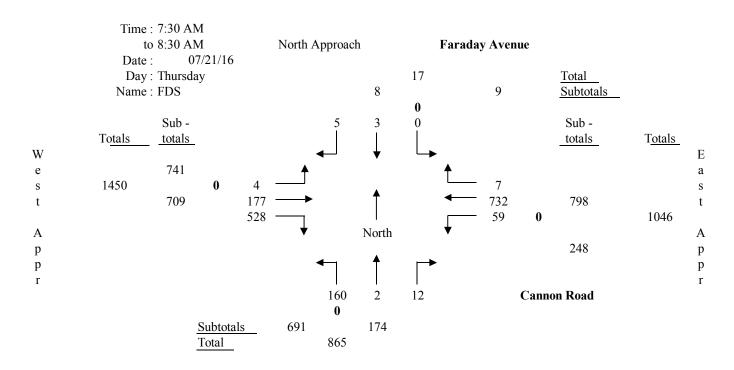
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tim			South	Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:30 AM 8:30 AM	to	<u>I</u>	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1	1	1	1			1		
Config -	(left)	2	1	1	1					1			1	
urations		3								1	1		1	1
		4												
		5												
		6												
	Outside	7												
	Free-flow													
Lane Setting	gs		2	0	0	0	0	1	1	1	1	1	2	0
Capacity		3	600	0	0	0	0	1800	1800	2000	1800	1800	4000	0
Are the Nor	th/South phas	es split	(Y/N)?	Y									
Are the Eas	t/West phases	split (Y/N)?		N									
Efficiency L	ost Factor	0	0.10											
Hourly Volu	ume	1	160	2	12	0	3	5	4	177	528	59	732	7
Adjusted He	ourly Volume	1	174	0	0	0	0	8	4	177	528	59	739	0
Utilization l	Factor	0	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.29	0.03	0.18	0.00
Critical Fac	tors	0	0.05					0.00			0.29	0.03		

ICU Ratio = 0.47 LOS = 1

Turning Movements at Intersection of:

Cannon Road and Faraday Avenue



South Approach

Cannon Road at Faraday Avenue

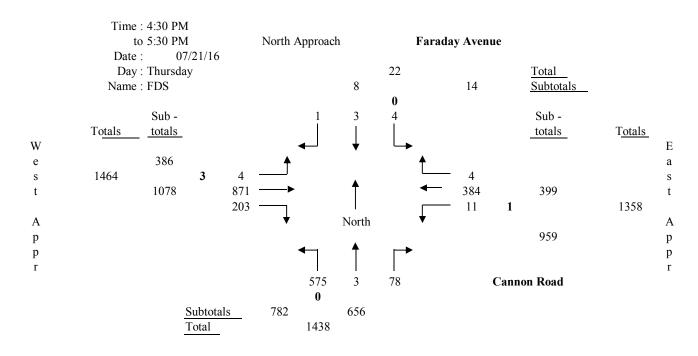
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Time Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:30 PM to 5:30 PM		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Inside	1	1			1	1	1	1			1		
Config - (left)	2	1	1	1					1			1	
urations	3								1	1		1	1
	4												
	5												
	6												
Outside	7												
Free-flow													
Lane Settings		2	0	0	1	0	0	1	2	0	1	2	0
Capacity		3600	0	0	1800	0	0	1800	4000	0	1800	4000	0
Are the North/South ph	ases	split (Y	/N)?	Y									
Are the East/West phas	es sp	lit (Y/N)?	N									
Efficiency Lost Factor		0.10											
Hourly Volume		575	3	78	4	3	1	4	871	203	11	384	4
Adjusted Hourly Volun	ne	656	0	0	8	3	0	4	871	203	11	388	0
Utilization Factor		0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.01	0.10	0.00
Critical Factors		0.18			0.00				0.22		0.01		

ICU Ratio = 0.51 LOS = A

Turning Movements at Intersection of:

Cannon Road and Faraday Avenue



South Approach



Vveracitytrafficgroup

N-S STREET: Faraday Ave. DATE: 07/21/2016 LOCATION: Carlsbad

E-W STREET: Cannon Rd. DAY: THURSDAY PROJECT# 16-1256-039

CONTROL: Signal

AM		DTUSC	LINIE			LINES		A CTC C:	NIB		ECTS C:	INID	
ויוא		RTHBO			UTHBO			ASTBOU			ESTBOL		I TOTA:
LANES:	NL 0	NT 1	NR 0	SL 1.3	ST 0.3	SR 0.3	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL
6:30 AM	0	0	0	39	0	6	0	168	1	0	30	37	281
6:45 AM	1	0	0	26	0	0	1	231	2	0	29	55	345
7:00 AM	0	0	1	47	2	0	8	161	2	0	34	61	316
7:15 AM	0	0	2	31	0	3	9	216	0	1	33	69	364
7:30 AM	0	1	2	46	1	5	13	202	0	1	43	112	426
7:45 AM	0	0	2	34	1	0	18	221	3	0	44	142	465
8:00 AM	0	1	1	42	0	4	11	150	2	0	48	143	402
8:15 AM	0	1	0	38	0	3	17	159	2	3	42	131	396
8:30 AM	2	1	2	32	2	4	8	133	5	2	62	118	371
8:45 AM	1	1	1	39	2	1	6	152	3	1	55	107	369
9:00 AM	0	1	0	41	2	0	9	130	1	3	62	83	332
9:15 AM	1	1	3	43	1	4	1	104	1	0	70	64	293
Volumes	5	7	14	458	11	30	101	2027	22	11	552	1122	4360
Approach %	19.23	26.92	53.85	91.78	2.20	6.01	4.70	94.28	1.02	0.65	32.76	66.59	
App/Depart	26	/	1230	499	1	44	2150	/	2499	1685	/	587	
Peak Volumes	0	3	5	160	2	12	59	732	7	4	177	528	1689
Approach %	0.00	37.50	62.50	91.95	1.15	6.90	7.39	91.73	0.88	0.56	24.96	74.47	<u> </u>
Pk Hr FACTOR:		0.67			0.84			0.82			0.93		0.9081
AM Pk Hr at:						LINID			INID		730		
PM	1	RTHBO			UTHBO			ASTBOU		l	ESTBOL		<u> </u>
3:30 PM	0	0	1	82	0	5	1	86	2	0	208	42	427
3:30 PM 3:45 PM	0 1	0	1 1	82 58	0 0	5 1	1 2	86 97	2 0	0 2	208 164	42 33	359
3:30 PM 3:45 PM 4:00 PM	0 1 0	0 0 0	1 1 2	82 58 102	0 0 0	5 1 8	1 2 4	86 97 101	2 0 0	0 2 2	208 164 183	42 33 42	359 444
3:30 PM 3:45 PM 4:00 PM 4:15 PM	0 1 0 1	0 0 0	1 1 2 0	82 58 102 91	0 0 0 0	5 1 8 10	1 2 4 6	86 97 101 105	2 0 0 0	0 2 2 1	208 164 183 186	42 33 42 43	359 444 443
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM	0 1 0 1	0 0 0 0	1 1 2 0 1	82 58 102 91 131	0 0 0 0	5 1 8 10 10	1 2 4 6 4	86 97 101 105 101	2 0 0 0	0 2 2 1 2	208 164 183 186 203	42 33 42 43 54	359 444 443 507
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM	0 1 0 1 1	0 0 0 0 0	1 1 2 0 1 0	82 58 102 91 131 116	0 0 0 0 0	5 1 8 10 10 19	1 2 4 6 4 2	86 97 101 105 101 81	2 0 0 0 0	0 2 2 1 2 0	208 164 183 186 203 200	42 33 42 43 54 53	359 444 443 507 475
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM	0 1 0 1 1 1	0 0 0 0 0 2	1 1 2 0 1 0	82 58 102 91 131 116 172	0 0 0 0 0 1	5 1 8 10 10 19 23	1 2 4 6 4 2 6	86 97 101 105 101 81 90	2 0 0 0 0 0 0	0 2 2 1 2 0 1	208 164 183 186 203 200 228	42 33 42 43 54 53 42	359 444 443 507 475 564
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM	0 1 0 1 1 1 1	0 0 0 0 0 2 0	1 1 2 0 1 0 0	82 58 102 91 131 116 172 159	0 0 0 0 0 1 0	5 1 8 10 10 19 23 12	1 2 4 6 4 2 6 1	86 97 101 105 101 81 90 113	2 0 0 0 0 0 1 1	0 2 2 1 2 0 1 1	208 164 183 186 203 200 228 219	42 33 42 43 54 53 42 66	359 444 443 507 475 564 574
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM	0 1 0 1 1 1 1 1	0 0 0 0 0 2 0 0	1 1 2 0 1 0 0 0	82 58 102 91 131 116 172 159 128	0 0 0 0 0 1 0 1	5 1 8 10 10 19 23 12 24	1 2 4 6 4 2 6 1 2	86 97 101 105 101 81 90 113 100	2 0 0 0 0 0 0 1 1 2	0 2 2 1 2 0 1 1 0	208 164 183 186 203 200 228 219 224	42 33 42 43 54 53 42 66 42	359 444 443 507 475 564 574 526
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	0 1 0 1 1 1 1 1 1 2	0 0 0 0 0 2 0 0 1 1	1 1 2 0 1 0 0 0 1	82 58 102 91 131 116 172 159 128 105	0 0 0 0 0 1 0 1 1	5 1 8 10 10 19 23 12 24 10	1 2 4 6 4 2 6 1 2 3	86 97 101 105 101 81 90 113 100 87	2 0 0 0 0 0 1 1 2	0 2 2 1 2 0 1 1 0 1	208 164 183 186 203 200 228 219 224 210	42 33 42 43 54 53 42 66 42 28	359 444 443 507 475 564 574 526 449
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM	0 1 0 1 1 1 1 1 1 2	0 0 0 0 0 2 0 0 1 1	1 1 2 0 1 0 0 0	82 58 102 91 131 116 172 159 128 105 102	0 0 0 0 0 1 0 1 1 1	5 1 8 10 10 19 23 12 24	1 2 4 6 4 2 6 1 2 3 4	86 97 101 105 101 81 90 113 100 87 79	2 0 0 0 0 0 0 1 1 2	0 2 2 1 2 0 1 1 0	208 164 183 186 203 200 228 219 224 210 181	42 33 42 43 54 53 42 66 42 28 31	359 444 443 507 475 564 574 526 449 404
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	0 1 0 1 1 1 1 1 1 2	0 0 0 0 0 2 0 0 1 1	1 1 2 0 1 0 0 0 0 1 0	82 58 102 91 131 116 172 159 128 105 102 81	0 0 0 0 0 1 0 1 1	5 1 8 10 10 19 23 12 24 10 7	1 2 4 6 4 2 6 1 2 3	86 97 101 105 101 81 90 113 100 87	2 0 0 0 0 0 1 1 2 1	0 2 2 1 2 0 1 1 0 1	208 164 183 186 203 200 228 219 224 210	42 33 42 43 54 53 42 66 42 28 31 25	359 444 443 507 475 564 574 526 449
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	0 1 0 1 1 1 1 1 1 2 0 1	0 0 0 0 0 2 0 0 1 1 0 0	1 1 2 0 1 0 0 0 1 0 0 0 0	82 58 102 91 131 116 172 159 128 105 102	0 0 0 0 0 1 0 1 1 1 0 0	5 1 8 10 10 19 23 12 24 10 7 7	1 2 4 6 4 2 6 1 2 3 4 3	86 97 101 105 101 81 90 113 100 87 79 76	2 0 0 0 0 0 1 1 2 1 0 1	0 2 2 1 2 0 1 1 0 1 0 0	208 164 183 186 203 200 228 219 224 210 181 166	42 33 42 43 54 53 42 66 42 28 31 25	359 444 443 507 475 564 574 526 449 404 360
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	0 1 0 1 1 1 1 1 1 2 0	0 0 0 0 0 2 0 0 1 1 0	1 1 2 0 1 0 0 0 1 0 0	82 58 102 91 131 116 172 159 128 105 102 81	0 0 0 0 0 1 0 1 1 1 1 0	5 1 8 10 10 19 23 12 24 10 7	1 2 4 6 4 2 6 1 2 3 4 3	86 97 101 105 101 81 90 113 100 87 79 76	2 0 0 0 0 0 1 1 2 1 0 1	0 2 2 1 2 0 1 1 0 1 0 1	208 164 183 186 203 200 228 219 224 210 181 166	42 33 42 43 54 53 42 66 42 28 31 25	359 444 443 507 475 564 574 526 449 404 360
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach %	0 1 0 1 1 1 1 1 2 0 1 10	0 0 0 0 2 0 0 1 1 0 0 4	1 1 2 0 1 0 0 0 1 0 0 0 0 0 0	82 58 102 91 131 116 172 159 128 105 102 81 1327	0 0 0 0 0 1 0 1 1 1 0 0 4	5 1 8 10 10 19 23 12 24 10 7 7 136	1 2 4 6 4 2 6 1 2 3 4 3 38 3.27	86 97 101 105 101 81 90 113 100 87 79 76 1116	2 0 0 0 0 0 1 1 2 1 0 1 8	0 2 2 1 2 0 1 1 0 1 0 0 1	208 164 183 186 203 200 228 219 224 210 181 166 2372	42 33 42 43 54 53 42 66 42 28 31 25 501	359 444 443 507 475 564 574 526 449 404 360
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart	0 1 0 1 1 1 1 1 2 0 1 10 50.00	0 0 0 0 2 0 0 1 1 0 0 4 20.00	1 1 2 0 1 0 0 0 1 0 0 0 0 6 30.00	82 58 102 91 131 116 172 159 128 105 102 81 1327 90.46 1467	0 0 0 0 1 0 1 1 1 0 0 4	5 1 8 10 10 19 23 12 24 10 7 7 7	1 2 4 6 4 2 6 1 2 3 4 3 38 38 3.27	86 97 101 105 101 81 90 113 100 87 79 76 1116 96.04	2 0 0 0 0 0 1 1 2 1 0 1 8 0.69 2449	0 2 2 1 2 0 1 1 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0	208 164 183 186 203 200 228 219 224 210 181 166 2372 82.28	42 33 42 43 54 53 42 66 42 28 31 25 501 17.38 2518	359 444 443 507 475 564 574 526 449 404 360 5532
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	0 1 0 1 1 1 1 1 2 0 1 10 50.00 20	0 0 0 0 2 0 0 1 1 0 0 4 20.00 /	1 1 2 0 1 0 0 0 1 0 0 0 6 30.00 543	82 58 102 91 131 116 172 159 128 105 102 81 1327 90.46 1467 575	0 0 0 0 0 1 0 1 1 1 0 0 4	5 1 8 10 10 19 23 12 24 10 7 7 7 136 9.27 22 78	1 2 4 6 4 2 6 1 2 3 4 3 38 3.27 1162 11	86 97 101 105 101 81 90 113 100 87 79 76 1116 96.04 /	2 0 0 0 0 0 1 1 2 1 0 1 8 0.69 2449	0 2 2 1 2 0 1 1 0 0 0 10 0 0.35 2883	208 164 183 186 203 200 228 219 224 210 181 166 2372 82.28 /	42 33 42 43 54 53 42 66 42 28 31 25 501 17.38 2518	359 444 443 507 475 564 574 526 449 404 360 5532



Intersection Analysis Summary

Intersection Number: 6

Intersection Location: El Camino Real & College Blvd.

Contents:

A.M. Peak Hour ICU Analysis and Turn Movement Diagram
Page 1

P.M. Peak Hour ICU Analysis and Turn Movement Diagram
Page 2

A.M./P.M. Peak Period Intersection Turning Movement Count Data Page 3



5050 Avenida Encinias, Ste 260 Carlsbad, CA 92008 Address Line 3 Address Line 4

College Boulevard at El Camino Real

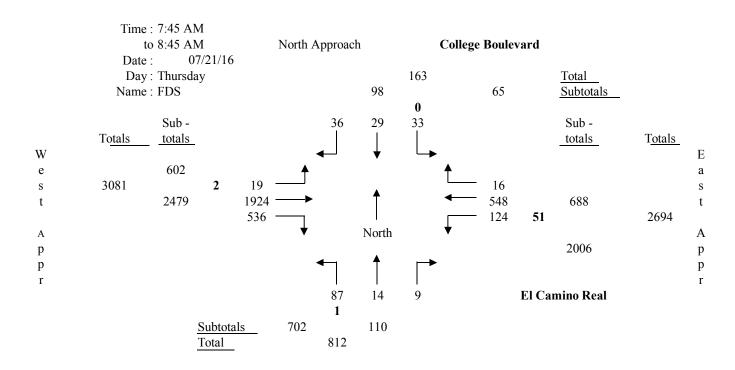
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin			Sout	h Appr	(NB)	Nort	th Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5												1
		6												
	Outside	7												
	Free-flow										1			
Lane Settin	ıgs		2	2	0	2	1	1	1	3	1	1	3	1
Capacity			3600	4000	0	3600	2000	1800	1800	6000	1800	1800	6000	1800
Are the No	orth/South pha	ses s	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vol	lume		87	14	9	33	29	36	19	1924	536	124	548	16
Adjusted F	Iourly Volume	9	87	23	0	33	29	0	19	1924	536	124	548	16
Utilization	Factor		0.02	0.01	0.00	0.01	0.01	0.00	0.01	0.32	0.30	0.07	0.09	0.01
Critical Fa	ctors		0.02				0.01			0.32		0.07		

ICU Ratio = 0.52 LOS = A

Turning Movements at Intersection of:

College Boulevard and El Camino Real



South Approach

College Boulevard at El Camino Real

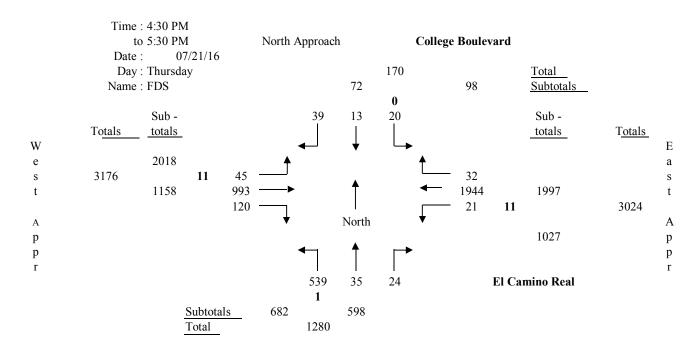
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Time Per	riod :	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:30 PM to 5:30 PM		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane In	side 1	1			1			1			1		
Config - (le	ft) 2	1			1				1			1	
urations	3		1			1			1			1	
	4		1	1		1	1		1			1	
	5												1
	6												
Ou	tside 7												
Free	e-flow									1			
Lane Settings		2	2	0	2	1	1	1	3	1	1	3	1
Capacity		3600	4000	0	3600	2000	1800	1800	6000	1800	1800	6000	1800
Are the North/So	uth phases	split (Y	/N)?	N									
Are the East/We	st phases sp	olit (Y/N	D?	N									
Efficiency Lost I	actor	0.10											
Hourly Volume		539	35	24	20	13	39	45	993	120	21	1944	32
Adjusted Hourly	Volume	539	59	0	20	13	0	45	993	120	21	1944	32
Utilization Facto	r	0.15	0.01	0.00	0.01	0.01	0.00	0.03	0.17	0.07	0.01	0.32	0.02
Critical Factors		0.15				0.01		0.03				0.32	

ICU Ratio = 0.61 LOS = B

Turning Movements at Intersection of:

College Boulevard and El Camino Real



South Approach



Vveracitytrafficgroup

N-S STREET: College Blvd. DATE: 07/21/2016 LOCATION: Carlsbad

E-W STREET: El Camino Real DAY: THURSDAY PROJECT# 16-1256-006

CONTROL: Signal

CONTROL:	Signal												
AM		RTHBO			UTHBO			ASTBOU			ESTBOL		
LANIEC	NL	NT	NR	SL	ST	SR	EL	ET	ER 1	WL	WT	WR	TOTAL
LANES:	2	2	0	2	2	0	1	3	1	1	3	1	420
6:30 AM	7	2	1	3	5	7	2	274	66	5	51	3	426
6:45 AM	8	1	0	9	5	3	4	372	107	13	79	2	603
7:00 AM	15	1	3	4	3	4	3	379	85	14	85	3	599
7:15 AM	15	1	1	3	6	9	6	474	96	10	97	3	721
7:30 AM	14	3	3	15	6	7	4	484	120	27	111	6	800
7:45 AM	15	3	1	8	9	6	2	532	163	31	138	8	916
8:00 AM	21	3	4	8	9	11	5	458	118	30	121	2	790
8:15 AM	21	3	0	9	4	10	1	471	118	27	134	2	800
8:30 AM	30	5	4	8	7	9	11	463	137	36	155	4	869
8:45 AM	28	9	1	8	7	11	5	461	105	26	180	5	846
9:00 AM	24	6	1	6	6	12	10	358	78	27	157	8	693
9:15 AM	13	5	5	9	7	8	8	271	60	27	148	18	579
Volumes	211	42	24	90	74	97	61	4997	1253	273	1456	64	8642
Approach %	76.17	15.16	8.66	34.48	28.35	37.16	0.97	79.18	19.85	15.23	81.20	3.57	
App/Depart	277	1	167	261	1	1600	6311	1	5111	1793	1	1764	
Peak Volumes	87	14	9	33	29	36	19	1924	536	124	548	16	3375
Approach %	79.09	12.73	8.18	33.67	29.59	36.73	0.77	77.61	21.62	18.02	79.65	2.33	
Pk Hr FACTOR:		0.71			0.88			0.89			0.88		0.9211
AM Pk Hr at:		745											
AM Pk Hr at:	NC	745 ORTHBO	UND	SO	UTHBO	UND	E	ASTBOU	IND	W	/ESTBOL	JND	
	NC 114		UND 6	SC 6	2	UND 5	E	ASTBOU 277	ND 39	13	ESTBOU	JND 3	868
PM	i	RTHBO				r					1	r	868 867
PM 3:30 PM	114	RTHBO 5	6	6	2	5	3	277	39	13	395	3	
PM 3:30 PM 3:45 PM	114 85	DRTHBO 5 8	6 1	6 5	2	5 10	3 8	277 270	39 41	13 8	395 424	3 4	867
3:30 PM 3:45 PM 4:00 PM	114 85 116	5 8 4	6 1 5	6 5 9	2 3 6	5 10 8	3 8 8	277 270 269	39 41 22	13 8 4	395 424 423	3 4 9	867 883
3:30 PM 3:45 PM 4:00 PM 4:15 PM	114 85 116 95	5 8 4 6	6 1 5 1	6 5 9	2 3 6 3	5 10 8 9	3 8 8 11	277 270 269 265	39 41 22 28	13 8 4 4	395 424 423 419	3 4 9 5	867 883 855
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM	114 85 116 95 131	5 8 4 6 5	6 1 5 1 4	6 5 9 9 5	2 3 6 3 4	5 10 8 9 7	3 8 8 11 7	277 270 269 265 258	39 41 22 28 28	13 8 4 4 5	395 424 423 419 477	3 4 9 5 9	867 883 855 940
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM	114 85 116 95 131 102	5 8 4 6 5	6 1 5 1 4 5	6 5 9 9 5 3	2 3 6 3 4 1	5 10 8 9 7 4	3 8 8 11 7 5	277 270 269 265 258 259	39 41 22 28 28 44	13 8 4 4 5 5	395 424 423 419 477 473	3 4 9 5 9	867 883 855 940 916
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM	114 85 116 95 131 102 164	5 8 4 6 5 6 13	6 1 5 1 4 5	6 5 9 5 3 8	2 3 6 3 4 1 4	5 10 8 9 7 4 8	3 8 8 11 7 5 13	277 270 269 265 258 259 239	39 41 22 28 28 44 26	13 8 4 4 5 5	395 424 423 419 477 473 499	3 4 9 5 9 9	867 883 855 940 916 997
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM	114 85 116 95 131 102 164 142	5 8 4 6 5 6 13 11	6 1 5 1 4 5 10 5	6 5 9 5 3 8 4	2 3 6 3 4 1 4	5 10 8 9 7 4 8 20	3 8 8 11 7 5 13 9	277 270 269 265 258 259 239 237	39 41 22 28 28 44 26 22	13 8 4 4 5 5 8 3	395 424 423 419 477 473 499 495	3 4 9 5 9 9	867 883 855 940 916 997 961
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM	114 85 116 95 131 102 164 142 92	5 8 4 6 5 6 13 11 6	6 1 5 1 4 5 10 5	6 5 9 5 3 8 4 9	2 3 6 3 4 1 4 4 7	5 10 8 9 7 4 8 20 9	3 8 8 11 7 5 13 9	277 270 269 265 258 259 239 237 241	39 41 22 28 28 44 26 22 29	13 8 4 4 5 5 8 3 2	395 424 423 419 477 473 499 495 432	3 4 9 5 9 9 5 9	867 883 855 940 916 997 961 849
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	114 85 116 95 131 102 164 142 92 104	5 8 4 6 5 6 13 11 6 10	6 1 5 1 4 5 10 5 7	6 5 9 5 3 8 4 9 7	2 3 6 3 4 1 4 4 7 2	5 10 8 9 7 4 8 20 9	3 8 8 11 7 5 13 9 5 6	277 270 269 265 258 259 239 237 241 212	39 41 22 28 28 44 26 22 29 24	13 8 4 4 5 5 8 3 2	395 424 423 419 477 473 499 495 432 412	3 4 9 5 9 9 5 9	867 883 855 940 916 997 961 849 796
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM	114 85 116 95 131 102 164 142 92 104 67	5 8 4 6 5 6 13 11 6 10 18	6 1 5 1 4 5 10 5 7 1	6 5 9 5 3 8 4 9 7 3	2 3 6 3 4 1 4 4 7 2 4	5 10 8 9 7 4 8 20 9 10 5	3 8 8 11 7 5 13 9 5 6	277 270 269 265 258 259 239 237 241 212 175	39 41 22 28 28 44 26 22 29 24 15	13 8 4 4 5 5 8 3 2 2	395 424 423 419 477 473 499 495 432 412 341	3 4 9 5 9 9 5 9 10 6 5	867 883 855 940 916 997 961 849 796 646
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	114 85 116 95 131 102 164 142 92 104 67 78	5 8 4 6 5 6 13 11 6 10 18 6	6 1 5 1 4 5 10 5 7 1 2 1	6 5 9 5 3 8 4 9 7 3 5	2 3 6 3 4 1 4 7 2 4 6	5 10 8 9 7 4 8 20 9 10 5	3 8 8 11 7 5 13 9 5 6 9	277 270 269 265 258 259 239 237 241 212 175 182	39 41 22 28 28 44 26 22 29 24 15 21	13 8 4 4 5 5 8 3 2 2 2	395 424 423 419 477 473 499 495 432 412 341 317	3 4 9 5 9 5 9 10 6 5	867 883 855 940 916 997 961 849 796 646 650
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	114 85 116 95 131 102 164 142 92 104 67 78	5 8 4 6 5 6 13 11 6 10 18 6	6 1 5 1 4 5 10 5 7 1 2 1	6 5 9 5 3 8 4 9 7 3 5	2 3 6 3 4 1 4 4 7 2 4 6	5 10 8 9 7 4 8 20 9 10 5 9	3 8 8 11 7 5 13 9 5 6 9	277 270 269 265 258 259 239 237 241 212 175 182	39 41 22 28 28 44 26 22 29 24 15 21	13 8 4 4 5 5 8 3 2 2 2 4	395 424 423 419 477 473 499 495 432 412 341 317	3 4 9 5 9 9 5 9 10 6 5 12	867 883 855 940 916 997 961 849 796 646 650
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach %	114 85 116 95 131 102 164 142 92 104 67 78 1290	5 8 4 6 5 6 13 11 6 10 18 6	6 1 5 1 4 5 10 5 7 1 2 1 48 3.34	6 5 9 9 5 3 8 4 9 7 3 5 73 32.74	2 3 6 3 4 1 4 4 7 2 4 6 46	5 10 8 9 7 4 8 20 9 10 5 9	3 8 8 11 7 5 13 9 5 6 9 9	277 270 269 265 258 259 239 237 241 212 175 182 2884	39 41 22 28 28 44 26 22 29 24 15 21 339	13 8 4 4 5 5 8 3 2 2 2 4 60	395 424 423 419 477 473 499 495 432 412 341 317 5107	3 4 9 5 9 9 5 9 10 6 5 12 86	867 883 855 940 916 997 961 849 796 646 650
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart	114 85 116 95 131 102 164 142 92 104 67 78 1290 89.83 1436	5 8 4 6 5 6 13 11 6 10 18 6 98 6.82	6 1 5 1 4 5 10 5 7 1 2 1 48 3.34 277	6 5 9 9 5 3 8 4 9 7 3 5 73 32.74 223	2 3 6 3 4 1 4 4 7 2 4 6 46 20.63	5 10 8 9 7 4 8 20 9 10 5 9 104 46.64 445	3 8 8 11 7 5 13 9 5 6 9 9 93 2.80 3316	277 270 269 265 258 259 239 237 241 212 175 182 2884 86.97	39 41 22 28 28 44 26 22 29 24 15 21 339 10.22 3005	13 8 4 4 5 5 8 3 2 2 2 4 60 1.14 5253	395 424 423 419 477 473 499 495 432 412 341 317 5107 97.22	3 4 9 5 9 9 5 9 10 6 5 12 86 1.64 6501	867 883 855 940 916 997 961 849 796 646 650
2:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	114 85 116 95 131 102 164 142 92 104 67 78 1290 89.83 1436 539	5 8 4 6 5 6 13 11 6 10 18 6 98 6.82 /	6 1 5 1 4 5 10 5 7 1 2 1 48 3.34 277 24	6 5 9 9 5 3 8 4 9 7 3 5 73 32.74 223	2 3 6 3 4 1 4 4 7 2 4 6 46 20.63 /	5 10 8 9 7 4 8 20 9 10 5 9 104 46.64 445 39	3 8 8 11 7 5 13 9 5 6 9 9 9 93 2.80 3316	277 270 269 265 258 259 239 237 241 212 175 182 2884 86.97 /	39 41 22 28 28 44 26 22 29 24 15 21 339 10.22 3005	13 8 4 4 5 5 8 3 2 2 2 4 60 1.14 5253 21	395 424 423 419 477 473 499 495 432 412 341 317 5107 97.22 /	3 4 9 5 9 9 5 9 10 6 5 12 86 1.64 6501 32	867 883 855 940 916 997 961 849 796 646 650
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes Approach %	114 85 116 95 131 102 164 142 92 104 67 78 1290 89.83 1436 539	5 8 4 6 5 6 13 11 6 10 18 6 98 6.82 /	6 1 5 1 4 5 10 5 7 1 2 1 48 3.34 277 24	6 5 9 9 5 3 8 4 9 7 3 5 73 32.74 223	2 3 6 3 4 1 4 4 7 2 4 6 46 20.63 /	5 10 8 9 7 4 8 20 9 10 5 9 104 46.64 445 39	3 8 8 11 7 5 13 9 5 6 9 9 9 93 2.80 3316	277 270 269 265 258 259 237 241 212 175 182 2884 86.97 /	39 41 22 28 28 44 26 22 29 24 15 21 339 10.22 3005	13 8 4 4 5 5 8 3 2 2 2 4 60 1.14 5253 21	395 424 423 419 477 473 499 495 432 412 341 317 5107 97.22 /	3 4 9 5 9 9 5 9 10 6 5 12 86 1.64 6501 32	867 883 855 940 916 997 961 849 796 646 650 10228



Intersection Analysis Summary

Intersection Number: 41

Intersection Location: College Blvd. & Faraday Ave.

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5050 Avenida Encinias, Ste 260 Carlsbad, CA 92008 Address Line 3 Address Line 4

College Boulevard at Faraday Avenue

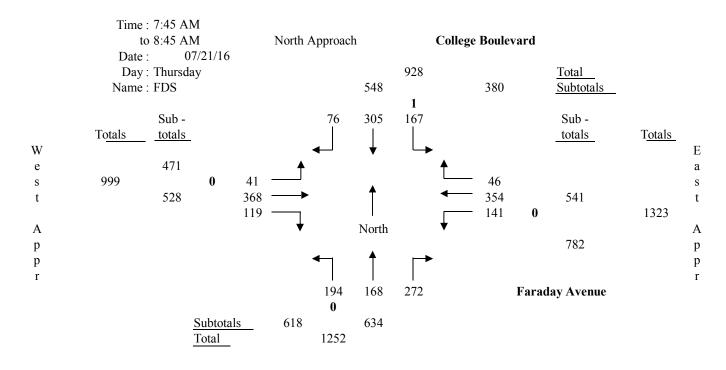
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin			Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1	1		1	1
		4		1	1		1	1						
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settin	igs		2	1	1	2	2	0	1	2	0	1	2	0
Capacity			3600	2000	1800	3600	4000	0	1800	4000	0	1800	4000	0
Are the No	orth/South pha	ses s	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vol	lume		194	168	272	167	305	76	41	368	119	141	354	46
Adjusted F	Iourly Volume	9	194	440	272	167	381	0	41	368	119	141	400	0
Utilization	Factor		0.05	0.22	0.15	0.05	0.10	0.00	0.02	0.09	0.00	0.08	0.10	0.00
Critical Fa	ctors			0.22		0.05				0.09		0.08		

ICU Ratio = 0.54 LOS = A

Turning Movements at Intersection of:

College Boulevard and Faraday Avenue



South Approach

College Boulevard at Faraday Avenue

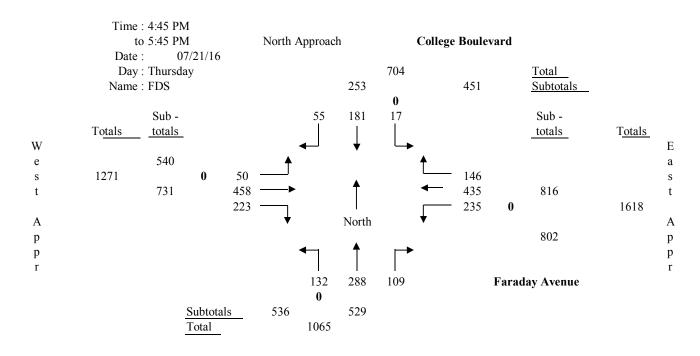
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tii	me Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Config -	Inside (left)	1 2	1 1			1 1			1	1		1	1	
urations		3		1			1			1	1		1	1
		4		1	1		1	1						
		5 6												
	Outside	7												
I ama Catti	Free-flow		2	2	0	2		0	1	2	0	1	2	0
Lane Settin	ngs		2 3600	2 4000	0	2 3600	2 4000	0	1800	2 4000	0	1800	2 4000	0 0
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo Adjusted F Utilization Critical Fa	Hourly Volume Factor	e	132 132 0.04	288 397 0.10 0.10	109 0 0.00	17 17 0.00 0.00	181 236 0.06	55 0 0.00	50 50 0.03	458 458 0.11 0.11	223 223 0.00	235 235 0.13 0.13	435 581 0.15	146 0 0.00

ICU Ratio = 0.44 LOS = A

Turning Movements at Intersection of:

College Boulevard and Faraday Avenue



South Approach



veracitytrafficgroup

College Blvd. LOCATION: Carlsbad N-S STREET: DATE: 07/21/2016

W STREET: Faraday Ave. CONTROL: Signal DAY: THURSDAY PROJECT# 16-1256-041 E-W STREET:

AM	NC	RTHBO	UND	SC	UTHBO	UND	Е	ASTBOU	IND	W	/ESTBOL	JND	
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	2	0	2	2	0	1	2	0	1	2	0	
6:30 AM	18	16	21	14	33	10	4	30	12	23	41	4	226
6:45 AM	24	13	26	38	49	14	3	34	9	31	56	14	311
7:00 AM	24	15	33	23	52	17	4	50	11	20	69	8	326
7:15 AM	29	20	42	31	59	14	2	51	25	17	62	11	363
7:30 AM	41	34	55	33	69	13	5	76	18	24	72	11	451
7:45 AM	50	33	87	53	101	15	10	98	33	31	85	14	610
8:00 AM	53	43	63	45	58	21	7	99	26	46	94	13	568
8:15 AM	46	38	65	29	62	20	4	83	35	39	69	11	501
8:30 AM	45	54	57	40	84	20	20	88	25	25	106	8	572
8:45 AM	51	38	53	24	75	17	11	86	15	34	104	4	512
9:00 AM	48	40	64	26	45	13	13	73	14	24	101	7	468
9:15 AM	44	28	51	25	42	12	3	64	16	37	96	11	429
Volumes	473	372	617	381	729	186	86	832	239	351	955	116	5337
Approach %	32.35	25.44	42.20	29.40	56.25	14.35	7.43	71.91	20.66	24.68	67.16	8.16	
App/Depart	1462	1	574	1296	1	1319	1157	1	1830	1422	1	1614	
Peak Volumes	194	168	272	167	305	76	41	368	119	141	354	46	2251
Approach %	30.60	26.50	42.90	30.47	55.66	13.87	7.77	69.70	22.54	26.06	65.43	8.50	
Pk Hr FACTOR:		0.93			0.81			0.94			0.88		0.9225
				1									•
AM Pk Hr at:		745											
PM		745 ORTHBO		l	UTHBO			ASTBOU			ESTBOL		
PM 3:30 PM	27	745 ORTHBO 69	15	6	UTHBO 43	9	12	ASTBOU 65	31	29	65	39	410
PM 3:30 PM 3:45 PM	27 27	745 DRTHBO 69 51	15 25	6 7	UTHBO 43 39	9	12 9	ASTBOU 65 65	31 32	29 25	65 59	39 23	371
3:30 PM 3:45 PM 4:00 PM	27 27 19	745 DRTHBO 69 51 85	15 25 16	6 7 0	43 39 31	9 9 11	12 9 11	65 65 65 66	31 32 37	29 25 52	65 59 58	39 23 34	371 420
3:30 PM 3:45 PM 4:00 PM 4:15 PM	27 27 19 22	745 DRTHBO 69 51 85 61	15 25 16 20	6 7 0 3	43 39 31 34	9 9 11 8	12 9 11 9	65 65 66 66	31 32 37 34	29 25 52 29	65 59 58 63	39 23 34 18	371 420 366
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM	27 27 19 22 28	745 DRTHBO 69 51 85 61 76	15 25 16 20 24	6 7 0 3 6	43 39 31 34 35	9 9 11 8 12	12 9 11 9 5	65 65 66 66 65 101	31 32 37 34 34	29 25 52 29 49	65 59 58 63 100	39 23 34 18 27	371 420 366 497
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM	27 27 19 22 28 37	745 DRTHBO 69 51 85 61 76 64	15 25 16 20 24 22	6 7 0 3 6 6	43 39 31 34 35 43	9 9 11 8 12 11	12 9 11 9 5 11	65 65 66 65 101 112	31 32 37 34 34 47	29 25 52 29 49 54	65 59 58 63 100 94	39 23 34 18 27 21	371 420 366 497 522
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM	27 27 19 22 28 37 30	745 DRTHBO 69 51 85 61 76 64 87	15 25 16 20 24 22 26	6 7 0 3 6 6 5	43 39 31 34 35 43 51	9 9 11 8 12 11 15	12 9 11 9 5 11 14	65 65 66 65 101 112 134	31 32 37 34 34 47 63	29 25 52 29 49 54 82	65 59 58 63 100 94 149	39 23 34 18 27 21 70	371 420 366 497 522 726
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM	27 27 19 22 28 37 30 34	745 DRTHBO 69 51 85 61 76 64 87 89	15 25 16 20 24 22 26 30	6 7 0 3 6 6 5	39 31 34 35 43 51 40	9 9 11 8 12 11 15 14	12 9 11 9 5 11 14 13	65 65 66 65 101 112 134 115	31 32 37 34 34 47 63 60	29 25 52 29 49 54 82 53	65 59 58 63 100 94 149 98	39 23 34 18 27 21 70 27	371 420 366 497 522 726 575
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM	27 27 19 22 28 37 30 34 31	745 DRTHBO 69 51 85 61 76 64 87 89 48	15 25 16 20 24 22 26 30 31	6 7 0 3 6 6 5 2 4	43 39 31 34 35 43 51 40 47	9 9 11 8 12 11 15 14	12 9 11 9 5 11 14 13	65 65 66 65 101 112 134 115 97	31 32 37 34 34 47 63 60 53	29 25 52 29 49 54 82 53 46	65 59 58 63 100 94 149 98 94	39 23 34 18 27 21 70 27 28	371 420 366 497 522 726 575 506
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	27 27 19 22 28 37 30 34 31 22	745 DRTHBO 69 51 85 61 76 64 87 89 48 62	15 25 16 20 24 22 26 30 31 27	6 7 0 3 6 6 5 2 4 5	39 31 34 35 43 51 40 47 35	9 9 11 8 12 11 15 14 15 8	12 9 11 9 5 11 14 13 12 8	65 65 66 65 101 112 134 115 97	31 32 37 34 34 47 63 60 53 39	29 25 52 29 49 54 82 53 46 32	65 59 58 63 100 94 149 98 94 83	39 23 34 18 27 21 70 27 28 25	371 420 366 497 522 726 575 506 440
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM	27 27 19 22 28 37 30 34 31 22 19	745 DRTHBO 69 51 85 61 76 64 87 89 48 62 50	15 25 16 20 24 22 26 30 31 27 20	6 7 0 3 6 6 5 2 4 5 3	39 31 34 35 43 51 40 47 35 34	9 9 11 8 12 11 15 14 15 8 6	12 9 11 9 5 11 14 13 12 8 16	ASTBOU 65 65 66 65 101 112 134 115 97 94 76	31 32 37 34 34 47 63 60 53 39 25	29 25 52 29 49 54 82 53 46 32 37	65 59 58 63 100 94 149 98 94 83 47	39 23 34 18 27 21 70 27 28 25 14	371 420 366 497 522 726 575 506 440 347
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	27 27 19 22 28 37 30 34 31 22 19	745 DRTHBO 69 51 85 61 76 64 87 89 48 62 50 61	15 25 16 20 24 22 26 30 31 27 20 14	6 7 0 3 6 6 5 2 4 5 3 1	43 39 31 34 35 43 51 40 47 35 34 34	9 9 11 8 12 11 15 14 15 8 6	12 9 11 9 5 11 14 13 12 8 16 10	ASTBOU 65 65 66 65 101 112 134 115 97 94 76 42	31 32 37 34 34 47 63 60 53 39 25 23	29 25 52 29 49 54 82 53 46 32 37 40	65 59 58 63 100 94 149 98 94 83 47 47	39 23 34 18 27 21 70 27 28 25 14 12	371 420 366 497 522 726 575 506 440 347 307
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	27 27 19 22 28 37 30 34 31 22 19 13	745 DRTHBO 69 51 85 61 76 64 87 89 48 62 50 61 803	15 25 16 20 24 22 26 30 31 27 20 14	6 7 0 3 6 6 5 2 4 5 3 1	43 39 31 34 35 43 51 40 47 35 34 34 466	9 9 11 8 12 11 15 14 15 8 6 10	12 9 11 9 5 11 14 13 12 8 16 10	ASTBOU 65 65 66 65 101 112 134 115 97 94 76 42 1032	31 32 37 34 34 47 63 60 53 39 25 23	29 25 52 29 49 54 82 53 46 32 37 40	65 59 58 63 100 94 149 98 94 83 47 47	39 23 34 18 27 21 70 27 28 25 14 12	371 420 366 497 522 726 575 506 440 347
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach %	27 27 19 22 28 37 30 34 31 22 19 13 309	745 DRTHBO 69 51 85 61 76 64 87 89 48 62 50 61 803	15 25 16 20 24 22 26 30 31 27 20 14 270	6 7 0 3 6 6 5 2 4 5 3 1 48 7.48	43 39 31 34 35 43 51 40 47 35 34 34 466 72.59	9 9 11 8 12 11 15 14 15 8 6 10	12 9 11 9 5 11 14 13 12 8 16 10 130	ASTBOU 65 65 66 65 101 112 134 115 97 94 76 42 1032 62.93	31 32 37 34 34 47 63 60 53 39 25 23 478 29.15	29 25 52 29 49 54 82 53 46 32 37 40 528 28.96	65 59 58 63 100 94 149 98 94 83 47 47 47	39 23 34 18 27 21 70 27 28 25 14 12 338	371 420 366 497 522 726 575 506 440 347 307
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart	27 27 19 22 28 37 30 34 31 22 19 13 309 22.36 1382	745 DRTHBO 69 51 85 61 76 64 87 89 48 62 50 61 803 58.10 /	15 25 16 20 24 22 26 30 31 27 20 14 270 19.54 1271	6 7 0 3 6 6 5 2 4 5 3 1 48 7.48 642	43 39 31 34 35 43 51 40 47 35 34 34 466 72.59	9 9 11 8 12 11 15 14 15 8 6 10 128 19.94 1472	12 9 11 9 5 11 14 13 12 8 16 10 7.93 1640	65 65 66 65 101 112 134 115 97 94 76 42 1032 62.93	31 32 37 34 34 47 63 60 53 39 25 23 478 29.15	29 25 52 29 49 54 82 53 46 32 37 40 528 28.96 1823	65 59 58 63 100 94 149 98 94 83 47 47 957 52.50	39 23 34 18 27 21 70 27 28 25 14 12 338 18.54 1394	371 420 366 497 522 726 575 506 440 347 307 5487
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	27 27 19 22 28 37 30 34 31 22 19 13 309 22.36 1382	745 DRTHBO 69 51 85 61 76 64 87 89 48 62 50 61 803 58.10 /	15 25 16 20 24 22 26 30 31 27 20 14 270 19.54 1271	6 7 0 3 6 6 5 2 4 5 3 1 48 7.48 642	43 39 31 34 35 43 51 40 47 35 34 34 466 72.59 /	9 9 11 8 12 11 15 14 15 8 6 10 128 19.94 1472 55	12 9 11 9 5 11 14 13 12 8 16 10 7.93 1640 50	ASTBOU 65 65 66 65 101 112 134 115 97 94 76 42 1032 62.93 /	31 32 37 34 34 47 63 60 53 39 25 23 478 29.15 1350	29 25 52 29 49 54 82 53 46 32 37 40 528 28.96 1823	65 59 58 63 100 94 149 98 94 83 47 47 957 52.50 /	39 23 34 18 27 21 70 27 28 25 14 12 338 18.54 1394	371 420 366 497 522 726 575 506 440 347 307
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes Approach %	27 27 19 22 28 37 30 34 31 22 19 13 309 22.36 1382	745 DRTHBO 69 51 85 61 76 64 87 89 48 62 50 61 803 58.10 / 288 54.44	15 25 16 20 24 22 26 30 31 27 20 14 270 19.54 1271	6 7 0 3 6 6 5 2 4 5 3 1 48 7.48 642	43 39 31 34 35 43 51 40 47 35 34 34 466 72.59 /	9 9 11 8 12 11 15 14 15 8 6 10 128 19.94 1472	12 9 11 9 5 11 14 13 12 8 16 10 7.93 1640	ASTBOU 65 65 66 65 101 112 134 115 97 94 76 42 1032 62.93 /	31 32 37 34 34 47 63 60 53 39 25 23 478 29.15	29 25 52 29 49 54 82 53 46 32 37 40 528 28.96 1823	65 59 58 63 100 94 149 98 94 83 47 47 957 52.50 /	39 23 34 18 27 21 70 27 28 25 14 12 338 18.54 1394	371 420 366 497 522 726 575 506 440 347 307 5487
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	27 27 19 22 28 37 30 34 31 22 19 13 309 22.36 1382	745 DRTHBO 69 51 85 61 76 64 87 89 48 62 50 61 803 58.10 /	15 25 16 20 24 22 26 30 31 27 20 14 270 19.54 1271	6 7 0 3 6 6 5 2 4 5 3 1 48 7.48 642	43 39 31 34 35 43 51 40 47 35 34 34 466 72.59 /	9 9 11 8 12 11 15 14 15 8 6 10 128 19.94 1472 55	12 9 11 9 5 11 14 13 12 8 16 10 7.93 1640 50	ASTBOU 65 65 66 65 101 112 134 115 97 94 76 42 1032 62.93 /	31 32 37 34 34 47 63 60 53 39 25 23 478 29.15 1350	29 25 52 29 49 54 82 53 46 32 37 40 528 28.96 1823	65 59 58 63 100 94 149 98 94 83 47 47 957 52.50 /	39 23 34 18 27 21 70 27 28 25 14 12 338 18.54 1394	371 420 366 497 522 726 575 506 440 347 307 5487



Intersection Analysis Summary

Intersection Number: 7

Intersection Location: El Camino Real & Faraday Ave.

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5050 Avenida Encinias, Ste 260 Carlsbad, CA 92008 Address Line 3 Address Line 4

El Camino Real at Faraday Avenue

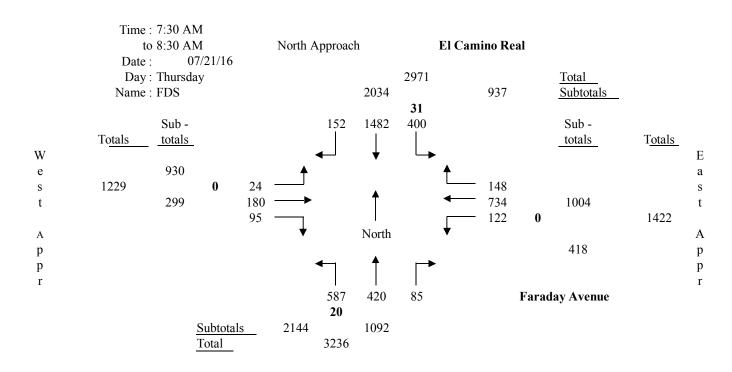
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin			Sout	h Appr	(NB)	Nort	th Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1			1	
		4		1			1				1			1
		5		1	1		1							
		6						1						
	Outside	7												
	Free-flow													
Lane Settin	ıgs		2	3	0	2	3	1	1	2	1	1	2	1
Capacity			3600	6000	0	3600	6000	1800	1800	4000	1800	1800	4000	1800
Are the No	orth/South pha	ses s	split (Y	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vol	lume		587	420	85	400	1482	152	24	180	95	122	734	148
Adjusted F	Iourly Volume	9	587	505	0	400	1482	152	24	180	95	122	734	148
Utilization	Factor		0.16	0.08	0.00	0.11	0.25	0.08	0.01	0.05	0.05	0.07	0.18	0.08
Critical Fa	ctors		0.16				0.25		0.01				0.18	

ICU Ratio = 0.70 LOS = B

Turning Movements at Intersection of:

El Camino Real and Faraday Avenue



South Approach

El Camino Real at Faraday Avenue

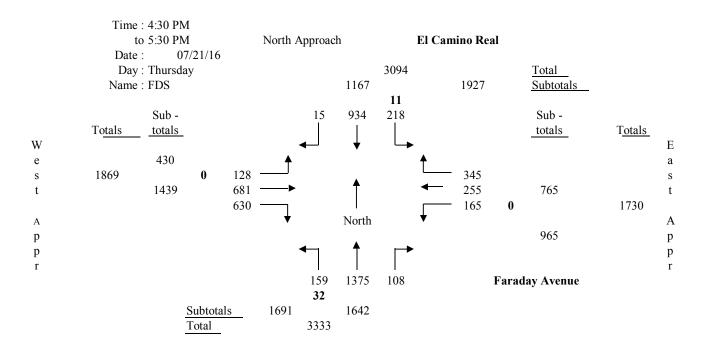
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Ti	me Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1			1	
		4		1			1				1			1
		5		1	1		1							
		6						1						
	Outside	7												
	Free-flow													
Lane Setti	ngs		2	3	0	2	3	1	1	1	2	1	2	1
Capacity			3600	6000	0	3600	6000	1800	1800	2000	3600	1800	4000	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N	D?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		159	1375	108	218	934	15	128	681	630	165	255	345
Adjusted I	Hourly Volume	е	159	1483	0	218	934	15	128	341	971	165	255	345
Utilization	Factor		0.04	0.25	0.00	0.06	0.16	0.01	0.07	0.17	0.27	0.09	0.06	0.19
Critical Fa	ctors			0.25		0.06					0.27	0.09		

ICU Ratio = 0.77 LOS = C

Turning Movements at Intersection of:

El Camino Real and Faraday Avenue



South Approach



veracitytrafficgroup

LOCATION: Carlsbad N-S STREET: El Camino Real DATE: 07/21/2016

W STREET: Faraday Ave. CONTROL: Signal E-W STREET: DAY: THURSDAY PROJECT# 16-1256-007

	Signal						_					11.15	_
AM		RTHBO			UTHBO			ASTBOU			ESTBOL		
LANIEC	NL	NT 3	NR	SL	ST 3	SR	EL	ET	ER 1	WL	WT	WR	TOTAL
LANES: 6:30 AM	2		20	2 64		12	1	2 17	1	1	2	1	F24
	60	45 77			161	13	5		7	21	99	12	524
6:45 AM 7:00 AM	94 99	77 81	27	104 89	277 249	25 39	1	26 30	16 16	16 16	124 165	23	810 812
			14 15				0	32	10			14	921
7:15 AM 7:30 AM	121 112	83 99	20	95 88	319 381	50 36	2	32 44	18	22 23	146 189	24	1041
7:30 AM 7:45 AM	155	99 120	28	129	379	39	2 6	44 46	23	23 28	200	29 48	1201
8:00 AM	162	87	26 15	91	348	39 46	12	51	28	37	192	36	1105
8:15 AM	158	67 114	22	91	3 4 6	31	4	39	26	34	153	35	1082
8:30 AM	133	132	18	61	322	38	7	39 41	27	22	156	38	995
8:45 AM	126	131	26	102	426	35	12	40	33	44	147	58	1180
9:00 AM	130	131	20	51	299	19	4	42	33	33	177	39	986
9:15 AM	127	136	30	53	244	24	6	24	39	35	111	42	871
Volumes	1477	1244	255	1019	3779	395	61	432	278	331	1859	398	11528
Approach %	49.63	41.80	8.57	19.62	72.77	7.61	7.91	56.03	36.06	12.79	71.83	15.38	
App/Depart	2976	/	1703	5193	/	4388	771	/	1706	2588	/ 1.00	3731	
Peak Volumes	587	420	85	400	1482	152	24	180	95	122	734	148	4429
Approach %	53.75	38.46	7.78	19.67	72.86	7.47	8.03	60.20	31.77	12.15	73.11	14.74	
	<u> </u>			i		•			•				0.0040
Pk Hr FACTOR:		0.90			0.93			0.82			0.91		0.9219
Pk Hr FACTOR: AM Pk Hr at:		0.90 730			0.93			0.82			0.91		0.9219
	NC		UND	SC	0.93 OUTHBO	UND	E	0.82 ASTBOU	IND	W	0.91 ESTBOU	JND	0.9219
AM Pk Hr at:	NC 41	730	UND 22	SC 44		UND 7	E 20		ND 113	W 46		JND 62	1056
AM Pk Hr at:		730 ORTHBO			UTHBO			ASTBOU			ESTBOL		
AM Pk Hr at: PM 3:30 PM	41	730 ORTHBO 309	22	44	UTHBO 236	7	20	ASTBOU	113	46	'ESTBOL	62	1056
AM Pk Hr at: PM 3:30 PM 3:45 PM	41 45	730 DRTHBO 309 285	22 19	44 43	236 266	7 4	20 16	108 103	113 90	46 41	ESTBOU 48 45	62 68	1056 1025
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM	41 45 46	730 DRTHBO 309 285 280	22 19 24	44 43 54	236 266 263	7 4 5	20 16 30	108 103 133	113 90 137	46 41 41	'ESTBOL 48 45 30	62 68 80	1056 1025 1123
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM	41 45 46 33	730 DRTHBO 309 285 280 294	22 19 24 15	44 43 54 55	236 266 263 233	7 4 5 1	20 16 30 15	108 103 133 119	113 90 137 94	46 41 41 34	48 45 30 51	62 68 80 74	1056 1025 1123 1018
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM	41 45 46 33 47	730 DRTHBO 309 285 280 294 333	22 19 24 15 12	44 43 54 55 62	236 266 263 233 234	7 4 5 1 3	20 16 30 15 39	108 103 133 119 130	113 90 137 94 157	46 41 41 34 40	48 45 30 51 58	62 68 80 74 91	1056 1025 1123 1018 1206
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM	41 45 46 33 47 39	730 DRTHBO 309 285 280 294 333 321	22 19 24 15 12 29	44 43 54 55 62 61	236 266 263 233 234 217	7 4 5 1 3 4	20 16 30 15 39 38	108 103 133 119 130 146	113 90 137 94 157 123	46 41 41 34 40 33	48 45 30 51 58 72	62 68 80 74 91 88	1056 1025 1123 1018 1206 1171
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM	41 45 46 33 47 39 33	730 ORTHBO 309 285 280 294 333 321 340	22 19 24 15 12 29 30	44 43 54 55 62 61 45	236 266 263 233 234 217 260	7 4 5 1 3 4 5	20 16 30 15 39 38 26	108 103 133 119 130 146 201	113 90 137 94 157 123 176	46 41 41 34 40 33 46	48 45 30 51 58 72 71	62 68 80 74 91 88 103	1056 1025 1123 1018 1206 1171 1336
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM	41 45 46 33 47 39 33 40	730 ORTHBO 309 285 280 294 333 321 340 381	22 19 24 15 12 29 30 37	44 43 54 55 62 61 45 50	236 266 263 233 234 217 260 223	7 4 5 1 3 4 5	20 16 30 15 39 38 26 25	108 103 133 119 130 146 201 204	113 90 137 94 157 123 176 174	46 41 41 34 40 33 46 46	48 45 30 51 58 72 71 54	62 68 80 74 91 88 103 63	1056 1025 1123 1018 1206 1171 1336 1300
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM	41 45 46 33 47 39 33 40 38 42 27	730 DRTHBO 309 285 280 294 333 321 340 381 321 295 249	22 19 24 15 12 29 30 37 27 19	44 43 54 55 62 61 45 50 61 49 39	236 266 263 233 234 217 260 223 217 190 166	7 4 5 1 3 4 5 3 7 1 3	20 16 30 15 39 38 26 25 33 22 20	108 103 133 119 130 146 201 204 180 142 91	113 90 137 94 157 123 176 174 140 116	46 41 41 34 40 33 46 46 49 30 27	48 45 30 51 58 72 71 54 49 36 35	62 68 80 74 91 88 103 63 66 64 43	1056 1025 1123 1018 1206 1171 1336 1300 1188 1006 830
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	41 45 46 33 47 39 33 40 38 42 27 22	730 DRTHBO 309 285 280 294 333 321 340 381 321 295	22 19 24 15 12 29 30 37 27	44 43 54 55 62 61 45 50 61 49	236 266 263 233 234 217 260 223 217 190	7 4 5 1 3 4 5 3 7	20 16 30 15 39 38 26 25 33 22	108 103 133 119 130 146 201 204 180 142	113 90 137 94 157 123 176 174 140 116	46 41 41 34 40 33 46 46 49 30	48 45 30 51 58 72 71 54 49 36	62 68 80 74 91 88 103 63 66 64	1056 1025 1123 1018 1206 1171 1336 1300 1188 1006
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM	41 45 46 33 47 39 33 40 38 42 27	730 DRTHBO 309 285 280 294 333 321 340 381 321 295 249	22 19 24 15 12 29 30 37 27 19	44 43 54 55 62 61 45 50 61 49 39	236 266 263 233 234 217 260 223 217 190 166	7 4 5 1 3 4 5 3 7 1 3	20 16 30 15 39 38 26 25 33 22 20	108 103 133 119 130 146 201 204 180 142 91	113 90 137 94 157 123 176 174 140 116	46 41 41 34 40 33 46 46 49 30 27	48 45 30 51 58 72 71 54 49 36 35	62 68 80 74 91 88 103 63 66 64 43	1056 1025 1123 1018 1206 1171 1336 1300 1188 1006 830
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	41 45 46 33 47 39 33 40 38 42 27 22 453 10.31	730 309 285 280 294 333 321 340 381 321 295 249 275	22 19 24 15 12 29 30 37 27 19 14 11 259 5.89	44 43 54 55 62 61 45 50 61 49 39 20 583 17.56	236 266 263 233 234 217 260 223 217 190 166 186	7 4 5 1 3 4 5 3 7 1 3 3 4 6 1.39	20 16 30 15 39 38 26 25 33 22 20 14 298 8.62	108 103 133 119 130 146 201 204 180 142 91 75	113 90 137 94 157 123 176 174 140 116 116 91	46 41 41 34 40 33 46 46 49 30 27 23 456	48 45 30 51 58 72 71 54 49 36 35 31	62 68 80 74 91 88 103 63 66 64 43 41 843	1056 1025 1123 1018 1206 1171 1336 1300 1188 1006 830 792
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	41 45 46 33 47 39 33 40 38 42 27 22	730 ORTHBO 309 285 280 294 333 321 340 381 321 295 249 275 3683	22 19 24 15 12 29 30 37 27 19 14 11	44 43 54 55 62 61 45 50 61 49 39 20	236 266 263 233 234 217 260 223 217 190 166 186	7 4 5 1 3 4 5 3 7 1 3 3	20 16 30 15 39 38 26 25 33 22 20 14	108 103 133 119 130 146 201 204 180 142 91 75	113 90 137 94 157 123 176 174 140 116 116 91	46 41 41 34 40 33 46 46 49 30 27 23	48 45 30 51 58 72 71 54 49 36 35 31	62 68 80 74 91 88 103 63 66 64 43 41	1056 1025 1123 1018 1206 1171 1336 1300 1188 1006 830 792
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach %	41 45 46 33 47 39 33 40 38 42 27 22 453 10.31 4395	730 ORTHBO 309 285 280 294 333 321 340 381 321 295 249 275 3683 83.80 / 1375	22 19 24 15 12 29 30 37 27 19 14 11 259 5.89 4824	44 43 54 55 62 61 45 50 61 49 39 20 583 17.56 3320 218	236 266 263 233 234 217 260 223 217 190 166 186 2691	7 4 5 1 3 4 5 3 7 1 3 3 46 1.39 4674	20 16 30 15 39 38 26 25 33 22 20 14 298 8.62	108 103 133 119 130 146 201 204 180 142 91 75 1632 47.21 /	113 90 137 94 157 123 176 174 140 116 116 91 1527 44.17 2474	46 41 41 34 40 33 46 46 49 30 27 23 456 24.27 1879	/ESTBOL 48 45 30 51 58 72 71 54 49 36 35 31 580 30.87 / 255	62 68 80 74 91 88 103 63 66 64 43 41 843 44.86 1079	1056 1025 1123 1018 1206 1171 1336 1300 1188 1006 830 792
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes Approach %	41 45 46 33 47 39 33 40 38 42 27 22 453 10.31 4395	730 DRTHBO 309 285 280 294 333 321 340 381 321 295 249 275 3683 83.80 /	22 19 24 15 12 29 30 37 27 19 14 11 259 5.89 4824	44 43 54 55 62 61 45 50 61 49 39 20 583 17.56 3320	236 266 263 233 234 217 260 223 217 190 166 186 2691 81.05	7 4 5 1 3 4 5 3 7 1 3 3 46 1.39 4674	20 16 30 15 39 38 26 25 33 22 20 14 298 8.62 3457	108 103 133 119 130 146 201 204 180 142 91 75 1632 47.21	113 90 137 94 157 123 176 174 140 116 116 91 1527 44.17 2474	46 41 41 34 40 33 46 46 49 30 27 23 456 24.27	48 45 30 51 58 72 71 54 49 36 35 31 580 30.87	62 68 80 74 91 88 103 63 66 64 43 41 843 44.86	1056 1025 1123 1018 1206 1171 1336 1300 1188 1006 830 792
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	41 45 46 33 47 39 33 40 38 42 27 22 453 10.31 4395	730 ORTHBO 309 285 280 294 333 321 340 381 321 295 249 275 3683 83.80 / 1375	22 19 24 15 12 29 30 37 27 19 14 11 259 5.89 4824	44 43 54 55 62 61 45 50 61 49 39 20 583 17.56 3320 218	236 266 263 233 234 217 260 223 217 190 166 186 2691 81.05 /	7 4 5 1 3 4 5 3 7 1 3 3 46 1.39 4674	20 16 30 15 39 38 26 25 33 22 20 14 298 8.62 3457	108 103 133 119 130 146 201 204 180 142 91 75 1632 47.21 /	113 90 137 94 157 123 176 174 140 116 116 91 1527 44.17 2474	46 41 41 34 40 33 46 46 49 30 27 23 456 24.27 1879	/ESTBOL 48 45 30 51 58 72 71 54 49 36 35 31 580 30.87 / 255	62 68 80 74 91 88 103 63 66 64 43 41 843 44.86 1079	1056 1025 1123 1018 1206 1171 1336 1300 1188 1006 830 792



Intersection Analysis Summary

Intersection Number: 48

Intersection Location: I-5 SB Ramps & Palomar Airport Rd.

Contents:

A.M. Peak Hour ICU Analysis and Turn Movement Diagram
Page 1

P.M. Peak Hour ICU Analysis and Turn Movement Diagram
Page 2

A.M./P.M. Peak Period Intersection Turning Movement Count Data Page 3



5050 Avenida Encinias, Ste 260 Carlsbad, CA 92008 Address Line 3 Address Line 4

I-5 Southbound Ramps at Palomar Airport Road

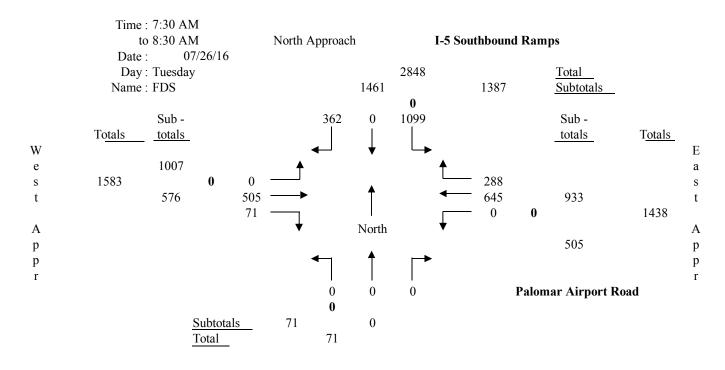
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin		-	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:30 AM 8:30 AM	to	•	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1				1				1			1	
Config -	(left)	2				1				1			1	
urations		3						1		1	1			
		4												
		5												
		6												
	Outside	7												
	Free-flow													1
Lane Settin	ıgs		0	0	0	2	0	1	0	3	0	0	2	1
Capacity			0	0	0	3600	0	1800	0	6000	0	0	4000	1800
Are the No	rth/South pha	ses s	split (Y/	N)?	N									
Are the Eas	st/West phase	s spl	lit (Y/N)?	N									
Efficiency 1	Lost Factor		0.10											
Hourly Vol	lume		0	0	0	1099	0	362	0	505	71	0	645	288
Adjusted F	Iourly Volume	Э	0	0	0	1099	0	362	0	576	0	0	645	0
Utilization	Factor		0.00	0.00	0.00	0.31	0.00	0.20	0.00	0.10	0.00	0.00	0.16	0.00
Critical Fa	ctors			0.00	0.00	0.31			0.00				0.16	

ICU Ratio = 0.57 LOS =

Turning Movements at Intersection of:

I-5 Southbound Ramps and Palomar Airport Road



South Approach

I-5 Southbound Ramps at Palomar Airport Road

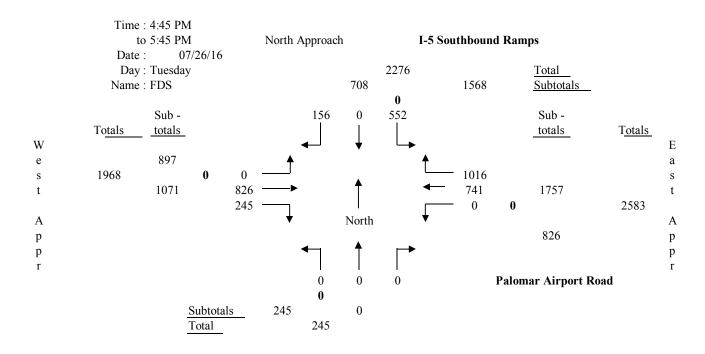
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	t Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1				1				1			1	
Config -	(left)	2				1				1			1	
urations		3						1		1	1			
		4												
		5												
		6												
	Outside	7												
	Free-flow													1
Lane Settin	ngs		0	0	0	2	0	1	0	3	0	0	2	1
Capacity			0	0	0	3600	0	1800	0	6000	0	0	4000	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N	D?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		0	0	0	552	0	156	0	826	245	0	741	1016
Adjusted F	Hourly Volum	е	0	0	0	552	0	156	0	1071	0	0	741	0
Utilization	Factor		0.00	0.00	0.00	0.15	0.00	0.09	0.00	0.18	0.00	0.00	0.19	0.00
Critical Fa	ctors			0.00	0.00	0.15			0.00				0.19	

ICU Ratio = 0.44 LOS = A

Turning Movements at Intersection of:

I-5 Southbound Ramps and Palomar Airport Road



South Approach Note: Left-turn volumes include U-turns. U-turns in bold.



Vveracitytrafficgroup

N-S STREET: I-5 SB Ramps DATE: 07/26/2016 LOCATION: Carlsbad

E-W STREET: Palomar Airport Rd. DAY: TUESDAY PROJECT# 16-1256-048

CONTROL: Signal

AM	Signal	DTLIDO	LINID	CO	UTHBO	LINID		ASTBOU	INID	١٨.	/ESTBOL	INID	
AIVI	NL NL	NT NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	טאנ WR	TOTAL
LANES:	0	0	0	2 2	0	3K 1	0	3	1	0	2	1	TOTAL
6:30 AM	0	0	0	128	0	75	0	74	13	0	110	69	469
6:45 AM	0	0	0	152	0	87	0	76	16	0	87	85	503
7:00 AM	0	0	0	159	0	59	0	96	18	0	106	82	520
7:15 AM	0	0	0	177	0	101	0	133	13	0	141	50	615
7:30 AM	0	0	0	214	0	103	0	131	16	0	159	75	698
7:45 AM	0	0	0	325	0	99	0	128	14	0	163	87	816
8:00 AM	0	0	0	275	0	85	0	122	21	0	169	60	732
8:15 AM	0	0	0	285	0	75	0	124	20	0	154	66	724
8:30 AM	0	0	0	226	0	87	0	104	33	0	128	96	674
8:45 AM	0	0	0	258	0	63	0	108	29	0	141	86	685
9:00 AM	0	0	0	185	0	50	0	141	24	0	143	85	628
9:15 AM	0	0	0	199	0	45	0	143	28	0	128	87	630
Volumes	0	0	0	2583	0	929	0	1380	245	0	1629	928	7694
Approach %	#DIV/0!	#DIV/0!	#DIV/0!	73.55	0.00	26.45	0.00	84.92	15.08	0.00	63.71	36.29	
App/Depart	0	1	928	3512	1	245	1625	1	3963	2557	1	2558	
Peak Volumes	0	0	0	1099	0	362	0	505	71	0	645	288	2970
Approach %	#DIV/0!	#DIV/0!	#DIV/0!	75.22	0.00	24.78	0.00	87.67	12.33	0.00	69.13	30.87	
		0.00			0.00			0.00			0.00		0.9099
Pk Hr FACTOR:		0.00			0.86			0.98			0.93		0.9099
AM Pk Hr at:		730											0.9099
AM Pk Hr at:	NC	730 ORTHBO	UND		0.86 OUTHBO	UND	E	ASTBOU		W	/ESTBOL		
AM Pk Hr at: PM 3:30 PM	NC 0	730	UND 0	138		47	0 0	ASTBOU 175	41	W	/ESTBOL	183	746
AM Pk Hr at: PM 3:30 PM 3:45 PM	0	730 ORTHBO		138 151	UTHBO	47 53		ASTBOU 175 147	41 39		/ESTBOU 161 148	183 185	746 723
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM	0 0 0	730 ORTHBO	0	138 151 132	OUTHBO	47 53 35	0	ASTBOU 175 147 171	41 39 49	1	/ESTBOU 161 148 157	183 185 226	746 723 770
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM	0 0 0 0	730 ORTHBO 0 0	0	138 151 132 127	OUTHBO 0 0	47 53 35 34	0	ASTBOU 175 147 171 168	41 39 49 46	1 0	/ESTBOU 161 148 157 164	183 185 226 194	746 723 770 733
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM	0 0 0	730 DRTHBO 0 0 0	0 0 0	138 151 132 127 160	0 0 0 0	47 53 35 34 31	0 0 0	175 147 171 168 206	41 39 49 46 45	1 0 0	/ESTBOL 161 148 157 164 140	183 185 226 194 232	746 723 770 733 814
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM	0 0 0 0 0	730 ORTHBO 0 0 0 0 0 0	0 0 0 0 0	138 151 132 127 160 123	0 0 0 0 0 0	47 53 35 34 31 41	0 0 0 0 0	175 147 171 168 206 187	41 39 49 46 45 54	1 0 0 0 0	/ESTBOL 161 148 157 164 140 191	183 185 226 194 232 215	746 723 770 733 814 811
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM	0 0 0 0 0	730 ORTHBO 0 0 0 0 0 0 0	0 0 0 0 0	138 151 132 127 160 123 142	0 0 0 0 0 0 0	47 53 35 34 31 41 44	0 0 0 0 0 0	175 147 171 168 206 187 200	41 39 49 46 45 54 70	1 0 0 0 0 0	/ESTBOL 161 148 157 164 140 191 163	183 185 226 194 232 215 265	746 723 770 733 814 811 884
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM	0 0 0 0 0 0	730 ORTHBO 0 0 0 0 0 0 0	0 0 0 0 0	138 151 132 127 160 123 142 142	0 0 0 0 0 0 0 0	47 53 35 34 31 41 44 48	0 0 0 0 0 0	175 147 171 168 206 187 200 237	41 39 49 46 45 54 70	1 0 0 0 0 0 0	/ESTBOL 161 148 157 164 140 191 163 178	183 185 226 194 232 215 265 270	746 723 770 733 814 811 884 931
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM	0 0 0 0 0 0 0	730 ORTHBO 0 0 0 0 0 0 0 0	0 0 0 0 0 0	138 151 132 127 160 123 142 142 145	0 0 0 0 0 0 0 0 0	47 53 35 34 31 41 44 48 23	0 0 0 0 0 0 0	175 147 171 168 206 187 200 237 202	41 39 49 46 45 54 70 55 66	1 0 0 0 0 0 0 0 1	161 148 157 164 140 191 163 178 209	183 185 226 194 232 215 265 270 266	746 723 770 733 814 811 884 931 912
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	0 0 0 0 0 0 0	730 ORTHBO 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0	138 151 132 127 160 123 142 142 145 152	0 0 0 0 0 0 0 0 0 0	47 53 35 34 31 41 44 48 23 32	0 0 0 0 0 0 0	175 147 171 168 206 187 200 237 202 186	41 39 49 46 45 54 70 55 66 30	1 0 0 0 0 0 0 0 1 0	/ESTBOL 161 148 157 164 140 191 163 178 209 162	183 185 226 194 232 215 265 270 266 247	746 723 770 733 814 811 884 931 912 810
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM	0 0 0 0 0 0 0	730 ORTHBO 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0	138 151 132 127 160 123 142 142 145 152 150	0 0 0 0 0 0 0 0 0 0 1 1	47 53 35 34 31 41 44 48 23 32 32	0 0 0 0 0 0 0 0	175 147 171 168 206 187 200 237 202 186 164	41 39 49 46 45 54 70 55 66 30 52	1 0 0 0 0 0 0 1 0 0	/ESTBOL 161 148 157 164 140 191 163 178 209 162 164	183 185 226 194 232 215 265 270 266 247 250	746 723 770 733 814 811 884 931 912 810 814
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	0 0 0 0 0 0 0 0	730 ORTHBO 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0	138 151 132 127 160 123 142 142 145 152 150 126	0 0 0 0 0 0 0 0 0 1 1	47 53 35 34 31 41 44 48 23 32 32 36	0 0 0 0 0 0 0 0	175 147 171 168 206 187 200 237 202 186 164 166	41 39 49 46 45 54 70 55 66 30 52 50	1 0 0 0 0 0 0 1 0 0 2	/ESTBOL 161 148 157 164 140 191 163 178 209 162 164 172	183 185 226 194 232 215 265 270 266 247 250 229	746 723 770 733 814 811 884 931 912 810 814 779
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	0 0 0 0 0 0 0 0	730 ORTHBO 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	138 151 132 127 160 123 142 142 145 152 150 126	0 0 0 0 0 0 0 0 0 1 1 0 0	47 53 35 34 31 41 44 48 23 32 32 36 456	0 0 0 0 0 0 0 0 0	175 147 171 168 206 187 200 237 202 186 164 166	41 39 49 46 45 54 70 55 66 30 52 50	1 0 0 0 0 0 0 1 0 0 2 0	/ESTBOL 161 148 157 164 140 191 163 178 209 162 164 172	183 185 226 194 232 215 265 270 266 247 250 229	746 723 770 733 814 811 884 931 912 810 814
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach %	0 0 0 0 0 0 0 0 0 0 0 0	730 ORTHBO 0 0 0 0 0 0 0 0 0 0 0 0 #DIV/0!	0 0 0 0 0 0 0 0 0 0 0	138 151 132 127 160 123 142 145 152 150 126 1688 78.66	0 0 0 0 0 0 0 0 0 1 1 1 0 0	47 53 35 34 31 41 44 48 23 32 32 36 456 21.25	0 0 0 0 0 0 0 0 0 0 0	ASTBOU 175 147 171 168 206 187 200 237 202 186 164 166 2209 78.72	41 39 49 46 45 54 70 55 66 30 52 50 597	1 0 0 0 0 0 0 1 0 0 2 0 4	/ESTBOL 161 148 157 164 140 191 163 178 209 162 164 172 2009	183 185 226 194 232 215 265 270 266 247 250 229 2762 57.84	746 723 770 733 814 811 884 931 912 810 814 779
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart	0 0 0 0 0 0 0 0 0 0 0 0 0	730 ORTHBO 0 0 0 0 0 0 0 0 0 0 0 #DIV/0!	0 0 0 0 0 0 0 0 0 0 0 0 0 2762	138 151 132 127 160 123 142 142 145 152 150 126 1688 78.66 2146	0 0 0 0 0 0 0 0 0 1 1 0 0 2	47 53 35 34 31 41 44 48 23 32 32 36 456 21.25 603	0 0 0 0 0 0 0 0 0 0 0 0	ASTBOU 175 147 171 168 206 187 200 237 202 186 164 166 2209 78.72	41 39 49 46 45 54 70 55 66 30 52 50 597 21.28 3897	1 0 0 0 0 0 0 1 0 0 2 0 4 0.08 4775	/ESTBOL 161 148 157 164 140 191 163 178 209 162 164 172 2009 42.07 /	183 185 226 194 232 215 265 270 266 247 250 229 2762 57.84 2465	746 723 770 733 814 811 884 931 912 810 814 779
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	0 0 0 0 0 0 0 0 0 0 0 0 0 0	730 ORTHBO 0 0 0 0 0 0 0 0 0 0 0 #DIV/0!	0 0 0 0 0 0 0 0 0 0 0 0 2762	138 151 132 127 160 123 142 145 152 150 126 1688 78.66 2146 552	0 0 0 0 0 0 0 0 0 1 1 0 0 2 0.09 /	47 53 35 34 31 41 44 48 23 32 32 36 456 21.25 603	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ASTBOU 175 147 171 168 206 187 200 237 202 186 164 166 2209 78.72 /	41 39 49 46 45 54 70 55 66 30 52 50 597 21.28 3897 245	1 0 0 0 0 0 0 1 0 0 2 0 4 0.08 4775	/ESTBOL 161 148 157 164 140 191 163 178 209 162 164 172 2009 42.07 / 741	183 185 226 194 232 215 265 270 266 247 250 229 2762 57.84 2465 1016	746 723 770 733 814 811 884 931 912 810 814 779
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes Approach %	0 0 0 0 0 0 0 0 0 0 0 0 0 0	730 ORTHBO 0 0 0 0 0 0 0 0 0 0 0 #DIV/0!	0 0 0 0 0 0 0 0 0 0 0 0 2762	138 151 132 127 160 123 142 142 145 152 150 126 1688 78.66 2146	0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 2 0.09 /	47 53 35 34 31 41 44 48 23 32 32 36 456 21.25 603	0 0 0 0 0 0 0 0 0 0 0 0	ASTBOU 175 147 171 168 206 187 200 237 202 186 164 166 2209 78.72 / 826 77.12	41 39 49 46 45 54 70 55 66 30 52 50 597 21.28 3897	1 0 0 0 0 0 0 1 0 0 2 0 4 0.08 4775	/ESTBOL 161 148 157 164 140 191 163 178 209 162 164 172 2009 42.07 / 741 42.15	183 185 226 194 232 215 265 270 266 247 250 229 2762 57.84 2465	746 723 770 733 814 811 884 931 912 810 814 779 9727
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	0 0 0 0 0 0 0 0 0 0 0 0 0 0	730 ORTHBO 0 0 0 0 0 0 0 0 0 0 0 #DIV/0!	0 0 0 0 0 0 0 0 0 0 0 0 2762	138 151 132 127 160 123 142 145 152 150 126 1688 78.66 2146 552	0 0 0 0 0 0 0 0 0 1 1 0 0 2 0.09 /	47 53 35 34 31 41 44 48 23 32 32 36 456 21.25 603	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ASTBOU 175 147 171 168 206 187 200 237 202 186 164 166 2209 78.72 /	41 39 49 46 45 54 70 55 66 30 52 50 597 21.28 3897 245	1 0 0 0 0 0 0 1 0 0 2 0 4 0.08 4775	/ESTBOL 161 148 157 164 140 191 163 178 209 162 164 172 2009 42.07 / 741	183 185 226 194 232 215 265 270 266 247 250 229 2762 57.84 2465 1016	746 723 770 733 814 811 884 931 912 810 814 779



Intersection Analysis Summary

Intersection Number: 49

Intersection Location: I-5 NB Ramps & Palomar Airport Rd.

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5050 Avenida Encinias, Ste 260 Carlsbad, CA 92008 Address Line 3 Address Line 4

I-5 Northbound Ramps at Palomar Airport Road

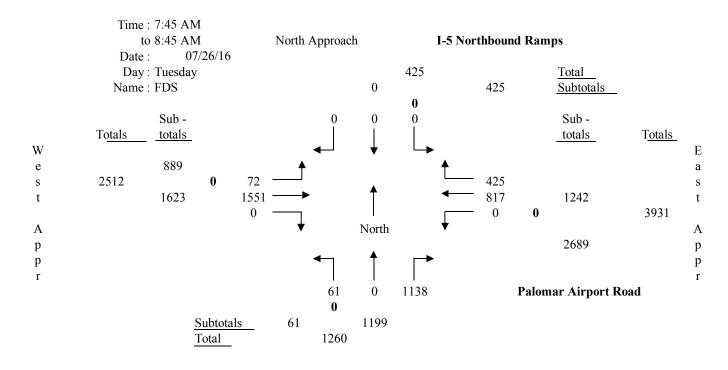
Lane Configuration for Intersection Capacity Utilization

	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1	1					1				1	
Config -	(left)	2			1					1			1	
urations		3			1					1			1	
		4								1				1
		5												1
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		1	0	2	0	0	0	1	3	0	0	3	2
Capacity			1800	0	3600	0	0	0	1800	6000	0	0	6000	3600
Are the No	orth/South pha	ses s	split (Y/	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		61	0	1138	0	0	0	72	1551	0	0	817	425
Adjusted I	Hourly Volum	e	61	0	1138	0	0	0	72	1551	0	0	817	425
Utilization	Factor		0.03	0.00	0.32	0.00	0.00	0.00	0.04	0.26	0.00	0.00	0.14	0.12
Critical Fa	ctors				0.32	0.00				0.26		0.00		

ICU Ratio = 0.68 LOS = B

Turning Movements at Intersection of:

I-5 Northbound Ramps and Palomar Airport Road



South Approach

I-5 Northbound Ramps at Palomar Airport Road

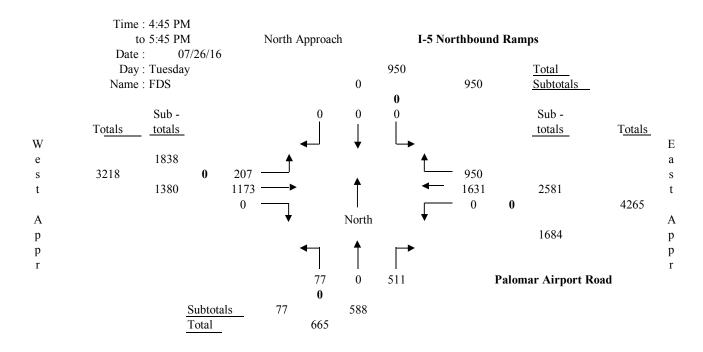
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tii	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1	1					1				1	
Config -	(left)	2			1					1			1	
urations		3			1					1			1	
		4								1				1
		5												1
		6												
	Outside	7												
	Free-flow													
Lane Setti	ngs		1	0	2	0	0	0	1	3	0	0	3	2
Capacity			1800	0	3600	0	0	0	1800	6000	0	0	6000	3600
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		77	0	511	0	0	0	207	1173	0	0	1631	950
Adjusted I	Hourly Volum	e	77	0	511	0	0	0	207	1173	0	0	1631	950
Utilization	Factor		0.04	0.00	0.14	0.00	0.00	0.00	0.12	0.20	0.00	0.00	0.27	0.26
Critical Fa	ctors				0.14	0.00			0.12				0.27	

ICU Ratio = 0.63 LOS = B

Turning Movements at Intersection of:

I-5 Northbound Ramps and Palomar Airport Road



South Approach



Vveracitytrafficgroup

N-S STREET: I-5 NB Ramps DATE: 07/26/2016 LOCATION: Carlsbad

E-W STREET: Palomar Airport Rd. DAY: TUESDAY PROJECT# 16-1256-049

CONTROL: Signal

AM	NIC	RTHBO	רואור	CC.	UTHBO	רואור		ASTBOU	ND	\/	/ESTBOL	IND	
AM	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0.5	0.5	2	0	0	0	1	3	0	0	3	2	IOIAL
6:30 AM	19	0	218	0	0	0	19	169	0	0	174	96	695
6:45 AM	13	2	244	0	0	0	16	214	0	0	158	86	733
7:00 AM	8	1	258	0	0	0	20	241	0	0	181	85	794
7:15 AM	11	1	325	0	0	0	24	258	0	0	187	87	893
7:30 AM	10	0	341	0	0	0	28	328	0	0	185	104	996
7:45 AM	14	0	244	0	0	0	21	422	0	0	196	122	1019
8:00 AM	8	0	258	0	0	0	14	411	0	0	214	101	1006
8:15 AM	19	0	325	0	0	0	18	355	0	0	222	103	1042
8:30 AM	20	0	311	0	0	0	19	363	0	0	185	99	997
8:45 AM	24	0	298	0	0	0	20	344	0	0	166	96	948
9:00 AM	41	0	263	0	0	0	24	325	0	0	208	85	946
9:15 AM	21	0	259	0	0	0	29	257	0	0	147	87	800
Volumes	208	4	3344	0	0	0	252	3687	0	0	2223	1151	10869
Approach %	5.85	0.11	94.04	#DIV/0!	#DIV/0!	#DIV/0!	6.40	93.60	0.00	0.00	65.89	34.11	
App/Depart	3556	/	1407	0	1	0	3939	/	7031	3374	1	2431	
Peak Volumes	61	0	1138	0	0	0	72	1551	0	0	817	425	4064
Approach %	5.09	0.00	94.91	#DIV/0!	#DIV/0!	#DIV/0!	4.44	95.56	0.00	0.00	65.78	34.22	
Pk Hr FACTOR:		0.87			0.00			0.92			0.96		0.975
AM Pk Hr at:	NG	745	LINID	66	LITUDO	LINID		A CTD OLL	ND		(ECTDO)	INID	
PM	<u>. </u>	RTHBO		1	UTHBO	i		ASTBOU			ESTBOL		
3:30 PM	17	0	141	0	0	0	54	262	0	0	325	186	985
3:45 PM	22	0	164	0	0	0		255	0	0			999
4:00 PM	1 40 1	١	4.47	_	_	_	37		•	•	314	207	1000
4.1E DM	10	0	147	0	0	0	50	268	0	0	353	208	1036
4:15 PM	18	0	129	0	0	0	50 35	268 251	0	0	353 303	208 232	968
4:30 PM	18 16	0 0	129 148	0	0	0	50 35 52	268 251 321	0	0	353 303 366	208 232 250	968 1153
4:30 PM 4:45 PM	18 16 22	0 0 0	129 148 135	0 0 0	0 0 0	0 0	50 35 52 36	268 251 321 267	0 0	0 0	353 303 366 375	208 232 250 257	968 1153 1092
4:30 PM 4:45 PM 5:00 PM	18 16 22 17	0 0 0	129 148 135 132	0 0 0 0	0 0 0 0	0 0 0 0	50 35 52 36 65	268 251 321 267 287	0 0 0	0 0 0 0	353 303 366 375 425	208 232 250 257 227	968 1153 1092 1153
4:30 PM 4:45 PM 5:00 PM 5:15 PM	18 16 22 17 13	0 0 0 0	129 148 135 132 123	0 0 0 0	0 0 0 0	0 0 0 0	50 35 52 36 65 55	268 251 321 267 287 315	0 0 0 0 0	0 0 0 0	353 303 366 375 425 410	208 232 250 257 227 230	968 1153 1092 1153 1146
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM	18 16 22 17 13 25	0 0 0 0	129 148 135 132 123 121	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	50 35 52 36 65 55 51	268 251 321 267 287 315 304	0 0 0 0 0 0	0 0 0 0 0	353 303 366 375 425 410 421	208 232 250 257 227 230 236	968 1153 1092 1153 1146 1158
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	18 16 22 17 13 25 30	0 0 0 0 0	129 148 135 132 123 121 139	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0	50 35 52 36 65 55 51	268 251 321 267 287 315 304 283	0 0 0 0 0 0 0 0	0 0 0 0 0 0	353 303 366 375 425 410 421 357	208 232 250 257 227 230 236 145	968 1153 1092 1153 1146 1158 1011
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM	18 16 22 17 13 25 30 24	0 0 0 0 0	129 148 135 132 123 121 139 156	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	50 35 52 36 65 55 51 57 58	268 251 321 267 287 315 304 283 254	0 0 0 0 0 0 0 0	0 0 0 0 0 0	353 303 366 375 425 410 421 357 408	208 232 250 257 227 230 236 145 117	968 1153 1092 1153 1146 1158 1011 1017
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	18 16 22 17 13 25 30 24 31	0 0 0 0 0 0 0	129 148 135 132 123 121 139 156 142	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0	50 35 52 36 65 55 51 57 58 53	268 251 321 267 287 315 304 283 254 177	0 0 0 0 0 0 0 0	0 0 0 0 0 0	353 303 366 375 425 410 421 357 408 320	208 232 250 257 227 230 236 145	968 1153 1092 1153 1146 1158 1011 1017 835
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	18 16 22 17 13 25 30 24 31	0 0 0 0 0 0 0	129 148 135 132 123 121 139 156 142	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	50 35 52 36 65 55 51 57 58 53	268 251 321 267 287 315 304 283 254 177	0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	353 303 366 375 425 410 421 357 408 320	208 232 250 257 227 230 236 145 117 112	968 1153 1092 1153 1146 1158 1011 1017
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes	18 16 22 17 13 25 30 24 31	0 0 0 0 0 0 0	129 148 135 132 123 121 139 156 142	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0	50 35 52 36 65 55 51 57 58 53	268 251 321 267 287 315 304 283 254 177	0 0 0 0 0 0	0 0 0 0 0 0 0	353 303 366 375 425 410 421 357 408 320	208 232 250 257 227 230 236 145 117 112	968 1153 1092 1153 1146 1158 1011 1017 835
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	18 16 22 17 13 25 30 24 31 245	0 0 0 0 0 0 0 0 0	129 148 135 132 123 121 139 156 142 1677 87.25	0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0	50 35 52 36 65 55 51 57 58 53 603	268 251 321 267 287 315 304 283 254 177 3244	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0	353 303 366 375 425 410 421 357 408 320 4377	208 232 250 257 227 230 236 145 117 112 2407	968 1153 1092 1153 1146 1158 1011 1017 835
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart	18 16 22 17 13 25 30 24 31 245 12.75 1922	0 0 0 0 0 0 0 0 0	129 148 135 132 123 121 139 156 142 1677 87.25 3010	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 #DIV/0! /	0 0 0 0 0 0 0 0 0 0 0 #DIV/0!	50 35 52 36 65 55 51 57 58 53 603 15.67 3847	268 251 321 267 287 315 304 283 254 177 3244 84.33	0 0 0 0 0 0 0 0 0 0 0 0 4921	0 0 0 0 0 0 0 0 0 0 0	353 303 366 375 425 410 421 357 408 320 4377 64.52 /	208 232 250 257 227 230 236 145 117 112 2407 35.48 4622	968 1153 1092 1153 1146 1158 1011 1017 835 12553
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	18 16 22 17 13 25 30 24 31 245 12.75 1922 77	0 0 0 0 0 0 0 0 0	129 148 135 132 123 121 139 156 142 1677 87.25 3010 511	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 #DIV/0! /	0 0 0 0 0 0 0 0 0 0 0 #DIV/0! 0	50 35 52 36 65 55 51 57 58 53 603 15.67 3847	268 251 321 267 287 315 304 283 254 177 3244 84.33 /	0 0 0 0 0 0 0 0 0 0 0 0 0 4921	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	353 303 366 375 425 410 421 357 408 320 4377 64.52 /	208 232 250 257 227 230 236 145 117 112 2407 35.48 4622	968 1153 1092 1153 1146 1158 1011 1017 835 12553



Intersection Analysis Summary

Intersection Number: 15

Intersection Location: Palomar Airport Rd. & Paseo Del Norte

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5050 Avenida Encinias, Ste 260 Carlsbad, CA 92008 Address Line 3 Address Line 4

Palomar Airport Road at Paseo Del Norte

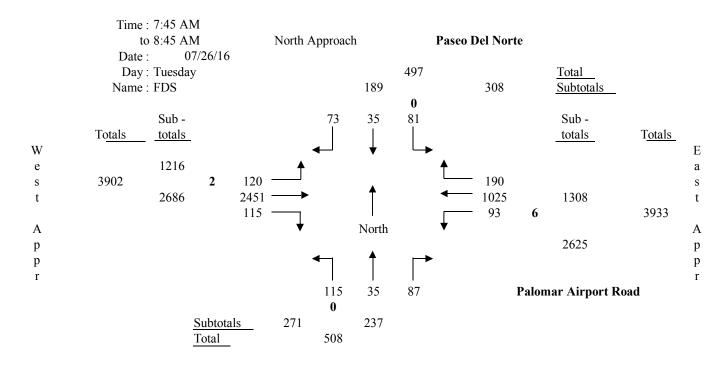
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir			Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5								1	1		1	
		6											1	
	Outside	7												1
-	Free-flow													
Lane Settir	ngs		2	1	1	2	1	1	2	3	0	2	4	1
Capacity			3600	2000	1800	3600	2000	1800	3600	6000	0	3600	8000	1800
Are the No	orth/South pha	ses s	split (Y	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		115	35	87	81	35	73	120	2451	115	93	1025	190
Adjusted F	Hourly Volume	e	115	0	122	81	0	108	120	2566	0	93	1025	150
Utilization	Factor		0.03	0.00	0.07	0.02	0.00	0.06	0.03	0.43	0.00	0.03	0.13	0.08
Critical Fa	ctors		0.03					0.06		0.43		0.03		

ICU Ratio = 0.65 LOS = B

Turning Movements at Intersection of:

Palomar Airport Road and Paseo Del Norte



South Approach

Palomar Airport Road at Paseo Del Norte

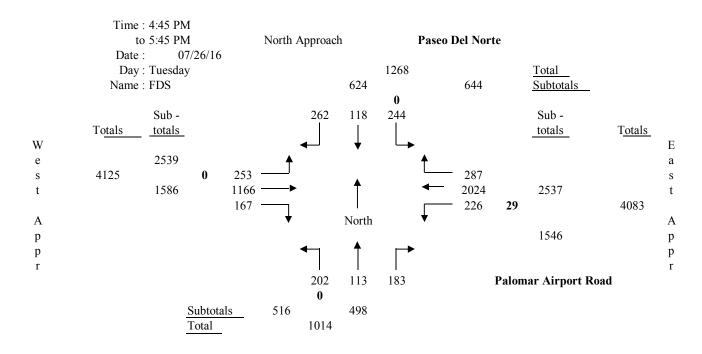
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Ti	me Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5								1	1		1	
		6											1	
	Outside	7												1
	Free-flow													
Lane Setti	ngs		2	1	1	2	1	1	2	3	0	2	4	1
Capacity			3600	2000	1800	3600	2000	1800	3600	6000	0	3600	8000	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	es sp	lit (Y/N	D?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		202	113	183	244	118	262	253	1166	167	226	2024	287
Adjusted I	Hourly Volum	e	202	0	296	244	0	380	253	1333	0	226	2024	165
Utilization	Factor		0.06	0.00	0.16	0.07	0.00	0.21	0.07	0.22	0.00	0.06	0.25	0.09
Critical Fa	ctors		0.06					0.21	0.07				0.25	

ICU Ratio = 0.69 LOS = B

Turning Movements at Intersection of:

Palomar Airport Road and Paseo Del Norte



South Approach



Vveracitytrafficgroup

N-S STREET: Paseo Del Norte DATE: 07/26/2016 LOCATION: Carlsbad

E-W STREET: Palomar Airport Rd. DAY: TUESDAY PROJECT# 16-1256-015

CONTROL: Signal

AM	NC	RTHBO	UND	SC	UTHBO	UND	E	ASTBOU	IND	W	/ESTBOL	JND	
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	2	0	2	2	0	2	3	0	2	4	1	
6:30 AM	21	9	16	10	8	14	16	325	19	11	187	25	661
6:45 AM	25	5	13	11	5	10	14	369	22	11	185	30	700
7:00 AM	28	8	18	8	9	11	18	424	20	11	214	29	798
7:15 AM	24	4	22	13	11	13	21	411	24	14	258	42	857
7:30 AM	26	7	20	16	10	16	23	456	28	21	244	41	908
7:45 AM	33	10	24	14	14	18	15	663	24	17	278	54	1164
8:00 AM	30	11	28	21	7	14	41	585	29	23	258	50	1097
8:15 AM	28	9	21	25	5	21	42	548	30	25	244	45	1043
8:30 AM	24	5	14	21	9	20	22	655	32	28	245	41	1116
8:45 AM	21	8	18	10	6	18	14	658	28	22	236	43	1082
9:00 AM	41	11	20	11	8	13	41	606	21	21	214	41	1048
9:15 AM	42	8	24	8	7	16	46	459	14	19	188	19	850
Volumes	343	95	238	168	99	184	313	6159	291	223	2751	460	11324
Approach %	50.74	14.05	35.21	37.25	21.95	40.80	4.63	91.07	4.30	6.49	80.11	13.40	
App/Depart	676	1	868	451	1	613	6763	1	6565	3434	1	3278	
Peak Volumes	115	35	87	81	35	73	120	2451	115	93	1025	190	4420
Approach %	48.52	14.77	36.71	42.86	18.52	38.62	4.47	91.25	4.28	7.11	78.36	14.53	
DILLIN EACTOR		0.86			0.93			0.95			0.94		0.9493
Pk Hr FACTOR:	-				0.00			0.00			0.01		0.0100
AM Pk Hr at:		745											0.0100
AM Pk Hr at:		745 ORTHBO			UTHBO			ASTBOU			/ESTBOL		
AM Pk Hr at: PM 3:30 PM	40	745 ORTHBO 19	37	77	UTHBO 35	64	51	ASTBOU 285	39	46	ESTBOU	53	1162
AM Pk Hr at: PM 3:30 PM 3:45 PM	40 42	745 DRTHBO 19 33	37 42	77 55	35 29	64 59	51 62	ASTBOU 285 314	39 45	46 54	/ESTBOU 416 381	53 65	1162 1181
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM	40 42 45	745 DRTHBO 19 33 24	37 42 31	77 55 58	35 29 34	64 59 78	51 62 47	285 314 273	39 45 41	46 54 52	/ESTBOU 416 381 453	53 65 55	1162 1181 1191
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM	40 42 45 50	745 DRTHBO 19 33 24 28	37 42 31 38	77 55 58 76	35 29 34 14	64 59 78 63	51 62 47 52	ASTBOU 285 314 273 276	39 45 41 35	46 54 52 59	/ESTBOU 416 381 453 447	53 65 55 54	1162 1181 1191 1192
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM	40 42 45 50 58	745 DRTHBO 19 33 24 28 32	37 42 31 38 35	77 55 58 76 72	35 29 34 14 32	64 59 78 63 64	51 62 47 52 57	285 314 273 276 324	39 45 41 35 48	46 54 52 59 28	416 381 453 447 360	53 65 55 54 32	1162 1181 1191 1192 1142
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM	40 42 45 50 58 58	745 DRTHBO 19 33 24 28 32 24	37 42 31 38 35 49	77 55 58 76 72 56	35 29 34 14 32 24	64 59 78 63 64 75	51 62 47 52 57 62	285 314 273 276 324 300	39 45 41 35 48 41	46 54 52 59 28 37	416 381 453 447 360 464	53 65 55 54 32 62	1162 1181 1191 1192 1142 1252
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM	40 42 45 50 58 58 54	745 DRTHBO 19 33 24 28 32 24 35	37 42 31 38 35 49 40	77 55 58 76 72 56 67	35 29 34 14 32 24 29	64 59 78 63 64 75 60	51 62 47 52 57 62 69	285 314 273 276 324 300 264	39 45 41 35 48 41 38	46 54 52 59 28 37 61	416 381 453 447 360 464 498	53 65 55 54 32 62 61	1162 1181 1191 1192 1142 1252 1276
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM	40 42 45 50 58 58 54 34	745 DRTHBO 19 33 24 28 32 24 35 22	37 42 31 38 35 49 40 48	77 55 58 76 72 56 67 55	35 29 34 14 32 24 29 32	64 59 78 63 64 75 60 72	51 62 47 52 57 62 69 60	285 314 273 276 324 300 264 307	39 45 41 35 48 41 38 46	46 54 52 59 28 37 61 64	/ESTBOL 416 381 453 447 360 464 498 529	53 65 55 54 32 62 61 90	1162 1181 1191 1192 1142 1252 1276 1359
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM	40 42 45 50 58 58 54 34 56	745 DRTHBO 19 33 24 28 32 24 35 22 32	37 42 31 38 35 49 40 48 46	77 55 58 76 72 56 67 55 66	35 29 34 14 32 24 29 32 33	64 59 78 63 64 75 60 72 55	51 62 47 52 57 62 69 60 62	285 314 273 276 324 300 264 307 295	39 45 41 35 48 41 38 46 42	46 54 52 59 28 37 61 64	/ESTBOL 416 381 453 447 360 464 498 529 533	53 65 55 54 32 62 61 90 74	1162 1181 1191 1192 1142 1252 1276 1359 1358
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	40 42 45 50 58 58 54 34 56 41	745 DRTHBO 19 33 24 28 32 24 35 22 32 32 33	37 42 31 38 35 49 40 48 46 52	77 55 58 76 72 56 67 55 66 45	35 29 34 14 32 24 29 32 33 20	64 59 78 63 64 75 60 72 55 63	51 62 47 52 57 62 69 60 62 61	285 314 273 276 324 300 264 307 295 324	39 45 41 35 48 41 38 46 42 36	46 54 52 59 28 37 61 64 64	/ESTBOL 416 381 453 447 360 464 498 529 533 439	53 65 55 54 32 62 61 90 74 63	1162 1181 1191 1192 1142 1252 1276 1359 1358 1241
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM	40 42 45 50 58 58 54 34 56 41 51	745 DRTHBO 19 33 24 28 32 24 35 22 32 32 33 35	37 42 31 38 35 49 40 48 46 52 61	77 55 58 76 72 56 67 55 66 45 64	35 29 34 14 32 24 29 32 33 20 28	64 59 78 63 64 75 60 72 55 63 57	51 62 47 52 57 62 69 60 62 61 59	285 314 273 276 324 300 264 307 295 324 290	39 45 41 35 48 41 38 46 42 36 39	46 54 52 59 28 37 61 64 64 64	/ESTBOL 416 381 453 447 360 464 498 529 533 439 447	53 65 55 54 32 62 61 90 74 63 51	1162 1181 1191 1192 1142 1252 1276 1359 1358 1241 1229
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	40 42 45 50 58 58 54 34 56 41 51 53	745 DRTHBO 19 33 24 28 32 24 35 22 32 32 33 35 25	37 42 31 38 35 49 40 48 46 52 61 34	77 55 58 76 72 56 67 55 66 45 64 57	35 29 34 14 32 24 29 32 33 20 28 34	64 59 78 63 64 75 60 72 55 63 57	51 62 47 52 57 62 69 60 62 61 59 51	285 314 273 276 324 300 264 307 295 324 290 272	39 45 41 35 48 41 38 46 42 36 39 22	46 54 52 59 28 37 61 64 64 47 45	/ESTBOL 416 381 453 447 360 464 498 529 533 439 447 417	53 65 55 54 32 62 61 90 74 63 51 52	1162 1181 1191 1192 1142 1252 1276 1359 1358 1241 1229 1117
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	40 42 45 50 58 58 54 34 56 41 51 53	745 DRTHBO 19 33 24 28 32 24 35 22 32 33 35 25 342	37 42 31 38 35 49 40 48 46 52 61 34	77 55 58 76 72 56 67 55 66 45 64 57	35 29 34 14 32 24 29 32 33 20 28 34	64 59 78 63 64 75 60 72 55 63 57 55	51 62 47 52 57 62 69 60 62 61 59 51	285 314 273 276 324 300 264 307 295 324 290 272	39 45 41 35 48 41 38 46 42 36 39 22	46 54 52 59 28 37 61 64 64 47 45	/ESTBOL 416 381 453 447 360 464 498 529 533 439 447 417 5384	53 65 55 54 32 62 61 90 74 63 51 52	1162 1181 1191 1192 1142 1252 1276 1359 1358 1241 1229
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach %	40 42 45 50 58 58 54 34 56 41 51 53 582 40.50	745 DRTHBO 19 33 24 28 32 24 35 22 32 33 35 25 342 23.80	37 42 31 38 35 49 40 48 46 52 61 34 513	77 55 58 76 72 56 67 55 66 45 64 57 748	35 29 34 14 32 24 29 32 33 20 28 34 344 18.52	64 59 78 63 64 75 60 72 55 63 57 55 765	51 62 47 52 57 62 69 60 62 61 59 51 693	285 314 273 276 324 300 264 307 295 324 290 272 3524 75.15	39 45 41 35 48 41 38 46 42 36 39 22 472 10.07	46 54 52 59 28 37 61 64 64 47 45 621 9.25	/ESTBOL 416 381 453 447 360 464 498 529 533 439 447 417	53 65 55 54 32 62 61 90 74 63 51 52 712	1162 1181 1191 1192 1142 1252 1276 1359 1358 1241 1229 1117
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart	40 42 45 50 58 58 54 34 56 41 51 53 582 40.50 1437	745 DRTHBO 19 33 24 28 32 24 35 22 32 32 33 35 25 342 23.80 /	37 42 31 38 35 49 40 48 46 52 61 34 513 35.70 1747	77 55 58 76 72 56 67 55 66 45 64 57 748 40.28	35 29 34 14 32 24 29 32 33 20 28 34 344 18.52	64 59 78 63 64 75 60 72 55 63 57 55 765 41.20	51 62 47 52 57 62 69 60 62 61 59 51 693 14.78 4689	285 314 273 276 324 300 264 307 295 324 290 272 3524 75.15	39 45 41 35 48 41 38 46 42 36 39 22 472 10.07 4785	46 54 52 59 28 37 61 64 64 47 45 621 9.25 6717	/ESTBOL 416 381 453 447 360 464 498 529 533 439 447 417 5384 80.15 /	53 65 55 54 32 62 61 90 74 63 51 52 712 10.60 6731	1162 1181 1191 1192 1142 1252 1276 1359 1358 1241 1229 1117
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	40 42 45 50 58 58 54 34 56 41 51 53 582 40.50 1437 202	745 DRTHBO 19 33 24 28 32 24 35 22 32 33 35 25 342 23.80 / 113	37 42 31 38 35 49 40 48 46 52 61 34 513 35.70 1747	77 55 58 76 72 56 67 55 66 45 64 57 748 40.28 1857	35 29 34 14 32 24 29 32 33 20 28 34 344 18.52 /	64 59 78 63 64 75 60 72 55 63 57 55 765 41.20 1437	51 62 47 52 57 62 69 60 62 61 59 51 693 14.78 4689 253	285 314 273 276 324 300 264 307 295 324 290 272 3524 75.15 /	39 45 41 35 48 41 38 46 42 36 39 22 472 10.07 4785	46 54 52 59 28 37 61 64 64 47 45 621 9.25 6717 226	/ESTBOL 416 381 453 447 360 464 498 529 533 439 447 417 5384 80.15 /	53 65 55 54 32 62 61 90 74 63 51 52 712 10.60 6731 287	1162 1181 1191 1192 1142 1252 1276 1359 1358 1241 1229 1117
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes Approach %	40 42 45 50 58 58 54 34 56 41 51 53 582 40.50 1437	745 DRTHBO 19 33 24 28 32 24 35 22 32 33 35 25 342 23.80 / 113 22.69	37 42 31 38 35 49 40 48 46 52 61 34 513 35.70 1747	77 55 58 76 72 56 67 55 66 45 64 57 748 40.28	35 29 34 14 32 24 29 32 33 20 28 34 344 18.52 /	64 59 78 63 64 75 60 72 55 63 57 55 765 41.20	51 62 47 52 57 62 69 60 62 61 59 51 693 14.78 4689	285 314 273 276 324 300 264 307 295 324 290 272 3524 75.15 /	39 45 41 35 48 41 38 46 42 36 39 22 472 10.07 4785	46 54 52 59 28 37 61 64 64 47 45 621 9.25 6717	/ESTBOL 416 381 453 447 360 464 498 529 533 439 447 417 5384 80.15 / 2024 79.78	53 65 55 54 32 62 61 90 74 63 51 52 712 10.60 6731	1162 1181 1191 1192 1142 1252 1276 1359 1358 1241 1229 1117 14700
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	40 42 45 50 58 58 54 34 56 41 51 53 582 40.50 1437 202	745 DRTHBO 19 33 24 28 32 24 35 22 32 33 35 25 342 23.80 / 113	37 42 31 38 35 49 40 48 46 52 61 34 513 35.70 1747	77 55 58 76 72 56 67 55 66 45 64 57 748 40.28 1857	35 29 34 14 32 24 29 32 33 20 28 34 344 18.52 /	64 59 78 63 64 75 60 72 55 63 57 55 765 41.20 1437	51 62 47 52 57 62 69 60 62 61 59 51 693 14.78 4689 253	285 314 273 276 324 300 264 307 295 324 290 272 3524 75.15 /	39 45 41 35 48 41 38 46 42 36 39 22 472 10.07 4785	46 54 52 59 28 37 61 64 64 47 45 621 9.25 6717 226	/ESTBOL 416 381 453 447 360 464 498 529 533 439 447 417 5384 80.15 /	53 65 55 54 32 62 61 90 74 63 51 52 712 10.60 6731 287	1162 1181 1191 1192 1142 1252 1276 1359 1358 1241 1229 1117



Intersection Analysis Summary

Intersection Number: 16

Intersection Location: Palomar Airport Rd. & Armada Dr.

Contents:

A.M. Peak Hour ICU Analysis and Turn Movement Diagram
Page 1

P.M. Peak Hour ICU Analysis and Turn Movement Diagram
Page 2

A.M./P.M. Peak Period Intersection Turning Movement Count Data Page 3



5050 Avenida Encinias, Ste 260 Carlsbad, CA 92008 Address Line 3 Address Line 4

Palomar Airport Road at Armada Drive

Lane Configuration for Intersection Capacity Utilization

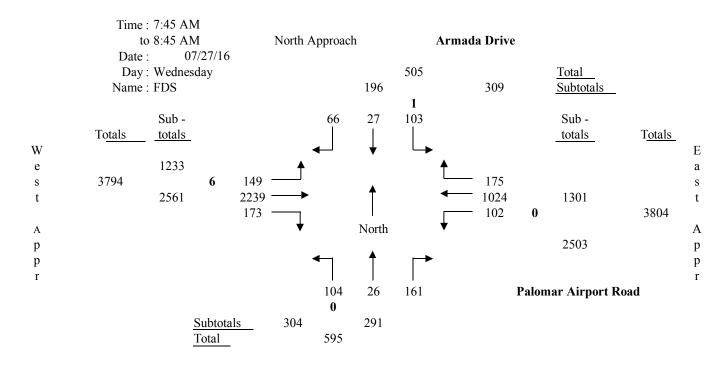
Pk. Hr. Tir		,	Sout	h Appr	(NB)	Nort	th Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1				1	
urations		3		1	1		1			1			1	
		4			1			1		1			1	
		5								1				1
		6									1			
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	0	2	2	1	1	2	3	1	1	3	1
Capacity			3600	0	3600	3600	2000	1800	3600	6000	1800	1800	6000	1800
Are the No	orth/South pha	ses s	split (Y/	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		104	26	161	103	27	66	149	2239	173	102	1024	175
Adjusted I	Hourly Volum	e	104	0	187	103	27	66	149	2239	121	102	1024	124
Utilization	Factor		0.03	0.00	0.05	0.03	0.01	0.04	0.04	0.37	0.07	0.06	0.17	0.07
Critical Fa	ctors				0.05	0.03				0.37		0.06		

В

ICU Ratio = 0.61 LOS =

Turning Movements at Intersection of:

Palomar Airport Road and Armada Drive



South Approach

Palomar Airport Road at Armada Drive

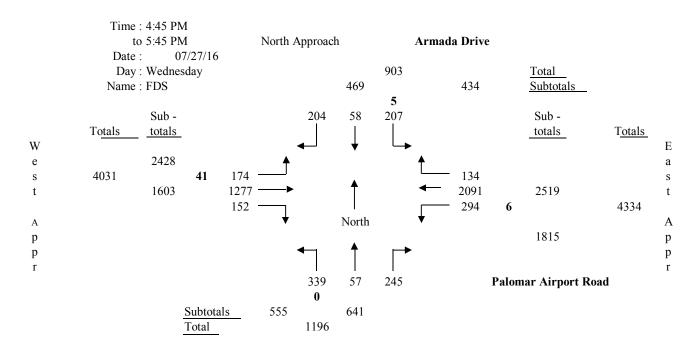
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Time P	eriod:	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:45 PM to 5:45 PM		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane I	nside 1	1			1			1			1		
Config - (1	eft) 2	. 1			1			1				1	
urations	3	}	1	1		1			1			1	
	4			1			1		1			1	
	5	;							1				1
	6)								1			
O	utside 7	,											
Fr	ee-flow												
Lane Settings		2	0	2	2	1	1	2	3	1	1	3	1
Capacity		3600	0	3600	3600	2000	1800	3600	6000	1800	1800	6000	1800
Are the North/S	South phases	split (Y	/N)?	N									
Are the East/W	est phases sp	plit (Y/N	D?	N									
Efficiency Lost	Factor	0.10											
Hourly Volume	;	339	57	245	207	58	204	174	1277	152	294	2091	134
Adjusted Hourl	y Volume	339	0	302	207	58	204	174	1277	0	294	2091	31
Utilization Fact	tor	0.09	0.00	0.08	0.06	0.03	0.11	0.05	0.21	0.00	0.16	0.35	0.02
Critical Factors	}	0.09					0.11	0.05				0.35	

ICU Ratio = 0.70 LOS = B

Turning Movements at Intersection of:

Palomar Airport Road and Armada Drive



South Approach



veracitytrafficgroup

N-S STREET: Armada Dr. /Costco Ent DATE: 07/27/2016 LOCATION: Carlsbad

Palomar Airport Rd. Signal DAY: WEDNESDAY PROJECT# 16-1256-016 E-W STREET:

CONTROL:

CONTROL:	Signal												
AM	NC	RTHBO	UND	SO	UTHBO	UND	E	ASTBOU	ND	W	/ESTBOL	JND	
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	0.5	1.5	1	2	1	2	3	1	1	3	1	
6:30 AM	28	8	12	7	5	4	14	277	22	12	177	28	594
6:45 AM	18	5	18	6	9	10	17	390	36	10	251	33	803
7:00 AM	21	6	39	16	6	8	17	368	37	19	226	25	788
7:15 AM	18	3	41	15	6	6	25	402	48	19	224	38	845
7:30 AM	35	5	44	21	8	10	27	523	49	29	250	52	1053
7:45 AM	33	8	39	38	9	19	44	582	45	30	246	62	1155
8:00 AM	28	5	42	28	9	14	29	562	36	25	250	43	1071
8:15 AM	21	6	40	20	3	20	33	542	44	30	224	31	1014
8:30 AM	22	7	40	17	6	13	43	553	48	17	304	39	1109
8:45 AM	33	10	36	31	9	17	54	538	43	24	279	55	1129
9:00 AM	43	6	39	11	6	16	42	460	38	43	258	39	1001
9:15 AM	43	7	30	14	9	21	44	423	53	24	305	39	1012
Volumes	343	76	420	224	85	158	389	5620	499	282	2994	484	11574
Approach %	40.88	9.06	50.06	47.97	18.20	33.83	5.98	86.36	7.67	7.50	79.63	12.87	
App/Depart	839	1	949	467	1	866	6508	1	6264	3760	1	3495	
Peak Volumes	104	26	161	103	27	66	149	2239	173	102	1024	175	4349
Approach %	35.74	8.93	55.33	52.55	13.78	33.67	5.82	87.43	6.76	7.84	78.71	13.45	
Pk Hr FACTOR:		0.91			0.74			0.95			0.90		0.9413
AM Pk Hr at:		745											
PM	NO	DTUDO	LINID	20	LITLIDA	LINID			N.D.	1.4	ECTROL		
	NC	RTHBO	טווט	50	UTHBO	UND	E	ASTBOU	ND	VV	/ESTBOL	JND	
3:30 PM	101	14	65 65	71	25	UND 54	20	ASTBOU 280	ND 36	61	407	JND 25	1159
											1		1159 1127
3:30 PM	101	14	65	71	25	54	20	280	36	61	407	25	
3:30 PM 3:45 PM	101 92	14 14	65 73	71 55	25 18	54 39	20 32	280 248	36 37	61 60	407 430	25 29	1127
3:30 PM 3:45 PM 4:00 PM	101 92 79	14 14 8	65 73 82	71 55 50	25 18 19	54 39 39	20 32 22	280 248 289	36 37 40	61 60 73	407 430 469	25 29 35	1127 1205
3:30 PM 3:45 PM 4:00 PM 4:15 PM	101 92 79 74	14 14 8 15	65 73 82 71	71 55 50 46	25 18 19 20	54 39 39 35	20 32 22 33	280 248 289 277	36 37 40 36	61 60 73 64	407 430 469 468	25 29 35 27	1127 1205 1166
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM	101 92 79 74 77	14 14 8 15 15	65 73 82 71 69	71 55 50 46 42	25 18 19 20 8	54 39 39 35 34	20 32 22 33 20	280 248 289 277 351	36 37 40 36 40	61 60 73 64 53	407 430 469 468 494	25 29 35 27 26	1127 1205 1166 1229
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM	101 92 79 74 77 93	14 14 8 15 15 10	65 73 82 71 69 58	71 55 50 46 42 37	25 18 19 20 8 9	54 39 39 35 34 40	20 32 22 33 20 30	280 248 289 277 351 379	36 37 40 36 40 39	61 60 73 64 53 78	407 430 469 468 494 443	25 29 35 27 26 32	1127 1205 1166 1229 1248
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM	101 92 79 74 77 93 81	14 14 8 15 15 10 14	65 73 82 71 69 58 76	71 55 50 46 42 37 70	25 18 19 20 8 9	54 39 39 35 34 40 55	20 32 22 33 20 30 62	280 248 289 277 351 379 283 302	36 37 40 36 40 39 34	61 60 73 64 53 78 68	407 430 469 468 494 443 569 556	25 29 35 27 26 32 23	1127 1205 1166 1229 1248 1353
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM	101 92 79 74 77 93 81 86	14 14 8 15 15 10 14 18	65 73 82 71 69 58 76 66	71 55 50 46 42 37 70 54	25 18 19 20 8 9 18	54 39 39 35 34 40 55 54	20 32 22 33 20 30 62 40	280 248 289 277 351 379 283	36 37 40 36 40 39 34 40	61 60 73 64 53 78 68	407 430 469 468 494 443 569	25 29 35 27 26 32 23 47	1127 1205 1166 1229 1248 1353 1347
3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM	101 92 79 74 77 93 81 86 79	14 14 8 15 15 10 14 18	65 73 82 71 69 58 76 66 45	71 55 50 46 42 37 70 54 46	25 18 19 20 8 9 18 16	54 39 39 35 34 40 55 54	20 32 22 33 20 30 62 40 42	280 248 289 277 351 379 283 302 313	36 37 40 36 40 39 34 40 39	61 60 73 64 53 78 68 68 80	407 430 469 468 494 443 569 556 523	25 29 35 27 26 32 23 47 32	1127 1205 1166 1229 1248 1353 1347 1284
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Turn Count Summary

Accurate Video Counts Inc info@accuratevideocounts.com (619) 987-5136



Location: Palomar Airport Rd @ Hidden Valley Rd

Date of Count: Wednesday, June 21, 2017

Analysts: LV/CD
Weather: Sunny





Vehicular Count

Accurate Video Counts Inc info@accuratevideocounts.com (619) 987-5136



Location: Palomar Airport Rd @ Hidden Valley Rd

	AM Period (7:00 AM - 9:00 AM)													
	S	outhbou	nd	Westbound			Northbound			Е	astboun	d		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL	
7:00 AM	8	1	7	25	228	6	6	2	10	17	377	15	702	
7:15 AM	10	3	10	22	259	11	12	1	12	19	480	15	854	
7:30 AM	7	2	15	29	267	11	16	5	14	27	530	33	956	
7:45 AM	10	3	11	30	307	16	21	4	15	26	675	24	1,142	
8:00 AM	7	1	13	23	258	17	20	2	18	19	570	23	971	
8:15 AM	17	4	12	37	323	13	19	2	11	28	560	29	1,055	
8:30 AM	26	1	14	43	338	17	29	9	21	21	511	53	1,083	
8:45 AM	19	1	18	43	319	15	25	4	11	25	513	44	1,037	
Total	104	16	100	252	2,299	106	148	29	112	182	4,216	236	7,800	

AM Intersection Peak Hour: 7:45 AM - 8:45 AM Intersection PHF: 0.93

	Southbound			Westbound			No	orthbou	nd	F	TOTAL		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	IOIAL
Volume	60	9	50	133	1,226	63	89	17	65	94	2,316	129	4,251
PHF	0.58	0.56	0.89	0.77	0.91	0.93	0.77	0.47	0.77	0.84	0.86	0.61	0.93
Movement PHF		0.73			0.89			0.72			0.88		0.93

PM Period (4:00 PM - 6:00 PM)													
	S	outhbou	nd	Westbound			N	orthbou	nd	E			
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	55	8	48	33	512	20	22	8	36	29	415	25	1,211
4:15 PM	40	2	45	36	479	14	18	7	16	27	465	18	1,167
4:30 PM	57	7	45	19	597	19	27	8	45	21	439	15	1,299
4:45 PM	43	12	30	19	539	23	9	9	35	22	466	28	1,235
5:00 PM	49	18	58	17	631	19	29	4	43	33	486	18	1,405
5:15 PM	50	4	47	28	675	29	10	9	31	30	499	11	1,423
5:30 PM	52	8	47	10	598	32	31	7	43	34	437	10	1,309
5:45 PM	33	5	22	15	498	25	16	7	32	18	396	17	1,084
Total	379	64	342	177	4,529	181	162	59	281	214	3,603	142	10,133

PM Intersection Peak Hour: 4:45 PM - 5:45 PM Intersection PHF: 0.94

	Southbound			Westbound			N	orthbou	nd	Е	TOTAL		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	IOIAL
Volume	194	42	182	74	2443	103	79	29	152	119	1888	67	5372
PHF	0.93	0.583	0.784	0.661	0.905	0.805	0.637	0.806	0.884	0.875	0.946	0.598	0.94
Movement PHF		0.84			0.89			0.80			0.96		0.94



Intersection Analysis Summary

Intersection Number: 17

Intersection Location: Palomar Airport Rd. & College Blvd./Aviara Pkwy.

Contents:

A.M. Peak Hour ICU Analysis and Turn Movement Diagram
Page 1

P.M. Peak Hour ICU Analysis and Turn Movement Diagram
Page 2

A.M./P.M. Peak Period Intersection Turning Movement Count Data Page 3



5050 Avenida Encinias, Ste 260 Carlsbad, CA 92008 Address Line 3 Address Line 4

Palomar Airport Road at College Boulevard/ Aviara Parkway

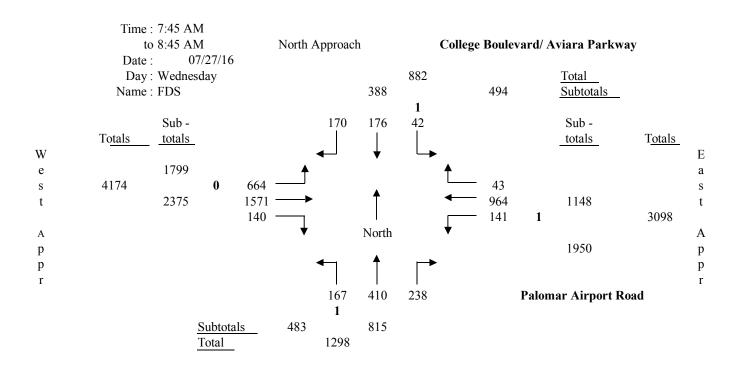
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Time Period:			Sout	h Appr	(NB)	Nort	th Appr	(SB)	Wes	st Appr	(EB)	East Appr (WB)		
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1				1		1			1		
urations		3		1				1		1			1	
		4		1						1			1	
		5			1					1			1	
		6									1			1
	Outside	7												
	Free-flow													
Lane Settii	ngs		2	2	1	1	1	1	2	3	1	2	3	1
Capacity			3600	4000	1800	1800	2000	1800	3600	6000	1800	3600	6000	1800
Are the No	orth/South pha	ses s	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		167	410	238	42	176	170	664	1571	140	141	964	43
Adjusted I	Hourly Volume	e	167	410	238	42	176	0	664	1571	140	141	964	43
Utilization	Factor		0.05	0.10	0.13	0.02	0.09	0.00	0.18	0.26	0.08	0.04	0.16	0.02
Critical Fa	ctors				0.13	0.02			0.18				0.16	

ICU Ratio = 0.59 LOS = A

Turning Movements at Intersection of:

Palomar Airport Road and College Boulevard/ Aviara Parkway



South Approach

Palomar Airport Road at College Boulevard/ Aviara Parkway

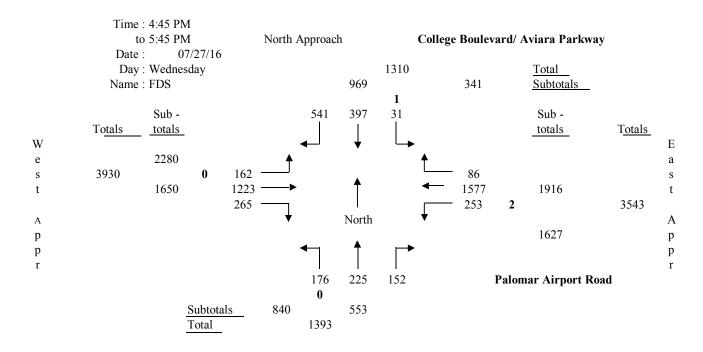
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Time Period	:	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East Appr (WB)		
4:45 PM to 5:45 PM		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Insid	e 1	1			1			1			1		
Config - (left)	2	1				1		1			1		
urations	3		1				1		1			1	
	4		1						1			1	
	5			1					1			1	
	6									1			1
Outsio	e 7												
Free-fl	ow												
Lane Settings		2	2	1	1	1	1	2	3	1	2	3	1
Capacity		3600	4000	1800	1800	2000	1800	3600	6000	1800	3600	6000	1800
Are the North/South	phases	split (Y	/N)?	N									
Are the East/West p	hases sp	lit (Y/N	I)?	N									
Efficiency Lost Fac	or	0.10											
Hourly Volume		176	225	152	31	397	541	162	1223	265	253	1577	86
Adjusted Hourly Vo	lume	176	225	152	31	397	460	162	1223	265	253	1577	86
Utilization Factor		0.05	0.06	0.08	0.02	0.20	0.26	0.05	0.20	0.15	0.07	0.26	0.05
Critical Factors		0.05					0.26	0.05				0.26	

ICU Ratio = 0.72 LOS = C

Turning Movements at Intersection of:

Palomar Airport Road and College Boulevard/ Aviara Parkway



South Approach



Vveracitytrafficgroup

N-S STREET: College Blvd./ Aviara Pkwy. DATE: 07/27/2016 LOCATION: Carlsbad

E-W STREET: Palomar Airport Rd. DAY: WEDNESDAY PROJECT# 16-1256-017

CONTROL: Signal

CONTROL:	Signal	DTUDO	LINIE		LITI'S	LINID	_	A CTD O	NID		CCTOO:	INID	
АМ		RTHBO			UTHBO			ASTBOU			ESTBOL		I TOTA!
LANES:	NL 2	NT 2	NR 1	SL 1	ST 1	SR 1	EL 2	ET 3	ER 1	WL 2	WT 3	WR 1	TOTAL
6:30 AM	26	20	30	10	21	25	61	202	17	18	194	3	627
6:45 AM	37	24	17	8	16	39	117	287	21	21	218	9	814
7:00 AM	29	28	33	4	25	28	107	263	24	18	206	7	772
7:00 AM 7:15 AM	35	56	48	16	45	35	121	302	28	27	201	10	924
7:30 AM	47	67	60	12	40	31	158	386	28	26	236	11	1102
7:45 AM	42	105	59	9	42	38	175	435	26	39	276	12	1258
8:00 AM	38	104	69	12	41	39	164	401	28	33	234	6	1169
8:15 AM	32	100	56	14	45	46	137	399	45	35	234	12	1155
8:30 AM	55	101	54	7	48	47	188	336	41	34	220	13	1144
8:45 AM	51	83	58	9	34	48	168	351	42	45	303	6	1198
9:00 AM	47	59	46	8	22	48	179	329	31	28	199	7	1003
9:15 AM	46	46	37	7	19	46	81	305	34	34	286	8	949
Volumes	485	793	567	116	398	470	1656	3996	365	358	2807	104	12115
Approach %	26.29	42.98	30.73	11.79	40.45	47.76	27.52	66.41	6.07	10.95	85.87	3.18	
App/Depart	1845	1	2553	984	1	1121	6017	/	4679	3269	1	3762	
Peak Volumes	167	410	238	42	176	170	664	1571	140	141	964	43	4726
Approach %	20.49	50.31	29.20	10.82	45.36	43.81	27.96	66.15	5.89	12.28	83.97	3.75	
DIL UII EAGTOR		0.07			0.92			0.93			0.88		0.9392
Pk Hr FACTOR:		0.97			0.02			0.90			0.00		0.0002
AM Pk Hr at:		745			0.02			0.93			0.00		0.0002
	NC		UND	SC	OUTHBO	UND	E	ASTBOU	ND	W	ESTBOL	JND	0.0002
AM Pk Hr at:	NC 35	745	UND 37	SC 7		UND 105	E 31		ND 66	W 35		JND 14	1068
AM Pk Hr at:		745 ORTHBO		l	UTHBO	1		ASTBOU			ESTBOL		
AM Pk Hr at: PM 3:30 PM	35	745 ORTHBO 33	37	7	UTHBO 55	105	31	ASTBOU 318	66	35	ESTBOU	14	1068
AM Pk Hr at: PM 3:30 PM 3:45 PM	35 45 50 27	745 ORTHBO 33 31	37 35	7 8	55 50	105 90	31 31	ASTBOU 318 296	66 53	35 52	332 302	14 28	1068 1021
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM	35 45 50 27 51	745 DRTHBO 33 31 31 37 43	37 35 34 33 45	7 8 7	55 50 64 74 69	105 90 142 90 110	31 31 37 35 33	318 296 317 279 248	66 53 50 68 75	35 52 45 36 57	332 302 373 331 381	14 28 22 18 31	1068 1021 1172 1034 1149
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM	35 45 50 27 51 33	745 DRTHBO 33 31 31 37 43 46	37 35 34 33 45 45	7 8 7 6	55 50 64 74 69 73	105 90 142 90 110 95	31 31 37 35	318 296 317 279 248 297	66 53 50 68 75 54	35 52 45 36 57 51	332 302 373 331 381 345	14 28 22 18	1068 1021 1172 1034 1149 1097
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM	35 45 50 27 51 33 45	745 DRTHBO 33 31 31 37 43 46 69	37 35 34 33 45 45 45	7 8 7 6 6 6 9	55 50 64 74 69 73 132	105 90 142 90 110 95 179	31 31 37 35 33 33 48	318 296 317 279 248 297 290	66 53 50 68 75 54 66	35 52 45 36 57 51 71	332 302 373 331 381 345 435	14 28 22 18 31 19 34	1068 1021 1172 1034 1149 1097 1414
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM	35 45 50 27 51 33 45 54	745 DRTHBO 33 31 31 37 43 46 69 69	37 35 34 33 45 45 45 36	7 8 7 6 6 6 9 11	55 50 64 74 69 73 132 105	105 90 142 90 110 95 179 137	31 31 37 35 33 33 48 38	318 296 317 279 248 297 290 320	66 53 50 68 75 54 66 71	35 52 45 36 57 51 71 67	332 302 373 331 381 345 435 447	14 28 22 18 31 19	1068 1021 1172 1034 1149 1097 1414 1374
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM	35 45 50 27 51 33 45 54 44	745 DRTHBO 33 31 31 37 43 46 69 69 41	37 35 34 33 45 45 36 36 35	7 8 7 6 6 6 9 11 5	55 50 64 74 69 73 132 105 87	105 90 142 90 110 95 179 137	31 31 37 35 33 33 48 38 43	318 296 317 279 248 297 290 320 316	66 53 50 68 75 54 66 71 74	35 52 45 36 57 51 71 67	332 302 373 331 381 345 435 447 350	14 28 22 18 31 19 34 19	1068 1021 1172 1034 1149 1097 1414 1374 1203
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:30 PM	35 45 50 27 51 33 45 54 44 53	745 DRTHBO 33 31 31 37 43 46 69 69 41 41	37 35 34 33 45 45 36 36 35 33	7 8 7 6 6 6 9 11 5	55 50 64 74 69 73 132 105 87 61	105 90 142 90 110 95 179 137 130 111	31 31 37 35 33 33 48 38 43 41	318 296 317 279 248 297 290 320 316 258	66 53 50 68 75 54 66 71 74 54	35 52 45 36 57 51 71 67 64 44	332 302 373 331 381 345 435 447 350 326	14 28 22 18 31 19 34 19 14	1068 1021 1172 1034 1149 1097 1414 1374 1203 1039
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM	35 45 50 27 51 33 45 54 44 53 48	745 DRTHBO 33 31 31 37 43 46 69 69 41 41 32	37 35 34 33 45 45 36 36 35 33 31	7 8 7 6 6 6 9 11 5 6 2	55 50 64 74 69 73 132 105 87 61 53	105 90 142 90 110 95 179 137 130 111	31 31 37 35 33 33 48 38 43 41 27	318 296 317 279 248 297 290 320 316 258 298	66 53 50 68 75 54 66 71 74 54	35 52 45 36 57 51 71 67 64 44 31	332 302 373 331 381 345 435 447 350 326 331	14 28 22 18 31 19 34 19 14 11 8	1068 1021 1172 1034 1149 1097 1414 1374 1203 1039 1029
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	35 45 50 27 51 33 45 54 44 53 48 39	745 DRTHBO 33 31 31 37 43 46 69 69 41 41 32 25	37 35 34 33 45 45 36 36 35 33 31 29	7 8 7 6 6 6 9 11 5 6 2 3	55 50 64 74 69 73 132 105 87 61 53 56	105 90 142 90 110 95 179 137 130 111 111 90	31 31 37 35 33 33 48 38 43 41 27 21	318 296 317 279 248 297 290 320 316 258 298 288	66 53 50 68 75 54 66 71 74 54 57	35 52 45 36 57 51 71 67 64 44 31 37	332 302 373 331 381 345 435 447 350 326 331 280	14 28 22 18 31 19 34 19 14 11 8 6	1068 1021 1172 1034 1149 1097 1414 1374 1203 1039 1029 921
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	35 45 50 27 51 33 45 54 44 53 48 39	745 DRTHBO 33 31 31 37 43 46 69 69 41 41 32 25	37 35 34 33 45 45 36 36 35 33 31 29	7 8 7 6 6 6 9 11 5 6 2 3	55 50 64 74 69 73 132 105 87 61 53 56	105 90 142 90 110 95 179 137 130 111 111 90	31 31 37 35 33 33 48 38 41 27 21	318 296 317 279 248 297 290 320 316 258 298 288	66 53 50 68 75 54 66 71 74 54 57 47	35 52 45 36 57 51 71 67 64 44 31 37	332 302 373 331 381 345 435 447 350 326 331 280	14 28 22 18 31 19 34 19 14 11 8 6	1068 1021 1172 1034 1149 1097 1414 1374 1203 1039 1029
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach %	35 45 50 27 51 33 45 54 44 53 48 39 524 36.11	745 DRTHBO 33 31 31 37 43 46 69 41 41 32 25 498	37 35 34 33 45 45 36 36 35 33 31 29 429	7 8 7 6 6 6 9 11 5 6 2 3 76	55 50 64 74 69 73 132 105 87 61 53 56 879	105 90 142 90 110 95 179 137 130 111 111 90 1390	31 31 37 35 33 33 48 38 43 41 27 21 418 8.94	318 296 317 279 248 297 290 320 316 258 298 288 3525	66 53 50 68 75 54 66 71 74 54 57 47 735	35 52 45 36 57 51 71 67 64 44 31 37 590	332 302 373 331 381 345 435 447 350 326 331 280 4233	14 28 22 18 31 19 34 19 14 11 8 6	1068 1021 1172 1034 1149 1097 1414 1374 1203 1039 1029 921
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart	35 45 50 27 51 33 45 54 44 53 48 39 524 36.11 1451	745 DRTHBO 33 31 31 37 43 46 69 69 41 41 32 25 498 34.32 /	37 35 34 33 45 45 36 36 35 33 31 29 429 29.57 1140	7 8 7 6 6 6 9 11 5 6 2 3 76 3.24 2345	55 50 64 74 69 73 132 105 87 61 53 56 879 37.48	105 90 142 90 110 95 179 137 130 111 111 90 1390 59.28 2204	31 31 37 35 33 33 48 38 43 41 27 21 418 8.94 4678	318 296 317 279 248 297 290 320 316 258 298 288 3525 75.35	66 53 50 68 75 54 66 71 74 54 57 47 735 15.71	35 52 45 36 57 51 71 67 64 44 31 37 590 11.69	332 302 373 331 381 345 435 447 350 326 331 280 4233 83.87	14 28 22 18 31 19 34 19 14 11 8 6	1068 1021 1172 1034 1149 1097 1414 1374 1203 1039 1029 921 13521
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	35 45 50 27 51 33 45 54 44 53 48 39 524 36.11 1451	745 DRTHBO 33 31 31 37 43 46 69 69 41 41 32 25 498 34.32 / 225	37 35 34 33 45 45 36 36 35 33 31 29 429 29.57 1140	7 8 7 6 6 6 9 11 5 6 2 3 76 3.24 2345 31	55 50 64 74 69 73 132 105 87 61 53 56 879 37.48 /	105 90 142 90 110 95 179 137 130 111 111 90 1390 59.28 2204	31 31 37 35 33 33 48 38 43 41 27 21 418 8.94 4678	318 296 317 279 248 297 290 320 316 258 298 288 3525 75.35 /	66 53 50 68 75 54 66 71 74 54 57 47 735 15.71 4030 265	35 52 45 36 57 51 71 67 64 44 31 37 590 11.69 5047	332 302 373 331 381 345 435 447 350 326 331 280 4233 83.87 /	14 28 22 18 31 19 34 19 14 11 8 6 224 4.44 6147	1068 1021 1172 1034 1149 1097 1414 1374 1203 1039 1029 921
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes Approach %	35 45 50 27 51 33 45 54 44 53 48 39 524 36.11 1451	745 DRTHBO 33 31 31 37 43 46 69 69 41 41 32 25 498 34.32 / 225 40.69	37 35 34 33 45 45 36 36 35 33 31 29 429 29.57 1140	7 8 7 6 6 6 9 11 5 6 2 3 76 3.24 2345	55 50 64 74 69 73 132 105 87 61 53 56 879 37.48 /	105 90 142 90 110 95 179 137 130 111 111 90 1390 59.28 2204	31 31 37 35 33 33 48 38 43 41 27 21 418 8.94 4678	318 296 317 279 248 297 290 320 316 258 298 288 3525 75.35 /	66 53 50 68 75 54 66 71 74 54 57 47 735 15.71	35 52 45 36 57 51 71 67 64 44 31 37 590 11.69	332 302 373 331 381 345 435 447 350 326 331 280 4233 83.87 /	14 28 22 18 31 19 34 19 14 11 8 6	1068 1021 1172 1034 1149 1097 1414 1374 1203 1039 1029 921 13521
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	35 45 50 27 51 33 45 54 44 53 48 39 524 36.11 1451	745 DRTHBO 33 31 31 37 43 46 69 69 41 41 32 25 498 34.32 / 225	37 35 34 33 45 45 36 36 35 33 31 29 429 29.57 1140	7 8 7 6 6 6 9 11 5 6 2 3 76 3.24 2345 31	55 50 64 74 69 73 132 105 87 61 53 56 879 37.48 /	105 90 142 90 110 95 179 137 130 111 111 90 1390 59.28 2204	31 31 37 35 33 33 48 38 43 41 27 21 418 8.94 4678	318 296 317 279 248 297 290 320 316 258 298 288 3525 75.35 /	66 53 50 68 75 54 66 71 74 54 57 47 735 15.71 4030 265	35 52 45 36 57 51 71 67 64 44 31 37 590 11.69 5047	332 302 373 331 381 345 435 447 350 326 331 280 4233 83.87 /	14 28 22 18 31 19 34 19 14 11 8 6 224 4.44 6147	1068 1021 1172 1034 1149 1097 1414 1374 1203 1039 1029 921 13521



Turn Count Summary

Accurate Video Counts Inc info@accuratevideocounts.com (619) 987-5136



Location: Palomar Airport Rd @ Camino Vida Roble

Date of Count: Wednesday, June 21, 2017

Analysts: LV/CD
Weather: Sunny





Vehicular Count

Accurate Video Counts Inc info@accuratevideocounts.com (619) 987-5136



Location: Palomar Airport Rd @ Camino Vida Roble

				AM F	Period (7	7:00 AN	Л - 9:00	AM)					
	S	outhbou	nd	W	/estboun	ıd	N	orthbou	nd	Е	astboun	d	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	3	2	8	77	224	24	6	8	21	47	206	20	646
7:15 AM	7	10	7	76	233	35	16	10	32	41	244	28	739
7:30 AM	12	11	10	87	244	32	10	21	19	59	271	44	820
7:45 AM	12	7	18	122	217	52	10	25	28	90	279	35	895
8:00 AM	10	8	14	70	283	54	15	20	29	101	388	26	1,018
8:15 AM	16	5	16	64	272	46	15	24	32	83	352	42	967
8:30 AM	5	0	6	53	252	22	14	13	27	73	394	22	881
8:45 AM	10	9	16	60	272	42	16	12	23	85	314	32	891
Total	75	52	95	609	1,997	307	102	133	211	579	2,448	249	6,857

AM Intersection Peak Hour: 7:45 AM - 8:45 AM Intersection PHF: 0.92

	Southbound				/estboun	ıd	N	orthbou	nd	Е	astboun	d	TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	IOIAL
Volume	43	20	54	309	1,024	174	54	82	116	347	1,413	125	3,761
PHF	0.67	0.63	0.75	0.63	0.90	0.81	0.90	0.82	0.91	0.86	0.90	0.74	0.92
Movement PHF		0.79			0.93			0.89			0.92		0.92

				PM F	Period (4	4:00 PN	/I - 6:00	PM)					
	S	outhbou	nd	V	/estboun	ıd	N	orthbou	nd	E	astboun	d	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	56	30	113	10	308	15	37	13	75	68	369	6	1,100
4:15 PM	30	19	58	14	305	6	29	4	48	44	365	11	933
4:30 PM	48	32	91	13	326	4	36	7	91	52	405	9	1,114
4:45 PM	29	22	89	8	331	21	39	10	62	73	365	10	1,059
5:00 PM	62	46	121	8	307	12	69	7	110	68	408	4	1,222
5:15 PM	49	18	61	10	405	9	27	6	91	50	377	9	1,112
5:30 PM	25	9	47	9	308	13	42	2	64	41	322	6	888
5:45 PM	20	12	21	12	244	10	42	4	52	61	288	6	772
Total	319	188	601	84	2,534	90	321	53	593	457	2,899	61	8,200

PM Intersection Peak Hour: 4:30 PM - 5:30 PM Intersection PHF: 0.92

	S	outhbou	ınd	V	/estbour	nd	No	orthbou	nd	Е	astboun	d	TOTAL
	Right Thru I			Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	IOIAL
Volume	188	118	362	39	1369	46	171	30	354	243	1555	32	4507
PHF	0.76	0.641	0.748	0.75	0.845	0.548	0.62	0.75	0.805	0.832	0.953	0.8	0.92
Movement PHF		0.73			0.86			0.75			0.95		0.92

City of Carlsbad Traffic Monitoring Program Summer 2016



Intersection Analysis Summary

Intersection Number: 18

Intersection Location: Palomar Airport Rd. & Yarrow Dr.

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5050 Avenida Encinias, Ste 260 Carlsbad, CA 92008 Address Line 3 Address Line 4

O: 760.476.9196 F: 760.476.9198 Email: someone@example.com

Palomar Airport Road at Yarrow Drive

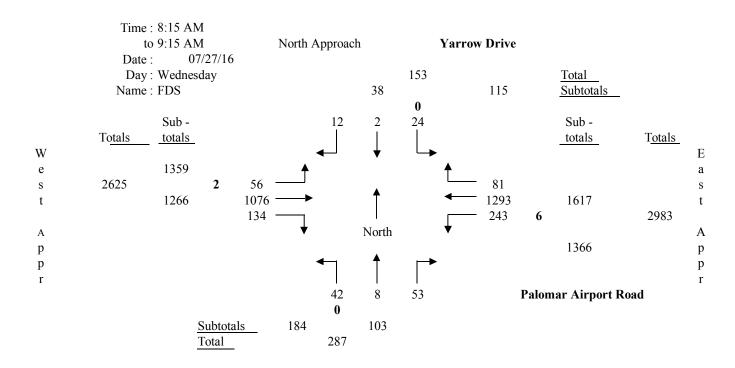
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin		•	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
8:15 AM 9:15 AM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1	1	1	1			1		
Config -	(left)	2		1						1			1	
urations		3			1					1			1	
		4								1	1		1	1
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settin	igs		1	1	1	1	0	0	1	3	0	1	3	0
Capacity			1800	2000	1800	1800	0	0	1800	6000	0	1800	6000	0
Are the No	orth/South pha	ses s	split (Y	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vol	lume		42	8	53	24	2	12	56	1076	134	243	1293	81
Adjusted F	Hourly Volume	Э	42	8	53	38	0	0	56	1210	0	243	1374	0
Utilization	Factor		0.02	0.00	0.03	0.02	0.00	0.00	0.03	0.20	0.00	0.14	0.23	0.00
Critical Fa	ctors				0.03	0.02				0.20		0.14		

ICU Ratio = 0.49 LOS = A

Turning Movements at Intersection of:

Palomar Airport Road and Yarrow Drive



South Approach

Palomar Airport Road at Yarrow Drive

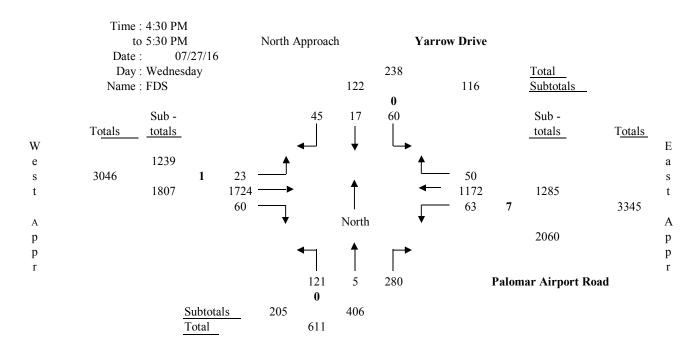
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Ti	me Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Config - urations	Inside (left)	1 2 3	1	1	1	1	1	1	1	1 1		1	1 1	
		4 5 6								1	1		1	1
	Outside Free-flow	7												
Lane Setti	ngs		1	1	1	1	0	0	1	3	0	1	3	0
Capacity			1800	2000	1800	1800	0	0	1800	6000	0	1800	6000	0
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N	D?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo Adjusted I Utilization Critical Fa	Hourly Volume Factor	e	121 121 0.07	5 5 0.00	280 280 0.16 0.16	60 122 0.07 0.07	17 0 0.00	45 0 0.00	23 23 0.01	1724 1784 0.30 0.30	60 0 0.00	63 63 0.04 0.04	1172 1222 0.20	50 0 0.00

ICU Ratio = 0.67 LOS = B

Turning Movements at Intersection of:

Palomar Airport Road and Yarrow Drive



South Approach



veracitytrafficgroup

LOCATION: Carlsbad N-S STREET: Yarrow Dr. DATE: 07/27/2016

W STREET: Palomar Airport Rd. CONTROL: Signal E-W STREET: DAY: WEDNESDAY PROJECT# 16-1256-018

A 1-4	NIO	סמו ודמ	LINID	C 0		LIMID		ACTROU	ND	14	/CCTDO!	INID	
AM		RTHBO		SL	OUTHBO ST		EL E.	ASTBOU		WL	ESTBOU WT		TOTAL
LANES:	NL 1	NT 2	NR 0	SL 0	1	SR 0	EL 1	ET 3	ER 0	₩ 1	3	WR 0	TOTAL
6:30 AM	5	2	3	4	0	1	4	140	19	37	296	10	521
6:45 AM	7	0	11	1	0	0	7	160	21	64	316	8	595
7:00 AM	4	2	5	3	0	4	8	169	25	72	296	13	601
7:15 AM	4	1	12	3	2	3	5	194	33	54	360	14	685
7:30 AM	8	1	21	4	0	1	5	224	27	61	354	13	719
7:45 AM	25	0	15	2	1	2	6	247	31	84	424	20	857
8:00 AM	2	1	13	1	0	5	6	100	15	25	154	2	324
8:15 AM	6	0	13	3	1	3	15	280	28	65	324	18	756
8:30 AM	13	0	13	5	1	3	14	277	42	59	323	16	766
8:45 AM	8	5	13	11	0	2	12	266	31	69	399	30	846
9:00 AM	15	3	14	5	0	4	15	253	33	50	247	17	656
9:15 AM	15	4	21	9	4	5	4	209	24	42	325	22	684
Volumes	112	19	154	51	9	33	101	2519	329	682	3818	183	8010
Approach %	39.30	6.67	54.04	54.84	9.68	35.48	3.42	85.42	11.16	14.56	81.53	3.91	
App/Depart	285	1	303	93	1	1020	2949	1	2724	4683	1	3963	
Peak Volumes	42	8	53	24	2	12	56	1076	134	243	1293	81	3024
Approach %	40.78	7.77	51.46	63.16	5.26	31.58	4.42	84.99	10.58	15.03	79.96	5.01	
Pk Hr FACTOR:		0.80			0.73			0.95			0.81		0.8936
AM Pk Hr at:		815											
PM	NC	RTHBO	UND	SC	UTHBO	UND	E	ASTBOU	ND	W	ESTBOL	JND	
3:30 PM	27	0	78	16	4	12	3	403	12	11	2 - 4		833
1											251	16	
3:45 PM	18	1	42	15	3	5	8	334	10	22	259	16	733
4:00 PM	18 28	1 3	42 54	15 14	3	5 12	8 10	334 409	10 13	22 17	259 287	16 7	733 857
4:00 PM 4:15 PM	18 28 22	1 3 3	42 54 54	15 14 12	3	5 12 3	8 10 6	334 409 374	10 13 11	22 17 15	259 287 256	16 7 10	733 857 769
4:00 PM 4:15 PM 4:30 PM	18 28 22 41	1 3 3 1	42 54 54 84	15 14 12 18	3 3 2	5 12 3 12	8 10 6 2	334 409 374 462	10 13 11 18	22 17 15 15	259 287 256 296	16 7 10 18	733 857 769 969
4:00 PM 4:15 PM 4:30 PM 4:45 PM	18 28 22 41 19	1 3 3 1 1	42 54 54 84 54	15 14 12 18 12	3 3 2 5	5 12 3 12 7	8 10 6 2 6	334 409 374 462 374	10 13 11 18 17	22 17 15 15 20	259 287 256 296 264	16 7 10 18 15	733 857 769 969 794
4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM	18 28 22 41 19 36	1 3 3 1 1 0	42 54 54 84 54 98	15 14 12 18 12 15	3 3 2 5 4	5 12 3 12 7 13	8 10 6 2 6 5	334 409 374 462 374 482	10 13 11 18 17 8	22 17 15 15 20 12	259 287 256 296 264 314	16 7 10 18 15 8	733 857 769 969 794 995
4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM	18 28 22 41 19 36 25	1 3 3 1 1 0 3	42 54 54 84 54 98 44	15 14 12 18 12 15 15	3 3 2 5 4 6	5 12 3 12 7 13 13	8 10 6 2 6 5 10	334 409 374 462 374 482 406	10 13 11 18 17 8 17	22 17 15 15 20 12 16	259 287 256 296 264 314 298	16 7 10 18 15 8 9	733 857 769 969 794 995 862
4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM	18 28 22 41 19 36 25 18	1 3 3 1 1 0 3 0	42 54 54 84 54 98 44 59	15 14 12 18 12 15 15	3 3 2 5 4 6 2	5 12 3 12 7 13 13	8 10 6 2 6 5 10 6	334 409 374 462 374 482 406 394	10 13 11 18 17 8 17	22 17 15 15 20 12 16 19	259 287 256 296 264 314 298 281	16 7 10 18 15 8 9	733 857 769 969 794 995 862 832
4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	18 28 22 41 19 36 25 18 23	1 3 3 1 1 0 3 0 1	42 54 54 84 54 98 44 59 36	15 14 12 18 12 15 15 19	3 3 2 5 4 6 2 3	5 12 3 12 7 13 13 15 7	8 10 6 2 6 5 10 6 5	334 409 374 462 374 482 406 394 347	10 13 11 18 17 8 17 12 8	22 17 15 15 20 12 16 19	259 287 256 296 264 314 298 281 266	16 7 10 18 15 8 9 7	733 857 769 969 794 995 862 832 733
4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM	18 28 22 41 19 36 25 18 23 16	1 3 3 1 1 0 3 0 1 2	42 54 54 84 54 98 44 59 36 36	15 14 12 18 12 15 15 19 13 10	3 3 2 5 4 6 2 3 3	5 12 3 12 7 13 13 15 7	8 10 6 2 6 5 10 6 5 4	334 409 374 462 374 482 406 394 347 354	10 13 11 18 17 8 17 12 8	22 17 15 15 20 12 16 19 14 21	259 287 256 296 264 314 298 281 266 253	16 7 10 18 15 8 9 7 10 9	733 857 769 969 794 995 862 832 733 723
4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	18 28 22 41 19 36 25 18 23 16 18	1 3 3 1 1 0 3 0 1 2	42 54 54 84 54 98 44 59 36 36 38	15 14 12 18 12 15 15 19 13 10 13	3 3 2 5 4 6 2 3 3	5 12 3 12 7 13 13 15 7 7	8 10 6 2 6 5 10 6 5 4 2	334 409 374 462 374 482 406 394 347 354 332	10 13 11 18 17 8 17 12 8 8 8	22 17 15 15 20 12 16 19 14 21 13	259 287 256 296 264 314 298 281 266 253 221	16 7 10 18 15 8 9 7 10 9	733 857 769 969 794 995 862 832 733 723 669
4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	18 28 22 41 19 36 25 18 23 16 18	1 3 3 1 1 0 3 0 1 2 0	42 54 54 84 54 98 44 59 36 36 38	15 14 12 18 12 15 15 19 13 10 13	3 3 2 5 4 6 2 3 1	5 12 3 12 7 13 13 15 7 7 9	8 10 6 2 6 5 10 6 5 4 2	334 409 374 462 374 482 406 394 347 354 332	10 13 11 18 17 8 17 12 8 8 8 8	22 17 15 15 20 12 16 19 14 21 13	259 287 256 296 264 314 298 281 266 253 221	16 7 10 18 15 8 9 7 10 9 14	733 857 769 969 794 995 862 832 733 723
4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach %	18 28 22 41 19 36 25 18 23 16 18 291 29.60	1 3 3 1 1 0 3 0 1 2 0 15 1.53	42 54 54 84 54 98 44 59 36 36 38 677	15 14 12 18 12 15 15 19 13 10 13 172 52.76	3 3 2 5 4 6 2 3 3 1 39	5 12 3 12 7 13 13 15 7 7 9	8 10 6 2 6 5 10 6 5 4 2 67	334 409 374 462 374 482 406 394 347 354 332 4671 95.72	10 13 11 18 17 8 17 12 8 8 8 8	22 17 15 15 20 12 16 19 14 21 13	259 287 256 296 264 314 298 281 266 253 221 3246	16 7 10 18 15 8 9 7 10 9 14	733 857 769 969 794 995 862 832 733 723 669
4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart	18 28 22 41 19 36 25 18 23 16 18 291 29.60 983	1 3 3 1 1 0 3 0 1 2 0 15 1.53	42 54 54 84 54 98 44 59 36 36 38 677 68.87	15 14 12 18 12 15 15 19 13 10 13 172 52.76 326	3 3 2 5 4 6 2 3 3 1 39 11.96 /	5 12 3 12 7 13 13 15 7 7 9 115 35.28 376	8 10 6 2 6 5 10 6 5 4 2 67 1.37 4880	334 409 374 462 374 482 406 394 347 354 332 4671 95.72 /	10 13 11 18 17 8 17 12 8 8 8 8 142 2.91 5520	22 17 15 15 20 12 16 19 14 21 13 195 5.45 3580	259 287 256 296 264 314 298 281 266 253 221 3246 90.67	16 7 10 18 15 8 9 7 10 9 14 139 3.88 3652	733 857 769 969 794 995 862 832 733 723 669 9769
4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	18 28 22 41 19 36 25 18 23 16 18 291 29.60 983	1 3 3 1 1 0 3 0 1 2 0 15 1.53 /	42 54 54 84 54 98 44 59 36 36 38 677 68.87 221	15 14 12 18 12 15 15 19 13 10 13 172 52.76 326 60	3 3 2 5 4 6 2 3 3 1 39 11.96 /	5 12 3 12 7 13 13 15 7 7 9 115 35.28 376 45	8 10 6 2 6 5 10 6 5 4 2 67 1.37 4880 23	334 409 374 462 374 482 406 394 347 354 332 4671 95.72 /	10 13 11 18 17 8 17 12 8 8 8 142 2.91 5520	22 17 15 15 20 12 16 19 14 21 13 195 5.45 3580 63	259 287 256 296 264 314 298 281 266 253 221 3246 90.67 /	16 7 10 18 15 8 9 7 10 9 14 139 3.88 3652 50	733 857 769 969 794 995 862 832 733 723 669
4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes Approach %	18 28 22 41 19 36 25 18 23 16 18 291 29.60 983	1 3 3 1 1 0 3 0 1 2 0 15 1.53 /	42 54 54 84 54 98 44 59 36 36 38 677 68.87	15 14 12 18 12 15 15 19 13 10 13 172 52.76 326	3 3 2 5 4 6 2 3 3 1 39 11.96 /	5 12 3 12 7 13 13 15 7 7 9 115 35.28 376	8 10 6 2 6 5 10 6 5 4 2 67 1.37 4880	334 409 374 462 374 482 406 394 347 354 332 4671 95.72 /	10 13 11 18 17 8 17 12 8 8 8 8 142 2.91 5520	22 17 15 15 20 12 16 19 14 21 13 195 5.45 3580	259 287 256 296 264 314 298 281 266 253 221 3246 90.67 /	16 7 10 18 15 8 9 7 10 9 14 139 3.88 3652	733 857 769 969 794 995 862 832 733 723 669 9769
4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	18 28 22 41 19 36 25 18 23 16 18 291 29.60 983	1 3 3 1 1 0 3 0 1 2 0 15 1.53 /	42 54 54 84 54 98 44 59 36 36 38 677 68.87 221	15 14 12 18 12 15 15 19 13 10 13 172 52.76 326 60	3 3 2 5 4 6 2 3 3 1 39 11.96 /	5 12 3 12 7 13 13 15 7 7 9 115 35.28 376 45	8 10 6 2 6 5 10 6 5 4 2 67 1.37 4880 23	334 409 374 462 374 482 406 394 347 354 332 4671 95.72 /	10 13 11 18 17 8 17 12 8 8 8 142 2.91 5520	22 17 15 15 20 12 16 19 14 21 13 195 5.45 3580 63	259 287 256 296 264 314 298 281 266 253 221 3246 90.67 /	16 7 10 18 15 8 9 7 10 9 14 139 3.88 3652 50	733 857 769 969 794 995 862 832 733 723 669 9769

City of Carlsbad Traffic Monitoring Program Summer 2016



Intersection Analysis Summary

Intersection Number: 8

Intersection Location: El Camino Real & Palomar Airport Rd.

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5050 Avenida Encinias, Ste 260 Carlsbad, CA 92008 Address Line 3 Address Line 4

O: 760.476.9196 F: 760.476.9198 Email: someone@example.com

El Camino Real at Palomar Airport Road

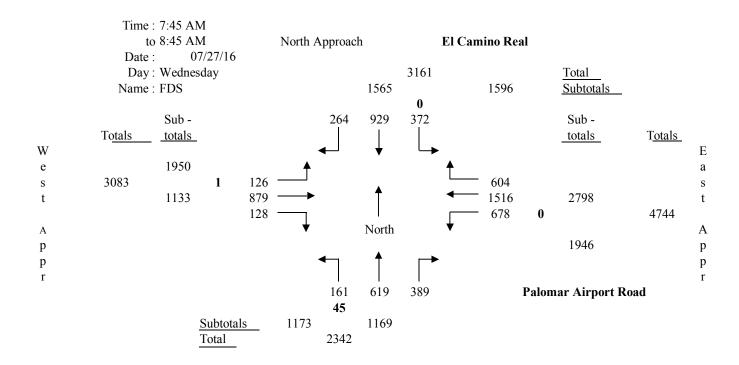
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin		•	Sout	h Appr	(NB)	Nor	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1			1	
		5		1			1			1			1	
		6			1			1			1			1
	Outside	7			1									1
	Free-flow													
Lane Settin	igs		2	3	2	2	3	1	2	3	1	2	3	2
Capacity			3600	6000	3600	3600	6000	1800	3600	6000	1800	3600	6000	3600
Are the No	rth/South pha	ses s	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vol	lume		161	619	389	372	929	264	126	879	128	678	1516	604
Adjusted F	Iourly Volume	9	161	619	50	372	929	201	126	879	128	678	1516	604
Utilization	Factor		0.04	0.10	0.01	0.10	0.15	0.11	0.04	0.15	0.07	0.19	0.25	0.17
Critical Fa	ctors			0.10		0.10				0.15		0.19		

ICU Ratio = 0.64 LOS = B

Turning Movements at Intersection of:

El Camino Real and Palomar Airport Road



South Approach Note: Left-turn volumes include

U-turns. U-turns in bold.

El Camino Real at Palomar Airport Road

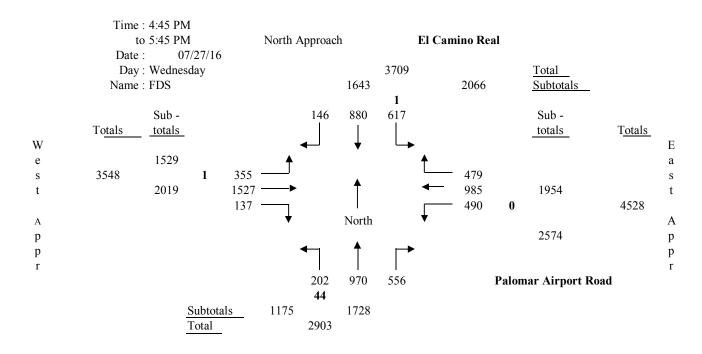
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Ti	me Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1			1	
		5		1			1			1			1	
		6			1			1			1			1
	Outside	7			1									1
	Free-flow													
Lane Setti	ngs		2	3	2	2	3	1	2	3	1	2	3	2
Capacity			3600	6000	3600	3600	6000	1800	3600	6000	1800	3600	6000	3600
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N	D?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		202	970	556	617	880	146	355	1527	137	490	985	479
Adjusted I	Hourly Volume	e	202	970	311	617	880	146	355	1527	137	490	985	479
Utilization	Factor		0.06	0.16	0.09	0.17	0.15	0.08	0.10	0.25	0.08	0.14	0.16	0.13
Critical Fa	ctors			0.16		0.17				0.25		0.14		

ICU Ratio = 0.82 LOS = D

Turning Movements at Intersection of:

El Camino Real and Palomar Airport Road



South Approach



veracitytrafficgroup

LOCATION: Carlsbad N-S STREET: El Camino Real DATE: 07/27/2016

W STREET: Palomar Airport Rd. CONTROL: Signal E-W STREET: DAY: WEDNESDAY PROJECT# 16-1256-008

AM	NIC	RTHBO	IIND	C)	UTHBO	LINID		ASTBOU	ND	١٨/	/ESTBOL	INID	
7	NL	NT	NR	SL	ST	SR	EL E	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	2	2 2	3	1	2	3	1	2	3	2	IOTAL
6:30 AM	14	59	50	42	91	40	19	124	14	85	299	73	910
6:45 AM	15	80	59	60	134	44	21	146	18	116	359	112	1164
7:00 AM	16	86	68	78	172	79	25	133	9	175	308	118	1267
7:15 AM	29	95	95	70	184	63	21	152	28	155	339	125	1356
7:30 AM	33	124	82	84	266	60	35	169	26	174	378	110	1541
7:45 AM	38	164	95	109	245	77	38	239	30	165	458	146	1804
8:00 AM	43	147	98	96	259	82	29	209	29	175	391	165	1723
8:15 AM	36	165	103	84	196	51	28	216	37	183	333	155	1587
8:30 AM	44	143	93	83	229	54	31	215	32	155	334	138	1551
8:45 AM	36	175	101	100	244	55	33	209	36	183	407	150	1729
9:00 AM	41	145	100	69	195	38	37	231	26	126	275	141	1424
9:15 AM	56	163	79	77	186	44	39	166	20	117	290	126	1363
Volumes	401	1546	1023	952	2401	687	356	2209	305	1809	4171	1559	17419
Approach %	13.50	52.05	34.44	23.56	59.43	17.00	12.40	76.97	10.63	24.00	55.33	20.68	
App/Depart	2970	1	3461	4040	1	4515	2870	1	4184	7539	1	5259	
Peak Volumes	161	619	389	372	929	264	126	879	128	678	1516	604	6665
Approach %	13.77	52.95	33.28	23.77	59.36	16.87	11.12	77.58	11.30	24.23	54.18	21.59	
Pk Hr FACTOR:		0.96			0.90			0.92			0.91		0.9236
AM Pk Hr at:	NO	745	LINID		LITLIBO	LINID		A CTD OLL	NID.		(ECTDO)	INID	I
PM		RTHBO			UTHBO	1		ASTBOU			ESTBOL		
3:30 PM	45	151	107	136	194	40	79	396	24	113	220	91	1596
3:45 PM	45	189	121	130	183 179	30	70	336 346	35	118 116	233	90	1580 1625
4:00 PM	51				179	34		346	29			444	
		180	120	148			68				243	111	
4:15 PM	61	227	117	136	167	23	55	356	27	119	221	105	1614
4:30 PM	61 60	227 193	117 145	136 139	167 183	23 44	55 78	356 378	27 34	119 124	221 234	105 117	1614 1729
4:30 PM 4:45 PM	61 60 50	227 193 215	117 145 132	136 139 149	167 183 225	23 44 45	55 78 80	356 378 383	27 34 30	119 124 126	221 234 225	105 117 99	1614 1729 1759
4:30 PM 4:45 PM 5:00 PM	61 60 50 60	227 193 215 231	117 145 132 149	136 139 149 161	167 183 225 234	23 44 45 34	55 78 80 104	356 378 383 421	27 34 30 36	119 124 126 106	221 234 225 257	105 117 99 144	1614 1729 1759 1937
4:30 PM 4:45 PM 5:00 PM 5:15 PM	61 60 50 60 44	227 193 215 231 252	117 145 132 149 135	136 139 149 161 160	167 183 225 234 248	23 44 45 34 39	55 78 80 104 106	356 378 383 421 359	27 34 30 36 40	119 124 126 106 145	221 234 225 257 253	105 117 99 144 128	1614 1729 1759 1937 1909
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM	61 60 50 60 44 48	227 193 215 231 252 272	117 145 132 149 135 140	136 139 149 161 160 147	167 183 225 234 248 173	23 44 45 34 39 28	55 78 80 104 106 65	356 378 383 421 359 364	27 34 30 36 40 31	119 124 126 106 145 113	221 234 225 257 253 250	105 117 99 144 128 108	1614 1729 1759 1937 1909 1739
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	61 60 50 60 44 48 64	227 193 215 231 252 272 267	117 145 132 149 135 140 123	136 139 149 161 160 147 117	167 183 225 234 248 173 165	23 44 45 34 39 28 31	55 78 80 104 106 65 59	356 378 383 421 359 364 347	27 34 30 36 40 31 24	119 124 126 106 145 113 112	221 234 225 257 253 250 202	105 117 99 144 128 108 88	1614 1729 1759 1937 1909 1739 1599
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM	61 60 50 60 44 48 64 59	227 193 215 231 252 272 267 225	117 145 132 149 135 140 123 97	136 139 149 161 160 147 117 116	167 183 225 234 248 173 165 145	23 44 45 34 39 28 31 36	55 78 80 104 106 65 59 53	356 378 383 421 359 364 347 331	27 34 30 36 40 31 24 20	119 124 126 106 145 113 112	221 234 225 257 253 250 202 209	105 117 99 144 128 108 88 93	1614 1729 1759 1937 1909 1739 1599 1485
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	61 60 50 60 44 48 64 59 51	227 193 215 231 252 272 267 225 212	117 145 132 149 135 140 123 97 98	136 139 149 161 160 147 117 116 112	167 183 225 234 248 173 165 145 122	23 44 45 34 39 28 31 36 21	55 78 80 104 106 65 59 53 50	356 378 383 421 359 364 347 331 305	27 34 30 36 40 31 24 20 25	119 124 126 106 145 113 112 101 82	221 234 225 257 253 250 202 209 189	105 117 99 144 128 108 88 93 83	1614 1729 1759 1937 1909 1739 1599 1485 1350
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	61 60 50 60 44 48 64 59 51	227 193 215 231 252 272 267 225 212	117 145 132 149 135 140 123 97 98	136 139 149 161 160 147 117 116 112	167 183 225 234 248 173 165 145 122	23 44 45 34 39 28 31 36 21	55 78 80 104 106 65 59 53 50	356 378 383 421 359 364 347 331 305	27 34 30 36 40 31 24 20 25	119 124 126 106 145 113 112 101 82	221 234 225 257 253 250 202 209 189	105 117 99 144 128 108 88 93 83	1614 1729 1759 1937 1909 1739 1599 1485
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes	61 60 50 60 44 48 64 59 51 638	227 193 215 231 252 272 267 225 212	117 145 132 149 135 140 123 97 98 1484 31.33	136 139 149 161 160 147 117 116 112 1651 38.63	167 183 225 234 248 173 165 145 122	23 44 45 34 39 28 31 36 21 405	55 78 80 104 106 65 59 53 50 867	356 378 383 421 359 364 347 331 305	27 34 30 36 40 31 24 20 25 355 6.40	119 124 126 106 145 113 112 101 82 1375	221 234 225 257 253 250 202 209 189	105 117 99 144 128 108 88 93 83 1257	1614 1729 1759 1937 1909 1739 1599 1485 1350
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart	61 60 50 60 44 48 64 59 51 638 13.47 4736	227 193 215 231 252 272 267 225 212 2614 55.19	117 145 132 149 135 140 123 97 98 1484 31.33 4738	136 139 149 161 160 147 117 116 112 1651 38.63 4274	167 183 225 234 248 173 165 145 122 2218 51.90	23 44 45 34 39 28 31 36 21 405 9.48 3948	55 78 80 104 106 65 59 53 50 867 15.64 5544	356 378 383 421 359 364 347 331 305 4322 77.96	27 34 30 36 40 31 24 20 25 355 6.40 7457	119 124 126 106 145 113 112 101 82 1375 25.61 5368	221 234 225 257 253 250 202 209 189 2736 50.97	105 117 99 144 128 108 88 93 83 1257 23.42 3779	1614 1729 1759 1937 1909 1739 1599 1485 1350
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes	61 60 50 60 44 48 64 59 51 638	227 193 215 231 252 272 267 225 212 2614	117 145 132 149 135 140 123 97 98 1484 31.33	136 139 149 161 160 147 117 116 112 1651 38.63	167 183 225 234 248 173 165 145 122 2218	23 44 45 34 39 28 31 36 21 405	55 78 80 104 106 65 59 53 50 867	356 378 383 421 359 364 347 331 305 4322 77.96	27 34 30 36 40 31 24 20 25 355 6.40	119 124 126 106 145 113 112 101 82 1375	221 234 225 257 253 250 202 209 189 2736 50.97	105 117 99 144 128 108 88 93 83 1257	1614 1729 1759 1937 1909 1739 1599 1485 1350
4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	61 60 50 60 44 48 64 59 51 638 13.47 4736	227 193 215 231 252 272 267 225 212 2614 55.19 /	117 145 132 149 135 140 123 97 98 1484 31.33 4738 556	136 139 149 161 160 147 117 116 112 1651 38.63 4274 617	167 183 225 234 248 173 165 145 122 2218 51.90 /	23 44 45 34 39 28 31 36 21 405 9.48 3948 146	55 78 80 104 106 65 59 53 50 867 15.64 5544	356 378 383 421 359 364 347 331 305 4322 77.96 /	27 34 30 36 40 31 24 20 25 355 6.40 7457	119 124 126 106 145 113 112 101 82 1375 25.61 5368 490	221 234 225 257 253 250 202 209 189 2736 50.97 /	105 117 99 144 128 108 88 93 83 1257 23.42 3779 479	1614 1729 1759 1937 1909 1739 1599 1485 1350

City of Carlsbad Traffic Monitoring Program Summer 2016



Intersection Analysis Summary

Intersection Number: 19

Intersection Location: Palomar Airport Rd. & Loker Ave. (W)

Contents:

A.M. Peak Hour ICU Analysis and Turn Movement Diagram
Page 1

P.M. Peak Hour ICU Analysis and Turn Movement Diagram
Page 2

A.M./P.M. Peak Period Intersection Turning Movement Count Data Page 3



5050 Avenida Encinias, Ste 260 Carlsbad, CA 92008 Address Line 3 Address Line 4

O: 760.476.9196 F: 760.476.9198 Email: someone@example.com

Palomar Airport Road at W. Loker Avenue/Innovation Way

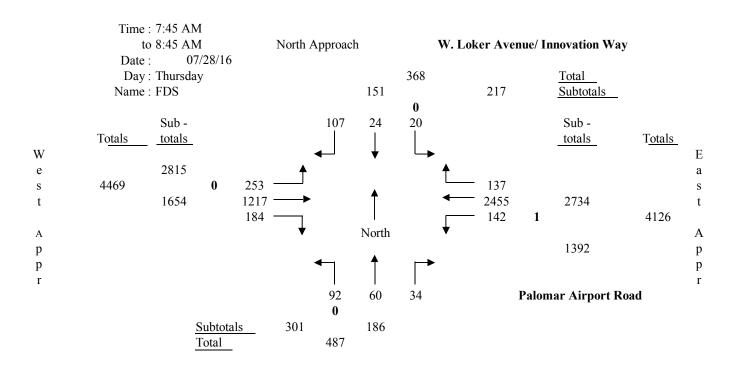
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2		1			1			1			1	
urations		3			1			1		1			1	
		4								1			1	1
		5									1			
		6												
	Outside	7												
	Free-flow													
Lane Settir	ıgs		1	1	1	1	1	1	1	3	1	1	3	0
Capacity			1800	2000	1800	1800	2000	1800	1800	6000	1800	1800	6000	0
Are the No	rth/South pha	ses s	split (Y/	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vol	lume		92	60	34	20	24	107	253	1217	184	142	2455	137
Adjusted F	Iourly Volume	9	92	60	34	20	24	107	253	1217	138	142	2592	0
Utilization	Factor		0.05	0.03	0.02	0.01	0.01	0.06	0.14	0.20	0.08	0.08	0.43	0.00
Critical Fa	ctors		0.05					0.06	0.14				0.43	

ICU Ratio = 0.78 LOS = C

Turning Movements at Intersection of:

Palomar Airport Road and W. Loker Avenue/ Innovation Way



South Approach

Palomar Airport Road at W. Loker Avenue/ Innovation Way

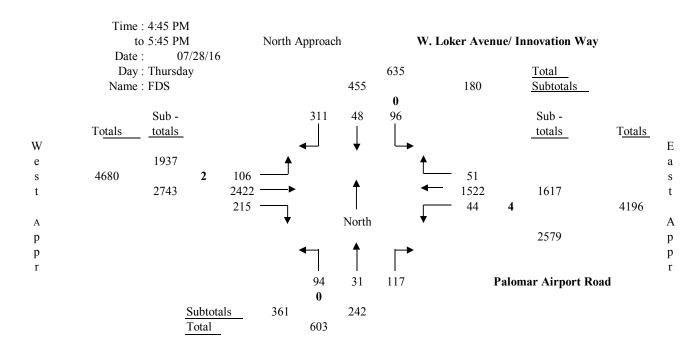
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Time	e Period :	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to	•	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2		1			1			1			1	
urations		3			1			1		1			1	
		4								1			1	1
		5									1			
		6												
	Outside	7												
	Free-flow													
Lane Setting	S		1	1	1	1	1	1	1	3	1	1	3	0
Capacity			1800	2000	1800	1800	2000	1800	1800	6000	1800	1800	6000	0
Are the Nort	h/South phas	ses s	split (Y	/N)?	N									
Are the East	West phases	s sp	lit (Y/N)?	N									
Efficiency Lo	ost Factor		0.10											
Hourly Volu	me		94	31	117	96	48	311	106	2422	215	44	1522	51
Adjusted Ho	-		94	31	117	96	48	311	106	2422	168	44	1573	0
Utilization F	actor		0.05	0.02	0.07	0.05	0.02	0.17	0.06	0.40	0.09	0.02	0.26	0.00
Critical Factor	ors		0.05					0.17		0.40		0.02		

ICU Ratio = 0.74 LOS = C

Turning Movements at Intersection of:

Palomar Airport Road and W. Loker Avenue/ Innovation Way



South Approach



Vveracitytrafficgroup

N-S STREET: Loker Ave. West/ DATE: 07/28/2016 LOCATION: Carlsbad

E-W STREET: Palomar Airport Rd. DAY: THURSDAY PROJECT# 16-1256-019

CONTROL: Signal

AM		DTUDO	LINE		UTUSS	LINIE		A OTE 0: :	NID		ECTS S:	INID	1
		RTHBO			UTHBO			ASTBOU			ESTBOL		TOT!
LANES:	NL 1	NT 1	NR 1	SL 1	ST 1	SR 1	EL 1	ET 3	ER 1	WL 1	WT 3	WR 0	TOTAL
6:30 AM	4	6	4	1	2	15	38	130	17	8	387	15	627
6:45 AM	14	12	8	2	3	16	43	213	21	11	509	22	874
7:00 AM	15	7	5	6	5	35	46	202	20	16	500	12	869
7:15 AM	12	11	6	4	6	19	48	229	29	14	561	17	956
7:30 AM	11	21	6	6	2	30	44	286	35	17	633	27	1118
7:45 AM	12	13	10	4	9	30	63	328	57	42	670	38	1276
8:00 AM	24	21	7	9	5	28	53	276	37	32	637	37	1166
8:15 AM	21	12	12	4	2	28	83	306	53	38	574	29	1162
8:30 AM	35	14	5	3	8	21	54	307	37	30	574	33	1121
8:45 AM	29	19	7	9	8	36	59	329	46	18	567	33	1160
9:00 AM	14	11	13	12	4	37	65	252	43	35	531	28	1045
9:15 AM	12	17	10	3	5	21	41	256	23	19	472	23	902
Volumes	203	164	93	63	59	316	637	3114	418	280	6615	314	12276
Approach %	44.13	35.65	20.22	14.38	13.47	72.15	15.28	74.69	10.03	3.88	91.76	4.36	
App/Depart	460	/	1115	438	/	757	4169	/	3270	7209	/	7134	
Peak Volumes	92	60	34	20	24	107	253	1217	184	142	2455	137	4725
Approach %	49.46	32.26	18.28	13.25	15.89	70.86	15.30	73.58	11.12	5.19	89.80	5.01	
Pk Hr FACTOR:		0.86			0.88			0.92			0.91		0.9257
AM Pk Hr at:		745	LINES		UTUSS	LINIE	-	4 CTF 0::	ND		ECTE C:	INID	1
PM		RTHBO			UTHBO			ASTBOU			ESTBOL		
3:30 PM	15	13	16	16	7	47	37	575	36	19	356	18	1155
3:45 PM	10	5	11	17	7	61	32	560	39	8	351	23	1124
4:00 PM	18	2	29	30	17	85	31	601	38	16	348	19	1234
4:15 PM	27	6	~-				~ .	E00		4.00	~~~		
4 20 214	22	-	27	18	5	59	24	580	37	12	373	11	1179
4:30 PM	23	4	34	16	13	82	30	626	21	9	368	10	1236
4:45 PM	25	4 15	34 20	16 24	13 9	82 71	30 23	626 589	21 49	9 10	368 370	10 19	1236 1224
4:45 PM 5:00 PM	25 36	4 15 8	34 20 36	16 24 37	13 9 14	82 71 93	30 23 29	626 589 592	21 49 45	9 10 11	368 370 401	10 19 12	1236 1224 1314
4:45 PM 5:00 PM 5:15 PM	25 36 21	4 15 8 4	34 20 36 26	16 24 37 20	13 9 14 15	82 71 93 71	30 23 29 26	626 589 592 619	21 49 45 60	9 10 11 8	368 370 401 378	10 19 12 8	1236 1224 1314 1256
4:45 PM 5:00 PM 5:15 PM 5:30 PM	25 36 21 12	4 15 8 4 4	34 20 36 26 35	16 24 37 20 15	13 9 14 15 10	82 71 93 71 76	30 23 29 26 28	626 589 592 619 622	21 49 45 60 61	9 10 11 8 15	368 370 401 378 373	10 19 12 8 12	1236 1224 1314 1256 1263
4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	25 36 21 12 14	4 15 8 4 4 5	34 20 36 26 35 17	16 24 37 20 15 17	13 9 14 15 10 8	82 71 93 71 76 62	30 23 29 26 28 24	626 589 592 619 622 568	21 49 45 60 61 41	9 10 11 8 15 7	368 370 401 378 373 320	10 19 12 8 12 10	1236 1224 1314 1256 1263 1093
4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM	25 36 21 12 14 14	4 15 8 4 4 5	34 20 36 26 35 17 25	16 24 37 20 15 17	13 9 14 15 10 8 6	82 71 93 71 76 62 45	30 23 29 26 28 24 16	626 589 592 619 622 568 499	21 49 45 60 61 41 25	9 10 11 8 15 7 11	368 370 401 378 373 320 339	10 19 12 8 12 10 8	1236 1224 1314 1256 1263 1093 1013
4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	25 36 21 12 14 14 17	4 15 8 4 4 5 4	34 20 36 26 35 17 25 16	16 24 37 20 15 17 21 14	13 9 14 15 10 8 6 2	82 71 93 71 76 62 45 35	30 23 29 26 28 24 16 14	626 589 592 619 622 568 499 474	21 49 45 60 61 41 25 31	9 10 11 8 15 7 11 9	368 370 401 378 373 320 339 246	10 19 12 8 12 10 8	1236 1224 1314 1256 1263 1093 1013 874
4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	25 36 21 12 14 14 17	4 15 8 4 4 5 4 5	34 20 36 26 35 17 25 16	16 24 37 20 15 17 21 14	13 9 14 15 10 8 6 2	82 71 93 71 76 62 45 35	30 23 29 26 28 24 16 14	626 589 592 619 622 568 499 474	21 49 45 60 61 41 25 31	9 10 11 8 15 7 11 9	368 370 401 378 373 320 339 246	10 19 12 8 12 10 8 11	1236 1224 1314 1256 1263 1093 1013
4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes	25 36 21 12 14 14 17 232 38.73	4 15 8 4 4 5 4	34 20 36 26 35 17 25 16 292 48.75	16 24 37 20 15 17 21 14 245 21.40	13 9 14 15 10 8 6 2	82 71 93 71 76 62 45 35 787 68.73	30 23 29 26 28 24 16 14 314 4.08	626 589 592 619 622 568 499 474	21 49 45 60 61 41 25 31 483 6.27	9 10 11 8 15 7 11 9	368 370 401 378 373 320 339 246	10 19 12 8 12 10 8 11 161 3.56	1236 1224 1314 1256 1263 1093 1013 874
4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart	25 36 21 12 14 14 17 232 38.73 599	4 15 8 4 4 5 4 5 75 12.52 /	34 20 36 26 35 17 25 16 292 48.75 550	16 24 37 20 15 17 21 14 245 21.40 1145	13 9 14 15 10 8 6 2 113 9.87	82 71 93 71 76 62 45 35 787 68.73 731	30 23 29 26 28 24 16 14 314 4.08	626 589 592 619 622 568 499 474 6905 89.65	21 49 45 60 61 41 25 31 483 6.27 7442	9 10 11 8 15 7 11 9 135 2.99 4519	368 370 401 378 373 320 339 246 4223 93.45 /	10 19 12 8 12 10 8 11 161 3.56 5242	1236 1224 1314 1256 1263 1093 1013 874 13965
4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	25 36 21 12 14 14 17 232 38.73	4 15 8 4 4 5 4 5 75	34 20 36 26 35 17 25 16 292 48.75	16 24 37 20 15 17 21 14 245 21.40	13 9 14 15 10 8 6 2 113 9.87	82 71 93 71 76 62 45 35 787 68.73	30 23 29 26 28 24 16 14 314 4.08	626 589 592 619 622 568 499 474 6905	21 49 45 60 61 41 25 31 483 6.27	9 10 11 8 15 7 11 9	368 370 401 378 373 320 339 246 4223	10 19 12 8 12 10 8 11 161 3.56	1236 1224 1314 1256 1263 1093 1013 874
4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart	25 36 21 12 14 14 17 232 38.73 599 94	4 15 8 4 4 5 4 5 75 12.52 /	34 20 36 26 35 17 25 16 292 48.75 550	16 24 37 20 15 17 21 14 245 21.40 1145 96	13 9 14 15 10 8 6 2 113 9.87 /	82 71 93 71 76 62 45 35 787 68.73 731 311	30 23 29 26 28 24 16 14 314 4.08 7702	626 589 592 619 622 568 499 474 6905 89.65 /	21 49 45 60 61 41 25 31 483 6.27 7442 215	9 10 11 8 15 7 11 9 135 2.99 4519	368 370 401 378 373 320 339 246 4223 93.45 /	10 19 12 8 12 10 8 11 161 3.56 5242 51	1236 1224 1314 1256 1263 1093 1013 874 13965

City of Carlsbad Traffic Monitoring Program Summer 2016



Intersection Analysis Summary

Intersection Number: 20

Intersection Location: Palomar Airport Rd. & El Fuerte St.

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5050 Avenida Encinias, Ste 260 Carlsbad, CA 92008 Address Line 3 Address Line 4

O: 760.476.9196 F: 760.476.9198 Email: someone@example.com

Palomar Airport Road at El Fuerte Street

Lane Configuration for Intersection Capacity Utilization

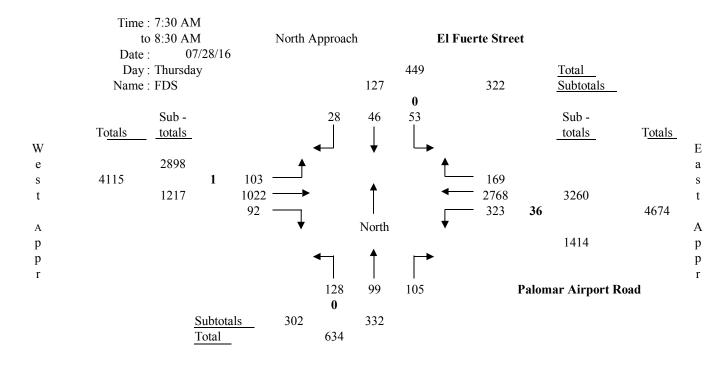
Pk. Hr. Tin			Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5								1			1	1
		6									1			
	Outside	7												
	Free-flow													
Lane Settin	igs		2	1	1	2	2	0	2	3	1	2	3	0
Capacity			3600	2000	1800	3600	4000	0	3600	6000	1800	3600	6000	0
Are the No	orth/South pha	ses s	split (Y	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vol	lume		128	99	105	53	46	28	103	1022	92	323	2768	169
Adjusted F	Iourly Volume	9	128	99	105	53	74	0	103	1022	92	323	2937	0
Utilization	Factor		0.04	0.05	0.06	0.01	0.02	0.00	0.03	0.17	0.05	0.09	0.49	0.00
Critical Fa	ctors				0.06	0.01			0.03				0.49	

В

ICU Ratio = 0.69 LOS =

Turning Movements at Intersection of:

Palomar Airport Road and El Fuerte Street



South Approach

Palomar Airport Road at El Fuerte Street

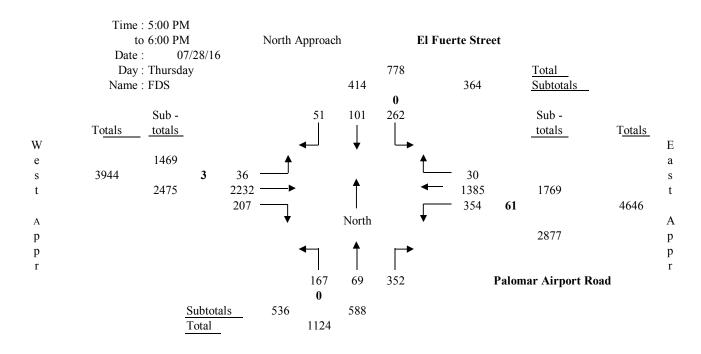
Lane Configuration for Intersection Capacity Utilization

	me Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
5:00 PM 6:00 PM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5								1			1	1
		6									1			
	Outside	7												
	Free-flow													
Lane Setti	ngs		2	1	1	2	2	0	2	3	1	2	3	0
Capacity			3600	2000	1800	3600	4000	0	3600	6000	1800	3600	6000	0
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		167	69	352	262	101	51	36	2232	207	354	1385	30
Adjusted I	Hourly Volume	•	167	69	352	262	152	0	36	2232	207	354	1415	0
Utilization	Factor		0.05	0.03	0.20	0.07	0.04	0.00	0.01	0.37	0.12	0.10	0.24	0.00
Critical Fa	ctors				0.20	0.07				0.37		0.10		

ICU Ratio = 0.84 LOS = D

Turning Movements at Intersection of:

Palomar Airport Road and El Fuerte Street



South Approach



Vveracitytrafficgroup

N-S STREET: El Fuerte St. DATE: 07/28/2016 LOCATION: Carlsbad

E-W STREET: Palomar Airport Rd. DAY: THURSDAY PROJECT# 16-1256-020

CONTROL: Signal

AM	NC	RTHBO	UND	SC	UTHBO	UND	E	ASTBOU	ND	W	'ESTBOL	JND	
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	2	0	2	2	0	2	3	1	2	3	0	
6:30 AM	16	5	9	5	3	3	10	135	5	27	457	34	709
6:45 AM	16	16	13	8	13	1	21	191	7	38	556	48	928
7:00 AM	23	8	25	12	20	9	16	188	10	52	521	34	918
7:15 AM	27	10	18	9	14	3	18	194	18	45	595	40	991
7:30 AM	24	21	20	14	5	5	20	235	15	78	705	37	1179
7:45 AM	44	31	23	11	16	7	31	292	20	79	731	53	1338
8:00 AM	21	15	25	12	14	9	25	220	28	78	708	40	1195
8:15 AM	39	32	37	16	11	7	27	275	29	88	624	39	1224
8:30 AM	32	35	27	6	9	5	17	262	29	90	630	23	1165
8:45 AM	38	29	39	8	17	6	20	279	43	88	617	23	1207
9:00 AM	37	16	42	10	16	5	23	229	24	74	533	24	1033
9:15 AM	26	19	33	7	9	9	18	215	26	70	479	21	932
Volumes	343	237	311	118	147	69	246	2715	254	807	7156	416	12819
Approach %	38.50	26.60	34.90	35.33	44.01	20.66	7.65	84.45	7.90	9.63	85.40	4.96	
App/Depart	891	/	899	334	1	1208	3215	1	3144	8379	1	7568	
Peak Volumes	128	99	105	53	46	28	103	1022	92	323	2768	169	4936
Approach %	38.55	29.82	31.63	41.73	36.22	22.05	8.46	83.98	7.56	9.91	84.91	5.18	
Pk Hr FACTOR:		0.77			0.91			0.89			0.94		0.9223
					0.31			0.03			0.01		0.0220
AM Pk Hr at:		730											0.0220
AM Pk Hr at:		730 ORTHBO			UTHBO		E	ASTBOU			ESTBOL		
AM Pk Hr at: PM 3:30 PM	33	730 ORTHBO 11	75	72	UTHBO 18	8	4	ASTBOU 521	31	50	ESTBOU	11	1163
AM Pk Hr at: PM 3:30 PM 3:45 PM	33 42	730 DRTHBO 11 11	75 59	72 34	18 23	8 7	4 8	ASTBOU 521 497	31 55	50 73	257BOU 329 334	11 7	1163 1150
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM	33 42 36	730 DRTHBO 11 11 12	75 59 70	72 34 74	18 23 27	8 7 16	4 8 6	ASTBOU 521 497 531	31 55 50	50 73 84	ESTBOU 329 334 355	11 7 10	1163 1150 1271
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM	33 42 36 38	730 DRTHBO 11 11 12 12	75 59 70 82	72 34 74 52	18 23 27 24	8 7 16 20	4 8 6 14	ASTBOU 521 497 531 532	31 55 50 52	50 73 84 74	329 334 355 311	11 7 10 5	1163 1150 1271 1216
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM	33 42 36 38 47	730 DRTHBO 11 11 12 12 13	75 59 70 82 92	72 34 74 52 42	18 23 27 24 23	8 7 16 20 7	4 8 6 14 5	521 497 531 532 546	31 55 50 52 47	50 73 84 74 82	329 334 355 311 370	11 7 10 5 9	1163 1150 1271 1216 1283
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM	33 42 36 38 47 35	730 DRTHBO 11 11 12 12 13 10	75 59 70 82 92 68	72 34 74 52 42 60	18 23 27 24 23 31	8 7 16 20 7 13	4 8 6 14 5	521 497 531 532 546 536	31 55 50 52 47 37	50 73 84 74 82 92	329 334 355 311 370 329	11 7 10 5 9 8	1163 1150 1271 1216 1283 1230
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM	33 42 36 38 47 35 41	730 DRTHBO 11 11 12 12 13 10 19	75 59 70 82 92 68 99	72 34 74 52 42 60 97	18 23 27 24 23 31 35	8 7 16 20 7 13 15	4 8 6 14 5 11 9	521 497 531 532 546 536 496	31 55 50 52 47 37 40	50 73 84 74 82 92 108	329 334 355 311 370 329 383	11 7 10 5 9 8 9	1163 1150 1271 1216 1283 1230 1351
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM	33 42 36 38 47 35 41 46	730 DRTHBO 11 11 12 12 13 10 19 17	75 59 70 82 92 68 99	72 34 74 52 42 60 97 51	18 23 27 24 23 31 35 22	8 7 16 20 7 13 15	4 8 6 14 5 11 9	521 497 531 532 546 536 496 566	31 55 50 52 47 37 40 48	50 73 84 74 82 92 108 96	329 334 355 311 370 329 383 343	11 7 10 5 9 8 9 7	1163 1150 1271 1216 1283 1230 1351 1312
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM	33 42 36 38 47 35 41 46 41	730 DRTHBO 11 11 12 12 13 10 19 17	75 59 70 82 92 68 99 93 76	72 34 74 52 42 60 97 51 69	18 23 27 24 23 31 35 22	8 7 16 20 7 13 15 17	4 8 6 14 5 11 9 6	521 497 531 532 546 536 496 566 609	31 55 50 52 47 37 40 48 45	50 73 84 74 82 92 108 96 78	329 334 355 311 370 329 383 343 343	11 7 10 5 9 8 9 7 11	1163 1150 1271 1216 1283 1230 1351 1312 1336
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	33 42 36 38 47 35 41 46 41 39	730 DRTHBO 11 11 12 12 13 10 19 17 18 15	75 59 70 82 92 68 99 93 76 84	72 34 74 52 42 60 97 51 69 45	23 27 24 23 31 35 22 24 20	8 7 16 20 7 13 15 17 12 7	4 8 6 14 5 11 9 6 10	521 497 531 532 546 536 496 566 609 561	31 55 50 52 47 37 40 48 45 74	50 73 84 74 82 92 108 96 78 72	329 334 355 311 370 329 383 343 343 316	11 7 10 5 9 8 9 7 11 3	1163 1150 1271 1216 1283 1230 1351 1312 1336 1247
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM	33 42 36 38 47 35 41 46 41 39 62	730 DRTHBO 11 11 12 12 13 10 19 17 18 15 7	75 59 70 82 92 68 99 93 76 84 76	72 34 74 52 42 60 97 51 69 45 39	18 23 27 24 23 31 35 22 24 20 23	8 7 16 20 7 13 15 17 12 7	4 8 6 14 5 11 9 6 10 11 2	521 497 531 532 546 536 496 566 609 561 475	31 55 50 52 47 37 40 48 45 74 40	50 73 84 74 82 92 108 96 78 72 73	329 334 355 311 370 329 383 343 343 316 287	11 7 10 5 9 8 9 7 11 3	1163 1150 1271 1216 1283 1230 1351 1312 1336 1247 1091
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	33 42 36 38 47 35 41 46 41 39 62 35	730 DRTHBO 11 11 12 12 13 10 19 17 18 15 7 9	75 59 70 82 92 68 99 93 76 84 76 75	72 34 74 52 42 60 97 51 69 45 39 25	18 23 27 24 23 31 35 22 24 20 23 13	8 7 16 20 7 13 15 17 12 7 2 3	4 8 6 14 5 11 9 6 10 11 2 5	521 497 531 532 546 536 496 566 609 561 475 433	31 55 50 52 47 37 40 48 45 74 40 46	50 73 84 74 82 92 108 96 78 72 73 71	287 287 329 334 355 311 370 329 383 343 343 316 287 254	11 7 10 5 9 8 9 7 11 3 5 3	1163 1150 1271 1216 1283 1230 1351 1312 1336 1247 1091 972
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	33 42 36 38 47 35 41 46 41 39 62 35	730 DRTHBO 11 11 12 12 13 10 19 17 18 15 7 9	75 59 70 82 92 68 99 93 76 84 76 75	72 34 74 52 42 60 97 51 69 45 39 25	DUTHBO 18 23 27 24 23 31 35 22 24 20 23 13 283	8 7 16 20 7 13 15 17 12 7 2 3	4 8 6 14 5 11 9 6 10 11 2 5	521 497 531 532 546 536 496 566 609 561 475 433	31 55 50 52 47 37 40 48 45 74 40 46	50 73 84 74 82 92 108 96 78 72 73 71	329 334 355 311 370 329 383 343 343 316 287 254	11 7 10 5 9 8 9 7 11 3 5 3	1163 1150 1271 1216 1283 1230 1351 1312 1336 1247 1091
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach %	33 42 36 38 47 35 41 46 41 39 62 35 495 30.98	730 DRTHBO 11 11 12 12 13 10 19 17 18 15 7 9 154	75 59 70 82 92 68 99 93 76 84 76 75 949	72 34 74 52 42 60 97 51 69 45 39 25 660	18 23 27 24 23 31 35 22 24 20 23 13 283	8 7 16 20 7 13 15 17 12 7 2 3 127 11.87	4 8 6 14 5 11 9 6 10 11 2 5	521 497 531 532 546 536 496 566 609 561 475 433 6303	31 55 50 52 47 37 40 48 45 74 40 46 565	50 73 84 74 82 92 108 96 78 72 73 71 953	329 334 355 311 370 329 383 343 343 316 287 254 3954 79.16	11 7 10 5 9 8 9 7 11 3 5 3 88	1163 1150 1271 1216 1283 1230 1351 1312 1336 1247 1091 972
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart	33 42 36 38 47 35 41 46 41 39 62 35 495 30.98 1598	730 DRTHBO 11 11 12 12 13 10 19 17 18 15 7 9 154 9.64 /	75 59 70 82 92 68 99 93 76 84 76 75 949 59.39	72 34 74 52 42 60 97 51 69 45 39 25 660 61.68	18 23 27 24 23 31 35 22 24 20 23 13 283 26.45	8 7 16 20 7 13 15 17 12 7 2 3 127 11.87 1801	4 8 6 14 5 11 9 6 10 11 2 5 91 1.31 6959	521 497 531 532 546 536 496 566 609 561 475 433 6303 90.57	31 55 50 52 47 37 40 48 45 74 40 46 565 8.12 7912	50 73 84 74 82 92 108 96 78 72 73 71 953 19.08 4995	7ESTBOL 329 334 355 311 370 329 383 343 343 316 287 254 3954 79.16	11 7 10 5 9 8 9 7 11 3 5 3 88 1.76	1163 1150 1271 1216 1283 1230 1351 1312 1336 1247 1091 972
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	33 42 36 38 47 35 41 46 41 39 62 35 495 30.98 1598	730 DRTHBO 11 11 12 12 13 10 19 17 18 15 7 9 154 9.64 / 69	75 59 70 82 92 68 99 93 76 84 76 75 949 59.39 333 352	72 34 74 52 42 60 97 51 69 45 39 25 660 61.68 1070	23 27 24 23 31 35 22 24 20 23 13 283 26.45 /	8 7 16 20 7 13 15 17 12 7 2 3 127 11.87 1801 51	4 8 6 14 5 11 9 6 10 11 2 5 91 1.31 6959 36	ASTBOU 521 497 531 532 546 536 496 566 609 561 475 433 6303 90.57 / 2232	31 55 50 52 47 37 40 48 45 74 40 46 565 8.12 7912	50 73 84 74 82 92 108 96 78 72 73 71 953 19.08 4995	329 334 355 311 370 329 383 343 343 316 287 254 3954 79.16 /	11 7 10 5 9 8 9 7 11 3 5 3 88 1.76 4576	1163 1150 1271 1216 1283 1230 1351 1312 1336 1247 1091 972
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes Approach %	33 42 36 38 47 35 41 46 41 39 62 35 495 30.98 1598	730 DRTHBO 11 11 12 12 13 10 19 17 18 15 7 9 154 9.64 / 69 11.73	75 59 70 82 92 68 99 93 76 84 76 75 949 59.39	72 34 74 52 42 60 97 51 69 45 39 25 660 61.68	18 23 27 24 23 31 35 22 24 20 23 13 283 26.45 /	8 7 16 20 7 13 15 17 12 7 2 3 127 11.87 1801	4 8 6 14 5 11 9 6 10 11 2 5 91 1.31 6959	ASTBOU 521 497 531 532 546 536 496 566 609 561 475 433 6303 90.57 / 2232 90.18	31 55 50 52 47 37 40 48 45 74 40 46 565 8.12 7912	50 73 84 74 82 92 108 96 78 72 73 71 953 19.08 4995	78.29 329 334 355 311 370 329 383 343 343 316 287 254 79.16 /	11 7 10 5 9 8 9 7 11 3 5 3 88 1.76	1163 1150 1271 1216 1283 1230 1351 1312 1336 1247 1091 972 14622
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	33 42 36 38 47 35 41 46 41 39 62 35 495 30.98 1598	730 DRTHBO 11 11 12 12 13 10 19 17 18 15 7 9 154 9.64 / 69	75 59 70 82 92 68 99 93 76 84 76 75 949 59.39 333 352	72 34 74 52 42 60 97 51 69 45 39 25 660 61.68 1070	23 27 24 23 31 35 22 24 20 23 13 283 26.45 /	8 7 16 20 7 13 15 17 12 7 2 3 127 11.87 1801 51	4 8 6 14 5 11 9 6 10 11 2 5 91 1.31 6959 36	ASTBOU 521 497 531 532 546 536 496 566 609 561 475 433 6303 90.57 / 2232	31 55 50 52 47 37 40 48 45 74 40 46 565 8.12 7912	50 73 84 74 82 92 108 96 78 72 73 71 953 19.08 4995	329 334 355 311 370 329 383 343 343 316 287 254 3954 79.16 /	11 7 10 5 9 8 9 7 11 3 5 3 88 1.76 4576	1163 1150 1271 1216 1283 1230 1351 1312 1336 1247 1091 972

City of Carlsbad Traffic Monitoring Program Summer 2016



Intersection Analysis Summary

Intersection Number: 21

Intersection Location: Palomar Airport Rd. & Melrose Dr.

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P.M. Peak Hour ICU Analysis and Turn Movement Diagram
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5050 Avenida Encinias, Ste 260 Carlsbad, CA 92008 Address Line 3 Address Line 4

O: 760.476.9196 F: 760.476.9198 Email: someone@example.com

Palomar Airport Road at Melrose Drive

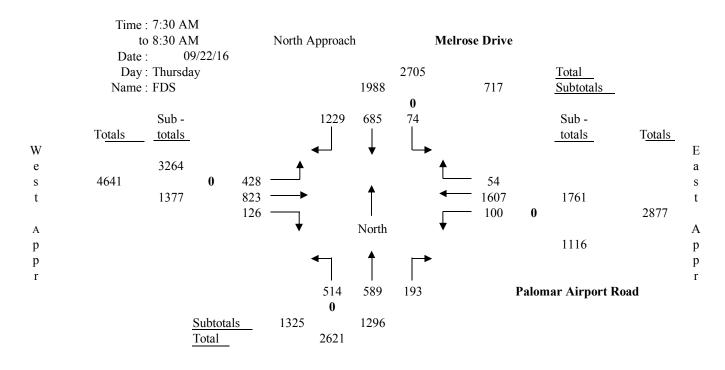
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir		-	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:30 AM 8:30 AM	to	;	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1			1	
		5		1				1		1			1	
		6		1				1			1			1
	Outside	7			1									
	Free-flow													
Lane Settir	igs		2	4	1	2	2	2	2	3	1	2	3	1
Capacity			3600	8000	1800	3600	4000	3600	3600	6000	1800	3600	6000	1800
Are the No	rth/South pha	ses s	split (Y/	N)?	N									
Are the Ea	st/West phase	s spl	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		514	589	193	74	685	1229	428	823	126	100	1607	54
Adjusted F	Iourly Volume	e	514	0	143	74	685	955	428	823	126	100	1607	54
Utilization	Factor		0.14	0.00	0.08	0.02	0.17	0.27	0.12	0.14	0.07	0.03	0.27	0.03
Critical Fa	ctors		0.14					0.27	0.12				0.27	

ICU Ratio = 0.90 LOS = D

Turning Movements at Intersection of:

Palomar Airport Road and Melrose Drive



South Approach

Palomar Airport Road at Melrose Drive

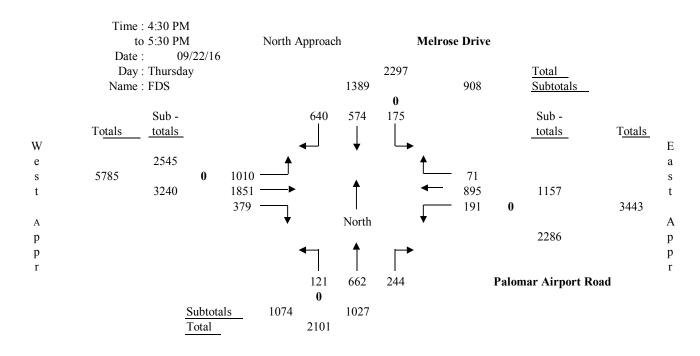
Lane Configuration for Intersection Capacity Utilization

	me Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (V	WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1			1	
		5		1				1		1			1	
		6		1				1			1			1
	Outside	7			1									
	Free-flow													
Lane Settin	ngs		2	4	1	2	2	2	2	3	1	2	3	1
Capacity			3600	8000	1800	3600	4000	3600	3600	6000	1800	3600	6000	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N	D?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		121	662	244	175	574	640	1010	1851	379	191	895	71
Adjusted I	Hourly Volum	e	121	662	0	175	574	75	1010	1851	379	191	895	71
Utilization	Factor		0.03	0.08	0.00	0.05	0.14	0.02	0.28	0.31	0.21	0.05	0.15	0.04
Critical Fa	ctors		0.03				0.14		0.28				0.15	

ICU Ratio = 0.70 LOS = B

Turning Movements at Intersection of:

Palomar Airport Road and Melrose Drive



South Approach



veracitytrafficgroup

LOCATION: Carlsbad N-S STREET: Melrose Dr. DATE: 09/22/16

W STREET: Palomar Airport Rd. CONTROL: Signal E-W STREET: DAY: THURSDAY PROJECT# 16-1256-021

CONTROL:	Signal	DTUSS	LINIS			LINIS		A CTD 01	NID		/FCT5 5:	INIC	
АМ		RTHBO			UTHBO			ASTBOU			ESTBOL		I TOTAL
LANES:	NL 2	NT 4	NR 1	SL 2	ST 3	SR 2	EL 2	ET 3	ER 1	WL 2	WT 3	WR 1	TOTAL
6:30 AM	71	59	22	6	142	217	59	103	22	10	284	9	1004
6:45 AM	86	72	25	10	147	236	75	103	28	22	344	13	1162
7:00 AM	88	72 78	39	19	135	249	73 78	146	20	22	356	8	1238
7:15 AM	100	102	57	14	168	271	89	191	27	16	372	10	1417
7:30 AM	123	146	42	20	183	330	89	180	31	28	410	7	1589
7:45 AM	135	150	50	14	166	308	131	227	37	27	394	16	1655
8:00 AM	116	152	52	19	180	317	99	202	34	24	409	6	1610
8:15 AM	140	141	49	21	156	274	109	214	24	21	394	25	1568
8:30 AM	122	130	48	24	152	285	101	173	26	23	339	9	1432
8:45 AM	131	105	40	20	129	240	75	153	19	20	346	10	1288
9:00 AM	79	83	28	10	98	173	96	163	24	18	246	10	1028
9:15 AM	82	71	23	11	93	180	90	198	28	9	233	15	1033
Volumes	1273	1289	475	188	1749	3080	1091	2054	320	240	4127	138	16024
Approach %	41.92	42.44	15.64	3.75	34.86	61.39	31.49	59.28	9.24	5.33	91.61	3.06	
App/Depart	3037	1	2518	5017	1	2309	3465	1	2717	4505	1	8480	
Peak Volumes	514	589	193	74	685	1229	428	823	126	100	1607	54	6422
Approach %	39.66	45.45	14.89	3.72	34.46	61.82	31.08	59.77	9.15	5.68	91.25	3.07	
								0.07			0.99		0.9701
Pk Hr FACTOR:		0.97			0.93			0.87			0.99		0.3701
Pk Hr FACTOR: AM Pk Hr at:		730			0.93			0.87			0.99		0.9701
	NC		UND	SC	0.93 OUTHBO	UND	E	0.87 ASTBOU	ND	W	/ESTBOL	JND	0.9701
AM Pk Hr at:	NC 65	730	UND 42	SC 26		UND 154	198		ND 70	W 38		JND 15	1563
AM Pk Hr at:		730 ORTHBO			UTHBO			ASTBOU			/ESTBOL		
AM Pk Hr at: PM 3:30 PM	65	730 ORTHBO 160	42	26	UTHBO 108	154	198	ASTBOU 456	70	38	ESTBOU	15	1563
AM Pk Hr at: PM 3:30 PM 3:45 PM	65 27	730 DRTHBO 160 129	42 47	26 31	108 117	154 141	198 182	456 379	70 68	38 33	Z31 235	15 19	1563 1408
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM	65 27 35	730 DRTHBO 160 129 148	42 47 51	26 31 24 43 41	108 117 107 137 126	154 141 141	198 182 232 202 248	456 379 474 397 463	70 68 89	38 33 37 49 39	231 235 213	15 19 27	1563 1408 1578 1472 1662
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM	65 27 35 21	730 DRTHBO 160 129 148 124 173 166	42 47 51 60	26 31 24 43 41 37	108 117 107 137 126 132	154 141 141 137 160 167	198 182 232 202 248 271	456 379 474 397 463 476	70 68 89 95 79 118	38 33 37 49 39 44	231 235 213 193 222 240	15 19 27 14	1563 1408 1578 1472 1662 1745
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM	65 27 35 21 27 29 31	730 DRTHBO 160 129 148 124 173 166 158	42 47 51 60 60 49 66	26 31 24 43 41 37 53	108 117 107 137 126 132 162	154 141 141 137 160 167 187	198 182 232 202 248 271 259	456 379 474 397 463 476 476	70 68 89 95 79 118 90	38 33 37 49 39 44 62	231 235 213 193 222 240 254	15 19 27 14 24 16 11	1563 1408 1578 1472 1662 1745 1809
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM	65 27 35 21 27 29 31 34	730 DRTHBO 160 129 148 124 173 166 158 165	42 47 51 60 60 49 66 69	26 31 24 43 41 37 53 44	108 117 107 137 126 132 162 154	154 141 141 137 160 167 187 126	198 182 232 202 248 271 259 232	456 379 474 397 463 476 476 436	70 68 89 95 79 118 90	38 33 37 49 39 44 62 46	231 235 213 193 222 240 254 179	15 19 27 14 24 16 11	1563 1408 1578 1472 1662 1745 1809 1597
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM	65 27 35 21 27 29 31 34 26	730 DRTHBO 160 129 148 124 173 166 158 165 158	42 47 51 60 60 49 66 69 57	26 31 24 43 41 37 53 44 21	108 117 107 137 126 132 162 154 109	154 141 141 137 160 167 187 126 120	198 182 232 202 248 271 259 232 251	456 379 474 397 463 476 476 436 460	70 68 89 95 79 118 90 92 128	38 33 37 49 39 44 62 46 57	231 235 213 193 222 240 254 179 215	15 19 27 14 24 16 11	1563 1408 1578 1472 1662 1745 1809 1597 1612
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	65 27 35 21 27 29 31 34 26 26	730 DRTHBO 160 129 148 124 173 166 158 165 158 129	42 47 51 60 60 49 66 69 57 45	26 31 24 43 41 37 53 44 21 28	108 117 107 137 126 132 162 154 109 118	154 141 141 137 160 167 187 126 120	198 182 232 202 248 271 259 232 251 185	456 379 474 397 463 476 476 436 460 304	70 68 89 95 79 118 90 92 128 100	38 33 37 49 39 44 62 46 57 48	231 235 213 193 222 240 254 179	15 19 27 14 24 16 11 20 10	1563 1408 1578 1472 1662 1745 1809 1597 1612 1312
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM	65 27 35 21 27 29 31 34 26 26 33	730 DRTHBO 160 129 148 124 173 166 158 165 158 129 123	42 47 51 60 60 49 66 69 57 45 59	26 31 24 43 41 37 53 44 21 28 19	108 117 107 137 126 132 162 154 109 118 80	154 141 141 137 160 167 187 126 120 125 106	198 182 232 202 248 271 259 232 251 185 205	456 379 474 397 463 476 476 436 460 304 377	70 68 89 95 79 118 90 92 128 100 85	38 33 37 49 39 44 62 46 57 48 50	231 235 213 193 222 240 254 179 215 193 174	15 19 27 14 24 16 11 20 10 11	1563 1408 1578 1472 1662 1745 1809 1597 1612 1312 1320
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	65 27 35 21 27 29 31 34 26 26 33 20	730 DRTHBO 160 129 148 124 173 166 158 165 158 129 123 118	42 47 51 60 60 49 66 69 57 45 59	26 31 24 43 41 37 53 44 21 28 19 23	108 117 107 137 126 132 162 154 109 118 80 71	154 141 141 137 160 167 187 126 120 125 106 88	198 182 232 202 248 271 259 232 251 185 205 201	456 379 474 397 463 476 476 436 460 304 377 321	70 68 89 95 79 118 90 92 128 100 85 76	38 33 37 49 39 44 62 46 57 48 50 36	/ESTBOL 231 235 213 193 222 240 254 179 215 193 174 149	15 19 27 14 24 16 11 20 10 11 9	1563 1408 1578 1472 1662 1745 1809 1597 1612 1312 1320 1171
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	65 27 35 21 27 29 31 34 26 26 33 20	730 DRTHBO 160 129 148 124 173 166 158 165 158 129 123 118	42 47 51 60 60 49 66 69 57 45 59 56	26 31 24 43 41 37 53 44 21 28 19 23	108 117 107 137 126 132 162 154 109 118 80 71	154 141 141 137 160 167 187 126 120 125 106 88	198 182 232 202 248 271 259 232 251 185 205 201	456 379 474 397 463 476 476 436 460 304 377 321	70 68 89 95 79 118 90 92 128 100 85 76	38 33 37 49 39 44 62 46 57 48 50 36	/ESTBOL 231 235 213 193 222 240 254 179 215 193 174 149 2498	15 19 27 14 24 16 11 20 10 11 9 12	1563 1408 1578 1472 1662 1745 1809 1597 1612 1312 1320
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach %	65 27 35 21 27 29 31 34 26 26 33 20 374	730 DRTHBO 160 129 148 124 173 166 158 165 158 129 123 118 1751	42 47 51 60 60 49 66 69 57 45 59 56 661	26 31 24 43 41 37 53 44 21 28 19 23 390 11.26	108 117 107 137 126 132 162 154 109 118 80 71 1421	154 141 141 137 160 167 187 126 120 125 106 88 1652 47.70	198 182 232 202 248 271 259 232 251 185 205 201 2666 30.38	456 379 474 397 463 476 476 436 460 304 377 321 5019	70 68 89 95 79 118 90 92 128 100 85 76 1090	38 33 37 49 39 44 62 46 57 48 50 36 539	/ESTBOL 231 235 213 193 222 240 254 179 215 193 174 149	15 19 27 14 24 16 11 20 10 11 9 12 188 5.83	1563 1408 1578 1472 1662 1745 1809 1597 1612 1312 1320 1171
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	65 27 35 21 27 29 31 34 26 26 33 20 374 13.42 2786	730 DRTHBO 160 129 148 124 173 166 158 165 158 129 123 118 1751 62.85	42 47 51 60 60 49 66 69 57 45 59 56 661 23.73 4605	26 31 24 43 41 37 53 44 21 28 19 23 390 11.26 3463	108 117 107 137 126 132 162 154 109 118 80 71 1421 41.03	154 141 141 137 160 167 187 126 120 125 106 88 1652 47.70 3050	198 182 232 202 248 271 259 232 251 185 205 201 2666 30.38 8775	456 379 474 397 463 476 476 436 460 304 377 321 5019 57.20	70 68 89 95 79 118 90 92 128 100 85 76 1090	38 33 37 49 39 44 62 46 57 48 50 36 539 16.71 3225	231 235 213 193 222 240 254 179 215 193 174 149 2498 77.46	15 19 27 14 24 16 11 20 10 11 9 12 188 5.83 4524	1563 1408 1578 1472 1662 1745 1809 1597 1612 1312 1320 1171
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	65 27 35 21 27 29 31 34 26 26 33 20 374 13.42 2786	730 DRTHBO 160 129 148 124 173 166 158 165 158 129 123 118 1751 62.85 / 662	42 47 51 60 60 49 66 69 57 45 59 56 661 23.73 4605	26 31 24 43 41 37 53 44 21 28 19 23 390 11.26 3463 175	108 117 107 137 126 132 162 154 109 118 80 71 1421 41.03 /	154 141 141 137 160 167 187 126 120 125 106 88 1652 47.70 3050 640	198 182 232 202 248 271 259 232 251 185 205 201 2666 30.38 8775 1010	456 379 474 397 463 476 476 436 460 304 377 321 5019 57.20 /	70 68 89 95 79 118 90 92 128 100 85 76 1090 12.42 6070 379	38 33 37 49 39 44 62 46 57 48 50 36 539 16.71 3225	/ESTBOL 231 235 213 193 222 240 254 179 215 193 174 149 2498 77.46 / 895	15 19 27 14 24 16 11 20 10 11 9 12 188 5.83 4524 71	1563 1408 1578 1472 1662 1745 1809 1597 1612 1312 1320 1171
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes Approach %	65 27 35 21 27 29 31 34 26 26 33 20 374 13.42 2786	730 DRTHBO 160 129 148 124 173 166 158 165 158 129 123 118 1751 62.85 / 662 64.46	42 47 51 60 60 49 66 69 57 45 59 56 661 23.73 4605	26 31 24 43 41 37 53 44 21 28 19 23 390 11.26 3463	108 117 107 137 126 132 162 154 109 118 80 71 1421 41.03 /	154 141 141 137 160 167 187 126 120 125 106 88 1652 47.70 3050	198 182 232 202 248 271 259 232 251 185 205 201 2666 30.38 8775	456 379 474 397 463 476 476 436 460 304 377 321 5019 57.20 /	70 68 89 95 79 118 90 92 128 100 85 76 1090	38 33 37 49 39 44 62 46 57 48 50 36 539 16.71 3225	/ESTBOL 231 235 213 193 222 240 254 179 215 193 174 149 2498 77.46 / 895 77.36	15 19 27 14 24 16 11 20 10 11 9 12 188 5.83 4524	1563 1408 1578 1472 1662 1745 1809 1597 1612 1312 1320 1171 18249
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	65 27 35 21 27 29 31 34 26 26 33 20 374 13.42 2786	730 DRTHBO 160 129 148 124 173 166 158 165 158 129 123 118 1751 62.85 / 662	42 47 51 60 60 49 66 69 57 45 59 56 661 23.73 4605	26 31 24 43 41 37 53 44 21 28 19 23 390 11.26 3463 175	108 117 107 137 126 132 162 154 109 118 80 71 1421 41.03 /	154 141 141 137 160 167 187 126 120 125 106 88 1652 47.70 3050 640	198 182 232 202 248 271 259 232 251 185 205 201 2666 30.38 8775 1010	456 379 474 397 463 476 476 436 460 304 377 321 5019 57.20 /	70 68 89 95 79 118 90 92 128 100 85 76 1090 12.42 6070 379	38 33 37 49 39 44 62 46 57 48 50 36 539 16.71 3225	/ESTBOL 231 235 213 193 222 240 254 179 215 193 174 149 2498 77.46 / 895	15 19 27 14 24 16 11 20 10 11 9 12 188 5.83 4524 71	1563 1408 1578 1472 1662 1745 1809 1597 1612 1312 1320 1171



Turn Count Summary

Accurate Video Counts Inc info@accuratevideocounts.com (619) 987-5136

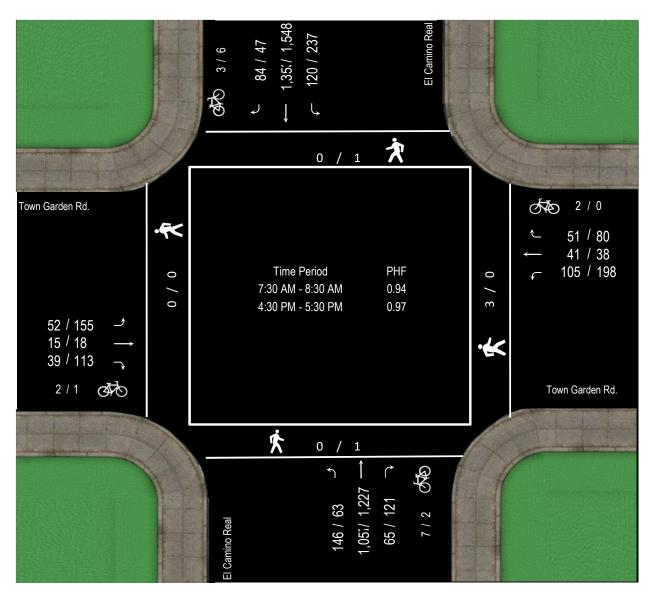


Location: Town Garden Rd. @ El Camino Real

Date of Count: Wednesday, June 21, 2017

Analysts: LV/CD
Weather: Sunny

Weather: Sunny
AVC Proj No: 17-0703





Vehicular Count

Accurate Video Counts Inc info@accuratevideocounts.com (619) 987-5136



Location: Town Garden Rd. @ El Camino Real

				AM F	eriod (7:00 AN	Л - 9:00	AM)					
	S	outhbou	nd	W	estbour	ıd	N	orthboui	nd	Е	astboun	d	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	27	333	8	4	6	16	7	169	17	5	0	12	604
7:15 AM	26	357	20	9	8	22	17	199	21	8	0	6	693
7:30 AM	25	384	33	12	10	15	16	267	28	10	1	14	815
7:45 AM	28	289	32	16	14	29	20	240	32	12	2	17	731
8:00 AM	16	351	34	7	11	37	19	287	47	10	5	12	836
8:15 AM	15	329	21	16	6	24	10	263	39	7	7	9	746
8:30 AM	19	284	26	13	11	33	14	273	34	8	3	10	728
8:45 AM	17	286	40	17	18	36	19	244	49	5	2	7	740
Total	173	2,613	214	94	84	212	122	1,942	267	65	20	87	5,893

AM Intersection Peak Hour: 7:30 AM - 8:30 AM Intersection PHF: 0.94

	S	outhbou	nd	W	estbour	nd	N	orthbour	nd	Е	astboun	d	TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	IOIAL
Volume	84	1,353	120	51	41	105	65	1,057	146	39	15	52	3,128
PHF	0.75	0.88	0.88	0.80	0.73	0.71	0.81	0.92	0.78	0.81	0.54	0.76	0.94
Movement PHF		0.88			0.83			0.90			0.85		0.94

				PM F	Period (4:00 PN	/I - 6:00	PM)					
	S	outhbou	nd	V	estbour	nd	N	orthboui	ıd	Е	astboun	d	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	15	435	44	23	4	45	21	291	12	23	4	50	967
4:15 PM	14	443	51	18	6	38	33	308	17	15	3	24	970
4:30 PM	10	390	36	23	8	46	26	315	17	29	4	40	944
4:45 PM	14	389	61	21	13	42	19	329	11	20	6	23	948
5:00 PM	9	399	60	15	11	55	34	277	14	38	5	47	964
5:15 PM	14	370	80	21	6	55	42	306	21	26	3	45	989
5:30 PM	23	388	68	7	8	45	35	263	19	29	7	26	918
5:45 PM	19	359	59	18	5	42	35	248	9	25	9	30	858
Total	118	3173	459	146	61	368	245	2,337	120	205	41	285	7,558

PM Intersection Peak Hour: 4:30 PM - 5:30 PM Intersection PHF: 0.97

	S	outhbou	ınd	W	/estboun	ıd	N	orthbou	nd	Е	astboun	ıd	TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	IOIAL
Volume	47	1548	237	80	38	198	121	1227	63	113	18	155	3845
PHF	0.84	0.97	0.741	0.87	0.731	0.9	0.72	0.932	0.75	0.743	0.75	0.824	0.97
Movement PHF		0.98			0.96			0.96			0.79		0.97



Turn Count Summary

Accurate Video Counts Inc info@accuratevideocounts.com (619) 987-5136



Location: Camino Vida Roble @ El Camino Real

Date of Count: Wednesday, June 21, 2017

Analysts: LV/CD
Weather: Sunny
AVC Proj No: 17-0703





Vehicular Count

Accurate Video Counts Inc info@accuratevideocounts.com (619) 987-5136



Location: Camino Vida Roble @ El Camino Real

AM Period (7:00 AM - 9:00 AM)													
	S	Southbound			Westbound			orthbou	nd	Е	astboun	d	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
7:00 AM	31	326	1	2	0	0	0	217	45	13	0	7	642
7:15 AM	38	310	2	0	0	1	0	269	72	16	0	6	714
7:30 AM	48	368	1	2	2	2	0	327	85	22	0	9	866
7:45 AM	76	297	4	4	0	0	1	325	110	19	0	11	847
8:00 AM	63	337	5	1	1	0	0	365	93	25	1	18	909
8:15 AM	56	305	7	1	1	1	1	345	104	16	0	15	852
8:30 AM	41	286	13	2	1	1	0	352	77	28	1	12	814
8:45 AM	65	256	15	1	0	1	3	336	124	17	3	20	841
Total	418	2,485	48	13	5	6	5	2,536	710	156	5	98	6,485

AM Intersection Peak Hour: 7:30 AM - 8:30 AM Intersection PHF: 0.96

	Southbound		Westbound			Northbound			Eastbound			TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	IOIAL
Volume	243	1,307	17	8	4	3	2	1,362	392	82	1	53	3,474
PHF	0.80	0.89	0.61	0.50	0.50	0.38	0.50	0.93	0.89	0.82	0.25	0.74	0.96
Movement PHF		0.94			0.63			0.96			0.77		0.96

PM Period (4:00 PM - 6:00 PM)													
	S	Southbound			Westbound			Northbound			Eastbound		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	TOTAL
4:00 PM	21	431	7	0	0	1	0	263	22	73	0	46	864
4:15 PM	26	416	12	1	2	0	4	296	25	69	4	48	903
4:30 PM	27	387	4	4	1	0	0	339	53	109	1	59	984
4:45 PM	31	380	9	0	0	0	0	344	35	96	0	58	953
5:00 PM	16	423	6	0	0	1	0	299	38	130	1	76	990
5:15 PM	20	434	4	1	1	0	2	272	30	95	1	71	931
5:30 PM	18	393	2	2	0	3	0	246	19	98	4	60	845
5:45 PM	19	354	4	1	0	2	0	260	36	85	1	35	797
Total	178	3218	48	9	4	7	6	2,319	258	755	12	453	7,267

PM Intersection Peak Hour: 4:30 PM - 5:30 PM Intersection PHF: 0.97

	Southbound		Westbound			Northbound			Eastbound			TOTAL	
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	IOIAL
Volume	94	1624	23	5	2	1	2	1254	156	430	3	264	3858
PHF	0.76	0.935	0.639	0.313	0.5	0.25	0.25	0.911	0.736	0.827	0.75	0.868	0.97
Movement PHF		0.95			0.40			0.90			0.84		0.97

City of Carlsbad Traffic Monitoring Program Summer 2016



Intersection Analysis Summary

Intersection Number: 10

Intersection Location: El Camino Real & Poinsettia Ln.

Contents:

A.M. Peak Hour ICU Analysis and Turn Movement Diagram
Page 1

P.M. Peak Hour ICU Analysis and Turn Movement Diagram
Page 2

A.M./P.M. Peak Period Intersection Turning Movement Count Data Page 3



5050 Avenida Encinias, Ste 260 Carlsbad, CA 92008 Address Line 3 Address Line 4

O: 760.476.9196 F: 760.476.9198 Email: someone@example.com

El Camino Real at Poinsettia Lane

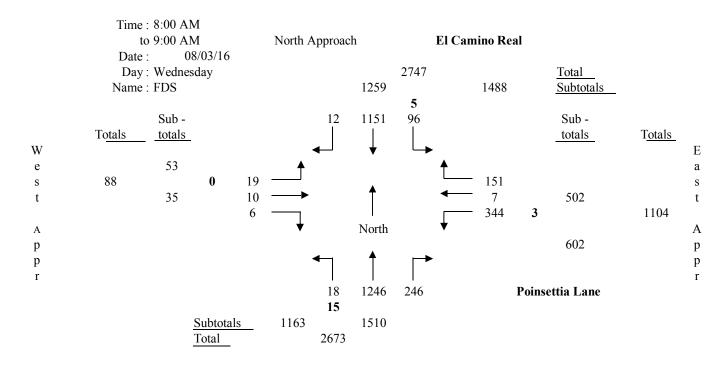
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tim	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
8:00 AM 9:00 AM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1	1		1	1
		5		1			1	1						
		6			1									
	Outside	7												
	Free-flow													
Lane Settin	gs		2	3	1	2	3	0	2	2	0	2	1	1
Capacity			3600	6000	1800	3600	6000	0	3600	4000	0	3600	2000	1800
Are the Nor	rth/South pha	ses s	split (Y	/N)?	N									
Are the Eas	t/West phase	s sp	lit (Y/N)?	N									
Efficiency I	Lost Factor		0.10											
Hourly Vol	ume		18	1246	246	96	1151	12	19	10	6	344	7	151
Adjusted H	ourly Volume	Э	18	1246	246	96	1163	0	19	16	0	344	0	158
Utilization 1	Factor		0.01	0.21	0.14	0.03	0.19	0.00	0.01	0.00	0.00	0.10	0.00	0.09
Critical Fac	etors			0.21		0.03				0.00		0.10		

ICU Ratio = 0.44 LOS =

Turning Movements at Intersection of:

El Camino Real and Poinsettia Lane



South Approach

El Camino Real at Poinsettia Lane

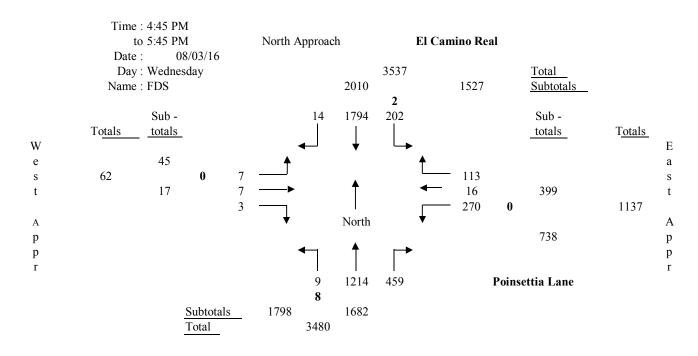
Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Ti	me Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr	(EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1	1		1	1
		5		1			1	1						
		6			1									
	Outside	7												
	Free-flow													
Lane Setti	ngs		2	3	1	2	3	0	2	2	0	2	1	1
Capacity			3600	6000	1800	3600	6000	0	3600	4000	0	3600	2000	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N	D?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		9	1214	459	202	1794	14	7	7	3	270	16	113
Adjusted I	Hourly Volume	e	9	1214	459	202	1808	0	7	7	10	270	0	129
Utilization	Factor		0.00	0.20	0.26	0.06	0.30	0.00	0.00	0.00	0.00	0.08	0.00	0.07
Critical Fa	ctors				0.26	0.06				0.00		0.08		

ICU Ratio = 0.50 LOS = A

Turning Movements at Intersection of:

El Camino Real and Poinsettia Lane



South Approach



Vveracitytrafficgroup

N-S STREET: El Camino Real DATE: 08/03/16 LOCATION: Carlsbad

E-W STREET: Poinsettia Ln. DAY: WEDNESDAY PROJECT# 16-1256-010

CONTROL: Signal

	Signal						_				E0== 4 :	13.15	
АМ		RTHBO		SOUTHBOUND				ASTBOU		WESTBOUND			
LANEC	NL	NT	NR 1	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES: 6:30 AM	2	3	19	8	3 111	0	2	2	0	2 51	0	8	331
	2	126				1		1		67			463
6:45 AM 7:00 AM	0	168 146	30 29	9 7	167 215	0 0	2 1	0 0	0	75	0	20 21	497
7:00 AM 7:15 AM	5		44			_	_		0 3	80	0		
7:15 AM 7:30 AM		225 292	44 46	6	289 267	1	1 4	2		79	1	28 31	685 743
7:30 AM 7:45 AM	8 2	370	62	8 8	310	1 1	2	2 1	3 4	100	2 2	36	898
8:00 AM	4	288	60	25	276	4	3	1		112	2	34	810
8:15 AM	3	306	55	25 14	284	2	2	3	1 3	85	2	36	795
8:30 AM	5	294	55 54	21	295	2	7	2	0	75	2	32	789
8:45 AM	6	358	77	36	295	4	7	4	2	73 72	1	32 49	912
9:00 AM	3	308	48	36 41	254	2	2	3	3	61	5	49 45	775
9:00 AM 9:15 AM	4	279	46	22	23 4 245	4	4	3 4	0	48	1	45 45	702
Volumes	45	3160	570	205	3009	22	39	23	19	905	18	385	8400
Approach %	1.19	83.71	15.10	6.33	92.99	0.68	48.15	28.40	23.46	69.19	1.38	29.43	
App/Depart	3775	/	3584	3236	/	3933	81	/	798	1308	/	85	
Peak Volumes	18	1246	246	96	1151	12	19	10	6	344	7	151	3306
Approach %	1.19	82.52	16.29	7.63	91.42	0.95	54.29	28.57	17.14	68.53	1.39	30.08	
	Ī				0.04			0.67			0.85		0.9063
Pk Hr FACTOR:		0.86			0.94			0.67			0.00		0.3003
Pk Hr FACTOR: AM Pk Hr at:		0.86 800			0.94			0.67			0.00		0.9000
	NC		UND	SC	0.94 OUTHBO	UND	E	4STBOU	ND	W	ESTBOL	JND	0.3003
AM Pk Hr at:	NC 4	800	UND 81	SC 32		UND 0	E. 4		ND 1	W 47		JND 32	800
AM Pk Hr at:		800 ORTHBO			UTHBO			ASTBOU			ESTBOL		
AM Pk Hr at: PM 3:30 PM	4	800 ORTHBO 282	81	32	OUTHBO 312	0	4	ASTBOU 1	1	47	ESTBOL 4	32	800
AM Pk Hr at: PM 3:30 PM 3:45 PM	4 2	800 DRTHBO 282 272	81 80	32 34	312 384	0	4 1	ASTBOU 1 1	1 2	47 54	ESTBOU 4 2	32 29	800 864
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM	4 2 2	800 DRTHBO 282 272 256	81 80 84 84 93	32 34 24	312 384 333	0 3 3	4 1 1	ASTBOU 1 1 1	1 2 1	47 54 62	ESTBOL 4 2 2	32 29 28	800 864 797 927 859
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM	4 2 2 5	800 DRTHBO 282 272 256 275	81 80 84 84	32 34 24 37 43 47	312 384 333 429	0 3 3 5	4 1 1 4	ASTBOU 1 1 1 3	1 2 1 0	47 54 62 53	ESTBOL 4 2 2 3	32 29 28 29	800 864 797 927 859 985
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM	4 2 2 5 4	800 DRTHBO 282 272 256 275 295 302 323	81 80 84 84 93 96 121	32 34 24 37 43 47 45	312 384 333 429 336 429 457	0 3 3 5 2 4 3	4 1 1 4 2 2 1	1 1 1 3 0	1 2 1 0 1	47 54 62 53 57 69 77	4 2 2 3 1 4	32 29 28 29 25 26 32	800 864 797 927 859 985 1067
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM	4 2 2 5 4 5	800 282 272 256 275 295 302 323 325	81 80 84 84 93 96 121 133	32 34 24 37 43 47 45 53	312 384 333 429 336 429 457 473	0 3 5 2 4 3 5	4 1 1 4 2 2 1 2	1 1 1 3 0 1 2	1 2 1 0 1	47 54 62 53 57 69 77 72	2 2 3 1 4 4 5	32 29 28 29 25 26 32 28	800 864 797 927 859 985 1067 1102
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM	4 2 2 5 4 5	800 DRTHBO 282 272 256 275 295 302 323	81 80 84 84 93 96 121	32 34 24 37 43 47 45	312 384 333 429 336 429 457	0 3 3 5 2 4 3	4 1 1 4 2 2 1	1 1 1 3 0 1 2	1 2 1 0 1 0	47 54 62 53 57 69 77	4 2 2 3 1 4	32 29 28 29 25 26 32	800 864 797 927 859 985 1067 1102 954
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	4 2 2 5 4 5 1 3 0	800 DRTHBO 282 272 256 275 295 302 323 325 264 287	81 80 84 84 93 96 121 133 109 124	32 34 24 37 43 47 45 53 57 36	312 384 333 429 336 429 457 473 435 311	0 3 5 2 4 3 5 2	4 1 1 4 2 2 1 2 2 3	1 1 1 3 0 1 2	1 2 1 0 1 0 1 1 1 1	47 54 62 53 57 69 77 72 52 51	ESTBOL 4 2 2 3 1 4 4 5 3 4	32 29 28 29 25 26 32 28 27 22	800 864 797 927 859 985 1067 1102 954 844
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM	4 2 2 5 4 5 1 3 0 1 2	800 DRTHBO 282 272 256 275 295 302 323 325 264 287 257	81 80 84 84 93 96 121 133 109 124 85	32 34 24 37 43 47 45 53 57 36 42	312 384 333 429 336 429 457 473 435 311 356	0 3 3 5 2 4 3 5 2 4 6	4 1 1 4 2 2 1 2 2 3 2	1 1 1 3 0 1 2 2 2 0 1	1 2 1 0 1 0 1 1 1 1 1 2	47 54 62 53 57 69 77 72 52 51 54	2 2 3 1 4 4 5 3	32 29 28 29 25 26 32 28 27 22	800 864 797 927 859 985 1067 1102 954 844 832
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	4 2 5 4 5 1 3 0 1 2 4	800 282 272 256 275 295 302 323 325 264 287 257 278	81 80 84 84 93 96 121 133 109 124 85 94	32 34 24 37 43 47 45 53 57 36 42 25	312 384 333 429 336 429 457 473 435 311 356 271	0 3 5 2 4 3 5 2 4 6 4	4 1 1 4 2 2 1 2 2 3 2 2	ASTBOU 1 1 3 0 1 2 2 0 1 0	1 2 1 0 1 0 1 1 1 1 1 2 2	47 54 62 53 57 69 77 72 52 51 54 49	ESTBOL 4 2 3 1 4 5 3 4 3 2	32 29 28 29 25 26 32 28 27 22 22 20	800 864 797 927 859 985 1067 1102 954 844 832 751
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM	4 2 2 5 4 5 1 3 0 1 2 4	800 DRTHBO 282 272 256 275 295 302 323 325 264 287 257 278	81 80 84 84 93 96 121 133 109 124 85 94	32 34 24 37 43 47 45 53 57 36 42 25	312 384 333 429 336 429 457 473 435 311 356 271	0 3 5 2 4 3 5 2 4 6 4	4 1 1 4 2 2 1 2 2 3 2 2 2 2	ASTBOU 1 1 1 3 0 1 2 2 0 1 0 14	1 2 1 0 1 0 1 1 1 1 2 2	47 54 62 53 57 69 77 72 52 51 54 49	ESTBOL 4 2 3 1 4 4 5 3 4 3 2 37	32 29 28 29 25 26 32 28 27 22 22 22 20	800 864 797 927 859 985 1067 1102 954 844 832
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach %	4 2 2 5 4 5 1 3 0 1 2 4 33 0.71	800 282 272 256 275 295 302 323 325 264 287 257 278 3416 73.73	81 80 84 84 93 96 121 133 109 124 85 94 1184	32 34 24 37 43 47 45 53 57 36 42 25 475	312 384 333 429 336 429 457 473 435 311 356 271 4526	0 3 3 5 2 4 3 5 2 4 6 4 41 0.81	4 1 1 4 2 2 1 2 2 3 2 2 2 49.06	1 1 1 3 0 1 2 2 2 0 1 0 14 26.42	1 2 1 0 1 0 1 1 1 1 2 2 13	47 54 62 53 57 69 77 72 52 51 54 49 697	ESTBOL 4 2 2 3 1 4 4 5 3 4 3 2 37 3.51	32 29 28 29 25 26 32 28 27 22 22 20 320 30.36	800 864 797 927 859 985 1067 1102 954 844 832 751
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart	4 2 2 5 4 5 1 3 0 1 2 4 33 0.71 4633	800 282 272 256 275 295 302 323 325 264 287 257 278 3416 73.73 /	81 80 84 84 93 96 121 133 109 124 85 94 1184 25.56 3762	32 34 24 37 43 47 45 53 57 36 42 25 475 9.42 5042	312 384 333 429 336 429 457 473 435 311 356 271 4526 89.77	0 3 3 5 2 4 3 5 2 4 6 4 41 0.81 5236	4 1 1 4 2 2 1 2 2 3 2 2 2 49.06 53	ASTBOU 1 1 1 3 0 1 2 2 2 0 1 0 14 26.42 /	1 2 1 0 1 0 1 1 1 1 2 2 2 13 24.53	47 54 62 53 57 69 77 72 52 51 54 49 697 66.13	ESTBOL 4 2 2 3 1 4 4 5 3 4 3 2 37 3.51	32 29 28 29 25 26 32 28 27 22 22 20 320 30.36 111	800 864 797 927 859 985 1067 1102 954 844 832 751
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	4 2 2 5 4 5 1 3 0 1 2 4 33 0.71 4633 9	800 DRTHBO 282 272 256 275 295 302 323 325 264 287 257 278 3416 73.73 / 1214	81 80 84 84 93 96 121 133 109 124 85 94 1184 25.56 3762 459	32 34 24 37 43 47 45 53 57 36 42 25 475 9.42 5042	312 384 333 429 336 429 457 473 435 311 356 271 4526 89.77 /	0 3 3 5 2 4 3 5 2 4 6 4 41 0.81 5236	4 1 1 4 2 2 1 2 2 3 2 2 2 2 49.06 53 7	ASTBOU 1 1 1 3 0 1 2 2 0 1 0 14 26.42 / 7	1 2 1 0 1 0 1 1 1 1 2 2 13 24.53 1673 3	47 54 62 53 57 69 77 72 52 51 54 49 697 66.13 1054	ESTBOL 4 2 2 3 1 4 4 5 3 4 3 2 37 3.51 /	32 29 28 29 25 26 32 28 27 22 22 20 320 30.36 111	800 864 797 927 859 985 1067 1102 954 844 832 751
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes Approach %	4 2 2 5 4 5 1 3 0 1 2 4 33 0.71 4633	800 DRTHBO 282 272 256 275 295 302 323 325 264 287 257 278 3416 73.73 / 1214 72.18	81 80 84 84 93 96 121 133 109 124 85 94 1184 25.56 3762	32 34 24 37 43 47 45 53 57 36 42 25 475 9.42 5042	312 384 333 429 336 429 457 473 435 311 356 271 4526 89.77 /	0 3 3 5 2 4 3 5 2 4 6 4 41 0.81 5236	4 1 1 4 2 2 1 2 2 3 2 2 2 49.06 53	ASTBOU 1 1 1 3 0 1 2 2 2 0 1 0 14 26.42 / 7 41.18	1 2 1 0 1 0 1 1 1 1 2 2 2 13 24.53	47 54 62 53 57 69 77 72 52 51 54 49 697 66.13	ESTBOL 4 2 2 3 1 4 4 5 3 4 3 2 37 3.51 / 16 4.01	32 29 28 29 25 26 32 28 27 22 22 20 320 30.36 111	800 864 797 927 859 985 1067 1102 954 844 832 751 10782
AM Pk Hr at: PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:15 PM Volumes Approach % App/Depart Peak Volumes	4 2 2 5 4 5 1 3 0 1 2 4 33 0.71 4633 9	800 DRTHBO 282 272 256 275 295 302 323 325 264 287 257 278 3416 73.73 / 1214	81 80 84 84 93 96 121 133 109 124 85 94 1184 25.56 3762 459	32 34 24 37 43 47 45 53 57 36 42 25 475 9.42 5042	312 384 333 429 336 429 457 473 435 311 356 271 4526 89.77 /	0 3 3 5 2 4 3 5 2 4 6 4 41 0.81 5236	4 1 1 4 2 2 1 2 2 3 2 2 2 2 49.06 53 7	ASTBOU 1 1 1 3 0 1 2 2 0 1 0 14 26.42 / 7	1 2 1 0 1 0 1 1 1 1 2 2 13 24.53 1673 3	47 54 62 53 57 69 77 72 52 51 54 49 697 66.13 1054	ESTBOL 4 2 2 3 1 4 4 5 3 4 3 2 37 3.51 /	32 29 28 29 25 26 32 28 27 22 22 20 320 30.36 111	800 864 797 927 859 985 1067 1102 954 844 832 751

	APPENDIX B
	ICU & HCM Intersection Analysis Calculation Methodologies
LINSCOTT, LAW & GREENSPAN, engineers	LLG Ref. 3-17-2772
-	McClellan-Palomar Airport Master Plan Update

The ICU is shown for unsignalized intersections because it represents the potential capacity for the intersection if it were to be signalized.

ICU Level of Service

The ICU Level of Service (LOS) gives insight into how an intersection is functioning and how much extra capacity is available to handle traffic fluctuations and incidents. ICU is not a value that can be measured with a stopwatch, but it does give a good reading on the conditions that can be expected at the intersection. Full details of the ICU LOS can be found in the topic, Intersection Capacity (ICU) Report.

Letters A to H are assigned to the intersection based on the Intersection Capacity Utilization using **Table 4-3**. Note that the ICU 2003 includes additional levels past F to further differentiate congested operation.

Table 4-3 Level of Service Criteria for ICU Analysis

ICU	Level of Service
0 to 55%	Α
>55% to 64%	В
>64% to 73%	С
>73% to 82%	D
>82% to 91%	E
>91% to 100%	F
>100% to 109%	G
>109%	Н

Offset Settings

The settings in the **Offset** settings box specify the phase the offset is reference to and the value of the current offset. Each intersection is given one offset that can be referenced to the beginning of green, yellow or red of the phase. The offset value represents the number of seconds that the reference phase lags the master reference (or arbitrary reference if no master is specified). The master reference synchronizes the intersections sharing a common cycle length to provide a coordinated system.

2010 HIGHWAY CAPACITY MANUAL LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

In the 2010 Highway Capacity Manual (HCM), Level of Service for signalized intersections is defined in terms of delay. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Specifically, Level of Service criteria are stated in terms of the average control delay per vehicle for a 15-minute analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Delay is a complex measure, and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group or approach in question.

LEVEL OF SERVICE	CONTROLLED DELAY PER VEHICLE (SEC)						
A		<u><</u>	10.0				
В	10.1	to	20.0				
C	20.1	to	35.0				
D	35.1	to	55.0				
E	55.1	to	80.0				
F		>	80.0				

Level of Service A describes operations with very low delay, (i.e. less than 10.0 seconds per vehicle). This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level of Service B describes operations with delay in the range of 10.1 to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

Level of Service C describes operations with delay in the range of 20.1 to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in the level. The number of vehicles stopping is significant at this level, although many still pass through the intersections without stopping.

Level of Service D describes operations with delay in the range of 35.1 to 55.0 seconds per vehicle. At Level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

Level of Service E describes operations with delay in the range of 55.1 to 80.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

Level of Service F describes operations with delay in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation (i.e. when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

2010 HIGHWAY CAPACITY MANUAL LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

In the 2010 Highway Capacity Manual (HCM), Level of Service for unsignalized intersections is determined by the computed or measured control delay and is defined for each minor movement. Level of Service is not defined for the intersection as a whole. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The criteria are given in the following the table, and are based on the average control delay for any particular minor movement.

LEVEL OF SERVICE	AVERA		NTROL DELAY VEH	EXPECTED DELAY TO MINOR STREET TRAFFIC
A	0.0	<u><</u>	10.0	Little or no delay
В	10.1	to	15.0	Short traffic delays
C	15.1	to	25.0	Average traffic delays
D	25.1	to	35.0	Long traffic delays
E	35.1	to	50.0	Very long traffic delays
F		>	50.0	Severe congestion

Level of Service F exists when there are insufficient gaps of suitable size to allow a side street demand to safely cross through a major street traffic stream. This Level of Service is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches. The method, however, is based on a constant critical gap size; that is, the critical gap remains constant no matter how long the side-street motorist waits. LOS F may also appear in the form on side-street vehicles selecting smaller-than-usual gaps. In such cases, safety may be a problem, and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior, which are more difficult to observe in the field than queuing.

In most cases at Two-Way Stop Controlled (TWSC) intersections, the critical movement is the minor-street left-turn movement. As such, the minor-street left-turn movement can generally be considered the primary factor affecting overall intersection performance. The lower threshold for LOS F is set at 50 seconds of delay per vehicle. There are many instances, particularly in urban areas, in which the delay equations will predict delays of 50 seconds (LOS F) or more for minor-street movements under very low volume conditions on the minor street (less than 25 vehicle/hour). Since the first term of the equation is a function only of the capacity, the LOS F threshold of 50 sec/vehicle is reached with a movement capacity of approximately 85 vehicle/hour or less.

This procedure assumes random arrivals on the major street. For a typical four-lane arterial with average daily traffic volumes in the range of 15,000 to 20,000 vehicles per day (peak hour, 1,500 to 2,000 vehicle/hour), the delay equation used in the TWSC capacity analysis procedure will predict 50 seconds of delay or more (LOS F) for many urban TWSC intersections that allow minor-street left-turn movements. **The LOS F threshold will be reached regardless of the volume of minor-street left-turn traffic.** Not-withstanding this fact, most low-volume minor-street approaches would not meet any of the volume or delay warrants for signalization of the *Manual on Uniform Traffic Control Devices* (MUTCD) since the warrants define an asymptote at 100 vehicle/hour on the minor approach. As a result, many public agencies that use the HCM Level of Service thresholds to determine the design adequacy of TWSC intersections may be forced to eliminate the minor-street left-turn movement, even when the movement may not present any operational problem, such as the formation of long queues on the minor street or driveway approach.

	APPENDIX C
	EXISTING INTERSECTION ANALYSIS CALCULATION WORKSHEETS
1000TT LAW & CREENORM Annine	LL C.D. C. 2.17.0770

Cannon Road at Faraday Avenue

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir			Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	<u>Thru</u>	Right	Left	<u>Thru</u>	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1	1	1	1			1		
Config -	(left)	2	1	1	1					1			1	
urations		3								1	1		1	1
		4												
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settir	ngs		2	0	0	0	0	1	1	1	1	1	2	0
Capacity			3600	0	0	0	0	1800	1800	2000	1800	1800	4000	0
Are the No	orth/South pha	ises	split (Y	N)?	Y									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		160	2	12	0	3	5	4	177	528	59	732	7
Adjusted F	Iourly Volum	e	174	0	0	0	0	8	4	177	528	59	739	0
Utilization	Factor		0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.29	0.03	0.18	0.00
Critical Fa	ctors		0.05					0.00			0.29	0.03		

ICU Ratio = 0.47 LOS = A

Cannon Road at Faraday Avenue

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1	1	1	1			1		
Config -	(left)	2	1	1	1					1			1	
urations		3								1	1		1	1
		4												
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	0	0	1	0	0	1	2	0	1	2	0
Capacity			3600	0	0	1800	0	0	1800	4000	0	1800	4000	0
Are the No	orth/South pha	ises	split (Y	N)?	Y									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		575	3	78	4	3	1	4	871	203	11	384	4
Adjusted F	Iourly Volum	e	656	0	0	8	3	0	4	871	203	11	388	0
Utilization	Factor		0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.01	0.10	0.00
Critical Fa	ctors		0.18			0.00				0.22		0.01		

ICU Ratio = 0.51 LOS = A

College Blvd at El Camino Real

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5												1
		6												
	Outside	7												
	Free-flow										1			
Lane Settin	ngs		2	2	0	2	1	1	1	3	1	1	3	1
Capacity			3600	4000	0	3600	2000	1800	1800	6000	1800	1800	6000	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		87	14	9	33	29	36	19	1924	536	124	548	16
Adjusted F	Iourly Volum	e	87	23	0	33	29	0	19	1924	536	124	548	16
Utilization	Factor		0.02	0.01	0.00	0.01	0.01	0.00	0.01	0.32	0.30	0.07	0.09	0.01
Critical Fa	ctors		0.02				0.01			0.32		0.07		

ICU Ratio = 0.52 LOS = A

College Blvd at El Camino Real

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:30 PM	to													
5:30 PM			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5												1
		6												
	Outside	7												
	Free-flow										1			
Lane Settin	ngs		2	2	0	2	1	1	1	3	1	1	3	1
Capacity			3600	4000	0	3600	2000	1800	1800	6000	1800	1800	6000	1800
Are the No	orth/South pha	ses s	split (Y	/N)?	N									
Are the Ea	st/West phase	s spl	it (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		539	35	24	20	13	39	45	993	120	21	1944	32
Adjusted F	Iourly Volume	е	539	59	0	20	13	0	45	993	120	21	1944	32
Utilization	Factor		0.15	0.01	0.00	0.01	0.01	0.00	0.03	0.17	0.07	0.01	0.32	0.02
Critical Fa	ctors		0.15				0.01		0.03				0.32	

ICU Ratio = 0.61 LOS = B

College Blvd at Faraday Ave

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	<u>Thru</u>	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1	1		1	1
		4		1	1		1	1						
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	1	1	2	2	0	1	2	0	1	2	0
Capacity			3600	2000	1800	3600	4000	0	1800	4000	0	1800	4000	0
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		194	168	272	167	305	76	41	368	119	141	354	46
Adjusted F	Iourly Volum	e	194	440	272	167	381	0	41	368	119	141	400	0
Utilization	Factor		0.05	0.22	0.15	0.05	0.10	0.00	0.02	0.09	0.00	0.08	0.10	0.00
Critical Fa	ctors			0.22		0.05				0.09		0.08		

ICU Ratio = 0.54 LOS = A

College Blvd at Faraday Ave

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru_	Right	Left_	<u>Thru</u>	Right	_Left_	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1	1		1	1
		4		1	1		1	1						
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	2	0	2	2	0	1	2	0	1	2	0
Capacity			3600	4000	0	3600	4000	0	1800	4000	0	1800	4000	0
Are the No	orth/South pha	ses s	split (Y	N)?	N									
Are the Ea	st/West phase	s spl	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		132	288	109	17	181	55	50	458	223	235	435	146
Adjusted H	Iourly Volume	е	132	397	0	17	236	0	50	458	223	235	581	0
Utilization	Factor		0.04	0.10	0.00	0.00	0.06	0.00	0.03	0.11	0.00	0.13	0.15	0.00
Critical Fa	ctors			0.10		0.00				0.11		0.13		

ICU Ratio = 0.44 LOS = A

El Camino Real at Faraday Ave

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1			1	
		4		1			1				1			1
		5		1	1		1							
		6						1						
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	3	0	2	3	1	1	2	1	1	2	1
Capacity			3600	6000	0	3600	6000	1800	1800	4000	1800	1800	4000	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		587	420	85	400	1482	152	24	180	95	122	734	148
Adjusted F	Hourly Volum	e	587	505	0	400	1482	152	24	180	95	122	734	148
Utilization	Factor		0.16	0.08	0.00	0.11	0.25	0.08	0.01	0.05	0.05	0.07	0.18	0.08
Critical Fa	ctors		0.16				0.25		0.01				0.18	

ICU Ratio = 0.70 LOS = B

El Camino Real at Faraday Ave

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	_Thru_	Right	Left	Thru	Right	Left_	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1			1	
		4		1			1				1			1
		5		1	1		1							
		6						1						
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	3	0	2	3	1	1	1	2	1	2	1
Capacity			3600	6000	0	3600	6000	1800	1800	2000	3600	1800	4000	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		159	1375	108	218	934	15	128	681	630	165	255	345
Adjusted F	Iourly Volum	e	159	1483	0	218	934	15	128	341	971	165	255	345
Utilization	Factor		0.04	0.25	0.00	0.06	0.16	0.01	0.07	0.17	0.27	0.09	0.06	0.19
Critical Fa	ctors			0.25		0.06					0.27	0.09		

ICU Ratio = 0.77 LOS = C

I-5 SB Ramps at Palomar Airport Road

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru	Right	Left	<u>Thru</u>	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1				1				1			1	
Config -	(left)	2				1				1			1	
urations		3						1		1	1			
		4												
		5												
		6												
	Outside	7												
	Free-flow													1
Lane Settin	ngs		0	0	0	2	0	1	0	3	0	0	2	1
Capacity			0	0	0	3600	0	1800	0	6000	0	0	4000	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		0	0	0	1099	0	362	0	505	71	0	645	288
Adjusted F	Hourly Volum	e	0	0	0	1099	0	362	0	576	0	0	645	0
Utilization	Factor		0.00	0.00	0.00	0.31	0.00	0.20	0.00	0.10	0.00	0.00	0.16	0.00
Critical Fa	ctors			0.00	0.00	0.31			0.00				0.16	

ICU Ratio = 0.57 LOS = A

I-5 SB Ramps at Palomar Airport Road

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Time	Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM to 5:45 PM)		Left	Thru	Right	Left	<u>Thru</u>	Right	_Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1				1				1			1	
Config -	(left)	2				1				1			1	
urations		3						1		1	1			
		4												
		5												
		6												
	Outside	7												
F	Free-flow													1
Lane Settings			0	0	0	2	0	1	0	3	0	0	2	1
Capacity			0	0	0	3600	0	1800	0	6000	0	0	4000	1800
Are the North	/South pha	ses s	split (Y	/N)?	N									
Are the East/V	West phase	s spl	lit (Y/N)?	N									
Efficiency Lo	st Factor		0.10											
Hourly Volun	ne		0	0	0	552	0	156	0	826	245	0	741	1016
Adjusted Hou	rly Volum	Э	0	0	0	552	0	156	0	1071	0	0	741	0
Utilization Fa	ctor		0.00	0.00	0.00	0.15	0.00	0.09	0.00	0.18	0.00	0.00	0.19	0.00
Critical Factor	rs			0.00	0.00	0.15			0.00				0.19	

ICU Ratio = 0.44 LOS = A

I-5 NB Ramps at Palomar Airport Road

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	<u>Thru</u>	Right	Left	Thru_	Right	_Left_	_Thru_	Right	_Left_	_Thru_	Right
Lane	Inside	1	1	1					1				1	
Config -	(left)	2			1					1			1	
urations		3			1					1			1	
		4								1				1
		5												1
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		1	0	2	0	0	0	1	3	0	0	3	2
Capacity			1800	0	3600	0	0	0	1800	6000	0	0	6000	3600
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		61	0	1138	0	0	0	72	1551	0	0	817	425
Adjusted F	Iourly Volum	e	61	0	1138	0	0	0	72	1551	0	0	817	425
Utilization	Factor		0.03	0.00	0.32	0.00	0.00	0.00	0.04	0.26	0.00	0.00	0.14	0.12
Critical Fa	ctors				0.32	0.00				0.26		0.00		

ICU Ratio = 0.68 LOS = B

I-5 NB Ramps at Palomar Airport Road

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1	1					1				1	
Config -	(left)	2			1					1			1	
urations		3			1					1			1	
		4								1				1
		5												1
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		1	0	2	0	0	0	1	3	0	0	3	2
Capacity			1800	0	3600	0	0	0	1800	6000	0	0	6000	3600
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		77	0	511	0	0	0	207	1173	0	0	1631	950
Adjusted F	Iourly Volum	e	77	0	511	0	0	0	207	1173	0	0	1631	950
Utilization	Factor		0.04	0.00	0.14	0.00	0.00	0.00	0.12	0.20	0.00	0.00	0.27	0.26
Critical Fa	ctors				0.14	0.00			0.12				0.27	

ICU Ratio = 0.63 LOS = B

Palomar Airport Road at Paseo Del Norte Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	<u>Thru</u>	Right	Left_	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5								1	1		1	
		6											1	
	Outside	7												1
	Free-flow													
Lane Settir	ngs		2	1	1	2	1	1	2	3	0	2	4	1
Capacity			3600	2000	1800	3600	2000	1800	3600	6000	0	3600	8000	1800
Are the No	rth/South pha	ses	split (Y	/N)?	N									
Are the Eas	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		115	35	87	81	35	73	120	2451	115	93	1025	190
Adjusted H	Iourly Volum	e	115	0	122	81	0	108	120	2566	0	93	1025	190
Utilization	Factor		0.03	0.00	0.07	0.02	0.00	0.06	0.03	0.43	0.00	0.03	0.13	0.11
Critical Fac	ctors		0.03					0.06		0.43		0.03		

ICU Ratio = 0.65 LOS = B

Palomar Airport Road at Paseo Del Norte Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5								1	1		1	
		6											1	
	Outside	7												1
	Free-flow													
Lane Settir	ngs		2	1	1	2	1	1	2	3	0	2	4	1
Capacity			3600	2000	1800	3600	2000	1800	3600	6000	0	3600	8000	1800
Are the No	rth/South pha	ses	split (Y	N)?	N									
Are the Eas	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		202	113	183	244	118	262	253	1166	167	226	2024	287
Adjusted H	Iourly Volume	e	202	0	296	244	0	380	253	1333	0	226	2024	287
Utilization	Factor		0.06	0.00	0.16	0.07	0.00	0.21	0.07	0.22	0.00	0.06	0.25	0.16
Critical Fac	ctors		0.06					0.21	0.07				0.25	

ICU Ratio = 0.69 LOS = B

Palomar Airport Road at Armada Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period :	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1				1	
urations		3		1	1		1			1			1	
		4			1			1		1			1	
		5								1				1
		6									1			
	Outside	7												
	Free-flow													
Lane Settir	ngs		2	0	2	2	1	1	2	3	1	1	3	1
Capacity			3600	0	3600	3600	2000	1800	3600	6000	1800	1800	6000	1800
Are the No	rth/South pha	ses s	split (Y/	N)?	N									
Are the Ea	st/West phase	s spl	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		104	26	161	103	27	66	149	2239	173	102	1024	175
Adjusted F	Iourly Volum	e	104	0	187	103	27	93	149	2239	173	102	1024	175
Utilization	Factor		0.03	0.00	0.05	0.03	0.01	0.05	0.04	0.37	0.10	0.06	0.17	0.10
Critical Fa	ctors				0.05	0.03				0.37		0.06		

ICU Ratio = 0.61 LOS = B

Palomar Airport Road at Armada Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Time Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM to 5:45 PM		Left	Thru_	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane Inside	1	1			1			1			1	1	
Config - (left) urations	2	1	1	1	1	1		1	1			1	
urations	4		1	1		1	1		1			1	
	5			1			1		1			1	1
	6								•	1			•
Outside	7									_			
Free-flow													
Lane Settings		2	0	2	2	1	1	2	3	1	1	3	1
Capacity		3600	0	3600	3600	2000	1800	3600	6000	1800	1800	6000	1800
Are the North/South ph	ases	split (Y	N)?	N									
Are the East/West phas	es sp	lit (Y/N)?	N									
Efficiency Lost Factor		0.10											
Hourly Volume		339	57	245	207	58	204	174	1277	152	294	2091	134
Adjusted Hourly Volum	ne	339	0	302	207	58	204	174	1429	0	294	2091	134
Utilization Factor		0.09	0.00	0.08	0.06	0.03	0.11	0.05	0.24	0.00	0.16	0.35	0.07
Critical Factors		0.09					0.11		0.24		0.16		

ICU Ratio = 0.70LOS = B

Palomar Airport Rd at Hidden Valley Rd Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2		1	1		1			1			1	
urations		3						1		1			1	
		4								1			1	1
		5									1			
		6												
	Outside	7												
	Free-flow													
Lane Settir	ngs		1	0	1	1	1	1	1	3	1	1	3	0
Capacity			1800	0	1800	1800	2000	1800	1800	6000	1800	1800	6000	0
Are the No	orth/South pha	ses	split (Y	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		65	17	89	50	9	60	129	2316	94	63	1226	133
Adjusted F	Iourly Volum	e	65	0	106	50	9	60	129	2316	94	63	1359	0
Utilization	Factor		0.04	0.00	0.06	0.03	0.00	0.03	0.07	0.39	0.05	0.04	0.23	0.00
Critical Fa	ctors				0.06	0.03				0.39		0.04		

ICU Ratio = 0.62

LOS = B

Palomar Airport Rd at Hidden Valley Rd Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	Left	<u>Thru</u>	Right	Left	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2		1	1		1			1			1	
urations		3						1		1			1	
		4								1			1	1
		5									1			
		6												
	Outside	7												
	Free-flow													
Lane Setti	ngs		1	0	1	1	1	1	1	3	1	1	3	0
Capacity			1800	0	1800	1800	2000	1800	1800	6000	1800	1800	6000	0
Are the No	orth/South pha	ises	split (Y	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		152	29	79	182	42	194	67	1888	119	103	2443	74
Adjusted H	Hourly Volum	e	152	0	108	182	42	194	67	1888	119	103	2517	0
Utilization	Factor		0.08	0.00	0.06	0.10	0.02	0.11	0.04	0.31	0.07	0.06	0.42	0.00
Critical Fa	ctors		0.08					0.11	0.04				0.42	

ICU Ratio = 0.75 LOS = C

Palomar Airport Road at College Ave / Aviara Pkwy Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1				1		1			1		
urations		3		1				1		1			1	
		4		1						1			1	
		5			1					1			1	
		6									1			1
	Outside	7												
	Free-flow													
Lane Settir	ngs		2	2	1	1	1	1	2	3	1	2	3	1
Capacity			3600	4000	1800	1800	2000	1800	3600	6000	1800	3600	6000	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		167	410	238	42	176	170	664	1571	140	141	964	43
Adjusted F	Iourly Volum	e	167	410	238	42	176	0	664	1571	140	141	964	43
Utilization	Factor		0.05	0.10	0.13	0.02	0.09	0.00	0.18	0.26	0.08	0.04	0.16	0.02
Critical Fa	ctors				0.13	0.02			0.18				0.16	

ICU Ratio = 0.59 LOS = A

Palomar Airport Road at College Ave / Aviara Pkwy Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	<u>Left</u>	Thru	Right	Left_	<u>Thru</u>	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1				1		1			1		
urations		3		1				1		1			1	
		4		1						1			1	
		5			1					1			1	
		6									1			1
	Outside	7												
	Free-flow													
Lane Settin	igs		2	2	1	1	1	1	2	3	1	2	3	1
Capacity			3600	4000	1800	1800	2000	1800	3600	6000	1800	3600	6000	1800
Are the No	rth/South pha	ses s	split (Y/	N)?	N									
Are the Eas	st/West phase	s spl	it (Y/N)?	N									
Efficiency	Lost Factor	_	0.10											
Hourly Vol	lume		176	225	152	31	397	541	162	1223	265	253	1577	86
Adjusted H	ourly Volume	е	176	225	152	31	397	460	162	1223	265	253	1577	86
Utilization	Factor		0.05	0.06	0.08	0.02	0.20	0.26	0.05	0.20	0.15	0.07	0.26	0.05
Critical Fac	ctors		0.05					0.26	0.05				0.26	

ICU Ratio = 0.72 LOS = C

Palomar Airport Rd at Camino Vida Roble

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1				1			1			1	
urations		3		1	1			1		1			1	
		4								1	1			1
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	1	0	1	1	1	1	3	0	1	2	1
Capacity			3600	2000	0	1800	2000	1800	1800	6000	0	1800	4000	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		116	82	54	54	20	43	125	1413	347	174	1024	309
Adjusted F	Iourly Volum	e	116	136	0	54	20	43	125	1760	0	174	1024	309
Utilization	Factor		0.03	0.07	0.00	0.03	0.01	0.02	0.07	0.29	0.00	0.10	0.26	0.17
Critical Fa	ctors			0.07		0.03				0.29		0.10		

ICU Ratio = 0.59 LOS = A

Palomar Airport Rd at Camino Vida Roble Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	Left	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1				1			1			1	
urations		3		1	1			1		1			1	
		4								1	1			1
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	0	1	1	1	1	1	3	0	1	2	1
Capacity			3600	0	1800	1800	2000	1800	1800	6000	0	1800	4000	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		354	30	171	362	118	188	32	1555	243	46	1369	39
Adjusted H	Hourly Volum	e	354	0	201	362	118	188	32	1798	0	46	1369	39
Utilization	Factor		0.10	0.00	0.11	0.20	0.06	0.10	0.02	0.30	0.00	0.03	0.34	0.02
Critical Fa	ctors				0.11	0.20			0.02				0.34	

ICU Ratio = 0.77 LOS = C

Palomar Airport Road at Yarrow Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
8:15 AM 9:15 AM	to		Left	_Thru_	Right	Left	Thru	Right	_Left_	_Thru_	Right	_Left_	Thru	Right
Lane	Inside	1	1			1	1	1	1			1		
Config -	(left)	2		1						1			1	
urations		3			1					1			1	
		4								1	1		1	1
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settir	ngs		1	1	1	1	0	0	1	3	0	1	3	0
Capacity			1800	2000	1800	1800	0	0	1800	6000	0	1800	6000	0
Are the No	rth/South pha	ses	split (Y	/N)?	N									
Are the Eas	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		42	8	53	24	2	12	56	1076	134	243	1293	81
Adjusted H	Iourly Volum	e	42	8	53	38	0	0	56	1210	0	243	1374	0
Utilization	Factor		0.02	0.00	0.03	0.02	0.00	0.00	0.03	0.20	0.00	0.14	0.23	0.00
Critical Fac	ctors				0.03	0.02				0.20		0.14		

ICU Ratio = 0.49 LOS = A

Palomar Airport Road at Yarrow Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	Left	Thru	Right	<u>Left</u>	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1	1	1	1			1		
Config -	(left)	2		1						1			1	
urations		3			1					1			1	
		4								1	1		1	1
		5												
		6												
	Outside	7												
	Free-flow													
Lane Setti	ngs		1	1	1	1	0	0	1	3	0	1	3	0
Capacity			1800	2000	1800	1800	0	0	1800	6000	0	1800	6000	0
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		121	5	280	60	17	45	23	1724	60	63	1172	50
Adjusted H	Hourly Volum	e	121	5	280	122	0	0	23	1784	0	63	1222	0
Utilization	Factor		0.07	0.00	0.16	0.07	0.00	0.00	0.01	0.30	0.00	0.04	0.20	0.00
Critical Fa	ctors				0.16	0.07				0.30		0.04		

ICU Ratio = 0.67 LOS = B

Palomar Airport Road at El Camino Real Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1			1	
		5		1			1			1			1	
		6			1			1			1			1
	Outside	7			1									1
	Free-flow													
Lane Settir	ngs		2	3	2	2	3	1	2	3	1	2	3	2
Capacity			3600	6000	3600	3600	6000	1800	3600	6000	1800	3600	6000	3600
Are the No	rth/South pha	ses	split (Y	/N)?	N									
Are the Eas	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		161	619	389	372	929	264	126	879	128	678	1516	604
Adjusted H	Iourly Volum	e	161	619	50	372	929	201	126	879	128	678	1516	604
Utilization	Factor		0.04	0.10	0.01	0.10	0.15	0.11	0.04	0.15	0.07	0.19	0.25	0.17
Critical Fac	ctors			0.10		0.10				0.15		0.19		

ICU Ratio = 0.64 LOS = B

Palomar Airport Road at El Camino Real Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tiı	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM	to													
5:45 PM			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1			1	
		5		1			1			1			1	
		6			1			1			1			1
	Outside	7			1									1
	Free-flow													
Lane Settin	ngs		2	3	2	2	3	1	2	3	1	2	3	2
Capacity			3600	6000	3600	3600	6000	1800	3600	6000	1800	3600	6000	3600
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		202	970	556	617	880	146	355	1527	137	490	985	479
Adjusted I	Hourly Volume	e	202	970	556	617	880	146	355	1527	137	490	985	479
Utilization	Factor		0.06	0.16	0.15	0.17	0.15	0.08	0.10	0.25	0.08	0.14	0.16	0.13
Critical Fa	ctors			0.16		0.17				0.25		0.14		

ICU Ratio = 0.82 LOS = D

Palomar Airport Road at Loker Ave Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Time Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
7:45 AM to 8:45 AM		Left	Thru	Right	Left_	Thru	Right	_Left_	Thru	Right	Left	Thru	Right
Lane Inside	1	1			1			1			1		
Config - (left)	2		1			1			1			1	
urations	3			1			1		1			1	
	4								1			1	1
	5									1			
	6												
Outside	7												
Free-flow													
Lane Settings		1	1	1	1	1	1	1	3	1	1	3	0
Capacity		1800	2000	1800	1800	2000	1800	1800	6000	1800	1800	6000	0
Are the North/South pl	nases s	split (Y	N)?	N									
Are the East/West phase	ses spl	it (Y/N)?	N									
Efficiency Lost Factor		0.10											
Hourly Volume		92	60	34	20	24	107	253	1217	184	142	2455	137
Adjusted Hourly Volum	me	92	60	34	20	24	107	253	1217	184	142	2592	0
Utilization Factor		0.05	0.03	0.02	0.01	0.01	0.06	0.14	0.20	0.10	0.08	0.43	0.00
Critical Factors		0.05					0.06	0.14				0.43	

ICU Ratio = 0.78 LOS = C

Palomar Airport Road at Loker Ave Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2		1			1			1			1	
urations		3			1			1		1			1	
		4								1			1	1
		5									1			
		6												
	Outside	7												
	Free-flow													
Lane Settir	ngs		1	1	1	1	1	1	1	3	1	1	3	0
Capacity			1800	2000	1800	1800	2000	1800	1800	6000	1800	1800	6000	0
Are the No	rth/South pha	ses	split (Y	/N)?	N									
Are the Eas	st/West phases	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		94	31	117	96	48	311	106	2422	215	44	1522	51
Adjusted H	Iourly Volume	9	94	31	117	96	48	311	106	2422	215	44	1573	0
Utilization	Factor		0.05	0.02	0.07	0.05	0.02	0.17	0.06	0.40	0.12	0.02	0.26	0.00
Critical Fac	ctors		0.05					0.17		0.40		0.02		

ICU Ratio = 0.74 LOS = C

Palomar Airport Road at El Fuerte St Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru	Right	_Left_	Thru	Right	Left	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1	1		1	1		1	1		1	1	
urations		3		1	1		1	1		1			1	
		4		1	1		1	1		1			1	1
		5								1	1		1	1
	Outside	6									1			
	Free-flow	/												
Lane Settin			2	1	1	2	2	0	2	3	1	2	3	0
	1g8		3600	2000	1800	3600	4000	0	3600	6000	1800	3600	6000	0
Capacity	wth/Couth nho	000			1800 N	3000	4000	U	3000	0000	1000	3000	0000	U
	orth/South pha		-		N									
	st/West phase	s sp	,):	IN									
•	Lost Factor		0.10	99	105	52	46	28	103	1022	02	323	2768	160
Hourly Vo		_	128 128	99 99	105 105	53 53	46 74	0		1022 1022	92 92			169 0
	Hourly Volum	е	_					-	103		-	323	2937	
Utilization			0.04	0.05	0.06	0.01	0.02	0.00	0.03	0.17	0.05	0.09	0.49	0.00
Critical Fa	ctors				0.06	0.01			0.03				0.49	

ICU Ratio = 0.69 LOS = B

Palomar Airport Road at El Fuerte St

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
5:00 PM 6:00 PM	to		Left	Thru	Right	Left	<u>Thru</u>	Right	<u>Left</u>	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5								1			1	1
		6									1			
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	1	1	2	2	0	2	3	1	2	3	0
Capacity			3600	2000	1800	3600	4000	0	3600	6000	1800	3600	6000	0
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		167	69	352	262	101	51	36	2232	207	354	1385	30
Adjusted H	Hourly Volum	e	167	69	352	262	152	0	36	2232	207	354	1415	0
Utilization	Factor		0.05	0.03	0.20	0.07	0.04	0.00	0.01	0.37	0.12	0.10	0.24	0.00
Critical Fa	ctors				0.20	0.07				0.37		0.10		

ICU Ratio = 0.84 LOS = D

Palomar Airport Road at Melrose Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1			1	
		5		1				1		1			1	
		6		1				1			1			1
	Outside	7			1									
	Free-flow													
Lane Settir	ıgs		2	4	1	2	2	2	2	3	1	2	3	1
Capacity			3600	8000	1800	3600	4000	3600	3600	6000	1800	3600	6000	1800
Are the No	rth/South pha	ses	split (Y	N)?	N									
Are the Eas	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		514	589	193	74	685	1229	428	823	126	100	1607	54
Adjusted H	Iourly Volum	e	514	0	143	74	685	955	428	823	126	100	1607	54
Utilization	Factor		0.14	0.00	0.08	0.02	0.17	0.27	0.12	0.14	0.07	0.03	0.27	0.03
Critical Fac	ctors		0.14					0.27	0.12				0.27	

ICU Ratio = 0.90 LOS = D

Palomar Airport Road at Melrose Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Time Period:	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:30 PM to 5:30 PM	Left	<u>Thru</u>	Right	Left	Thru_	Right	_Left_	Thru	Right	Left	Thru	Right
Lane Inside 1	1			1			1			1		
Config - (left) 2	1			1			1			1		
urations 3		1			1			1			1	
4		1			1			1			1	
5		1				1		1			1	
6		1				1			1			1
Outside 7			1									
Free-flow												
Lane Settings	2	4	1	2	2	2	2	3	1	2	3	1
Capacity	3600	8000	1800	3600	4000	3600	3600	6000	1800	3600	6000	1800
Are the North/South phases	split (Y	/N)?	N									
Are the East/West phases sp	olit (Y/N)?	N									
Efficiency Lost Factor	0.10											
Hourly Volume	121	662	244	175	574	640	1010	1851	379	191	895	71
Adjusted Hourly Volume	121	906	0	175	574	75	1010	1851	379	191	895	71
Utilization Factor	0.03	0.11	0.00	0.05	0.14	0.02	0.28	0.31	0.21	0.05	0.15	0.04
Critical Factors	0.03				0.14		0.28				0.15	

ICU Ratio = 0.70 LOS = B

El Camino Real at Town Garden Rd

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru	Right	Left_	Thru	Right	_Left_	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1	1		1		
Config -	(left)	2		1			1				1		1	1
urations		3		1			1							
		4		1			1							
		5			1			1						
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		1	3	1	1	3	1	1	0	1	1	0	1
Capacity			1800	6000	1800	1800	6000	1800	1800	0	1800	1800	0	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	Y									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		146	1057	65	120	1353	84	52	15	39	105	41	51
Adjusted F	Hourly Volum	e	146	1057	65	120	1353	84	67	0	39	105	0	92
Utilization	Factor		0.08	0.18	0.04	0.07	0.23	0.05	0.04	0.00	0.02	0.06	0.00	0.05
Critical Fa	ctors		0.08				0.23		0.04			0.06		

ICU Ratio = 0.51 LOS = A

El Camino Real at Town Garden Rd

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1	1		1		
Config -	(left)	2		1			1				1		1	1
urations		3		1			1							
		4		1			1							
		5			1			1						
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		1	3	1	1	3	1	1	0	1	1	0	1
Capacity			1800	6000	1800	1800	6000	1800	1800	0	1800	1800	0	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	Y									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		63	1227	121	237	1548	47	155	18	113	198	38	80
Adjusted F	Hourly Volum	e	63	1227	121	237	1548	47	173	0	113	198	0	118
Utilization	Factor		0.04	0.20	0.07	0.13	0.26	0.03	0.10	0.00	0.06	0.11	0.00	0.07
Critical Fa	ctors			0.20		0.13			0.10			0.11		

ICU Ratio = 0.64 LOS = B

El Camino Real at Camino Vida Roble

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tiı	me Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru	Right	Left_	<u>Thru</u>	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1	1	1
Config -	(left)	2	1				1		1	1	1			
urations		3		1			1				1			
		4		1			1	1						
		5			1									
		6												
	Outside	7												
	Free-flow													
Lane Setti	ngs		2	2	1	1	3	0	0	0	3	0	0	1
Capacity			3600	4000	1800	1800	6000	0	0	0	4680	0	0	1800
Are the No	orth/South pha	ases	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	Y									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		392	1362	2	17	1307	243	53	1	82	3	4	8
Adjusted I	Hourly Volum	e	392	1362	2	17	1550	0	0	0	136	0	0	15
Utilization	Factor		0.11	0.34	0.00	0.01	0.26	0.00	0.00	0.00	0.03	0.00	0.00	0.01
Critical Fa	ctors		0.11				0.26				0.03			0.01

ICU Ratio = 0.51 LOS = A

El Camino Real at Camino Vida Roble

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1	1	1
Config -	(left)	2	1				1		1	1	1			
urations		3		1			1				1			
		4		1			1	1						
		5			1									
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	2	1	1	3	0	0	0	3	0	0	1
Capacity			3600	4000	1800	1800	6000	0	0	0	4680	0	0	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	Y									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		156	1254	2	23	1624	94	264	3	430	1	2	5
Adjusted F	Hourly Volum	e	156	1254	2	23	1718	0	0	0	697	0	0	8
Utilization	Factor		0.04	0.31	0.00	0.01	0.29	0.00	0.00	0.00	0.15	0.00	0.00	0.00
Critical Fa	ctors		0.04				0.29				0.15			0.00

ICU Ratio = 0.58 LOS = A

El Camino Real at Poinsettia Lane

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
8:00 AM 9:00 AM	to		Left	Thru	Right	<u>Left</u>	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1	1		1	1
		5		1			1	1						
		6			1									
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	3	1	2	3	0	2	2	0	2	1	1
Capacity			3600	6000	1800	3600	6000	0	3600	4000	0	3600	2000	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		18	1246	246	96	1151	12	19	10	6	344	7	151
Adjusted F	Hourly Volum	e	18	1246	246	96	1163	0	19	16	0	344	0	158
Utilization	Factor		0.01	0.21	0.14	0.03	0.19	0.00	0.01	0.00	0.00	0.10	0.00	0.09
Critical Fa	ctors			0.21		0.03				0.00		0.10		

ICU Ratio = 0.44 LOS = A

El Camino Real at Poinsettia Lane

Lane Configuration for Intersection Capacity Utilization

	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	_Thru_	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1	1		1	1
		5		1			1	1						
		6			1									
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	3	1	2	3	0	2	2	0	2	1	1
Capacity			3600	6000	1800	3600	6000	0	3600	4000	0	3600	2000	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		9	1214	459	202	1794	14	7	7	3	270	16	113
Adjusted F	Hourly Volum	e	9	1214	459	202	1808	0	7	7	10	270	0	113
Utilization	Factor		0.00	0.20	0.26	0.06	0.30	0.00	0.00	0.00	0.00	0.08	0.00	0.06
Critical Fa	ctors				0.26	0.06				0.00		0.08		

ICU Ratio = 0.50 LOS = A

	APPENDIX D
	Existing + Project Intersection Analysis Calculation Worksheets
LINSCOTT, LAW & GREENSPAN, engineers	LLG Ref. 3-17-2772 McClellan-Palomar Airport Master Plan Update

EXISTING PLUS PROJECT ALTERNATIVE 1
INTERSECTION ANALYSIS CALCULATION
WORKSHEETS

Cannon Road at Faraday Avenue

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir			Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	<u>Thru</u>	Right	Left	<u>Thru</u>	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1	1	1	1			1		
Config -	(left)	2	1	1	1					1			1	
urations		3								1	1		1	1
		4												
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settir	ngs		2	0	0	0	0	1	1	1	1	1	2	0
Capacity			3600	0	0	0	0	1800	1800	2000	1800	1800	4000	0
Are the No	orth/South pha	ises	split (Y	N)?	Y									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		160	2	12	0	3	5	4	177	528	59	732	7
Adjusted F	Iourly Volum	e	174	0	0	0	0	8	4	177	528	59	739	0
Utilization	Factor		0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.29	0.03	0.18	0.00
Critical Fa	ctors		0.05					0.00			0.29	0.03		

ICU Ratio = 0.47 LOS = A

Cannon Road at Faraday Avenue

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1	1	1	1			1		
Config -	(left)	2	1	1	1					1			1	
urations		3								1	1		1	1
		4												
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	0	0	1	0	0	1	2	0	1	2	0
Capacity			3600	0	0	1800	0	0	1800	4000	0	1800	4000	0
Are the No	orth/South pha	ises	split (Y	N)?	Y									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		575	3	78	4	3	1	45	871	203	11	384	4
Adjusted F	Iourly Volum	e	656	0	0	8	3	0	45	871	203	11	388	0
Utilization	Factor		0.18	0.00	0.00	0.00	0.00	0.00	0.03	0.22	0.00	0.01	0.10	0.00
Critical Fa	ctors		0.18			0.00				0.22		0.01		

ICU Ratio = 0.51 LOS = A

College Blvd at El Camino Real

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5												1
		6												
	Outside	7												
	Free-flow										1			
Lane Settin	ngs		2	2	0	2	1	1	1	3	1	1	3	1
Capacity			3600	4000	0	3600	2000	1800	1800	6000	1800	1800	6000	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		87	14	9	33	29	36	19	1926	536	124	550	16
Adjusted F	Hourly Volum	e	87	23	0	33	29	0	19	1926	536	124	550	16
Utilization	Factor		0.02	0.01	0.00	0.01	0.01	0.00	0.01	0.32	0.30	0.07	0.09	0.01
Critical Fa	ctors		0.02				0.01			0.32		0.07		

ICU Ratio = 0.52 LOS = A

College Blvd at El Camino Real

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	<u>Thru</u>	Right	<u>Left</u>	Thru	Right	Left_	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5												1
		6												
	Outside	7												
	Free-flow										1			
Lane Settin	ngs		2	2	0	2	1	1	1	3	1	1	3	1
Capacity			3600	4000	0	3600	2000	1800	1800	6000	1800	1800	6000	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		539	35	24	20	13	39	45	995	120	21	1946	32
Adjusted I	Hourly Volum	e	539	59	0	20	13	0	45	995	120	21	1946	32
Utilization	Factor		0.15	0.01	0.00	0.01	0.01	0.00	0.03	0.17	0.07	0.01	0.32	0.02
Critical Fa	ctors		0.15				0.01		0.03				0.32	

ICU Ratio = 0.61 LOS = B

College Blvd at Faraday Ave

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	<u>Thru</u>	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1	1		1	1
		4		1	1		1	1						
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	1	1	2	2	0	1	2	0	1	2	0
Capacity			3600	2000	1800	3600	4000	0	1800	4000	0	1800	4000	0
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		194	168	272	167	305	76	41	368	119	141	354	46
Adjusted F	Iourly Volum	e	194	440	272	167	381	0	41	368	119	141	400	0
Utilization	Factor		0.05	0.22	0.15	0.05	0.10	0.00	0.02	0.09	0.00	0.08	0.10	0.00
Critical Fa	ctors			0.22		0.05				0.09		0.08		

ICU Ratio = 0.54 LOS = A

College Blvd at Faraday Ave

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru_	Right	Left_	Thru	Right	_Left_	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1	1		1	1
		4		1	1		1	1						
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	2	0	2	2	0	1	2	0	1	2	0
Capacity			3600	4000	0	3600	4000	0	1800	4000	0	1800	4000	0
Are the No	orth/South pha	ses s	split (Y	N)?	N									
Are the Ea	st/West phase	s spl	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		132	288	109	17	181	55	50	458	223	235	435	146
Adjusted F	Iourly Volume	е	132	397	0	17	236	0	50	458	223	235	581	0
Utilization	Factor		0.04	0.10	0.00	0.00	0.06	0.00	0.03	0.11	0.00	0.13	0.15	0.00
Critical Fa	ctors			0.10		0.00				0.11		0.13		

ICU Ratio = 0.44 LOS = A

El Camino Real at Faraday Ave

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru	Right	Left	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1			1	
		4		1			1				1			1
		5		1	1		1							
		6						1						
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	3	0	2	3	1	1	2	1	1	2	1
Capacity			3600	6000	0	3600	6000	1800	1800	4000	1800	1800	4000	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		587	422	85	400	1484	152	24	180	95	123	734	148
Adjusted F	Iourly Volum	e	587	507	0	400	1484	152	24	180	95	123	734	148
Utilization	Factor		0.16	0.08	0.00	0.11	0.25	0.08	0.01	0.05	0.05	0.07	0.18	0.08
Critical Fa	ctors		0.16				0.25		0.01				0.18	

ICU Ratio = 0.70 LOS = B

El Camino Real at Faraday Ave

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tiı	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	<u>Thru</u>	Right	Left	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1			1	
		4		1			1				1			1
		5		1	1		1							
		6						1						
	Outside	7												
	Free-flow													
Lane Setti	ngs		2	3	0	2	3	1	1	1	2	1	2	1
Capacity			3600	6000	0	3600	6000	1800	1800	2000	3600	1800	4000	1800
Are the No	orth/South pha	ses	split (Y	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		159	1377	109	218	936	15	128	681	630	166	255	345
Adjusted I	Hourly Volum	e	159	1486	0	218	936	15	128	341	971	166	255	345
Utilization	Factor		0.04	0.25	0.00	0.06	0.16	0.01	0.07	0.17	0.27	0.09	0.06	0.19
Critical Fa	ctors			0.25		0.06					0.27	0.09		

ICU Ratio = 0.77 LOS = C

I-5 SB Ramps at Palomar Airport Road

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1				1				1			1	
Config -	(left)	2				1				1			1	
urations		3						1		1	1			
		4												
		5												
		6												
	Outside	7												
	Free-flow													1
Lane Settir	ıgs		0	0	0	2	0	1	0	3	0	0	2	1
Capacity			0	0	0	3600	0	1800	0	6000	0	0	4000	1800
Are the No	rth/South pha	ases	split (Y	/N)?	N									
Are the Eas	st/West phase	es sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		0	0	0	1102	0	362	0	505	71	0	645	290
Adjusted H	Iourly Volum	e	0	0	0	1102	0	362	0	576	0	0	645	0
Utilization	Factor		0.00	0.00	0.00	0.31	0.00	0.20	0.00	0.10	0.00	0.00	0.16	0.00
Critical Fac	ctors			0.00	0.00	0.31			0.00				0.16	

ICU Ratio = 0.57 LOS = A

I-5 SB Ramps at Palomar Airport Road

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	<u>Left</u>	<u>Thru</u>	Right	_Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1				1				1			1	
Config -	(left)	2				1				1			1	
urations		3						1		1	1			
		4												
		5												
		6												
	Outside	7												
	Free-flow													1
Lane Settin	ngs		0	0	0	2	0	1	0	3	0	0	2	1
Capacity			0	0	0	3600	0	1800	0	6000	0	0	4000	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		0	0	0	555	0	156	0	828	245	0	741	1018
Adjusted F	Iourly Volum	e	0	0	0	555	0	156	0	1073	0	0	741	0
Utilization	Factor		0.00	0.00	0.00	0.15	0.00	0.09	0.00	0.18	0.00	0.00	0.19	0.00
Critical Fa	ctors			0.00	0.00	0.15			0.00				0.19	

ICU Ratio = 0.44 LOS = A

I-5 NB Ramps at Palomar Airport Road

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1	1					1				1	
Config -	(left)	2			1					1			1	
urations		3			1					1			1	
		4								1				1
		5												1
		6												
	Outside	7												
	Free-flow													
Lane Settir	ngs		1	0	2	0	0	0	1	3	0	0	3	2
Capacity			1800	0	3600	0	0	0	1800	6000	0	0	6000	3600
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		61	0	1140	0	0	0	72	1554	0	0	819	427
Adjusted F	Iourly Volum	e	61	0	1140	0	0	0	72	1554	0	0	819	427
Utilization	Factor		0.03	0.00	0.32	0.00	0.00	0.00	0.04	0.26	0.00	0.00	0.14	0.12
Critical Fa	ctors				0.32	0.00				0.26		0.00		

ICU Ratio = 0.68 LOS = B

I-5 NB Ramps at Palomar Airport Road

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tiı	me Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	Left	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1	1					1				1	
Config -	(left)	2			1					1			1	
urations		3			1					1			1	
		4								1				1
		5												1
		6												
	Outside	7												
	Free-flow													
Lane Setti	ngs		1	0	2	0	0	0	1	3	0	0	3	2
Capacity			1800	0	3600	0	0	0	1800	6000	0	0	6000	3600
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		77	0	513	0	0	0	207	1176	0	0	1682	953
Adjusted I	Hourly Volum	e	77	0	513	0	0	0	207	1176	0	0	1682	953
Utilization	Factor		0.04	0.00	0.14	0.00	0.00	0.00	0.12	0.20	0.00	0.00	0.28	0.26
Critical Fa	ctors				0.14	0.00			0.12				0.28	

ICU Ratio = 0.64 LOS = B

Palomar Airport Road at Paseo Del Norte Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5								1	1		1	
		6											1	
	Outside	7												1
	Free-flow													
Lane Settin	ngs		2	1	1	2	1	1	2	3	0	2	4	1
Capacity			3600	2000	1800	3600	2000	1800	3600	6000	0	3600	8000	1800
Are the No	rth/South pha	ses	split (Y	/N)?	N									
Are the Eas	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		115	35	87	81	35	73	120	2456	115	93	1029	190
Adjusted H	Iourly Volum	e	115	0	122	81	0	108	120	2571	0	93	1029	190
Utilization	Factor		0.03	0.00	0.07	0.02	0.00	0.06	0.03	0.43	0.00	0.03	0.13	0.11
Critical Fac	ctors		0.03					0.06		0.43		0.03		

ICU Ratio = 0.65 LOS = B

Palomar Airport Road at Paseo Del Norte Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	<u>Thru</u>	Right	Left_	<u>Thru</u>	Right	Left_	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5								1	1		1	
		6											1	
	Outside	7												1
	Free-flow													
Lane Settir	igs		2	1	1	2	1	1	2	3	0	2	4	1
Capacity			3600	2000	1800	3600	2000	1800	3600	6000	0	3600	8000	1800
Are the No	rth/South pha	ses	split (Y	N)?	N									
Are the Eas	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vol	lume		202	113	183	244	118	262	253	1171	167	226	2029	287
Adjusted H	Iourly Volume	e	202	0	296	244	0	380	253	1338	0	226	2029	287
Utilization	Factor		0.06	0.00	0.16	0.07	0.00	0.21	0.07	0.22	0.00	0.06	0.25	0.16
Critical Fac	ctors		0.06					0.21	0.07				0.25	

ICU Ratio = 0.69 LOS = B

Palomar Airport Road at Armada Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tiı	ne Period :	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM	to													
8:45 AM			Left	<u>Thru</u>	Right	Left	<u>Thru</u>	Right	Left	<u>Thru</u>	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1				1	
urations		3		1	1		1			1			1	
		4			1			1		1			1	
		5								1				1
		6									1			
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	0	2	2	1	1	2	3	1	1	3	1
Capacity			3600	0	3600	3600	2000	1800	3600	6000	1800	1800	6000	1800
Are the No	orth/South pha	ses s	split (Y/	N)?	N									
Are the Ea	st/West phase	s spl	it (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		104	26	161	103	27	66	149	2244	173	102	1028	175
Adjusted I	Hourly Volum	e	104	0	187	103	27	93	149	2244	173	102	1028	175
Utilization	Factor		0.03	0.00	0.05	0.03	0.01	0.05	0.04	0.37	0.10	0.06	0.17	0.10
Critical Fa	ctors				0.05	0.03				0.37		0.06		

ICU Ratio = 0.61 LOS = B

Palomar Airport Road at Armada Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	me Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to	-	Left	<u>Thru</u>	Right	Left	Thru	Right	<u>Left</u>	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1				1	
urations		3		1	1		1			1			1	
		4			1			1		1			1	
		5								1				1
		6									1			
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	0	2	2	1	1	2	3	1	1	3	1
Capacity			3600	0	3600	3600	2000	1800	3600	6000	1800	1800	6000	1800
Are the No	orth/South pha	ses s	split (Y/	N)?	N									
Are the Ea	st/West phase	s spl	it (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		339	57	245	207	58	204	174	1282	152	294	2096	134
Adjusted F	Hourly Volum	e	339	0	302	207	58	204	174	1434	0	294	2096	134
Utilization	Factor		0.09	0.00	0.08	0.06	0.03	0.11	0.05	0.24	0.00	0.16	0.35	0.07
Critical Fa	ctors		0.09					0.11		0.24		0.16		

ICU Ratio = 0.70 LOS = B

Palomar Airport Rd at Hidden Valley Rd Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2		1	1		1			1			1	
urations		3						1		1			1	
		4								1			1	1
		5									1			
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		1	0	1	1	1	1	1	3	1	1	3	0
Capacity			1800	0	1800	1800	2000	1800	1800	6000	1800	1800	6000	0
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		65	17	89	50	9	60	129	2321	94	63	1230	133
Adjusted F	Hourly Volum	e	65	0	106	50	9	60	129	2321	94	63	1363	0
Utilization	Factor		0.04	0.00	0.06	0.03	0.00	0.03	0.07	0.39	0.05	0.04	0.23	0.00
Critical Fa	ctors				0.06	0.03				0.39		0.04		

ICU Ratio = 0.62

LOS = B

Palomar Airport Rd at Hidden Valley Rd Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Time Po	eriod :	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:45 PM to 5:45 PM		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	_Left_	Thru	Right
Lane I	nside 1	1			1			1			1		
Config - (1	eft) 2		1	1		1			1			1	
urations	3						1		1			1	
	4								1			1	1
	5									1			
	6												
O	utside 7												
Fre	ee-flow												
Lane Settings		1	0	1	1	1	1	1	3	1	1	3	0
Capacity		1800	0	1800	1800	2000	1800	1800	6000	1800	1800	6000	0
Are the North/S	South phases	split (Y	N)?	N									
Are the East/W	est phases sp	olit (Y/N)?	N									
Efficiency Lost	Factor	0.10											
Hourly Volume	;	152	29	79	182	42	194	67	1893	119	103	2448	74
Adjusted Hourl	y Volume	152	0	108	182	42	194	67	1893	119	103	2522	0
Utilization Fact	or	0.08	0.00	0.06	0.10	0.02	0.11	0.04	0.32	0.07	0.06	0.42	0.00
Critical Factors		0.08					0.11	0.04				0.42	

ICU Ratio = 0.75 LOS = C

Palomar Airport Road at College Ave / Aviara Pkwy Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1				1		1			1		
urations		3		1				1		1			1	
		4		1						1			1	
		5			1					1			1	
		6									1			1
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	2	1	1	1	1	2	3	1	2	3	1
Capacity			3600	4000	1800	1800	2000	1800	3600	6000	1800	3600	6000	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		167	410	238	42	176	170	664	1576	140	141	968	43
Adjusted F	Hourly Volum	e	167	410	238	42	176	0	664	1576	140	141	968	43
Utilization	Factor		0.05	0.10	0.13	0.02	0.09	0.00	0.18	0.26	0.08	0.04	0.16	0.02
Critical Fa	ctors				0.13	0.02			0.18				0.16	

ICU Ratio = 0.59 LOS = A

Palomar Airport Road at College Ave / Aviara Pkwy Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tim	e Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to	-	Left	Thru	Right	Left	Thru	Right	<u>Left</u>	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1				1		1			1		
urations		3		1				1		1			1	
		4		1						1			1	
		5			1					1			1	
		6									1			1
	Outside	7												
	Free-flow													
Lane Setting	gs		2	2	1	1	1	1	2	3	1	2	3	1
Capacity			3600	4000	1800	1800	2000	1800	3600	6000	1800	3600	6000	1800
Are the Nor	th/South pha	ses s	split (Y/	N)?	N									
Are the East	t/West phase	s spl	it (Y/N)?	N									
Efficiency I	Lost Factor		0.10											
Hourly Volu	ume		176	225	152	31	397	541	162	1228	265	253	1582	86
Adjusted Ho	ourly Volume	•	176	225	152	31	397	460	162	1228	265	253	1582	86
Utilization I	Factor		0.05	0.06	0.08	0.02	0.20	0.26	0.05	0.20	0.15	0.07	0.26	0.05
Critical Fac	tors		0.05					0.26	0.05				0.26	

ICU Ratio = 0.72 LOS = C

Palomar Airport Rd at Camino Vida Roble

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	<u>Thru</u>	Right	Left_	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1				1			1			1	
urations		3		1	1			1		1			1	
		4								1	1			1
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	1	0	1	1	1	1	3	0	1	2	1
Capacity			3600	2000	0	1800	2000	1800	1800	6000	0	1800	4000	1800
Are the No	orth/South pha	ses s	split (Y	N)?	N									
Are the Ea	st/West phase	s spl	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		116	82	54	54	20	45	127	1416	347	174	1026	309
Adjusted F	Iourly Volum	e	116	136	0	54	20	45	127	1763	0	174	1026	309
Utilization	Factor		0.03	0.07	0.00	0.03	0.01	0.03	0.07	0.29	0.00	0.10	0.26	0.17
Critical Fa	ctors			0.07		0.03				0.29		0.10		

ICU Ratio = 0.59 LOS = A

Palomar Airport Rd at Camino Vida Roble Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1				1			1			1	
urations		3		1	1			1		1			1	
		4								1	1			1
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	0	1	1	1	1	1	3	0	1	2	1
Capacity			3600	0	1800	1800	2000	1800	1800	6000	0	1800	4000	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		354	30	171	362	118	190	34	1558	243	46	1372	39
Adjusted F	Iourly Volum	e	354	0	201	362	118	190	34	1801	0	46	1372	39
Utilization	Factor		0.10	0.00	0.11	0.20	0.06	0.11	0.02	0.30	0.00	0.03	0.34	0.02
Critical Fa	ctors				0.11	0.20			0.02				0.34	

ICU Ratio = 0.77 LOS = C

Palomar Airport Road at Yarrow Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
8:15 AM 9:15 AM	to		Left	_Thru_	Right	Left	Thru	Right	_Left_	_Thru_	Right	_Left_	Thru	Right
Lane	Inside	1	1			1	1	1	1			1		
Config -	(left)	2		1						1			1	
urations		3			1					1			1	
		4								1	1		1	1
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settir	ngs		1	1	1	1	0	0	1	3	0	1	3	0
Capacity			1800	2000	1800	1800	0	0	1800	6000	0	1800	6000	0
Are the No	rth/South pha	ses	split (Y	/N)?	N									
Are the Eas	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		42	9	53	29	2	14	59	1076	134	243	1293	89
Adjusted H	Iourly Volum	e	42	9	53	45	0	0	59	1210	0	243	1382	0
Utilization	Factor		0.02	0.00	0.03	0.03	0.00	0.00	0.03	0.20	0.00	0.14	0.23	0.00
Critical Fac	ctors				0.03	0.03				0.20		0.14		

ICU Ratio = 0.50 LOS = A

Palomar Airport Road at Yarrow Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period :	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	Left	<u>Thru</u>	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1	1	1	1			1		
Config -	(left)	2		1						1			1	
urations		3			1					1			1	
		4								1	1		1	1
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settir	ngs		1	1	1	1	0	0	1	3	0	1	3	0
Capacity			1800	2000	1800	1800	0	0	1800	6000	0	1800	6000	0
Are the No	rth/South pha	ses s	split (Y	/N)?	N									
Are the Ea	st/West phase	s spl	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		121	6	280	67	18	48	26	1724	60	63	1172	58
Adjusted H	Iourly Volume	9	121	6	280	133	0	0	26	1784	0	63	1230	0
Utilization	Factor		0.07	0.00	0.16	0.07	0.00	0.00	0.01	0.30	0.00	0.04	0.21	0.00
Critical Fa	ctors				0.16	0.07				0.30		0.04		

ICU Ratio = 0.67 LOS = B

Palomar Airport Road at El Camino Real Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	<u>Thru</u>	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1			1	
		5		1			1			1			1	
		6			1			1			1			1
	Outside	7			1									1
	Free-flow													
Lane Settir	igs		2	3	2	2	3	1	2	3	1	2	3	2
Capacity			3600	6000	3600	3600	6000	1800	3600	6000	1800	3600	6000	3600
Are the No	rth/South pha	ses	split (Y	N)?	N									
Are the Eas	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		164	619	389	372	929	267	128	880	130	678	1518	604
Adjusted H	Iourly Volume	9	164	619	50	372	929	203.3	128	880	130	678	1518	604
Utilization	Factor		0.05	0.10	0.01	0.10	0.15	0.11	0.04	0.15	0.07	0.19	0.25	0.17
Critical Fa	ctors			0.10		0.10				0.15		0.19		

ICU Ratio = 0.64 LOS = B

Palomar Airport Road at El Camino Real Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	<u>Thru</u>	Right	Left_	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1			1	
		5		1			1			1			1	
		6			1			1			1			1
	Outside	7			1									1
	Free-flow													
Lane Settin	ngs		2	3	2	2	3	1	2	3	1	2	3	2
Capacity			3600	6000	3600	3600	6000	1800	3600	6000	1800	3600	6000	3600
Are the No	orth/South pha	ses s	split (Y	/N)?	N									
Are the Ea	st/West phase	s spl	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		205	970	556	617	880	149	358	1529	139	490	987	479
Adjusted F	Hourly Volume	e	205	970	556	617	880	149	358	1529	139	490	987	479
Utilization	Factor		0.06	0.16	0.15	0.17	0.15	0.08	0.10	0.25	0.08	0.14	0.16	0.13
Critical Fa	ctors			0.16		0.17				0.25		0.14		

ICU Ratio = 0.82 LOS = D

Palomar Airport Road at Loker Ave Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	<u>Thru</u>	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2		1			1			1			1	
urations		3			1			1		1			1	
		4								1			1	1
		5									1			
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		1	1	1	1	1	1	1	3	1	1	3	0
Capacity			1800	2000	1800	1800	2000	1800	1800	6000	1800	1800	6000	0
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		92	60	34	20	24	107	253	1218	184	142	2457	137
Adjusted F	Hourly Volum	e	92	60	34	20	24	107	253	1218	184	142	2594	0
Utilization	Factor		0.05	0.03	0.02	0.01	0.01	0.06	0.14	0.20	0.10	0.08	0.43	0.00
Critical Fa	ctors		0.05					0.06	0.14				0.43	

ICU Ratio = 0.78 LOS = C

Palomar Airport Road at Loker Ave Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	_Thru_	Right	Left	<u>Thru</u>	Right	_Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2		1			1			1			1	
urations		3			1			1		1			1	
		4								1			1	1
		5									1			
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		1	1	1	1	1	1	1	3	1	1	3	0
Capacity			1800	2000	1800	1800	2000	1800	1800	6000	1800	1800	6000	0
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		94	31	117	96	48	311	106	2424	215	44	1524	51
Adjusted F	Iourly Volum	e	94	31	117	96	48	311	106	2424	215	44	1575	0
Utilization	Factor		0.05	0.02	0.07	0.05	0.02	0.17	0.06	0.40	0.12	0.02	0.26	0.00
Critical Fa	ctors		0.05					0.17		0.40		0.02		

ICU Ratio = 0.74 LOS = C

Palomar Airport Road at El Fuerte St Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	<u>Thru</u>	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5								1			1	1
		6									1			
	Outside	7												
	Free-flow													
Lane Settir	igs		2	1	1	2	2	0	2	3	1	2	3	0
Capacity			3600	2000	1800	3600	4000	0	3600	6000	1800	3600	6000	0
Are the No	rth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		128	99	105	53	46	28	103	1023	92	323	2770	169
Adjusted F	Iourly Volum	e	128	99	105	53	74	0	103	1023	92	323	2939	0
Utilization	Factor		0.04	0.05	0.06	0.01	0.02	0.00	0.03	0.17	0.05	0.09	0.49	0.00
Critical Fa	ctors				0.06	0.01			0.03				0.49	

ICU Ratio = 0.69 LOS = B

Palomar Airport Road at El Fuerte St Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
5:00 PM 6:00 PM	to		Left	Thru	Right	<u>Left</u>	Thru	Right	Left	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5								1			1	1
		6									1			
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	1	1	2	2	0	2	3	1	2	3	0
Capacity			3600	2000	1800	3600	4000	0	3600	6000	1800	3600	6000	0
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		167	69	352	262	101	51	36	2234	207	354	1387	30
Adjusted F	Hourly Volum	e	167	69	352	262	152	0	36	2234	207	354	1417	0
Utilization	Factor		0.05	0.03	0.20	0.07	0.04	0.00	0.01	0.37	0.12	0.10	0.24	0.00
Critical Fa	ctors				0.20	0.07				0.37		0.10		

ICU Ratio = 0.84 LOS = D

Palomar Airport Road at Melrose Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	<u>Thru</u>	Right	Left_	Thru	Right	Left	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1			1	
		5		1				1		1			1	
		6		1				1			1			1
	Outside	7			1									
	Free-flow													
Lane Settir	igs		2	4	1	2	2	2	2	3	1	2	3	1
Capacity			3600	8000	1800	3600	4000	3600	3600	6000	1800	3600	6000	1800
Are the No	rth/South pha	ses	split (Y	N)?	N									
Are the Eas	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		514	589	193	74	685	1229	428	824	126	100	1609	54
Adjusted H	Iourly Volume	9	514	0	143	74	685	955	428	824	126	100	1609	54
Utilization	Factor		0.14	0.00	0.08	0.02	0.17	0.27	0.12	0.14	0.07	0.03	0.27	0.03
Critical Fac	ctors		0.14					0.27	0.12				0.27	

ICU Ratio = 0.90 LOS = D

Palomar Airport Road at Melrose Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru_	Right	Left	Thru_	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1			1	
		5		1				1		1			1	
		6		1				1			1			1
	Outside	7			1									
	Free-flow													
Lane Settin	igs		2	4	1	2	2	2	2	3	1	2	3	1
Capacity			3600	8000	1800	3600	4000	3600	3600	6000	1800	3600	6000	1800
Are the No	rth/South pha	ses	split (Y/	N)?	N									
Are the Eas	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vol	lume		121	662	244	175	574	640	1010	1853	379	191	897	71
Adjusted H	lourly Volume	9	121	906	0	175	574	75	1010	1853	379	191	897	71
Utilization	Factor		0.03	0.11	0.00	0.05	0.14	0.02	0.28	0.31	0.21	0.05	0.15	0.04
Critical Fac	ctors		0.03				0.14		0.28				0.15	

ICU Ratio = 0.70 LOS = B

El Camino Real at Town Garden Rd

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1	1		1		
Config -	(left)	2		1			1				1		1	1
urations		3		1			1							
		4		1			1							
		5			1			1						
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		1	3	1	1	3	1	1	0	1	1	0	1
Capacity			1800	6000	1800	1800	6000	1800	1800	0	1800	1800	0	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	Y									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		146	1060	65	120	1355	84	52	15	39	105	41	51
Adjusted F	Iourly Volum	e	146	1060	65	120	1355	84	67	0	39	105	0	92
Utilization	Factor		0.08	0.18	0.04	0.07	0.23	0.05	0.04	0.00	0.02	0.06	0.00	0.05
Critical Fa	ctors		0.08				0.23		0.04			0.06		

ICU Ratio = 0.51 LOS = A

El Camino Real at Town Garden Rd

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1	1		1		
Config -	(left)	2		1			1				1		1	1
urations		3		1			1							
		4		1			1							
		5			1			1						
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		1	3	1	1	3	1	1	0	1	1	0	1
Capacity			1800	6000	1800	1800	6000	1800	1800	0	1800	1800	0	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	Y									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		63	1230	121	237	1550	47	155	18	113	198	38	80
Adjusted F	Hourly Volum	e	63	1230	121	237	1550	47	173	0	113	198	0	118
Utilization	Factor		0.04	0.21	0.07	0.13	0.26	0.03	0.10	0.00	0.06	0.11	0.00	0.07
Critical Fa	ctors			0.21		0.13			0.10			0.11		

ICU Ratio = 0.65 LOS = B

El Camino Real at Camino Vida Roble

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1	1	1
Config -	(left)	2	1				1		1	1	1			
urations		3		1			1				1			
		4		1			1	1						
		5			1									
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	2	1	1	3	0	0	0	3	0	0	1
Capacity			3600	4000	1800	1800	6000	0	0	0	4680	0	0	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	Y									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		393	1365	2	17	1309	243	53	1	82	3	4	8
Adjusted F	Hourly Volum	e	393	1365	2	17	1552	0	0	0	136	0	0	15
Utilization	Factor		0.11	0.34	0.00	0.01	0.26	0.00	0.00	0.00	0.03	0.00	0.00	0.01
Critical Fa	ctors		0.11				0.26				0.03			0.01

ICU Ratio = 0.51 LOS = A

El Camino Real at Camino Vida Roble

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:30 PM	to													
5:30 PM			Left	<u>Thru</u>	Right	Left	<u>Thru</u>	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1	1	1
Config -	(left)	2	1				1		1	1	1			
urations		3		1			1				1			
		4		1			1	1						
		5			1									
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	2	1	1	3	0	0	0	3	0	0	1
Capacity			3600	4000	1800	1800	6000	0	0	0	4680	0	0	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	Y									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		157	1257	2	23	1626	94	264	3	431	1	2	5
Adjusted F	Iourly Volume	e	157	1257	2	23	1720	0	0	0	698	0	0	8
Utilization	Factor		0.04	0.31	0.00	0.01	0.29	0.00	0.00	0.00	0.15	0.00	0.00	0.00
Critical Fa	ctors		0.04				0.29				0.15			0.00

ICU Ratio = 0.58 LOS = A

El Camino Real at Poinsettia Lane

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
8:00 AM 9:00 AM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1	1		1	1
		5		1			1	1						
		6			1									
	Outside	7												
	Free-flow													
Lane Settir	ıgs		2	3	1	2	3	0	2	2	0	2	1	1
Capacity			3600	6000	1800	3600	6000	0	3600	4000	0	3600	2000	1800
Are the No	rth/South pha	ses	split (Y	N)?	N									
Are the Eas	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		18	1250	246	96	1153	12	19	10	6	344	7	151
Adjusted H	Iourly Volum	e	18	1250	246	96	1165	0	19	16	0	344	0	158
Utilization	Factor		0.01	0.21	0.14	0.03	0.19	0.00	0.01	0.00	0.00	0.10	0.00	0.09
Critical Fa	ctors			0.21		0.03				0.00		0.10		

ICU Ratio = 0.44 LOS = A

El Camino Real at Poinsettia Lane

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr	(EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	Left	Thru_	Right	Left	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1	1		1	1
		5		1			1	1						
		6			1									
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	3	1	2	3	0	2	2	0	2	1	1
Capacity			3600	6000	1800	3600	6000	0	3600	4000	0	3600	2000	1800
Are the No	orth/South pha	ses	split (Y	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		9	1218	459	202	1797	14	7	7	3	270	16	113
Adjusted F	Iourly Volume	Э	9	1218	459	202	1811	0	7	7	10	270	0	113
Utilization	Factor		0.00	0.20	0.26	0.06	0.30	0.00	0.00	0.00	0.00	0.08	0.00	0.06
Critical Fa	ctors				0.26	0.06				0.00		0.08		

ICU Ratio = 0.50 LOS = A

EXISTING PLUS PROJECT ALTERNATIVE 2
INTERSECTION ANALYSIS CALCULATION
WORKSHEETS

Cannon Road at Faraday Avenue

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir			Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	<u>Thru</u>	Right	Left	<u>Thru</u>	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1	1	1	1			1		
Config -	(left)	2	1	1	1					1			1	
urations		3								1	1		1	1
		4												
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settir	ngs		2	0	0	0	0	1	1	1	1	1	2	0
Capacity			3600	0	0	0	0	1800	1800	2000	1800	1800	4000	0
Are the No	orth/South pha	ises	split (Y	/N)?	Y									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		160	2	12	0	3	5	4	177	529	59	732	7
Adjusted F	Iourly Volum	e	174	0	0	0	0	8	4	177	529	59	739	0
Utilization	Factor		0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.29	0.03	0.18	0.00
Critical Fa	ctors		0.05					0.00			0.29	0.03		

ICU Ratio = 0.47 LOS = A

Cannon Road at Faraday Avenue

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tiı	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	_Left_	Thru	Right	Left_	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1	1	1	1			1		
Config -	(left)	2	1	1	1					1			1	
urations		3								1	1		1	1
		4												
		5												
		6												
	Outside	7												
	Free-flow													
Lane Setti	ngs		2	0	0	1	0	0	1	2	0	1	2	0
Capacity			3600	0	0	1800	0	0	1800	4000	0	1800	4000	0
Are the No	orth/South pha	ses	split (Y	N)?	Y									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		575	3	78	4	3	1	4	871	204	11	384	4
Adjusted H	Hourly Volum	e	656	0	0	8	3	0	4	871	204	11	388	0
Utilization	Factor		0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.01	0.10	0.00
Critical Fa	ctors		0.18			0.00				0.22		0.01		

ICU Ratio = 0.51 LOS = A

College Blvd at El Camino Real

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period :	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5												1
		6												
	Outside	7												
	Free-flow										1			
Lane Settir	ngs		2	2	0	2	1	1	1	3	1	1	3	1
Capacity			3600	4000	0	3600	2000	1800	1800	6000	1800	1800	6000	1800
Are the No	rth/South pha	ises s	split (Y	N)?	N									
Are the Ea	st/West phase	s spl	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		87	14	9	33	29	36	19	1928	536	124	550	16
Adjusted H	Iourly Volum	e	87	23	0	33	29	0	19	1928	536	124	550	16
Utilization	Factor		0.02	0.01	0.00	0.01	0.01	0.00	0.01	0.32	0.30	0.07	0.09	0.01
Critical Fa	ctors		0.02				0.01			0.32		0.07		

ICU Ratio = 0.52 LOS = A

College Blvd at El Camino Real

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5												1
		6												
	Outside	7												
	Free-flow										1			
Lane Settin	ngs		2	2	0	2	1	1	1	3	1	1	3	1
Capacity			3600	4000	0	3600	2000	1800	1800	6000	1800	1800	6000	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		539	35	24	20	13	39	45	997	120	21	1948	32
Adjusted F	Iourly Volum	e	539	59	0	20	13	0	45	997	120	21	1948	32
Utilization	Factor		0.15	0.01	0.00	0.01	0.01	0.00	0.03	0.17	0.07	0.01	0.32	0.02
Critical Fa	ctors		0.15				0.01		0.03				0.32	

ICU Ratio = 0.61 LOS = B

College Blvd at Faraday Ave

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	<u>Thru</u>	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1	1		1	1
		4		1	1		1	1						
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settir	ngs		2	1	1	2	2	0	1	2	0	1	2	0
Capacity			3600	2000	1800	3600	4000	0	1800	4000	0	1800	4000	0
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		194	168	272	167	305	76	41	368	120	141	354	46
Adjusted F	Iourly Volum	e	194	440	272	167	381	0	41	368	120	141	400	0
Utilization	Factor		0.05	0.22	0.15	0.05	0.10	0.00	0.02	0.09	0.00	0.08	0.10	0.00
Critical Fa	ctors			0.22		0.05				0.09		0.08		

ICU Ratio = 0.54 LOS = A

College Blvd at Faraday Ave

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	Left	<u>Thru</u>	Right	_Left_	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1	1		1	1
		4		1	1		1	1						
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settii	ngs		2	2	0	2	2	0	1	2	0	1	2	0
Capacity			3600	4000	0	3600	4000	0	1800	4000	0	1800	4000	0
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		133	288	109	17	181	55	50	458	224	235	435	146
Adjusted F	Iourly Volum	e	133	397	0	17	236	0	50	458	224	235	581	0
Utilization	Factor		0.04	0.10	0.00	0.00	0.06	0.00	0.03	0.11	0.00	0.13	0.15	0.00
Critical Fa	ctors			0.10		0.00				0.11		0.13		

ICU Ratio = 0.44 LOS = A

El Camino Real at Faraday Ave

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru	Right	Left	Thru	Right	<u>Left</u>	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1			1	
		4		1			1				1			1
		5		1	1		1							
		6						1						
	Outside	7												
	Free-flow													
Lane Settir	ngs		2	3	0	2	3	1	1	2	1	1	2	1
Capacity			3600	6000	0	3600	6000	1800	1800	4000	1800	1800	4000	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		587	422	86	400	1486	152	24	180	95	123	734	148
Adjusted F	Iourly Volum	e	587	508	0	400	1486	152	24	180	95	123	734	148
Utilization	Factor		0.16	0.08	0.00	0.11	0.25	0.08	0.01	0.05	0.05	0.07	0.18	0.08
Critical Fa	ctors		0.16				0.25		0.01				0.18	

ICU Ratio = 0.70 LOS = B

El Camino Real at Faraday Ave

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	<u>Thru</u>	Right	Left	Thru	Right	Left_	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1				1			1	
urations		3		1			1			1			1	
		4		1			1				1			1
		5		1	1		1							
		6						1						
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	3	0	2	3	1	1	1	2	1	2	1
Capacity			3600	6000	0	3600	6000	1800	1800	2000	3600	1800	4000	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		159	1379	109	218	938	15	128	681	630	166	255	345
Adjusted F	Iourly Volum	e	159	1488	0	218	938	15	128	341	971	166	255	345
Utilization	Factor		0.04	0.25	0.00	0.06	0.16	0.01	0.07	0.17	0.27	0.09	0.06	0.19
Critical Fa	ctors			0.25		0.06					0.27	0.09		

ICU Ratio = 0.77 LOS = C

I-5 SB Ramps at Palomar Airport Road

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1				1				1			1	
Config -	(left)	2				1				1			1	
urations		3						1		1	1			
		4												
		5												
		6												
	Outside	7												
	Free-flow													1
Lane Settir	ıgs		0	0	0	2	0	1	0	3	0	0	2	1
Capacity			0	0	0	3600	0	1800	0	6000	0	0	4000	1800
Are the No	rth/South pha	ases	split (Y	/N)?	N									
Are the Eas	st/West phase	es sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		0	0	0	1103	0	362	0	505	71	0	645	291
Adjusted H	Iourly Volum	e	0	0	0	1103	0	362	0	576	0	0	645	0
Utilization	Factor		0.00	0.00	0.00	0.31	0.00	0.20	0.00	0.10	0.00	0.00	0.16	0.00
Critical Fac	ctors			0.00	0.00	0.31			0.00				0.16	

ICU Ratio = 0.57 LOS = A

I-5 SB Ramps at Palomar Airport Road

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr	(EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right
Lane	Inside	1				1				1			1	
Config -	(left)	2				1				1			1	
urations		3						1		1	1			
		4												
		5												
		6												
	Outside	7												
	Free-flow													1
Lane Settin	ıgs		0	0	0	2	0	1	0	3	0	0	2	1
Capacity			0	0	0	3600	0	1800	0	6000	0	0	4000	1800
Are the No	rth/South pha	ses s	split (Y	N)?	N									
Are the Eas	st/West phase	s spl	it (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vol	lume		0	0	0	556	0	156	0	826	245	0	741	1020
Adjusted H	lourly Volum	e	0	0	0	556	0	156	0	1071	0	0	741	0
Utilization	Factor		0.00	0.00	0.00	0.15	0.00	0.09	0.00	0.18	0.00	0.00	0.19	0.00
Critical Fac	ctors			0.00	0.00	0.15			0.00				0.19	

ICU Ratio = 0.44 LOS = A

I-5 NB Ramps at Palomar Airport Road

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1	1					1				1	
Config -	(left)	2			1					1			1	
urations		3			1					1			1	
		4								1				1
		5												1
		6												
	Outside	7												
	Free-flow													
Lane Settir	ngs		1	0	2	0	0	0	1	3	0	0	3	2
Capacity			1800	0	3600	0	0	0	1800	6000	0	0	6000	3600
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		61	0	1142	0	0	0	72	1555	0	0	820	428
Adjusted F	Iourly Volum	e	61	0	1142	0	0	0	72	1555	0	0	820	428
Utilization	Factor		0.03	0.00	0.32	0.00	0.00	0.00	0.04	0.26	0.00	0.00	0.14	0.12
Critical Fa	ctors				0.32	0.00				0.26		0.00		

ICU Ratio = 0.68 LOS = B

I-5 NB Ramps at Palomar Airport Road

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	me Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	<u>Thru</u>	Right	Left	<u>Thru</u>	Right	_Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1	1					1				1	
Config -	(left)	2			1					1			1	
urations		3			1					1			1	
		4								1				1
		5												1
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		1	0	2	0	0	0	1	3	0	0	3	2
Capacity			1800	0	3600	0	0	0	1800	6000	0	0	6000	3600
Are the No	orth/South pha	ses	split (Y	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		77	0	515	0	0	0	207	1177	0	0	1635	954
Adjusted F	Iourly Volum	e	77	0	515	0	0	0	207	1177	0	0	1635	954
Utilization	Factor		0.04	0.00	0.14	0.00	0.00	0.00	0.12	0.20	0.00	0.00	0.27	0.27
Critical Fa	ctors				0.14	0.00			0.12				0.27	

ICU Ratio = 0.63 LOS = B

Palomar Airport Road at Paseo Del Norte Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5								1	1		1	
		6											1	
	Outside	7												1
	Free-flow													
Lane Settir	ıgs		2	1	1	2	1	1	2	3	0	2	4	1
Capacity			3600	2000	1800	3600	2000	1800	3600	6000	0	3600	8000	1800
Are the No	rth/South pha	ses	split (Y	N)?	N									
Are the Eas	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		115	35	87	81	35	73	120	2459	115	93	1031	190
Adjusted H	Iourly Volum	e	115	0	122	81	0	108	120	2574	0	93	1031	190
Utilization	Factor		0.03	0.00	0.07	0.02	0.00	0.06	0.03	0.43	0.00	0.03	0.13	0.11
Critical Fac	ctors		0.03					0.06		0.43		0.03		

ICU Ratio = 0.65 LOS = B

Palomar Airport Road at Paseo Del Norte Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru_	Right	Left	Thru_	Right	Left	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5								1	1		1	
		6											1	
	Outside	7												1
	Free-flow													
Lane Settin	ngs		2	1	1	2	1	1	2	3	0	2	4	1
Capacity			3600	2000	1800	3600	2000	1800	3600	6000	0	3600	8000	1800
Are the No	orth/South pha	ses	split (Y	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		202	113	183	244	118	262	253	1174	167	226	2032	287
Adjusted F	Iourly Volume	е	202	0	296	244	0	380	253	1341	0	226	2032	287
Utilization	Factor		0.06	0.00	0.16	0.07	0.00	0.21	0.07	0.22	0.00	0.06	0.25	0.16
Critical Fa	ctors		0.06					0.21	0.07				0.25	

ICU Ratio = 0.69 LOS = B

Palomar Airport Road at Armada Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (V	WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1				1	
urations		3		1	1		1			1			1	
		4			1			1		1			1	
		5								1				1
		6									1			
	Outside	7												
	Free-flow													
Lane Settir	ngs		2	0	2	2	1	1	2	3	1	1	3	1
Capacity			3600	0	3600	3600	2000	1800	3600	6000	1800	1800	6000	1800
Are the No	rth/South pha	ses	split (Y/	N)?	N									
Are the Eas	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		104	26	161	103	27	66	149	2247	173	102	1030	175
Adjusted H	Iourly Volum	e	104	0	187	103	27	93	149	2247	173	102	1030	175
Utilization	Factor		0.03	0.00	0.05	0.03	0.01	0.05	0.04	0.37	0.10	0.06	0.17	0.10
Critical Fac	ctors				0.05	0.03				0.37		0.06		

ICU Ratio = 0.61 LOS = B

Palomar Airport Road at Armada Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	Left	<u>Thru</u>	Right	Left	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1				1	
urations		3		1	1		1			1			1	
		4			1			1		1			1	
		5								1				1
		6									1			
	Outside	7												
	Free-flow													
Lane Settir	ngs		2	0	2	2	1	1	2	3	1	1	3	1
Capacity			3600	0	3600	3600	2000	1800	3600	6000	1800	1800	6000	1800
Are the No	orth/South pha	ses	split (Y/	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		339	57	245	207	58	204	174	1285	152	294	2099	134
Adjusted F	Iourly Volume	е	339	0	302	207	58	204	174	1437	0	294	2099	134
Utilization	Factor		0.09	0.00	0.08	0.06	0.03	0.11	0.05	0.24	0.00	0.16	0.35	0.07
Critical Fa	ctors		0.09					0.11		0.24		0.16		

ICU Ratio = 0.70 LOS = B

Palomar Airport Rd at Hidden Valley Rd Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2		1	1		1			1			1	
urations		3						1		1			1	
		4								1			1	1
		5									1			
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		1	0	1	1	1	1	1	3	1	1	3	0
Capacity			1800	0	1800	1800	2000	1800	1800	6000	1800	1800	6000	0
Are the No	orth/South pha	ises	split (Y	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		65	17	89	50	9	60	129	2324	94	63	1232	133
Adjusted F	Hourly Volum	e	65	0	106	50	9	60	129	2324	94	63	1365	0
Utilization	Factor		0.04	0.00	0.06	0.03	0.00	0.03	0.07	0.39	0.05	0.04	0.23	0.00
Critical Fa	ctors				0.06	0.03				0.39		0.04		

ICU Ratio = 0.62

LOS = B

Palomar Airport Rd at Hidden Valley Rd Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to	-	Left	<u>Thru</u>	Right	_Left_	Thru	Right	_Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2		1	1		1			1			1	
urations		3						1		1			1	
		4								1			1	1
		5									1			
		6												
	Outside	7												
	Free-flow													
Lane Settir	igs		1	0	1	1	1	1	1	3	1	1	3	0
Capacity			1800	0	1800	1800	2000	1800	1800	6000	1800	1800	6000	0
Are the No	rth/South pha	ses s	split (Y/	N)?	N									
Are the Eas	st/West phase	s spl	it (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		152	29	79	182	42	194	67	1896	119	103	2451	74
Adjusted H	lourly Volum	e	152	0	108	182	42	194	67	1896	119	103	2525	0
Utilization	Factor		0.08	0.00	0.06	0.10	0.02	0.11	0.04	0.32	0.07	0.06	0.42	0.00
Critical Fac	ctors		0.08					0.11	0.04				0.42	

ICU Ratio = 0.75 LOS = C

Palomar Airport Road at College Ave / Aviara Pkwy Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	me Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1				1		1			1		
urations		3		1				1		1			1	
		4		1						1			1	
		5			1					1			1	
		6									1			1
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	2	1	1	1	1	2	3	1	2	3	1
Capacity			3600	4000	1800	1800	2000	1800	3600	6000	1800	3600	6000	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		167	410	239	43	176	170	664	1579	140	142	970	43
Adjusted I	Hourly Volum	e	167	410	239	43	176	0	664	1579	140	142	970	43
Utilization	Factor		0.05	0.10	0.13	0.02	0.09	0.00	0.18	0.26	0.08	0.04	0.16	0.02
Critical Fa	ctors				0.13	0.02			0.18				0.16	

ICU Ratio = 0.59 LOS = A

Palomar Airport Road at College Ave / Aviara Pkwy Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1				1		1			1		
urations		3		1				1		1			1	
		4		1						1			1	
		5			1					1			1	
		6									1			1
	Outside	7												
	Free-flow													
Lane Settin	ıgs		2	2	1	1	1	1	2	3	1	2	3	1
Capacity			3600	4000	1800	1800	2000	1800	3600	6000	1800	3600	6000	1800
Are the No	rth/South pha	ses s	split (Y/	N)?	N									
Are the Eas	st/West phase	s spl	it (Y/N)?	N									
Efficiency	Lost Factor	_	0.10											
Hourly Vol	ume		176	225	153	32	397	541	162	1231	265	254	1585	87
Adjusted H	ourly Volume	е	176	225	153	32	397	460	162	1231	265	254	1585	87
Utilization	Factor		0.05	0.06	0.09	0.02	0.20	0.26	0.05	0.21	0.15	0.07	0.26	0.05
Critical Fac	ctors		0.05					0.26	0.05				0.26	

ICU Ratio = 0.72 LOS = C

Palomar Airport Rd at Camino Vida Roble

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period :	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to	-	Left	Thru_	Right	Left	Thru	Right	_Left_	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1				1			1			1	
urations		3		1	1			1		1			1	
		4								1	1			1
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settir	ngs		2	1	0	1	1	1	1	3	0	1	2	1
Capacity			3600	2000	0	1800	2000	1800	1800	6000	0	1800	4000	1800
Are the No	rth/South pha	ises s	split (Y	N)?	N									
Are the Ea	st/West phase	s spl	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		116	82	54	54	20	46	130	1418	347	174	1028	309
Adjusted H	Iourly Volum	e	116	136	0	54	20	46	130	1765	0	174	1028	309
Utilization	Factor		0.03	0.07	0.00	0.03	0.01	0.03	0.07	0.29	0.00	0.10	0.26	0.17
Critical Fa	ctors			0.07		0.03				0.29		0.10		

ICU Ratio = 0.59 LOS = A

Palomar Airport Rd at Camino Vida Roble Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	Left	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1				1			1			1	
urations		3		1	1			1		1			1	
		4								1	1			1
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	0	1	1	1	1	1	3	0	1	2	1
Capacity			3600	0	1800	1800	2000	1800	1800	6000	0	1800	4000	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		354	30	171	362	118	193	37	1560	243	46	1374	39
Adjusted F	Iourly Volum	e	354	0	201	362	118	193	37	1803	0	46	1374	39
Utilization	Factor		0.10	0.00	0.11	0.20	0.06	0.11	0.02	0.30	0.00	0.03	0.34	0.02
Critical Fa	ctors				0.11	0.20			0.02				0.34	

ICU Ratio = 0.77 LOS = C

Palomar Airport Road at Yarrow Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir			Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
8:15 AM 9:15 AM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1	1	1	1			1		
Config -	(left)	2		1						1			1	
urations		3			1					1			1	
		4								1	1		1	1
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settir	ngs		1	1	1	1	0	0	1	3	0	1	3	0
Capacity			1800	2000	1800	1800	0	0	1800	6000	0	1800	6000	0
Are the No	rth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		42	10	53	33	3	16	61	1076	134	243	1293	95
Adjusted F	Iourly Volum	e	42	10	53	52	0	0	61	1210	0	243	1388	0
Utilization			0.02	0.01	0.03	0.03	0.00	0.00	0.03	0.20	0.00	0.14	0.23	0.00
Critical Fa	ctors				0.03	0.03				0.20		0.14		

ICU Ratio = 0.50 LOS = A

Palomar Airport Road at Yarrow Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr	(EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	<u>Thru</u>	Right	Left	<u>Thru</u>	Right	_Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1	1	1	1			1		
Config -	(left)	2		1						1			1	
urations		3			1					1			1	
		4								1	1		1	1
		5												
		6												
	Outside	7												
	Free-flow													
Lane Settir	ngs		1	1	1	1	0	0	1	3	0	1	3	0
Capacity			1800	2000	1800	1800	0	0	1800	6000	0	1800	6000	0
Are the No	rth/South pha	ses s	split (Y	/N)?	N									
Are the Eas	st/West phase	s spl	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		121	7	280	73	19	50	28	1724	60	63	1172	64
Adjusted H	Iourly Volume	е	121	7	280	142	0	0	28	1784	0	63	1236	0
Utilization	Factor		0.07	0.00	0.16	0.08	0.00	0.00	0.02	0.30	0.00	0.04	0.21	0.00
Critical Fac	ctors				0.16	0.08				0.30		0.04		

ICU Ratio = 0.68 LOS = B

Palomar Airport Road at El Camino Real Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM	to													
8:45 AM			Left	<u>Thru</u>	Right	Left	Thru	Right	Left	<u>Thru</u>	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1			1	
		5		1			1			1			1	
		6			1			1			1			1
	Outside	7			1									1
	Free-flow													
Lane Settin	ngs		2	3	2	2	3	1	2	3	1	2	3	2
Capacity			3600	6000	3600	3600	6000	1800	3600	6000	1800	3600	6000	3600
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		166	619	389	372	929	269	129	882	131	678	1520	604
Adjusted F	Hourly Volume	e	166	619	50	372	929	204.8	129	882	131	678	1520	604
Utilization	Factor		0.05	0.10	0.01	0.10	0.15	0.11	0.04	0.15	0.07	0.19	0.25	0.17
Critical Fa	ctors			0.10		0.10				0.15		0.19		

ICU Ratio = 0.64 LOS = B

Palomar Airport Road at El Camino Real Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tiı	ne Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	<u>Thru</u>	Right	_Left_	Thru	Right	_Left_	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1			1	
		5		1			1			1			1	
		6			1			1			1			1
	Outside	7			1									1
	Free-flow													
Lane Settin	ngs		2	3	2	2	3	1	2	3	1	2	3	2
Capacity			3600	6000	3600	3600	6000	1800	3600	6000	1800	3600	6000	3600
Are the No	orth/South pha	ses s	split (Y	/N)?	N									
Are the Ea	st/West phase	s spl	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		207	970	556	617	880	151	360	1531	141	490	989	479
Adjusted I	Hourly Volume	e	207	970	556	617	880	151	360	1531	141	490	989	479
Utilization	Factor		0.06	0.16	0.15	0.17	0.15	0.08	0.10	0.26	0.08	0.14	0.16	0.13
Critical Fa	ctors			0.16		0.17				0.26		0.14		

ICU Ratio = 0.83 LOS = D

Palomar Airport Road at Loker Ave Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:45 AM 8:45 AM	to		Left	<u>Thru</u>	Right	Left	Thru	Right	_Left_	Thru	Right	Left	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2		1			1			1			1	
urations		3			1			1		1			1	
		4								1			1	1
		5									1			
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		1	1	1	1	1	1	1	3	1	1	3	0
Capacity			1800	2000	1800	1800	2000	1800	1800	6000	1800	1800	6000	0
Are the No	orth/South pha	ses	split (Y	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		92	60	34	20	24	107	253	1220	184	142	2459	137
Adjusted F	Hourly Volum	e	92	60	34	20	24	107	253	1220	184	142	2596	0
Utilization	Factor		0.05	0.03	0.02	0.01	0.01	0.06	0.14	0.20	0.10	0.08	0.43	0.00
Critical Fa	ctors		0.05					0.06	0.14				0.43	

ICU Ratio = 0.78 LOS = C

Palomar Airport Road at Loker Ave Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Time Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:45 PM to 5:45 PM		Left	_Thru_	Right	Left_	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane Inside	1	1			1			1			1		
Config - (left)	2		1			1			1			1	
urations	3			1			1		1			1	
	4								1			1	1
	5									1			
	6												
Outside	7												
Free-flov	V												
Lane Settings		1	1	1	1	1	1	1	3	1	1	3	0
Capacity		1800	2000	1800	1800	2000	1800	1800	6000	1800	1800	6000	0
Are the North/South	hases	split (Y	/N)?	N									
Are the East/West ph	ases spl	lit (Y/N)?	N									
Efficiency Lost Facto	r	0.10											
Hourly Volume		94	31	117	96	48	311	106	2426	215	44	1526	51
Adjusted Hourly Vol	ıme	94	31	117	96	48	311	106	2426	215	44	1577	0
Utilization Factor		0.05	0.02	0.07	0.05	0.02	0.17	0.06	0.40	0.12	0.02	0.26	0.00
Critical Factors		0.05					0.17		0.40		0.02		

ICU Ratio = 0.74 LOS = C

Palomar Airport Road at El Fuerte St Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
7:30 AM 8:30 AM	to	-	Left	<u>Thru</u>	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5								1			1	1
		6									1			
	Outside	7												
	Free-flow													
Lane Settir	ngs		2	1	1	2	2	0	2	3	1	2	3	0
Capacity			3600	2000	1800	3600	4000	0	3600	6000	1800	3600	6000	0
Are the No	rth/South pha	ses s	split (Y	N)?	N									
Are the Ea	st/West phase	s spl	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		128	99	105	53	46	28	103	1025	92	323	2772	169
Adjusted H	Iourly Volum	9	128	99	105	53	74	0	103	1025	92	323	2941	0
Utilization	Factor		0.04	0.05	0.06	0.01	0.02	0.00	0.03	0.17	0.05	0.09	0.49	0.00
Critical Fa	ctors				0.06	0.01			0.03				0.49	

ICU Ratio = 0.69 LOS = B

Palomar Airport Road at El Fuerte St Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
5:00 PM 6:00 PM	to		Left	<u>Thru</u>	Right	Left_	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1	1		1	1		1			1	
		5								1			1	1
		6									1			
	Outside	7												
	Free-flow													
Lane Settir	ngs		2	1	1	2	2	0	2	3	1	2	3	0
Capacity			3600	2000	1800	3600	4000	0	3600	6000	1800	3600	6000	0
Are the No	rth/South pha	ses	split (Y	N)?	N									
Are the Eas	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		167	69	352	262	101	51	36	2236	207	354	1389	30
Adjusted H	Iourly Volume	9	167	69	352	262	152	0	36	2236	207	354	1419	0
Utilization	Factor		0.05	0.03	0.20	0.07	0.04	0.00	0.01	0.37	0.12	0.10	0.24	0.00
Critical Fac	ctors				0.20	0.07				0.37		0.10		

ICU Ratio = 0.84 LOS = D

Palomar Airport Road at Melrose Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru	Right	<u>Left</u>	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1			1	
		5		1				1		1			1	
		6		1				1			1			1
	Outside	7			1									
	Free-flow													
Lane Settir	ngs		2	4	1	2	2	2	2	3	1	2	3	1
Capacity			3600	8000	1800	3600	4000	3600	3600	6000	1800	3600	6000	1800
Are the No	orth/South pha	ses	split (Y	N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		515	589	193	74	685	1230	428	826	126	100	1609	54
Adjusted F	Iourly Volume	е	515	0	143	74	685	955.8	428	826	126	100	1609	54
Utilization	Factor		0.14	0.00	0.08	0.02	0.17	0.27	0.12	0.14	0.07	0.03	0.27	0.03
Critical Fa	ctors		0.14					0.27	0.12				0.27	

ICU Ratio = 0.90 LOS = D

Palomar Airport Road at Melrose Dr Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	me Period:	_	Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr ((EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1			1	
		5		1				1		1			1	
		6		1				1			1			1
	Outside	7			1									
	Free-flow													
Lane Settin	ngs		2	4	1	2	2	2	2	3	1	2	3	1
Capacity			3600	8000	1800	3600	4000	3600	3600	6000	1800	3600	6000	1800
Are the No	orth/South pha	ses s	split (Y	N)?	N									
Are the Ea	st/West phase	s spl	it (Y/N)?	N									
Efficiency	Lost Factor	_	0.10											
Hourly Vo	lume		122	662	244	175	574	641	1011	1853	380	191	897	71
Adjusted I	Hourly Volume	Э	122	906	0	175	574	75.12	1011	1853	380	191	897	71
Utilization	Factor		0.03	0.11	0.00	0.05	0.14	0.02	0.28	0.31	0.21	0.05	0.15	0.04
Critical Fa	ctors		0.03				0.14		0.28				0.15	

ICU Ratio = 0.70 LOS = B

El Camino Real at Town Garden Rd

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tin	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr	(EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru_	Right	Left_	Thru	Right	_Left_	Thru	Right	_Left_	Thru	Right
Lane	Inside	1	1			1			1	1		1		
Config -	(left)	2		1			1				1		1	1
urations		3		1			1							
		4		1			1							
		5			1			1						
		6												
	Outside	7												
	Free-flow													
Lane Settir	ıgs		1	3	1	1	3	1	1	0	1	1	0	1
Capacity			1800	6000	1800	1800	6000	1800	1800	0	1800	1800	0	1800
Are the No	rth/South pha	ses	split (Y	/N)?	N									
Are the Eas	st/West phase	s sp	lit (Y/N)?	Y									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		146	1062	65	120	1356	84	52	15	39	105	41	51
Adjusted H	lourly Volume	е	146	1062	65	120	1356	84	67	0	39	105	0	92
Utilization	Factor		0.08	0.18	0.04	0.07	0.23	0.05	0.04	0.00	0.02	0.06	0.00	0.05
Critical Fac	ctors		0.08				0.23		0.04			0.06		

ICU Ratio = 0.51 LOS = A

El Camino Real at Town Garden Rd

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period :		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	t Appr	(EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	<u>Thru</u>	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1	1		1		
Config -	(left)	2		1			1				1		1	1
urations		3		1			1							
		4		1			1							
		5			1			1						
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		1	3	1	1	3	1	1	0	1	1	0	1
Capacity			1800	6000	1800	1800	6000	1800	1800	0	1800	1800	0	1800
Are the No	rth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	Y									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		63	1232	121	237	1552	47	155	18	113	198	38	80
Adjusted F	Iourly Volume	9	63	1232	121	237	1552	47	173	0	113	198	0	118
Utilization	Factor		0.04	0.21	0.07	0.13	0.26	0.03	0.10	0.00	0.06	0.11	0.00	0.07
Critical Fa	ctors			0.21		0.13			0.10			0.11		

ICU Ratio = 0.65 LOS = B

El Camino Real at Camino Vida Roble

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
7:30 AM 8:30 AM	to		Left	Thru	Right	Left	Thru	Right	Left_	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1	1	1
Config -	(left)	2	1				1		1	1	1			
urations		3		1			1				1			
		4		1			1	1						
		5			1									
		6												
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	2	1	1	3	0	0	0	3	0	0	1
Capacity			3600	4000	1800	1800	6000	0	0	0	4680	0	0	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	Y									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		394	1367	2	17	1310	243	53	1	83	3	4	8
Adjusted I	Iourly Volum	e	394	1367	2	17	1553	0	0	0	137	0	0	15
Utilization	Factor		0.11	0.34	0.00	0.01	0.26	0.00	0.00	0.00	0.03	0.00	0.00	0.01
Critical Fa	ctors		0.11				0.26				0.03			0.01

ICU Ratio = 0.51 LOS = A

El Camino Real at Camino Vida Roble

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tiı	me Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:30 PM 5:30 PM	to		Left	Thru	Right	Left	Thru	Right	<u>Left</u>	Thru	Right	<u>Left</u>	Thru	Right
Lane	Inside	1	1			1			1			1	1	1
Config -	(left)	2	1				1		1	1	1			
urations		3		1			1				1			
		4		1			1	1						
		5			1									
		6												
	Outside	7												
	Free-flow													
Lane Setti	ngs		2	2	1	1	3	0	0	0	3	0	0	1
Capacity			3600	4000	1800	1800	6000	0	0	0	4680	0	0	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	Y									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		158	1259	2	23	1628	94	264	3	432	1	2	5
Adjusted I	Hourly Volum	e	158	1259	2	23	1722	0	0	0	699	0	0	8
Utilization	Factor		0.04	0.31	0.00	0.01	0.29	0.00	0.00	0.00	0.15	0.00	0.00	0.00
Critical Fa	ctors		0.04				0.29				0.15			0.00

ICU Ratio = 0.58 LOS = A

El Camino Real at Poinsettia Lane

Lane Configuration for Intersection Capacity Utilization

Pk. Hr. Tir	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
8:00 AM 9:00 AM	to		Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1	1		1	1
		5		1			1	1						
		6			1									
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	3	1	2	3	0	2	2	0	2	1	1
Capacity			3600	6000	1800	3600	6000	0	3600	4000	0	3600	2000	1800
Are the No	orth/South pha	ses	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		18	1253	246	96	1155	12	19	10	6	344	7	151
Adjusted F	Hourly Volum	e	18	1253	246	96	1167	0	19	16	0	344	0	158
Utilization	Factor		0.01	0.21	0.14	0.03	0.19	0.00	0.01	0.00	0.00	0.10	0.00	0.09
Critical Fa	ctors			0.21		0.03				0.00		0.10		

ICU Ratio = 0.44 LOS = A

El Camino Real at Poinsettia Lane

Lane Configuration for Intersection Capacity Utilization

	ne Period:		Sout	h Appr	(NB)	Nort	h Appr	(SB)	Wes	st Appr ((EB)	East	Appr (WB)
4:45 PM 5:45 PM	to		Left	_Thru_	Right	Left	Thru	Right	Left_	Thru	Right	Left_	Thru	Right
Lane	Inside	1	1			1			1			1		
Config -	(left)	2	1			1			1			1		
urations		3		1			1			1			1	
		4		1			1			1	1		1	1
		5		1			1	1						
		6			1									
	Outside	7												
	Free-flow													
Lane Settin	ngs		2	3	1	2	3	0	2	2	0	2	1	1
Capacity			3600	6000	1800	3600	6000	0	3600	4000	0	3600	2000	1800
Are the No	orth/South pha	ises	split (Y	/N)?	N									
Are the Ea	st/West phase	s sp	lit (Y/N)?	N									
Efficiency	Lost Factor		0.10											
Hourly Vo	lume		9	1221	459	202	1800	14	7	7	3	270	16	113
Adjusted F	Hourly Volum	e	9	1221	459	202	1814	0	7	7	10	270	0	113
Utilization	Factor		0.00	0.20	0.26	0.06	0.30	0.00	0.00	0.00	0.00	0.08	0.00	0.06
Critical Fa	ctors				0.26	0.06				0.00		0.08		

ICU Ratio = 0.50 LOS = A

	APPENDIX E
	NEAR-TERM INTERSECTION ANALYSIS CALCULATION WORKSHEETS
	MEAR-TERM INTERSECTION ANALYSIS CALCULATION WORKSHELTS
	·
LINSCOTT, LAW & GREENSPAN, engineers	LLG Ref. 3-17-2772 McClellan-Palomar Airport Master Plan Update

HCM 2010 Signalized Intersection Summary 1: Faraday Ave. & Canon Rd.

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Movement FB EFT EBR WB1		1	†	<u> </u>	-	ļ	1	•	—	4	۶	→	*
1	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
10	Lane Configurations	r	4₽		je-	4₽		je-	4			4	
10	Traffic Volume (veh/h)	10	190	290	70	790	10	170	10	20	10	10	10
100	Future Volume (veh/h)	10	190	290	02	790	10	170	10	20	10	10	10
1.00	Number	വ	2	12	- (9 0	91	က	∞ (9	7	4 (14
1.00	Initial Q (Qb), veh	S	0	0 0	0 6	0	0 10	0 6	0	0 0	0 0	0	0 0
1845 1845 1900 1845 1845 1900 1845 1910 1845 1910 1845 1910 1845 1910 1845 1910 1845 1910 1910 1845 1910	Ped-Bike Adj(A_pb1)	8.6	5	1.98	8.6	5	0.93	8.6	9	1.00	00.1	00	1001
11 21 622 78 878 713 7	Adi Sat Flow veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1900
1 2 0 1 2 0 0 1 0 0 0 1 0 0 0	Adj Flow Rate, veh/h	11	211	622	2 82	878	1 28	217	20	0	11	11	11
0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90	Adj No. of Lanes	-	2	0	-	2	0	2	—	0	0	-	0
3	Peak Hour Factor	06:0	0.90	0.90	0.90	0.90	06:0	0.90	06:0	0.90	0.00	06.0	06.0
574 1002 877 99 1068 13 407 214 0 20 20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Percent Heavy Veh, %	3	3	3	3	3	c	c	c	3	3	3	c
1.32 0.57 0.57 0.06 0.30 0.01 0.00	Cap, veh/h	574	1002	877	66	1068	13	407	214	0	20	20	20
1757 1752 1535 1757 3542 44 3514 1845 0 551 551 1757 1752 1535 1757 3542 44 3514 1845 0 651 351 1751 1752 1535 1757 184 455 277 0 0 0 2.0 0 104 59 292 44 230 230 58 0 0 0 2.0 0 100 100 100 100 100 100 100 0	Arrive On Green	0.33	0.57	0.57	90:0	0.30	0.30	0.12	0.00	0.00	0.04	0.04	0.04
11 211 622 78 434 455 217 0 0 33 0 1757 1752 1353 1757 1752 1834 1757 1845 0 0 0 2.0 0 104 59 292 44 230 230 58 0.0 0.0 2.0 0.0 104 59 292 44 230 230 58 0.0 0.0 2.0 0.0 105 100 100 100 200 100 0.0 0.0 0.0 106 0.02 0.21 0.71 0.78 0.82 0.83 0.00 0.00 0.55 0.00 107 108 109 100 100 100 100 100 100 100 100 108 109 100 100 100 100 100 100 100 100 109 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0	Sat Flow, veh/h	1757	1752	1535	1757	3542	44	3514	1845	0	551	551	551
1757 1752 1535 1757 1752 1834 1757 1845 0 1652 0 0 0 0 0 0 0 0 0	Grp Volume(v), veh/h	11	211	622	78	434	455	217	0	0	33	0	0
04 59 292 44 230 530 58 0.0 0.0 2.0 0.0 1.00 0.0 1.00 0.0 0.0 0.0 0.0 0.0	Grp Sat Flow(s),veh/h/ln	1757	1752	1535	1757	1752	1834	1757	1845	0	1652	0	0
100 14 59 292 44 230 230 58 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Q Serve(g_s), s	0.4	5.9	29.2	4.4	23.0	23.0	2.8	0.0	0.0	2.0	0.0	0.0
1.00		0.4	5.9	29.2	4.4	23.0	23.0	2.8	0.0	0.0	2.0	0.0	0.0
STA 1002 877 99 528 553 407 214 0 59 0 0 0 0 0 0 0 0 0	Prop In Lane	1.00		1.00	1.00		0.05	1.00		0.00	0.33		0.33
0.02 0.02 0.71 0.78 0.82 0.83 0.00 0.00 0.55 0.00 0.00 0.00 0.00 0.0	Lane Grp Cap(c), veh/h	574	1002	877	66	278	223	407	214	0	26	0	0
1.00	V/C Ratio(X)	0.02	0.21	0.71	0.78	0.82	0.82	0.53	0.00	0.00	0.55	0.00	0.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	574	1002	877	141	613	642	1160	609	0	66	0	0
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
h 228 104 154 466 324 324 417 00 0.0 474 0.0 0.0 0.5 48 107 135 13.0 0.8 0.0 0.0 0.0 h 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
0.0 0.5 4.8 10.7 13.5 13.0 0.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	22.8	10.4	15.4	46.6	32.4	32.4	41.7	0.0	0.0	47.4	0.0	0.0
h 00 00 00 00 00 00 00 00 00 00 00 00 00	Incr Delay (d2), s/veh	0.0	0.5	4.8	10.7	13.5	13.0	0.8	0.0	0.0	3.0	0.0	0.0
hin 0.2 2.9 13.4 2.4 13.1 13.6 2.9 0.0 0.0 0.9 0.0 0.0 0.2 0.0 13.4 2.4 13.1 13.6 2.9 0.0 0.0 0.0 0.9 0.0 0.0 0.0 0.0 0.0 0	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
228 10.9 20.2 57.3 46.0 45.4 42.5 0.0 0.0 50.4 0.0 0.0 0.0 50.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	%ile BackOfQ(50%),veh/ln	0.5	2.9	13.4	2.4	13.1	13.6	2.9	0.0	0.0	6.0	0.0	0.0
C B C E D D D D D D D D D	LnGrp Delay(d), s/ven	8.77	10.9	70.7	5/.3	40.0	42.4	47.5	0.0	0.0	50.4	0.0	0.0
17 17 18 18 18 18 18 18	Lugg LOS	اد	20 5	اد	ш	0 2			5			c	
1,79 400 42.5 B D D 42.5 B 1 2 3 4 5 6 7 8 5,5 11.7 63.2 8.6 38.7 36.1 16.6 8 6.0 60 60 60 60 5.0 14.1),5 6.4 31.2 4.0 35.0 78 8 0 0 0 0 0 0 0 5.1 0.5 C C	Approach Vol. vervn		27.0			/0/			/17			33	
1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 4 5 6 8 1 8 6 38.7 36.1 16.6 1 8 7 8 7 86.1 1 8 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 8 7	Approach Delay, siven		6.7			40.0			47.5			50°.4	
1 2 3 4 5 6 7 1 2 4 5 6 7 1 3 4 5 6 7 1 2 4 5 6 7 1 3 4 5 6 7 1 4 5 6 7 1 5 8 6 8 38.1 2 8 6 8 38.1 2 8 6 8 38.1 3 8 0 3 1.0 3 1.0	Applicacii LOS		۵			۵			٥			٥	
9,5 11.7 63.2 8.6 38.7 36.1 36.0 60 60 60 60 60 60 60 60 60 60 60 60 60	Timer	_	2	3	4	2	9	7	∞				
3,5 117 632 86 387 36.1 5 60 60 50 60 60 17 60 60 60 60 18 64 31.2 40 24 25.0 5 00 00 00 00 5.1 34.5	Assigned Phs	-	2		4	2	9		∞				
S 60 60 50 60 60 60 80 80 80 810 80 810 80 810 80 810 80 810 81	Phs Duration (G+Y+Rc), s	11.7	63.2		9.8	38.7	36.1		16.6				
nax), s 80 310 60 40 350 >+11), s 64 312 40 24 250 s 0.0 0.0 0.0 0.0 5.1 34.5	Change Period (Y+Rc), s	0.9	0.9		2.0	0.9	0.9		2.0				
s 0.0 0.0 0.0 0.0 5.1 34.5 C	Max Green Setting (Gmax), s	8.0	31.0		0.9	4.0	35.0		33.0				
s 0.0 0.0 0.0 0.0 5.1 0 34.5 C	(E±	6.4	31.2		4.0	2.4	25.0		7.8				
	Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	5.1		0.5				
	Intersection Summary												
	HCM 2010 Ctrl Delay			34.5									
	HCM 2010 LOS			ပ									

N:2772/AnalysisIntersections\Synchro\text{I.Ex} +C AM.syn HCM 2010 Signalized Intersection Summary

Synchro 10 Report Page 1

HCM 2010 Signalized Intersection Summary 2: College Blvd. & El Camino Real

Ex + Cumulative AM 08/03/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	je.	444	¥C	r	444	*	F	₩		F	₹	
Traffic Volume (veh/h)	40	2030	220	140	280	40	100	40	10	80	02	8
Future Volume (veh/h)	40	2030	570	140	280	40	100	40	10	80	70	∞
Number	വ	7	12	- -	9	16	m d	∞ α	9 9	_	4 (77
Initial Q (Qb), veh	0 0	0	0 6	0 6	0	0 0	0 6	0	0 10	0 6	0	٠ ا
Ped-Bike Adj(A_pb1)	1.00	00	1.00	1.00	5	1.00	1.00	00	1.00	1.00	5	0.95
Adi Cat Elow, web/h/lb	1045	1045	1045	1045	1005	1045	1045	1045	1000	1045	10.00	100
Adj Flow Rate, veh/h	43	2207	040	152	630	43	109	43	11	87	76	87
Adj No. of Lanes	_	m	-	-	က	—	2	2	0	2	2	O
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	(+)
Cap, veh/h	22	2072	645	408	3123	896	105	400	67	105	254	216
Arrive On Green	0.03	0.41	0.00	0.23	0.62	0.62	0.03	0.14	0.14	0.03	0.14	0.14
Sat Flow, veh/h	1757	5036	1568	1757	5036	1560	3408	2766	673	3408	1752	1494
Grp Volume(v), veh/h	43	2207	0	152	630	43	109	26	28	87	9/	87
Grp Sat Flow(s),veh/h/ln	1757	1679	1568	1757	1679	1560	1704	1752	1687	1704	1752	1494
	3.2	53.5	0.0	9.5	7.1	1.4	4.0	1.7	9.	3.3	2.0	6.9
Cycle Q Clear(g_c), s	3.2	53.5	0.0	9.5	7.1	1.4	4.0	1.7	8. 5	3.3	2.0	6.9
Prop in Lane	0.1	0.700	1.00	00.1	2172	00.1	100	N 3C	0.40	9.1	254	0.1
V/C Ratio(X)	0.78	1.06	0.00	0.37	0.20	0.04	1.04	0.10	0.11	0.83	0.30	0.40
Avail Cap(c a), veh/h	89	2072	645	408	3123	896	105	539	519	105	539	460
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.5	38.3	0.0	42.0	10.7	9.6	63.0	48.3	48.3	62.7	49.7	50.5
Incr Delay (d2), s/veh	29.9	39.7	0.0	0.2	0.1	0.1	98.9	0.1	0.1	38.3	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
InGrn Delay(d) slyeh	0.2 V CO	92.4	0.0	4.0	10.0	0.0	162.6	48.3	48.4	100 9	49.0	50.9
LuGrp LOS	F 4	. 4	2	Z: Zt	B (2)	×	P -		0	. H	٥	
Approach Vol, veh/h		2250			825			163			250	
Approach Delay, s/veh		78.2			16.6			124.7			0.89	
Approach LOS		ш			В			ш			Ш	
Timer	_	2	က	4	വ	9	7	∞				
Assigned Phs	_	2	3	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	36.2	59.5	0.6	25.3	9.1	9.98	0.6	25.3				
Change Period (Y+Rc), s	0.9	9 *	2.0	6.5	2.0	0.9	2.0	6.5				
Max Green Setting (Gmax), s	10.0	* 54	4.0	40.0	2.0	28.2	4.0	40.0				
Green Ext Time (b. c). s		0.00	0.0	0.5	0.0	2.5	0.0	0.5				
	2	5	5	5	5	į	5	5				
Intersection Summary												
HCM 2010 Ctrl Delay			65.1									
HCM 2010 LOS			ш									
			,									

NY2772/Analysis/Intersections/Synchro7. Ex +C AM.syn HCM 2010 Signalized Intersection Summary

HCM 2010 Signalized Intersection Summary 3: College Blvd. & Faraday Ave.

Ex + Cumulative AM 08/03/2017

	4	†	1	>	ţ	4	•	←	•	٠	-	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	r	₩.		۴	₩₽		į.	₩		K.	₩	
Traffic Volume (veh/h)	20	390	130	160	380	09	210	200	300	190	320	06
Future Volume (veh/h)	20	330	130	160	380	99	210	200	300	190	320	06
Number	7	4	14	co	∞	9	2	2	12	-	9	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1:00	1.00	1.00	1.00	1.00	1.00	00!	00!	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	24	424	141	174	413	65	228	217	326	207	380	86
Adj No. of Lanes	-	2	0	-	2	0	2	2	0	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	m (· ·	<u>د</u> ا	· ;			e 6	· ·	· ·			
Cap, veh/h	8	169	227	154	942	147	299	204	438	290	783	199
Arrive On Green	0.05	25.71	0.27 845	1757	30.55	0.31	3408	1752	1521	3408	9749	67.0
Gra Volume(v) veh/h	54	787	278	174	238	240	228	717	326	201.0	240	238
Gro Sat Flow(s),veh/h/ln	1757	1752	1664	1757	1752	1745	1704	1752	1521	1704	1752	1696
Q Serve(g_s), s	2.2	10.6	10.8	6.5	8.0	8.1	4.8	7.4	14.4	4.4	8.4	8.6
Cycle Q Clear(g_c), s	2.2	10.6	10.8	6.5	8.0	8.1	4.8	7.4	14.4	4.4	8.4	9.8
Prop In Lane	1.00		0.51	1.00		0.27	1.00		1.00	1.00		0.41
Lane Grp Cap(c), veh/h	8	471	447	154	546	543	299	204	438	290	466	483
V/C Ratio(X)	89.0	0.61	0.62	1.13	0.44	0.44	0.76	0.43	0.74	0.71	0.48	0.49
Avail Cap(c_a), veh/h	135	853	810	154	872	898	299	734	638	299	734	711
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1:00	1.00	1.00	00	1:00	1.00	1.00	00.1	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.8	23.6	23.7	33.7	20.3	20.3	33.0	21.4	23.9	33.0	21.9	22.0
Incr Delay (d2), s/veh	9.7	7.3	4. 0	110.7	0.5	9.0	10.9	9.0	2.7	7.5	0.7	8.0
Initial Q Delay(d3), sweh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOrU(50%),vervin	S	5.3		6.7	5.9	4.0	7.7	3.7	0.3	40.5	4.7	4
LnGrp Delay(u),s/ven	44.4	24.9	- C2 - C	144.4 F	8.U.S	70.9 C	43.9	0.22 C	0.02	40.3	0.77	8.22
Approach Vol. veh/h		619		-	652			771			685	
Approach Delay, s/veh		26.7			53.8			30.4			28.1	
Approach LOS		O			Ω			S			O	
Timer	1	2	3	4	2	9	7	8				
Assigned Phs	1	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	10.8	27.3	11.0	24.9	11.0	27.1	7.9	28.0				
	4.5	0.9	4.5	2.0	4.5	0.9	4.5	2.0				
Max Green Setting (Gmax), s	6.5	31.0	6.5	36.0	6.5	31.0	5.7	36.8				
Green Ext Time (p_c), s	0.0	2.7	0.0	3.3	0.0	2.4	0.0	2.7				
Intersection Summary												
HCM 2010 Ctrl Delay			34.6									
HCM 20101 OS			ن									
			,									

N:2772\Analysis\Intersections\Synchro\7. Ex +C AM.syn HCM 2010 Signalized Intersection Summary

Synchro 10 Report Page 5

HCM 2010 Signalized Intersection Summary 4: El Camino Real & Faraday Ave.

Ex + Cumulative AM 08/03/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	*	R.	*	*	R.	K	4413		F	444	×
Traffic Volume (veh/h)	40	190	100	130	780	170	720	720	110	440	1560	220
Future Volume (veh/h)	40	190	100	130	780	170	720	720	110	440	1560	220
Number	7	4	14	3	8	18	2	2	12	_	9	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	43	207	109	141	848	185	783	783	120	478	1696	239
Adj No. of Lanes	_	2	-	_	2	-	2	3	0	2	က	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	က	3	က	3
Cap, veh/h	202	1240	220	105	1021	443	2024	3459	526	414	1511	466
Arrive On Green	0.12	0.35	0.35	90.0	0.29	0.29	0.59	0.79	0.79	0.12	0.30	0.30
Sat Flow, veh/h	1757	3505	1555	1757	3505	1522	3408	4400	699	3408	2036	1552
Grp Volume(v), veh/h	43	207	109	141	848	185	783	969	307	478	1696	239
Grp Sat Flow(s),veh/h/ln	1757	1752	1555	1757	1752	1522	1704	1679	1712	1704	1679	1552
Q Serve(g_s), s	2.9	5.3	4.3	7.8	29.4	17.8	15.7	0.9	6.1	15.8	39.0	16.6
Cycle Q Clear(g_c), s	2.9	5.3	4.3	7.8	29.4	17.8	15.7	0.9	6.1	15.8	39.0	16.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	202	1240	220	105	1021	443	2024	2639	1346	414	1511	466
V/C Ratio(X)	0.21	0.17	0.20	1.34	0.83	0.42	0.39	0.23	0.23	1.15	1.12	0.51
Avail Cap(c_a), veh/h	502	1240	220	105	1286	228	2024	2639	1346	414	1511	466
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1:00	1.00	1.00	1.00	1.00	1.00	0.79	0.79	0.79	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	28.8	13.4	61.1	43.1	72.1	13.9	3.6	3.6	57.1	45.5	37.6
Incr Delay (d2), s/veh	2.3	0.3	8.0	202.7	3.1	0.5	0.0	0.5	0.3	93.4	64.5	4.0
Initial Q Delay(d3), s/ven	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOlQ(50%),ven/in	U C P	0.7	0.7	1.4	14.7	0.7	4.7	Z.0 0	6.7	1505	1.12	1.0
Litterp Detay(u),S/veri	5.4°	1.67	Z.4.	203.0	40.7	77.3	0.+ D	0.0	, <	130.3	0.01	0
Approach Vol. voh.h.		250			1174		۵	1404	۲	1	2412	
Approach Delay skieh		77.6			76.4			8.5			1113	
Approach LOS		S			ш			Y A			<u>L</u>	
Timor	-	C	2	_	ננ	4	7	o				
Assigned Phs		1 ~	c	4	2 10	9	7	0				
Phs Duration (G+Y+Rc), s	20.0	110.0	12.0	51.0	85.0	45.0	20.1	42.9				
	4.7 * 1.6	0.0	4.4.2	C * *	0.0	0 0		n c				
Max O Clear Time (n c+11) s		0.14	× 0	7 3	17.7	410	0.0	314				
Green Ext Time (p_c), s		4.5	0.0	= ==	0.0	0.0	0.0	4.2				
Intersection Summary												
HCM 2010 Ctrl Delay			67.9									
HCM 2010 LOS			Ш									

N:2772/AnalysisUntersections\Synchrol7 Ex +C AM\syn HCM 2010 Signalized Intersection Summary

HCM 2010 Signalized Intersection Summary 5: I-5 South On-Ramp/I-5 SB Ramps & Palomar Airport Rd.

Ex + Cumulative AM 08/03/2017

	1	†	<i>></i>	-	Ļ	1	•	—	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		444			₩	¥C				K.		¥C_
Traffic Volume (veh/h)	0	540	80	0	089	310	0	0	0	1160	0	390
Future Volume (veh/h)	0	240	8	0	089	310	0	0	0	1160	0	390
Number	വ	2	12	- 0	9	92				_	4 (14
Initial C (CD), ven	0 ;	0	0 ;	0 ;	0	0 ;				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1:00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/In	0	1845	1900	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	009	68	0	756	0				1289	0	433
Adj No. of Lanes	0	3	0	0	2	_				2	0	_
Peak Hour Factor	0.00	0.90	0.00	0.90	0.90	0.90				06:0	0.90	06:0
Percent Heavy Veh, %	0	3	3	0	3	3				m	0	3
Cap, veh/h	0	1317	193	0	1040	465				1421	0	654
Arrive On Green	0.00	0:30	0.30	0.00	0.30	0.00				0.42	0.00	0.42
Sat Flow, veh/h	0	4604	920	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	452	237	0	756	0				1289	0	433
Grp Sat Flow(s),veh/h/ln	0	1679	1730	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	4.0	4.1	0.0	7.1	0.0				13.0	0.0	8.2
Cycle Q Clear(g_c), s	0.0	4.0	4.1	0.0	7.1	0.0				13.0	0.0	8.2
Prop In Lane	0.00		0.38	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	966	513	0	1040	465				1421	0	654
V/C Ratio(X)	0.00	0.45	0.46	0.00	0.73	0.00				0.91	0.00	99.0
Avail Cap(c_a), veh/h	0	2206	1137	0	2303	1030				2361	0	1086
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	10.5	10.5	0.0	11.6	0.0				10.0	0.0	8.6
Incr Delay (d2), s/veh	0.0	0.1	0.2	0.0	0.4	0.0				1.9	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.8	1.9	0.0	3.4	0.0				6.3	0.0	3.6
LnGrp Delay(d),s/veh	0.0	10.6	10.8	0.0	11.9	0.0				12.0	0.0	0.6
LnGrp LOS		В	В		В					В		Α
Approach Vol, veh/h		689			756						1722	
Approach Delay, s/veh		10.7			11.9						11.2	
Approach LOS		В			В						В	
Timer	_	2	33	4	2	9	7	8				
Assigned Phs		2		4		9						
Phs Duration (G+Y+Rc), s		16.3		20.4		16.3						
Change Period (Y+Rc), s		5.4		5.1		5.4						
Max Green Setting (Gmax), s		24.1		25.4		24.1						
Max Q Clear Time (g_c+I1), s		6.1		15.0		9.1						
Green Ext Time (p_c), s		0.9		0.3		1.						
Intersection Summary												
HCM 2010 Ctrl Delay			11.3									
HCM 2010 LOS			2									
LOW ZO CO			3									

N-12772/Analysis/Intersections/Synchrol7. Ex +C AM syn HCM 2010 Signalized Intersection Summary

Synchro 10 Report Page 8

HCM 2010 Signalized Intersection Summary 6: I-5 NB Ramps & Palomar Airport Rd.

Ex + Cumulative AM 08/03/2017

Abovement EBI		NBL	NBT NBR	SBL	SBT	SBR
A + + + + A + + A + + A + + A + + A	K 444		KK T			
80 1630 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0						
80 1630 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	098			0	0	0
5 2 12 1 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.01 1.00 1.00 1.02 1.85 0 0 0 1.02 2299 0 0 0 1.02 2299 0 0 0 1.03 1.05 0.00 1.05 38.1 0.0 0.00 1.05 38.1 0.0 0.00 1.05 38.1 0.0 0.00 1.07 1.09 0.00 1.08 1.68 0 0 0 1.09 0.00 1.00 0.00 0.00 1.01 1.02 2299 0 0 1.02 2299 0 0 1.03 1.03 1.00 0.00 1.04 1.13 0.00 0.00 1.05 38.1 0.0 0.00 1.00 1.00 0.00 1.00 0.00 0.00 1.00 0.0	860 4	1-	0 1200		0	0
100 100 100 100 100 100 100 100 100 100	9	2	8 18			
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0	1	0 0			
1845 1845 0 0 0 82 1845 0 0 0 82 1845 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.00		1.00 1.00			
82 1680 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1845	1900				
0.1	887	72				
097 097 097 097 097 097 097 097 097 097	e		1 2			
102 2299 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		7 0.97	76.0 76.0			
102 2999 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 3	3	3			
006 046 000 000 000 000 000 000 000 000		4 823	0 1263			
1757 5202 0 0 8 182 1680 0 0 0 182 1680 0 0 0 6.5 38.1 0.0 0.0 1.0 38.1 0.0 0.0 1.0 38.1 0.0 0.0 1.0 2299 0 0 0 1.0 1299 0 0 0 1.0 100 100 100 0.63 0.63 0.03 0.00 0.63 0.63 0.00 0.00 0.69 3.179 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		2 0.47	0.00 0.47			
1777 1679 0 0 0 1777 1679 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	·	1757	0 2696			
1757 1679 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	887		0 1237			
65 38.1 0.0 0.0 65 38.1 0.0 0.0 102 2299 0 0.0 081 0.73 0.00 0.00 1.00 1.00 1.00 1.00 0.63 0.63 0.00 0.0 65.2 31.0 0.0 0.0 65.2 31.0 0.0 0.0 65.2 31.0 0.0 0.0 65.2 31.0 0.0 0.0 65.2 31.0 0.0 0.0 65.2 31.0 0.0 0.0 65.2 31.0 0.0 0.0 65.2 31.0 0.0 0.0 65.2 3.4 1.3 0.0 0.0 66.3 3.3 17.9 0.0 0.0 66.5 32.4 0.0 0.0 66.5 32.4 0.0 0.0 66.5 32.4 0.0 0.0 67.5 66.3 66.3 3.1 1.2 3 4 64.4	. 6291	-				
65 38.1 0.0 0.0 100 229 0 0 0 102 229 0 0 0 103 0.02 100 0.00 161 2299 0 0 0 161 2299 0 0 0 162 229 0 0 0 162 229 0 0 0 162 229 0 0 0 163 0.63 0.00 0.00 65.2 31.0 0.0 0.0 65.2 31.0 0.0 0.0 65.2 31.0 0.0 0.0 65.2 31.0 0.0 0.0 65.2 31.0 0.0 0.0 65.2 31.0 0.0 0.0 66.5 32.4 0.0 0.0 66.5 32.4 0.0 0.0 66.5 32.4 0.0 0.0 66.5 32.4 0.0 0.0 66.5 32.4 0.0 0.0 66.5 32.4 0.0 0.0 66.5 32.4 0.0 0.0 66.5 32.4 0.0 0.0 66.5 32.4 0.0 0.0 66.5 32.4 0.0 0.0 66.5 32.4 0.0 0.0 66.5 32.4 0.0 0.0 66.5 32.4 0.0 0.0 66.5 32.4 0.0 0.0 67.0 44.4	23.0	3.2	0.0 63.1			
100 0.00 0.00 0.00 0.00 0.00 0.00 0.00	23.0					
102 2299 0 0 0 102 103 104 105 105 106 106 106 106 106 106 106 106 106 106			1.00			
081 073 0.00 0.00 0.00 0.00 0.00 0.00 0.00	1838					
161 2299 0 0 0 1.00 1.00 1.00 0.63 0.00 0.65 2 31.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.48					
1.00 1.00 1.00 0.00 0.00 0.00 0.00 0.00	1838					
0.63 0.63 0.00 0.00 0.00 0.00 0.00 0.00	0.33					
65.2 81.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.81					
44 1.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	49.2 4	. 7				
3.3 17.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	0.7					
3.3 17.9 0.0 0.0 69.5 32.4 0.0 0.0 E	0.0					
69.3 8.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	8.0.2					
1762 17762 1	50.0	70	0.0 54.3			
1762 34.1 C C 69.3 69.3 5.4 5.4 0.5 40.1 7.5 44.4 P.		2)				
74.1 C 3 4 C 2 3 4 69.3 69.3 5.4 5.4 7.5 44.4 D 5 44.4	1351	,	1309			
69.3 4 69.3 5.4 5.4 5.4 5.7 3.1 3.1 44.4 P.1	50.2		52.4			
1 2 3 4 2 2 4 69.3 69.3 5.4 6.1 7 9.5 55.7 7 9.5 9.1 9.1 9.1 9.1 9.1 9.1 9.1 9.1 9.1 9.1	n		n			
2 69.3 5.4 5.4 7.5 5.4 4.4 P.1		2 9	8			
69.3 5.4 5.4 5.5 7, s 40.1 44.4 D		9	8			
s, 5,4	۵,	10	70.7			
ax), s 55.7 (II), s 40.1 3.1 44.4		4	5.1			
(f), s 40.1 3.1 44.4 D		2	73.8			
3.1 44.4 D	2	0	65.1			
	0.0	10	0.5			
Notes						

N:2772/Analysis/Intersections\Synchro\7. Ex +C AM.syn HCM 2010 Signalized Intersection Summary

HCM 2010 Signalized Intersection Summary 7: Paseo Del Norte & Palomar Airport Rd.

	4	†	<u> </u>	\	ļ	1	•	—	4	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	ተቀጉ		<u> </u>	≣	¥C	j.	4₽		K.	4₽	
Traffic Volume (veh/h)	130	2580	130	100	1080	200	130	40	100	06	40	80
Future Volume (veh/h)	130	72280	130	90 -	080L	200	30	φ α	100	06	40	80
Initial Q (Qb), veh	0	4 0	<u>i</u> 0	- 0	0	0	0	0	0	. 0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	138	2745	138	106	1149	213	138	43	106	96	43	82
Adj No. of Lanes	2	m :	0	2	4 .0		2	2	0	2	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	m	m i	က	က	co	က	m	က	m i	က	co	m
Cap, veh/h	1442	3147	156	122	1528	431	182	259	221	127	219	185
Arrive On Green	0.28	0.43	0.43	0.01	0.08	0.08	0.02	0.15	0.15	0.04	0.12	0.12
Sat Flow, veh/h	3408	4911	243	3408	6346	1548	3408	1752	1495	3408	1752	1485
Grp Volume(v), veh/h	138	1862	1021	106	1149	213	138	43	106	96	43	82
Grp Sat Flow(s),veh/h/ln	1704	1679	1796	1704	1586	1548	1704	1752	1495	1704	1752	1485
Q Serve(g_s), s	4.2	70.5	73.4	4.3	24.8	11.3	9.6	3.0	9.1	3.9	3.1	7.4
Cycle Q Clear(g_c), s	4.2	70.5	73.4	4.3	24.8	11.3	9.6	3.0	9.1	3.9	3.1	7.4
Prop In Lane	1.00		0.14	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1442	2152	1151	122	1528	431	185	259	221	127	219	185
V/C Ratio(X)	0.10	0.87	0.89	0.87	0.75	0.49	0.75	0.17	0.48	0.76	0.20	0.46
Avail Cap(c_a), veh/h	1442	2152	1151	122	3010	793	236	488	416	127	432	366
HCM Platoon Ratio	0.67	0.67	0.67	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.44	0.44	0.44	0.78	0.78	0.78	1.00	1:00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.4	34.4	35.3	6.89	60.3	35.4	65.3	52.1	54.7	8.99	22.0	56.9
Incr Delay (d2), s/veh	0.0	2.3	2.0	36.3	2.7	3.1	6.4	0.1	9.0	20.8	0.2	0.7
Initial Q Delay(d3), sweh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOtO(50%),veh/ln	20.0	33.4	38.1	2.7	11.2	5.2	2.8	7.5	8 6	2.2	7.5	3.7
Lingip Delay(u), swell	50.4	20.7	60.5	7.601	03.0	0.00	0.17	7.70	00.0	0.70	 	0.70
Annroach Vol. veh/h	اد	3021	اد	-	1468		1	787	1	-	224	1
Approach Delay, s/veh		37.6			62.5			62.7			6.69	
Approach LOS		D			ш			Ш			Ш	
Timer	_	2	c	4	2	9	7	00				
Assigned Phs	-	2	3	4	2	9	7	00				
Phs Duration (G+Y+Rc), s	9.2	95.7	12.6	22.5	65.2	39.7	9.4	25.7				
Change Period (Y+Rc), s	* 4.2	0.9	2.0	* 5	0.9	9 *	* 4.2	2.0				
Max Green Setting (Gmax), s	* 5	71.4	6.7	* 35	10.0	99 *	* 5.2	39.0				
Max Q Clear Time (g_c+I1), s	6.3	75.4	9.7	9.4	6.2	26.8	5.9	11.1				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.5	0.1	8.9	0.0	9.0				
Intersection Summary												
HCM 2010 Ctrl Delay			47.8									
HCM 2010 LOS			O									
Notes												

N-12772/AnalysisUntersections/Synchrol7. Ex +C AIM.syn HCM 2010 Signalized Intersection Summary

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HCM 2010 Signalized Intersection Summary 8: Armada Dr. & Palomar Airport Rd.

Ex + Cumulative AM 08/03/2017

Ex + Cumulative AM

08/03/2017

Lane Configurations				
100 100	NBT	NBR SBL	SBT	SBR
160 2360 190 110 1080 190 160 2360 190 110 1080 190 110 1080 190 100	١.		*	×
160 2360 190 110 1080 19	30	170 110	90.	2
5		170 110	30	20
1,00	∞	18 7	4	14
100	0		0	0
100 100				0.94
1845 1845 1845 1845 1845 1845 1845 1845 1845 1845 1845 1845 1845 1845 1445 1470 2.2 3 3 3 3 3 3 3 3 3	1.00	1.00 1.00	1.00	1.00
170 2511 202 117 1149 202 203 3 3 3 3 3 3 3 3 3	1845		1845	1845
2 3 1 1 3 1 1 3 1 1 3 1 1 3 1 1 3 1 1 3 1 1 3 1 1 3 1 1 3 1 1 3 1 3 1 3 3 3 3 3 1 3 1 3 1 3 1 3 3 1 3 3 3 1 3 1 1 408 3241 1067 118 1434 498 0 8340 5030 0 002 0 009 0 002 100 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0	202 117	32	74
0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94	0		-	
1408 3.24 1.05	0.94	0.94 0.94	0.94	0.94
1408 3.241 1067 118 1434 498 6.83 1.00 1.00 0.02 0.09 0.09 0.09 0.09 0.09 0.09 0	33	3 3	3	3
0.83 1.00 1.00 0.02 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0.00 <td< td=""><td>0</td><td></td><td>198</td><td>128</td></td<>	0		198	128
3408 6036 1561 1787 5036 1551 33 170 2511 202 117 1149 202 170 4 1679 1679 1679 1679 1.3 0.0 0.0 9.3 31.3 12.0 1.00 1.00 9.3 31.3 12.0 1.00 1.00 9.3 31.3 12.0 1.00 1.00 9.3 31.3 12.0 1.00 1.00 9.3 31.3 12.0 1.00 1.00 9.3 31.3 12.0 1.00 1.00 9.3 31.3 12.0 1.00 1.00 9.3 31.3 12.0 1.00 1.00 9.3 31.3 12.0 1.00 1.00 9.3 0.3 31.3 12.0 1.00 2.00 2.00 0.3 0.3 0.3 0.3 1 1.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.00		0.11	0.11
170 2511 202 117 1149 202 1704 1679 1561 1737 1679 1561 1737 1679 1561 1737 1679 1561 173 1670 130 1	0	2956 3408	1845	1475
1704 1679 1561 1787 1679 1551 1704 1579 1561 1787 1679 1551 1705 1706 1700 1.00 0.0 9.3 31.3 12.0 1.00 1.	0		32	74
1,3 0,0 0,0 9,3 31,3 12,0 1,0 0,0 0,0 1,0 0,0 1,0 0,0 1,0 0,0 1,0 0,0 1,0 0,0 1,0 0,0 1,0 0,0 1,0 0,0 1,0 0,0 1,0 0,0 0			_	1475
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100 100 100 100 100 100 100 100 100 100				3.0
1408 3241 1067 118 1434 498 6012 0012 077 019 019 019 019 041 041 1408 3241 1067 118 2266 754 754 1067 118 2266 754 754 019 019 019 019 019 019 019 019 019 019				1.00
0.12 0.77 0.19 0.99 0.80 0.41 0.71 0.72 0.20 0.33 0.33 0.33 0.32 0.20 0.20 0.30 0.80 0.80 0.80 0.80 0.80 0.80 0.8				158
1408 3.241 1067 118 2266 754 200 2.00 2.00 0.33 0.33 0.33 0.27 0.27 0.27 0.80 0.80 0.80 0.80 0.80 0.80 0.80 0.8	0.0	_	_	0.47
2.00 2.00 2.00 0.33 0.33 0.33 1.03 1.0 2.27 0.27 0.27 0.80 0.80 0.80 0.80 0.00 0.00 0.00 0.0			527	421
0.27 0.27 0.27 0.80 0.80 0.80 1 7.2 0.0 0.0 0.6.4 59.5 484 6 0.0 0.5 0.1 71.4 3.9 2.0 3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		1.00 1.00	1.00	1.00
72 0.0 0.0 68.4 99.5 48.4 6 0.0 0.5 0.1 71.4 39. 2.0 3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0			1.00	1.00
00 0.5 0.1 71.4 3.9 2.0 3 00 0.0 0.0 0.0 0.0 0.0 00 0.0 0.0 0.0 0				11.9
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0.6 0.2 0.0 6.9 15.1 5.4 7.3 0.5 0.1 139.8 6.34 50.4 9.4 7.3 0.5 0.1 139.8 6.34 50.4 9.5 1.2 8.3 4 5.6 6.1 13.6 96.1 10.3 20.0 6.38 45.9 11.3 2.0 6.6 5.0 3.3 33.3 3.3 0.0 0.2 5.5 0.0 0.2 6.6 5.0 0.2 6.6		0.0 0.0		0.0
A A F F E D 2883 1468 0.9 67.7 A A F F E D 2883 1468 0.9 67.7 A E E 1 2 3 4 5 6 13.6 66.1 10.3 20.0 638 45.9 5. 9.4 65.1 15.6 40. 11.5 63 5. 9.4 65.1 5.6 40. 11.5 63 5. 11.3 2.0 6.6 5.0 3.3 33.3 0.0 22.5 0.0 0.2 0.2 6.6				1.2
A A A F F E D 2883 1468 0.9 E E 1 2 3 4 5 6 13 4 5 6 13 4 5 6 13 4 5 6 13 4 5 6 13 4 5 6 13 4 5 6 13 4 5 6 13 4 5 6 13 4 5 6 13 6 4.7 5 60 6 5 8 9 4 65,1 5 6 40 115 63 5 11,3 2,0 6,6 5,0 3,3 33,3 0.0 22.5 0.0 0.2 0.2 66	0.0	43.9 136.2	56.9	17.7
2883 1468 0.9 6.7 6 5.0 0.2 6.6 0.0 0.2 6.7 7 6.8 6.7 7 6.8 6.1 10.3 20.0 6.38 45.9 11.3 2.0 6.6 5.0 3.3 33.3 6.0 0.2 6.5 6.0 6.0 0.2 6.5	4	U L	ч ;	
0.9 67.1 1 2 3 4 5 6 1 2 3 4 5 6 136 96.1 10.3 20.0 638 45.9 1 8.42 6.0 *4.7 *5 6.0 *6 8. *9,4 65.1 *5,6 *40 11.5 *63 8. *11.3 2.0 6,6 5.0 3.3 33.3 0.0 22.5 0.0 0.2 6.6	319		223	
1 2 3 4 5 6 1 2 3 4 5 6 136 96.1 10.3 20.0 638 45.9 1 8 **	03.7		83.9	
1 2 3 4 5 6 136 96.1 13 20.0 6.38 459 1 13. 94 65.1 *5.6 *40 115 *63 13. 11.3 2.0 6.6 5.0 3.3 33.3 10. 22.5 0.0 0.2 0.2 6.6	ш		_	
1 2 3 4 5 6 1 1 1 2 3 1 4 5 6 1 1 1 2 1 3 2 1 1 1 2 1 1 2 1 1 1 2 1 1 2 1 2	8			
136 96.1 10.3 20.0 63.8 45.9 1 14.2 6.0 4.7 5 60 6 15. 9.4 65.1 5.6 40 11.5 63 17. 11.3 2.0 6.6 5.0 33 33.3 18. 12.5 0.0 0.2 0.2 6.6				
.42 60 .47 .5 60 .6 .5 .94 65.1 .5.6 .40 11.5 .63 .8 113 2.0 6.6 5.0 33 33.3 .0 22.5 0.0 0.2 0.2 66				
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C+II), S 11.3 2.0 6.6 5.0 3.3 33.3 S 3 0.0 22.5 0.0 0.2 0.2 6.6	7			
s 0.0 22.5 0.0 0.2 0.2 6.6	9.8			
Intersection Summary				
Delay 28.				
HCM 2010 LOS				

N-V2772/Analysis/Intersections\Synchro\7. Ex +C AM\syn HCM 2010 Signalized Intersection Summary

HCM 2010 Signalized Intersection Summary 9: Hidden Valley Rd. & Palomar Airport Rd.

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Cumulative	100,00700
EX +	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u>_</u>	444	¥	۴	4413		F	2		۳	+	¥.
Traffic Volume (veh/h)	140	2440	100	70	1290	140	0/	70	100	09	10	70
Future Volume (veh/h)	140	2440	100	02	1290	140	02	20	100	09	10	70
Number	2	2	12	-	9	16	3	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	151	2624	108	75	1387	151	75	22	108	99	1	75
Adj No. of Lanes		3		_	3	0		_	0			_
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	172	2464	830	316	2657	289	79	32	155	82	238	192
Arrive On Green	0.20	0.98	0.98	0.36	1.00	1.00	0.02	0.12	0.12	0.02	0.13	0.13
Sat Flow, veh/h	1757	5036	1552	1757	4593	200	1757	260	1275	1757	1845	1488
Grp Volume(v), veh/h	151	2624	108	75	1014	524	75	0	130	99	11	75
Grp Sat Flow(s),veh/h/ln	1757	1679	1552	1757	1679	1735	1757	0	1535	1757	1845	1488
Q Serve(g_s), s	11.7	68.5	0.1	4.2	0.0	0.0	0.9	0.0	11.4	5.1	0.7	6.5
Cycle Q Clear(g_c), s	11.7	68.5	0.1	4.2	0.0	0.0	0.9	0.0	11.4	5.1	0.7	6.5
Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.83	1.00		1.00
Lane Grp Cap(c), veh/h	172	2464	830	316	1942	1004	79	0	187	82	238	192
V/C Ratio(X)	0.88	1.06	0.13	0.24	0.52	0.52	0.95	0.00	0.70	0.79	0.05	0.39
Avail Cap(c_a), veh/h	238	2464	830	316	1942	1004	79	0	400	113	514	414
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.42	0.45	0.45	0.77	0.77	0.77	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.4	1.5	0.2	38.1	0.0	0.0	2.99	0.0	29.0	0.99	53.4	55.9
Incr Delay (d2), s/veh	8.7	33.6	0.1	0.1	0.8	1.5	83.0	0.0	1.8	15.4	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	18.6	0.1	2.0	0.2	0.4	4.7	0.0	4.9	2.8	0.4	2.7
LnGrp Delay(d),s/veh	64.2	35.1	0.4	38.2	0.8	1.5	149.7	0.0	8.09	81.4	53.4	56.4
LnGrp LOS	ш	-	⋖		∢	⋖	4		ш	٠		۳
Approach Vol, veh/h		2883			1613			202			151	
Approach Delay, s/veh		35.3			7.8			93.3			6.99	
Approach LOS		Ω			V			_			ш	
Timer		2	33	4	2	9	7	00				
Assigned Phs	,	2	3	4	2	9	7	00				
Phs Duration (G+Y+Rc), s	31.2	74.5	10.5	23.8	18.7	87.0	11.6	22.7				
Change Period (Y+Rc), s	0.9	9 *	* 4.2	2.7	2.0	0.9	2.0	* 5.7				
Max Green Setting (Gmax), s	6.1	69 *	* 6.3	39.0	19.0	54.8	0.6	* 37				
Max Q Clear Time (g_c+I1), s	6.2	70.5	8.0	8.5	13.7	2.0	7.1	13.4				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.1	6.6	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			27.9									
HCM 2010 LOS			S									
Notes												

N:2772\Analysis\Intersections\Synchro\7. Ex +C AM syn HCM 2010 Signalized Intersection Summary

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HCM 2010 Signalized Intersection Summary 10: College Blvd. & Palomar Airport Rd.

Ex + Cumulative AM 08/03/2017

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K	444	*	K.	444	*	K.	*	*-	r	*	*
Traffic Volume (veh/h)	700	1670	150	150	1020	20	180	440	250	20	190	180
Future Volume (veh/h)	700	1670	150	150	1020	20	180	440	250	20	190	180
Number	ഗ	7	12	- 0	9 0	16	က	∞ α	9	_	4 0	4 0
milal Q (Qb), ven	0 6	0	0 6	0 0	>	0 0	0 6	0	0 0	0 6	0	0 0
Ped-bike Auj(A_por) Parking Bits Adi	3 6	1 00	1.00	100	100	100	1.00	1 00	100	00.1	1 00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	753	1796	161	161	1097	54	194	473	269	54	204	194
Adj No. of Lanes	2	m	-	2	က	-	2	2	-	_	-	_
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	m	3	m	e	m	3	m	3	m	m	co
Cap, veh/h	1151	2661	828	207	1191	366	248	789	348	69	330	802
Arrive On Green	0.68	1.00	1.00	90.0	0.24	0.24	0.07	0.23	0.23	0.04	0.18	0.18
Sat Flow, veh/h	3408	5036	1568	3408	5036	1548	3408	3505	1547	1757	1845	1542
Grp Volume(v), veh/h	753	1796	161	161	1097	54	194	473	569	54	204	194
Grp Sat Flow(s),veh/h/ln	1704	1679	1568	1704	1679	1548	1704	1752	1547	1757	1845	1542
Q Serve(g_s), s	18.0	0.0	0.0	6.5	29.8	3.3	7.8	16.9	22.8	4.3	14.3	0.0
Cycle Q Clear(g_c), s	18.0	0.0	0.0	6.5	29.8	3.3	7.8	16.9	22.8	4.3	14.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1151	2661	828	207	1191	399	248	789	348	69	330	802
V/C Ratio(X)	0.65	0.67	0.19	0.78	0.92	0.15	0.78	09.0	0.77	0.78	0.62	0.24
Avail Cap(c_a), veh/h	1151	2661	828	214	1241	381	248	1054	465	114	240	981
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	00.1	00.1	1.00
Upstream Filter(I)	0.44	0.44	0.44	00.1	00.1	00.1	00.1	00.1	00.1	1.00	00.1	00.1
Uniform Delay (d), s/veh	18.0	0.0	0.0	64.8	52.2	30.6	63.8	48.6	50.9	7.99	53.1	18.7
Incr Delay (d2), s/ven	0.5	0.0	0.7	14.4	12.9	S. 6	13.6	0.3	2.00	0.7	0.7	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	0.2	0.1	3.5	15.2	7.5	4.2	8.5	10.1	2.2	7.4	4.1
LnGrp Delay(d),s/veh	18.5	9.0	0.2	79.2	65.1	31.4	77.4	48.9	54.7	73.6	53.8	18.7
LnGrp LOS	۵	⋖	⋖	ш	ᅵ	ပ	ᆈ			ш		ا ۵
Approach Vol, veh/h		2710			1312			936			452	
Approach Delay, s/veh		2.2			65.4			56.4			41.1	
Approach LOS		A			ш			ш			O	
Timer	-	2	3	4	2	9	7	00				
Assigned Phs	-	2	3	4	2	9	7	00				
Phs Duration (G+Y+Rc), s	12.7	80.3	16.0	31.0	53.6	39.4	6.7	37.3				
Change Period (Y+Rc), s	* 4.2	* 6.3	2.8	9 *	* 6.3	* 6.3	* 4.2	2.8				
Max Green Setting (Gmax), s	∞. ×	09 *	, 10 ,	* 41	* 34	* 35	* 9.1	42.1				
Max Q Clear Time (g_c+I1), s	8.5	2.0	9.8	16.3	20.0	31.8	6.3	24.8				
Green Ext Time (p_c), s	0.0	10.9	0.0	6.0	1.3	1.3	0.0	2.1				
Intersection Summary												
HCM 2010 Ctrl Delay			31.8									
HCM 2010 LOS			ပ									
Notes												

 $N.2772/AnalysisUntersections/Synchrol7. \ Ex+CAM.syn-HCM 2010 Signalized Intersection Summary$

HCM 2010 Signalized Intersection Summary 11: Camino Vida Roble & Palomar Airport Rd.

Ex + Cumulative AM 08/03/2017

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Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	-	441		je-	441		F	æ,		je-	*	¥C
Traffic Volume (veh/h)	140	1490	370	190	1080	330	130	06	09	09	30	20
Future Volume (veh/h)	140	1490	370	190	1080	330	130	06	09	09	30	20
Number	വ	2	12	-	9	16	n	∞ (18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	6	0.96	1.00	6	0.96	1.00	5	0.96	1.00	6	0.95
Parking Bus, Adj	00.1	00.1	00.1	00.1	00.1	00.1	00.1	00.1	1.00	00.1	00.1	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	152	1620	402	707	11 /4	329	141	æ '	69	65	33	54
Adj No. of Lanes	_ 0	m 6	0 0	_ 0	m 6	0 0	2	_ 0	0	_ 0	- 6	_ 0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	2	3	3	2	2	3	2	c	2	c
Cap, veh/h	533	2147	525	228	1313	401	184	158	105	82	274	222
Arrive On Green	0.30	0.54	0.54	0.13	0.35	0.35	0.02	0.16	0.16	0.05	0.15	0.15
Sat Flow, veh/h	1757	4006	086	1757	3779	1155	3408	1015	673	1757	1845	1495
Grp Volume(v), veh/h	152	1354	899	207	1043	490	141	0	163	99	33	54
Grp Sat Flow(s),veh/h/ln	1757	1679	1629	1757	1679	1577	1704	0	1689	1757	1845	1495
Q Serve(g_s), s	6.6	47.0	48.4	17.4	44.1	44.1	6.1	0.0	13.5	5.5	2.3	2.7
Cycle Q Clear(g_c), s	6.6	47.0	48.4	17.4	44.1	44.1	6.1	0.0	13.5	5.5	2.3	2.7
Prop In Lane	1.00		09.0	1.00		0.73	1.00		0.40	1.00		1.00
Lane Grp Cap(c), veh/h	533	1799	873	228	1167	548	184	0	263	82	274	222
V/C Ratio(X)	0.29	0.75	0.77	0.91	0.89	0.89	0.77	0.00	0.62	0.79	0.12	0.24
Avail Cap(c_a), veh/h	533	1799	873	247	1419	199	186	0	430	94	467	379
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.8	27.1	27.4	64.4	46.3	46.3	70.0	0.0	59.2	70.8	55.4	17.3
Incr Delay (d2), s/veh	0.1	3.0	6.4	31.1	10.6	19.7	15.4	0.0	6.0	28.2	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfO(50%),veh/ln	4.8	22.5	23.3	10.4	22.1	22.2	3.3	0.0	6.4	3.3	1.2	Ξ.
LnGrp Delay(d),s/veh	39.9	30.0	33.8	95.4	57.0	0.99	85.4	0.0	60.1	0.66	55.5	17.6
LnGrp LOS		O	U	4	ш	w	-		ш	-	ш	m
Approach Vol, veh/h		2174			1740			304			152	
Approach Delay, s/veh		31.9			64.1			71.8			9.09	
Approach LOS		O			ш			ш			ш	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	23.7	8.98	12.3	27.2	51.9	58.5	11.2	28.3				
Change Period (Y+Rc), s	* 4.2	* 6.4	* 4.2	* 5	* 6.4	* 6.4	* 4.2	* 5				
Max Green Setting (Gmax), s	* 21	* 63	* 8.2	* 38	* 21	* 63	∞ *	* 38				
Max Q Clear Time (g_c+I1), s	19.4	50.4	8.1	4.7	11.9	46.1	7.5	15.5				
Green Ext Time (p_c), s	0.0	7.0	0:0	0.2	0.1	0.9	0.0	9.0				
Intersection Summary												
HCM 2010 Ctrl Delay			48.5									
HCM 2010 LOS			۵									

N:12772\Analysis\Intersections\Synchro\7.Ex +C AM.syn HCM 2010 Signalized Intersection Summary

Synchro 10 Report Page 19

HCM 2010 Signalized Intersection Summary 12: Yarrow Dr./McClellan & Palomar Airport Rd.

Ex + Cumulative AM 08/03/2017

Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	-	4413		F	4413		r	*	¥.		÷	
Traffic Volume (veh/h)	2	1300	180	280	1420	120	20	10	09	40	10	20
Future Volume (veh/h)	2	1300	180	280	1420	120	20	10	09	40	10	70
Number	2	2	12	-	9	16	7	4	14	က	ω	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1	96.0	1.00		0.98	0.98		0.95	0.98	1	0.95
Parking Bus, Adj	100	100	1.00	1000	1.00 104E	1.00	1000	1.00 104E	1000	1.00	1.00	1.00
Adj Sat Flow, ventini Adj Flow Rate veh/h	79	1461	200	315	1596	135	1043	11	67	45	11	22
Adi No. of Lanes	-	· ~	0	-	e cc	0	5 -	-	5	2 0	-	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	c	co	3	co	co	က	က	က	co	co	co	3
Cap, veh/h	86	1584	219	701	3361	284	220	243	196	136	36	23
Arrive On Green	90:0	0.36	0.36	0.40	0.71	0.71	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	1757	4446	614	1757	4723	399	1333	1845	1489	744	274	400
Grp Volume(v), veh/h	79	1103	290	315	1134	265	99	11	19	78	0	0
Grp Sat Flow(s),veh/h/ln	1757	1679	1703	1757	1679	1765	1333	1845	1489	1418	0	0
Q Serve(g_s), s	6.7	47.2	47.3	19.7	22.1	22.1	0.0	0.8	6.1	2.9	0.0	0.0
Cycle Q Clear(g_c), s	6.7	47.2	47.3	19.7	22.1	22.1	0.9	8.0	6.1	7.3	0.0	0.0
Prop In Lane	1.00		0.36	1.00		0.23	1.00		1.00	0.58		0.28
Lane Grp Cap(c), veh/h	86	1196	209	701	2389	1256	220	243	196	225	0	0
V/C Ratio(X)	0.81	0.92	0.92	0.45	0.47	0.48	0.25	0.05	0.34	0.35	0.00	0.00
Avail Cap(c_a), veh/h	120	1276	647	701	2389	1256	392	481	388	404	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	00.1	00.1	00.1	00.1	00.1	00.1	1.00	00.1	00.1	00.1	0.00	0.00
Uniform Delay (d.), swen	0.0	40.3	40.3	33.0	4.4	4.4	1.40	20.9	7.40	0.70	0.0	0.0
Incl Delay (uz), sven	0.6	13.0	71.9	7.0	0.0	ς. 	7.0	0.0	4.0	0.3	0.0	0.0
Initial U Delay(d3),S/ven	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOlQ(50%), ven/iii	0.5	74.1	60.7	0.6	10.3	- 1	7.7	4.0.7	0.7	3.0	0.0	0.0
LnGrp Delay(d),S/ven	0.6/	59.3	7.80	33.2	- 0	10.7	59.4	20.9	27.0	59.9	0.0	0.0
LuGrp LUS	ш	ш ;	ш	اد	2	2	ш	ц;	ш	ш	i	
Approach Vol, veh/h		1/42			2046			134			8/2	
Approach Delay, swen		03.0			3.8			59.3			59.9	
Approach LOS		ш			מ			ш			ш	
Timer		2	3	4	2	9	7	∞				
Assigned Phs	-	2		4	2	9		∞				
Phs Duration (G+Y+Rc), s	62.9	59.4		24.7	12.6	112.7		24.7				
Change Period (Y+Rc), s	0.9	9 *		4.9	* 4.2	0.9		4.9				
Max Green Setting (Gmax), s	38.8	* 57		39.1	* 13	83.0		39.1				
Max Q Clear Time (g_c+I1), s	21.7	49.3		8.1	8.7	24.1		9.3				
Green Ext Time (p_c), s	0.4	4.1		0.2	0.0	8.5		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay HCM 2010 LOS			37.7 D									

N\2772\Analysis\Intersections\Synchro\7. Ex +C AM.syn HCM 2010 Signalized Intersection Summary

HCM 2010 Signalized Intersection Summary 13: El Camino Real & Palomar Airport Rd.

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	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
180 930 320 720 1600 640 170 660 440 560 1060 18	Lane Configurations	K.	444	*_	F	444	N. W.	K.	444	N.W.	K.	444	*
180 930 320 720 1600 640 170 660 440 560 1050 100 1.0	Traffic Volume (veh/h)	180	930	320	720	1600	640	170	099	440	260	1050	340
5 2 12 1 6 16 3 8 18 7 4 0	Future Volume (veh/h)	180	930	320	720	1600	640	170	099	440	290	1050	340
1,00	Number	2	2	12	-	9	16	3	∞	18	7	4	14
1,00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
1,00	Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.99
1845 1845 <td< td=""><td>Parking Bus, Adj</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td></td<>	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
156 1011 348 783 1739 696 185 717 478 609 1141 2	Adj Sat Flow, veh/h/In	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
2 3 1 2 3 2 3	Adj Flow Rate, veh/h	196	1011	348	783	1739	969	185	717	478	609	1141	370
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Adj No. of Lanes	2	က	-	2	m	2	2	က	2	2	3	_
3 3	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
513 1262 388 454 1175 636 233 1544 1214 509 1953 0.15 50.25 0.28 0.09 0.16 0.07 0.31 0.13 0.39 0.39 3408 50.35 1.549 3408 50.36 1.74 478 609 1141 1704 1679 1.82 1739 696 185 717 478 609 1141 1704 1679 1.82 1704 1679 188 1704 1679 1141 1704 1679 1.82 1704 1679 180 1704 1679 1141 1704 1679 1.82 177 478 609 141 171 478 609 141 171 478 609 141 171 173 41 179 180 170 100 1141 173 170 100 100 100 100 100 100	Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
0.15 0.25 0.25 0.05 0.16 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.03 <td< td=""><td>Cap, veh/h</td><td>513</td><td>1262</td><td>388</td><td>454</td><td>1175</td><td>989</td><td>233</td><td>1544</td><td>1214</td><td>200</td><td>1953</td><td>839</td></td<>	Cap, veh/h	513	1262	388	454	1175	989	233	1544	1214	200	1953	839
3408 5036 1549 3408 5036 2724 3408 5036 1549 3408 5036 156 3408 5036 141 1704 1679 1549 1749 1679 182 174 478 604 141 7.8 28.2 32.6 20.0 35.0 35.0 80 17.3 9.1 22.4 26.9 7.8 28.2 32.6 20.0 35.0 35.0 80 17.3 9.1 22.4 26.9 1.00	Arrive On Green	0.15	0.25	0.25	0.09	0.16	0.16	0.07	0.31	0.31	0.15	0.39	0.39
196 1011 348 783 1739 696 185 717 478 609 1141 1704 1679 1549 1704 1679 1362 1704 1679 1362 226 200 350 350 80 173 9.1 22.4 26.9 1.00 1.	Sat Flow, veh/h	3408	5036	1549	3408	5036	2724	3408	5036	2760	3408	5036	1556
1704 1679 1549 1704 1679 1362 1704 1679 1549 1704 1679 1362 1704 1679 1362 1704 1679 1362 1704 1679 1362 1704 1679 1362 1704 1679 1362 1704 1679 1362 1704 1679 1362 1704 1679 1362 1706 1.00	Grp Volume(v), veh/h	196	1011	348	783	1739	969	185	717	478	609	1141	370
78 28.2 32.6 35.0 3	Grp Sat Flow(s),veh/h/ln	1704	1679	1549	1704	1679	1362	1704	1679	1380	1704	1679	1556
7.8 28.2 22.6 20.0 35.0 35.0 17.3 9.1 22.4 26.9 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 51.3 1.26 3.88 4.54 1175 6.36 23.3 1544 12.1 50.0 1.00 5.88 1.30 1.72 1.48 1.09 0.79 0.46 0.39 1.20 0.58 1.00 1.00 0.70 0.67 0.67 1.00	Q Serve(g_s), s	7.8	28.2	32.6	20.0	35.0	35.0	8.0	17.3	9.1	22.4	26.9	5.1
1,00	Cycle Q Clear(g_c), s	7.8	28.2	32.6	20.0	35.0	35.0	8.0	17.3	9.1	22.4	26.9	5.1
513 1262 388 454 1175 636 233 1544 1214 509 1953 0.38 0.90 0.72 1.48 1.09 0.79 0.46 0.39 1.20 0.58 568 1.34 1.13 4.54 1.175 6.66 5.45 1.44 1.00	Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
0.38 0.80 0.90 1.72 148 109 0.79 0.46 0.39 120 0.58 0.58 1343 4.13 4.15 148 109 0.79 0.45 0.39 120 0.58 0.58 1.00 1.00 0.67 0.67 0.67 1.00 1.00 1.00 1.00 0.67 0.67 1.00 1.00 1.00 1.00 1.00 1.00 0.09 0.09	Lane Grp Cap(c), veh/h	513	1262	388	454	1175	929	233	1544	1214	200	1953	839
568 1343 413 454 1175 636 545 1544 1214 509 1953 1.00 1.00 1.00 0.67 0.67 0.67 1.00 0.00 <td>V/C Ratio(X)</td> <td>0.38</td> <td>0.80</td> <td>06:0</td> <td>1.72</td> <td>1.48</td> <td>1.09</td> <td>0.79</td> <td>0.46</td> <td>0.39</td> <td>1.20</td> <td>0.58</td> <td>0.44</td>	V/C Ratio(X)	0.38	0.80	06:0	1.72	1.48	1.09	0.79	0.46	0.39	1.20	0.58	0.44
1.00 1.00 1.00 0.67 0.67 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Avail Cap(c_a), veh/h	268	1343	413	454	1175	929	545	1544	1214	209	1953	839
11.00 1.00 1.00 0.09 0.09 1.00 1.00 1.00	HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
57.4 52.7 54.3 66.3 63.3 63.3 68.8 42.0 10.9 69.8 36.8 0.2 3.0 3.06 3.26 2.64 45.5 2.3 1.0 10.9 69.9 0.1 3.7 13.5 16.1 30.0 39.8 17.2 39 8.2 3.6 16.9 12.5 57.6 55.7 74.3 394.5 27.9 108 7.1 43.0 11.9 18.3 36.5 E E F F F F D B F D 0.0 0.	Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1.00	1.00	1.00	0.09	0.09	0.09
02 30 200 326.2 216.4 45.5 2.3 1.0 1.0 89.9 0.1 00 00 00 00 00 00 00 00 00 00 0.0 3.7 13.5 14.3 3945 279.7 108.8 71.2 43.0 11.9 153.7 36.5 E E E F F F E D B F D 1555 33.8 4 5 6 7 8 26.0 43.6 16.3 64.2 28.6 41.0 28.4 52.0 20.0 400 24.0 42.0 25.0 35.0 20.0 46.0 22.0 34.6 10.0 28.9 9.8 37.0 24.4 19.3 0.0 2.4 0.2 5.5 0.3 0.0 0.0 3.9 1 3.3 4 5 6 7 8 2.0 4.0 2.0 2.0 4.0 46.0 2.0 3.9 37.0 24.4 19.3 0.0 2.4 0.2 5.5 0.3 0.0 0.0 3.9	Uniform Delay (d), s/veh	57.4	52.7	54.3	68.3	63.3	63.3	8.89	42.0	10.9	63.8	36.3	8.5
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	0.2	3.0	20.0	326.2	216.4	45.5	2.3	1.0	1.0	89.9	0.1	0.2
3.7 13.5 16.1 30.0 39.8 17.2 39.9 82 3.6 16.9 12.5 57.6 55.7 74.3 394.5 279.7 108.8 71.2 43.0 11.9 13.7 36.5 E E F F F E D B F D 60.1 270.7 36.0 B 7 B 2120 60.1 270.7 36.0 B 7 B E 1 2 3 4 5 6 7 B 250 43.6 16.3 64.2 28.6 41.0 28.4 52.0 500 60 60 60 60 60 60 60 60 60 200 34.6 100 28.9 98 37.0 24.4 19.3 0.0 2.4 0.2 5.5 0.3 0.0 0.0 3.9 139.3 139.3	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57.6 55.7 14.3 394.5 279.7 108.8 71.2 43.0 11.9 153.7 36.5 E E E F F E D B F D 1555 3218 1380 2720 65.3 1380 65.3 65.3 1 2 3 4 5 6 7 8 E B F B E <td>%ile BackOfQ(50%),veh/ln</td> <td>3.7</td> <td>13.5</td> <td>16.1</td> <td>30.0</td> <td>39.8</td> <td>17.2</td> <td>3.9</td> <td>8.2</td> <td>3.6</td> <td>16.9</td> <td>12.5</td> <td>5.4</td>	%ile BackOfQ(50%),veh/ln	3.7	13.5	16.1	30.0	39.8	17.2	3.9	8.2	3.6	16.9	12.5	5.4
F F F F F F F F F F	LnGrp Delay(d),s/veh	27.6	22.7	74.3	394.5	279.7	108.8	71.2	43.0	11.9	153.7	36.5	8.6
1555 3218 1380 1380 1400 1555 1400	LnGrp LOS	ᆈ	ш	ш	ᅵ	니	ᅵ	ш		8	ᅵ		۷
601	Approach Vol, veh/h		1555			3218			1380			2120	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 20.0 43.6 16.3 64.2 28.6 410 28.4 5 20.0 40.0 24.0 42.0 25.0 35.0 20.0 4 20.0 34.6 10.0 28.9 9.8 37.0 24.4 0.0 2.4 0.2 5.5 0.3 0.0 0.0	Approach Delay, s/veh		60.1			270.7			36.0			65.3	
1 2 3 4 5 6 7 2 0 3 4 5 6 7 2 0 436 163 642 286 410 284 9 2 0 400 240 420 250 35.0 200 2 2 3 46 100 289 98 37.0 244 0 0 2 4 0 2 55 0.3 0.0 0.0	Approach LOS		ш			ш.			٥			ш	
260 436 163 642 286 410 284 9 200 600 600 600 600 600 600 60 200 400 240 420 250 350 200 4 220 346 100 289 98 370 244 0 00 24 02 55 03 00 00	Timer	_	2	က	4	2	9	7	00				
260 436 16.3 642 286 41.0 284 16.0 60 60 60 60 60 60 60 60 60 60 60 200 400 246 100 289 98 370 244 10.0 24 0.2 55 0.3 0.0 0.0	Assigned Phs	-	2	က	4	2	9	7	∞				
6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 2.0 4.0 2.0 2.0 2.0 2.4 0.2 2.5 0.3 0.0 0.0 0.0 0.0 2.4 0.2 5.5 0.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Phs Duration (G+Y+Rc), s	26.0	43.6	16.3	64.2	28.6	41.0	28.4	52.0				
200 400 240 420 250 350 200 4 220 346 100 289 98 370 244 00 00 2.4 0.2 5.5 0.3 0.0 0.0 139.3	Change Period (Y+Rc), s	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9				
220 346 100 289 98 370 244 1 00 24 02 55 03 00 00 1393	Max Green Setting (Gmax), s	20.0	40.0	24.0	42.0	25.0	35.0	20.0	46.0				
, s 0.0 2.4 0.2 5.5 0.3 0.0 0.0 1.39.3	Max Q Clear Time (g_c+I1), s	22.0	34.6	10.0	28.9	8.6	37.0	24.4	19.3				
	Green Ext Time (p_c), s	0.0	2.4	0.2	5.5	0.3	0.0	0.0	3.9				
	Intersection Summary												
	HCM 2010 Ctrl Delay			139.3									
	HCM 2010 LOS			ш									

N:2772\Analysis\Intersections\Synchro\7. Ex +C AM.syn HCM 2010 Signalized Intersection Summary

Synchro 10 Report Page 23

HCM 2010 Signalized Intersection Summary 14: Innovation Way/Loker Ave. & Palomar Airport Rd.

Ex + Cumulative AM 08/03/2017

	FBT 1280 1280 1280 2 0 0 0 0 0 3 3 0.92 3 1524 0.61 1391 1679 36.5 36.5 36.5 36.5 36.5 36.5 36.5 36.5	EBR 210 210 210 12 0 0 095 228 228 3 3 533 0.61 1492	WBL 160 160 160 1.00 1.00 1.00 1.00 1.00 1.	WBT ↑↑↑ 2590 2590 6 0 1.00 1845 2815	150 150 16 0 0	140 140 3	NBT 70 70 70 70 70 70 70 70 70 70 70 70 70	NBR 60 60	30 30	SBT 30	SBR 120
		210 210 210 12 0 0.095 1.00 1845 228 1 0.92 3 3 533 0.61	160 160 160 1.00 1.00 1.00 1.00 1.00 1.0	2590 2590 2590 6 0 1.00 1845	150 150 16 0	140 140 3	← 0.7 0.0	~ 09 09	30 30	← ⊗	120
		210 210 12 0 0.095 1.00 1845 228 1845 3 3 3 3 6.041	160 160 1 100 1.00 1.00 1 174 1 174 1 0.92 3 632 632 0.72	2590 2590 6 0 0 1.00 1845 2815	150 150 16 0	140	07 07	09	30	30	120
(c		210 12 0 0 0.95 1.00 1845 228 228 1 0.92 3 3 0.61	160 1.00 1.00 1.00 1.00 1.00 3 3 632 0.72 1757	2590 6 0 1.00 1845 2815	150 16 0 0	140	70	09	30		
		12 0 0.05 1.00 1845 228 228 1 0.92 3 533 0.61	1 0 1.00 1.00 1.845 174 1 0.92 3 3 632 0.72 1757	6 0 1.00 1845 2815	16	3	•	3)	30	120
		0.095 1.00 1.845 228 228 1 0.92 3 533 0.61	0 1.00 1.00 1.00 174 1 0.92 3 632 0.72 1757	1.00 1845 2815	0 99		∞	18	7	4	14
- 6 %		0.95 1.00 1.845 228 1 0.92 3 533 0.61	1.00 1.00 1.00 1845 174 1 0.92 3 632 0.72 1757	1.00	66.0	0	0	0	0	0	0
		1.00 1845 228 1 0.92 3 533 0.61	1.00 1845 174 1 0.92 3 632 0.72 1757	1.00 1845 2815		1.00		96:0	1.00		0.95
		228 228 1 0.92 3 533 0.61	1845 174 1 0.92 3 632 0.72 1757	1845	1.00	1.00	1.00	1.00	1.00	1.00	1.00
% 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		228 1 0.92 3 533 0.61 1492	174 1 0.92 3 632 0.72 1757	2815	1900	1845	1845	1845	1845	1845	1845
9h, % (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		0.92 3 533 0.61 1492	0.92 3 632 0.72 1757	2.04	163	152	76	99	33	33	130
John Meh. %		0.92 3 533 0.61 1492	0.92 3 632 0.72 1757	3	0	-	-	-		-	_
Veh',%		3 533 0.61 1492	3 632 0.72 1757	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
veh/h		533 0.61 1492	632 0.72 1757 174	3	3	3	3	3	3	3	3
veh/h		1492	0.72 1757 174	2303	131	91	322	262	42	270	219
veh/h		1492	1757	0.95	0.95	0.05	0.17	0.17	0.02	0.15	0.15
-			174	4873	277	1757	1845	1503	1757	1845	1495
		228		1922	1056	152	9/	99	33	33	130
.ven/n/n		1492	1757	1679	1792	1757	1845	1503	1757	1845	1495
Q Serve(g_s), s 27.8		3.3	5.2	6.07	70.9	7.8	5.3	2.7	2.8	2.3	12.2
_c), s		3.3	5.2	70.9	70.9	7.8	5.3	2.7	2.8	2.3	12.2
		1.00	1.00		0.15	1.00		1.00	1.00		1.00
p(c), veh/h		533	632	1586	847	91	322	262	42	270	219
)		0.43	0.28	1.21	1.25	1.66	0.24	0.25	0.78	0.12	0.59
ų		731	632	1586	847	91	464	378	71	443	329
0		2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
		0.36	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.8
h 4		8.9	14.2	4.1	4.1	71.1	53.3	12.2	72.8	25.6	59.9
		0.9	0.0	95.8	112.0	341.9	0.1	0.2	11.2	0.1	1.0
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
eh/III	5.7.5	7.4	2.5	46.2	53.1	12.5	7.7	_ {	C. 5	1.2	5.7
LnGrp Delay(d),S/ven 46.6	31.9	8.6	14.2	6.66	7.911	413.0	53.5	12.4	84.0	55.7	8.09
LINGIPLUS D		∢	2	T 0	-	-	ماء	2	-	П ,	1
Approach Vol, veh/h	1956			3152			293			196	
Approach Delay, siven	د.اد د.			100.0			23U.9			03.9	
Apploacii LOS	د			_			_			ш	
Timer 1	2	3	4	2	9	7	8				
Assigned Phs 1	2	m	4	2	9	7	8				
	51.4	12.0	26.7	34.5	76.9	7.8	30.9				
,		7.4	4.7	4.7	0.0	4.2	4.7				
Max O Clear Time (a c+11) s 7.2	38 5	ω. σ σ	30	20 8	72.0	- o V	38				
		0.0	0.3	0.4	0:0	0.0	0.3				
Intersection Summary											
HCM 2010 Ctrl Delay		82.1									
HCM 2010 LOS		ш									
Natan											

N:2772/AnalysisUntersections\Synchrol/7 Ex +C AM\syn HCM 2010 Signalized Intersection Summary

HCM 2010 Signalized Intersection Summary 15: El Fuerte St. & Palomar Airport Rd.

397 1.00 1.00 56.4 1.00 1845 54 2 281 0.14 1943 254 0.0 1.8 56.5 7 0 0 11.00 11.00 65 65 65 0.02 3 3 102 0.03 28.0 5.0 34.5 16.3 0.9 1.00 1845 120 2 0.92 3 269 0.15 1752 120 1752 9.3 269 0.45 403 1.00 1.00 57.7 0.4 0.0 4.6 58.1 3 0 1.00 1.00 1.02 2 2 2 3.00 3.408 1.00 1.00 1.100 1.115 1.115 1.115 1.100 1.000 1. 8.7 * 5.3 4.8 0.0 180 16 0 0.98 1.00 1900 0 0 0.92 \$2.0 * 6 * 86 88.0 0.0 21.3 6.0 4.8 6.5 0.0 2780 1.00 4849 2168 1679 0.0 0.0 1925 2.00 0.09 0.0 57.6 0.0 15.4 57.6 1.00 26.7 5.0 34.0 6.1 0.3 180 180 0 0 0.0.99 1.00 1.00 196 196 3 10.0 4.2 5.8 7.8 0.0 50.8 D 0.92 2845 1.00 5036 1239 1679 0.0 2845 0.44 2845 2.00 0.77 0.0 0.0 0.0 0.1 90.7 6.0 24.0 2.0 5.6 Ť 1.00 1.00 1.00 120 0.92 347 00.20 120 1704 4.5 4.5 1.00 347 0.35 0.71 0.71 0.20 0.71 0.20 0.71 55.4 55.4 55.6 * 67 17.7 0.6 Assigned Phs
Phs Duration (G+Y+RC), s 2
Change Period (Y+RC), s ...
Max Green Setting (Gmax), s ...
Max Q Clear Time (g_C+I1), s 1 Parking Bus, Adj Adj Sat Flow, vehhinn Adj Flow Rate, vehh Adj No. of Lanes Peak Hour Factor Percent Heavy Veh, % Cap, vehh Arrive On Green Sat Flow, vehh Grip Volume(y), vehVih Grip Sat Flow(s), vehVih Op Sat Flow(s), vehVih Op Sat Flow(s), sehVihin Op Serve(g_s), sehVihin %ile BackOfQ(50%),veh/ln Upstream Filter(I) Uniform Delay (d), s/veh Incr Delay (d2), s/veh LnGrp LOS Approach Vol, veh/h Approach Delay, s/veh Approach LOS Lane Grp Cap(c), veh/h V/C Ratio(X) Initial Q Delay(d3),s/veh Green Ext Time (p_c), s Intersection Summary HCM 2010 Ctrl Delay HCM 2010 LOS Lane Configurations Traffic Volume (veh/h) Cycle Q Clear(g_c), s Prop In Lane Avail Cap(c_a), veh/h HCM Platoon Ratio LnGrp Delay(d),s/veh Future Volume (veh/h) Ped-Bike Adj(A_pbT) Number Initial Q (Qb), veh

N:\2772\Analysis\Intersections\Synchro\7. Ex +C AM.syn HCM 2010 Signalized Intersection Summary

Synchro 10 Report Page 26

HCM 2010 Signalized Intersection Summary 16: Melrose Dr. & Palomar Airport Rd.

Ex + Cumulative AM

08/03/2017

Ex + Cumulative AM

		t	•	•		•	-	-	_			
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K	***	æ	K.	***	æ	K.	Ħ	¥.	K	*	K
Traffic Volume (veh/h)	200	870	140	110	1690	09	970	620	210	80	720	1300
Future Volume (veh/h)	200	870	140	110	1690	09	620	620	210	80	720	1300
Number	2	2	12	-	9	16	m	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		66.0	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	515	897	144	113	1742	62	639	639	216	82	742	1340
Adj No. of Lanes	2	3		2	3	-	2	4	-	2	2	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	226	2200	089	156	1544	476	495	2187	809	125	827	1096
Arrive On Green	0.33	0.87	0.87	0.02	0.31	0.31	0.15	0.34	0.34	0.04	0.24	0.24
Sat Flow, veh/h	3408	5036	1557	3408	5036	1553	3408	6346	1554	3408	3505	2725
Grp Volume(v), veh/h	515	897	144	113	1742	62	639	689	216	82	742	1340
Grp Sat Flow(s),veh/h/ln	1704	1679	1557	1704	1679	1553	1704	1586	1554	1704	1752	1362
Q Serve(g_s), s	21.8	5.2	2.2	4.9	46.0	3.7	21.8	11.0	14.8	3.6	30.8	27.3
Cycle Q Clear(g_c), s	21.8	5.2	2.2	4.9	46.0	3.7	21.8	11.0	14.8	3.6	30.8	27.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	2200	089	156	1544	476	495	2187	809	125	827	1096
V/C Ratio(X)	0.92	0.41	0.21	0.72	1.13	0.13	1.29	0.29	0.36	0.65	0.00	1.22
Avail Cap(c_a), veh/h	286	2200	089	218	1544	476	495	2187	809	164	848	1112
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00
Uniform Delay (d), s/veh	49.5	2.7	2.5	9.02	52.0	27.1	64.1	35.8	32.4	71.3	55.5	23.0
Incr Delay (d2), s/veh	17.6	0.5	9.0	3.3	999	9.0	145.1	0.0	0.1	2.2	11.7	108.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	2.4	0.7	2.4	30.8	9.1.6	20.2	8.4	6.3	7.7	16.3	26.7
LnGrp Delay(d),s/ven	1./9	7.9	0.1	/3.9	118.5	9.17	209.2	35.9	32.5	73.5	7.79	131.7
LnGrp LOS	ш	∀	⋖	ال	-	اد	-		اد	الا	и :	-
Approach Vol, veh/h		1556			1917			1494			2164	
Approach Delay, swen		26.3			112.9			109.5			10 / .4	
Approach LOS		ပ			_			_			_	
Timer	_	2	3	4	2	9	7	00				
Assigned Phs	-	2	3	4	2	9	7	00				
Phs Duration (G+Y+Rc), s	11.1	71.5	26.0	41.4	30.6	52.0	9.7	57.7				
Change Period (Y+Rc), s	4.2	0.9	4.2	9 .	0.9	9 .	4.2	0.9				
Max Green Setting (Gmax), s	9.6*	36.0	* 22	* 36	25.8	* 46	* 7.2	50.6				
Groon Ext Time (n. c) s	0.0	3.0	0.62	32.0	0.2	40.0	0.0	0.0				
	9	ò	9	5:3	5	9	9	7:0				
Intersection Summary												
HCM 2010 Ctrl Delay			91.6									
HCM 2010 LOS			_									

N:\2772\Analysis\Intersections\Synchro\7. Ex +C AM.syn HCM 2010 Signalized Intersection Summary

HCM 2010 Signalized Intersection Summary 17: El Camino Real & Town Garden Rd.

Ex + Cumulative AM 08/03/2017

	4	†	<u> </u>	/	Ļ	4	•	—	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		₩	*	<u>"</u>	¢Ŷ		F	444	¥	r	444	*
Traffic Volume (veh/h)	09	50	20	140	20	70	160	1360	160	140	1430	06
Future Volume (veh/h)	09	70	20	140	20	70	160	1360	160	140	1430	06
Number	7	4	14	3	8	18	2	2	12		9	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1900	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	64	21	23	149	23	74	170	1447	170	149	1521	96
Adj No. of Lanes	0	-	_		-	0	_	33	_	-	က	_
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	m	m	3	3	3	m	m	3	3	3	co
Cap, veh/h	131	43	143	230	88	123	150	1289	394	658	2819	873
Arrive On Green	0.10	0.10	0.10	0.13	0.13	0.13	0.00	0.26	0.26	0.37	0.56	0.56
Sat Flow, veh/h	1339	439	1468	1757	929	943	1757	5036	1537	1757	5036	1560
Grp Volume(v), veh/h	82	0	23	149	0	127	170	1447	170	149	1521	96
Grp Sat Flow(s),veh/h/ln	17.78	0	1468	1757	0	1619	1757	1679	1537	1757	1679	1560
Q Serve(g_s), s	8.9	0.0	5.1	12.1	0.0	11.1	12.8	38.4	13.9	8.7	28.6	4.3
Cycle Q Clear(g_c), s	6.8	0.0	2.1	12.1	0.0	11.1	12.8	38.4	13.9	8.7	28.6	4.3
Prop In Lane	0.75		1.00	1:00		0.58	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	174	0	143	230	0	211	120	1289	394	658	2819	873
V/C Ratio(X)	0.49	0.00	0.37	0.65	0.00	0.60	1.13	1.12	0.43	0.23	0.54	0.11
Avail Cap(c_a), veh/h	420	0	372	468	0	432	120	1289	394	658	2819	873
HCM Platoon Ratio	1:00	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	00.1	1.00	0.00	00 !	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.1	0.0	63.4	61.9	0.0	61.5	9.89	55.8	46.7	32.1	20.8	15.5
Incr Delay (d2), s/veh	0.8	0.0	9.0	1.2	0.0	0.7	114.0	8.09	3.4	0.1	0.7	0.3
Initial Q Delay(d3),sweh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackUrU(50%),vervin	3.4	0:0	7.7	0.0	0.0	5.0	0.11	727	0.3	4.7	13.4	7.7
LnGrp Delay(d), s/ven	04.9	0.0	63.9	03.1	0.0	67.20	182.0	0.121	20.1	32.1	0.12	15.7
Lucrp LOS	ш	3	ш	ш	į	ш	-	-		اد	: اد	20
Approach Vol, veh/h		138			2/6			1/8/			1/66	
Approach Delay, siven		04.0			8.79			120.6			77.7	
Approach LOS		١			٠			_			ر	
Timer	_	2	3	4	2	9	7	∞				
Assigned Phs	-	2		4	2	9		∞				
Phs Duration (G+Y+Rc), s	62.6	44.8		18.8	17.0	90.4		23.8				
Change Period (Y+Rc), s	* 6.4	* 6.4		* 4.2	* 4.2	* 6.4		4.2				
Max Green Setting (Gmax), s	* 15	. 38 *		æ ;	* 13	* 40		40.0				
Max Q Clear Time (g_c+I1), s	10.7	40.4		œ 6	14.8	30.6		14.1				
Green Ext Time (p_c), s	0.1	0.0		0.3	0.0	5.5		0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			70.8									
HCM 2010 LOS			ш									
Notes												
Notes												

N:\2772\Analysis\Intersections\Synchro\7. Ex +C AM.syn HCM 2010 Signalized Intersection Summary

Synchro 10 Report Page 30

HCM 2010 Signalized Intersection Summary 18: El Camino Real & Camino Vida Roble

Ex + Cumulative AM 08/03/2017

Movement EB EF EB WB WB WB WB WB NB NB N		1	†	1	-	Ļ	4	•	—	•	۶	→	•
10 10 10 10 10 10 10 10	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
66 10 90 10 10 10 420 1440 10 20 1380 7 4 90 10 10 10 420 1440 10 20 1380 1 0 0 0 0 0 0 0 0 0	Lane Configurations	*	4	¥L.		4		K.	‡	¥.	۴	444	
Fig. 10 Fig. 10 Fig. 10 Fig. 140 F	Traffic Volume (veh/h)	09	10	06	10	10	10	420	1440	10	20	1380	260
7 4 14 3 8 18 5 2 12 12 1 6 100 0 0 0 0 0 0 0 0 0 0 0 1100 100 1100 0 0 0	Future Volume (veh/h)	09	10	06	10	10	10	420	1440	10	20	1380	260
100	Number	7	4	14	က	∞ (18	2	2	12	-	9	16
1.00	Initial Q (Qb), veh	0 0	0	0	0 0	0	0	0 0	0	0 0	0 6	0	0 8
1945 1945 1945 1940	Ped-Bike Adj(A_por)	9.6	100	1.00	00.1	100	1.00	00.1	100	1.00	9.1	5	1.00
45 0 119 10 10 438 1500 10 21 1438 150	Adi Sat Flow. veh/h/ln	1845	1845	1845	1900	1845	1900	1845	1845	1845	1845	1845	1900
1	Adj Flow Rate, veh/h	42	0	119	10	10	10	438	1500	10	21	1438	271
1,096 0,96	Adj No. of Lanes	-	0	2	0		0	2	2	_	_	3	0
15	Peak Hour Factor	96.0	96:0	96.0	96.0	96.0	96.0	96:0	96:0	96.0	96.0	96:0	96:0
164	Percent Heavy Veh, %	33	33	က	3	3	က	3	33	က	က	က	33
1757 0 2929 553 553 540 541 0.31 0.34 0.45 0.45 1.45 0.5 1.45 1.45 0.5 1.45 1.45 0.5 1.46 1.45 1.45 0.5 1.45	Cap, veh/h	164	0	274	38	38	38	273	1094	481	675	2615	492
1757 0 2929 553 553 3408 3565 1543 1757 4243 1757 0 1444 1659 0 0 0 0 1704 1752 1573 1757 1679 1475 1757 1679 1475 1757 1679 1475 1757 1679 1475 1757 1679 1475 1475 1757 1679 1475 1475 1757 1679 1475	Arrive On Green	0.09	0.00	0.09	0.07	0.07	0.07	0.08	0.31	0.31	0.38	0.62	0.62
1757 1767	Sat Flow, veh/h	1757	0	2929	553	553	553	3408	3505	1543	1757	4243	798
1757 0 1464 1659 0 0 1704 1752 1543 1757 1649 1869 0 120 468 0.7 1.1 295 1.6 0.0 0.0 1.20 468 0.7 1.1 295 1.00 1.00 0.33 1.00 1.0	Grp Volume(v), veh/h	45	0	119	30	0	0	438	1500	10	21	1137	572
C), S	Grp Sat Flow(s),veh/h/ln	1757	0	1464	1659	0	0	1704	1752	1543	1757	1679	1684
34, 0.0 5.8 2.6 0.0 0.0 12.0 46.8 0.7 1.1 295 1.00 1.00 0.33 1.00 1.00 1.00 1.00 1.00 0.44 0.25 0.00 0.44 15 0.5 0.00 2.) verlyh 164 0.27 0.00 0.44 0.26 0.00 1.61 1.37 0.02 0.03 0.55 verlyh 245 0.74 115 0 0.00 1.00 1.00 1.00 1.00 1.00 (i) 3/verh 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Q Serve(g_s), s	3.6	0.0	2.8	5.6	0.0	0.0	12.0	46.8	0.7	1.	29.5	29.6
9, verbft 160 0.33 0.33 1.00 1.00 1.00 1.00 1.00 1.0		3.6	0.0	5.8	5.6	0.0	0.0	12.0	46.8	0.7	1:1	29.5	29.6
C), veh/h 164 0 274 115 0 0 0 273 1094 481 675 2069 veh/h 445 0 242 443 0 0 0.00 1.61 137 002 0.03 0.55 veh/h 100 1.00 0.00 1.00 1.00 1.00 1.00 1.00	Prop In Lane	1.00		1.00	0.33		0.33	1.00		1.00	1.00		0.47
vehn 445 0.00 0.44 0.26 0.00 0.00 1.61 1.37 0.02 0.03 0.55 care vehn 445 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Grp Cap(c), veh/h	164	0	274	115	0	0	273	1094	481	675	2069	1038
verhh 445 0 742 443 0 0 273 1094 481 675 2069 aslie 1.00	V/C Ratio(X)	0.27	0.00	0.44	0.26	0.00	0.00	1.61	1.37	0.02	0.03	0.55	0.55
below 100 100 100 100 100 100 100 100 100 10	Avail Cap(c_a), veh/h	445	0	742	443	0	0	273	1094	481	675	2069	1038
(ii) (iii) (HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Syech 63.3 0.0 64.3 66.2 0.0 0.0 69.0 516 35.7 28.8 16.7 38.4 10.1 1.2 0.0 0.0 2894 1731 0.1 0.0 1.1 13.5 8.4 16.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Upstream Filter(I)	1:00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Sych 0.9 0.0 1.1 1.2 0.0 0.0 894 1731 0.1 0.0 1.1 0.0 0.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	63.3	0.0	64.3	66.2	0.0	0.0	0.69	51.6	35.7	28.8	16.7	16.7
33,5/veh	Incr Delay (d2), s/veh	6.0	0.0	= ;	1.2	0:0	0.0	289.4	173.1	0.1	0.0	= ;	2.1
Solely, vehiln 18 0.0 2.4 1.2 0.0 0.0 16.6 48.9 0.3 0.5 13.9 s, sveh E E E F F D C 17.8 v, s, veh 65.0 67.4 30 19.48 1730 1730 v, s, veh 65.0 67.4 28.3 B 18.3 B 18.3 B 18.3 B 18.3 B 18.3 B 18.3 B B 18.3 B	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Size Color Size	%ile BackOfQ(50%),veh/ln	<u>~</u> ;	0.0	2.4	1.2	0.0	0.0	16.6	48.9	0.3	0.5	13.9	14.3
behh 164 30 1948 7. ceth 65.0 67.4 2538	LnGrp Delay(d),s/veh	64.2	0.0	65.3	67.4	0.0	0.0	358.4	224.7	35.8	28.8	17.8	18.8
Helph 164 30 1948 9, Sweh 65.0 67.4 253.8 F E E F F F F F F F F F F F F F F F F	LnGrp LOS	ᆈ		ᆈ	ᆈ			4	4		ပ	۵	۱۳
y, s/veh 65.0 67.4 253.8 F F F F F F F F F F F F F F F F F F F	Approach Vol, veh/h		164			30			1948			1730	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 (Y+RQ), S 6.36 5.28 19.0 18.0 98.4 (Y+RQ), S 6.0 6.0 6.0 6.0 ling (Gmax), S 4.0 46.8 '38 12.0 38.8 met (g.c.H), S 3.1 48.8 7.8 14.0 31.6 mmary Delay 139.1	Approach Delay, sweh		65.0			67.4			253.8			18.3	
1 2 3 4 5 6 7 1 2 4 5 6 7 636 528 19,0 18,0 98,4 60 60 ° 5 60 60 40 46,8 ° 38 12,0 38,8 31 48,8 7,8 14,0 31,6 00 0,0 0,6 0,0 5,6 F	Approach LOS		ш			ш			_			В	
1 2 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Timer		2	က	4	2	9	7	∞				
63.6 52.8 19.0 18.0 98.4 6.0 6.0 **5 6.0 6.0 4.0 46.8 **38 12.0 38.8 3.1 48.8 7.8 14.0 31.6 0.0 0.0 0.6 0.0 5.6 F	Assigned Phs	-	2		4	2	9		∞				
60 60 *5 60 60 40 468 *38 12.0 38.8 3.1 48.8 7.8 14.0 31.6 0.0 0.0 0.6 0.0 5.6 139.1	Phs Duration (G+Y+Rc), s	93.6	52.8		19.0	18.0	98.4		14.6				
40 468 *38 12.0 388 3.1 488 7.8 14.0 31.6 0.0 0.0 0.6 0.0 5.6 139.1	Change Period (Y+Rc), s	0.9	0.9		· 2	0.9	0.9		4.2				
11), s 3.1 48.8 7.8 14,0 31,6 0.0 0.0 0.6 0.0 5.6 139.1 F	Max Green Setting (Gmax), s	4.0	46.8		* 38	12.0	38.8		40.0				
00 00 0.6 0.0 5.6 139.1 F	Max Q Clear Time (g_c+I1), s	3.1	48.8		7.8	14.0	31.6		4.6				
I	Green Ext Time (p_c), s	0.0	0.0		9.0	0.0	2.6		0.1				
	Intersection Summary												
HCM 2010 LOS F	HCM 2010 Ctrl Delay			139.1									
Notice	HCM 2010 LOS			ш									
	00 to 10												

N:2772/AnalysisUntersections\Synchrol/7 Ex +C AM\syn HCM 2010 Signalized Intersection Summary

HCM 2010 Signalized Intersection Summary 19: El Camino Real & Poinsettia Ln.

Ex + Cumulative AM 08/03/2017

Movement EB1 EB1 MB1	Movement Lane Configurations Traffic Volume (veh/h) Future Volume (veh/h) Number	FBI	FBT	EBR	WBL	WBT	WRP	ION	FOIR	NBR	SBL	CDT	CDD
10 10 10 10 10 10 10 10	Lane Configurations Traffic Volume (veh/h) Future Volume (veh/h) Number	בחר						NDL	NBI			ODI	SDF
30 20 10 370 10 160 30 1310 260 110 100 100 100 100 100 100 100 100 1	Traffic Volume (veh/h) Future Volume (veh/h) Number	F	₽		F	₩		F	444	¥	F	444	
30 20 10 370 110 160 30 1310 260 110 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Future Volume (veh/h) Number	8	20	10	370	10	160	30	1310	260	110	1210	20
1.00	Number	8	20	10	370	10	160	30	1310	260	110	1210	20
1.00	do., (40) O loitel	_ 0	4 0	4 0	m c	∞ <	<u> </u>	ഹ വ	5	12	- -	9 0	16
1.00 1.00	Ped-Bike Adi(A. pbT)	001	>	0.94	100	>	0.97	100	>	0.99	100	>	0.98
1845 1845 1940 1845 1845 1940 1845		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
33 22 11 411 11 178 33 1456 289 122		1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1900
10.0		33	22	Ξ	411	Ξ	178	33	1456	289	122	1344	22
0.99 0.90 0.90 0.90 0.90 0.90 0.90 0.90		2	2	0	2	2	0	2	3	-	2	က	0
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3		06.0	06:0	06:0	0.90	0.90	06:0	06:0	06:0	06:0	06:0	06:0	0.90
68 268 121 460 411 355 88 1836 567 817 617 6102 0.024 0.024 0.022 0.02 0.012 0.02 0.02 0.02 0.02 0.	Percent Heavy Veh, %	3	e	c,	m	3	m	3	co	co	3	3	m
3408 2303 4408 1752 1623 002 036 036 024 3408 2303 1039 3408 1752 1515 3408 5036 1255 3408 3418 1734 1752 1589 1704 1752 1515 1704 1679 1555 1704 1.14 1.2 1.4 178 0.7 153 1.4 388 21.8 4.2 1.10 0.66 1.00 1.00 1.00 1.00 1.00 1.00		89	268	121	460	411	355	82	1836	267	817	3017	49
3408 2303 1039 3408 1752 1515 3408 5636 1555 3408 11 4 12 14 17 11 17 17 17 33 1456 289 122 11 4 12 14 178 07 153 14 388 218 42 11 6 8 204 185 460 411 355 85 1836 567 817 11 0 0.49 0.08 0.09 0.08 0.03 0.50 0.09 0.100 11 0 100 1.00 1.00 1.00 1.00 1		0.02	0.12	0.12	0.13	0.23	0.23	0.02	0.36	0.36	0.24	0.59	0.59
133 16 17 411 178 33 146 289 122 1		3408	2303	1039	3408	1752	1515	3408	5036	1555	3408	5102	84
1704 7752 589 7704 7752 515 7704 1679 1555 7704 1714 1.2 1.4 1.78 0.7 15.3 1.4 388 21.8 4.2 1.4 1.2 1.4 1.78 0.7 15.3 1.4 388 21.8 4.2 1.0 1.00 0.66 1.00 1.	Grp Volume(v), veh/h	33	16	17	411	11	178	33	1456	289	122	884	482
14 12 14 178 07 153 14 388 218 42 100 066 100 100 100 100 100 100 089 003 050 039 079 051 015 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00 11.00 1.00		1704	1752	1589	1704	1752	1515	1704	1679	1555	1704	1679	1828
14 12 14 178 07 153 14 388 218 42 100 100 665 100 100 100 100 100 100 008 009 089 003 050 039 079 051 015 100 100 100 100 100 100 100 100 100 100	Q Serve(g_s), s	1.4	1.2	1.4	17.8	0.7	15.3	1.4	38.8	21.8	4.2	21.9	21.9
100 0.66 100	Cycle Q Clear(g_c), s	1.4	1.2	1.4	17.8	0.7	15.3	1.4	38.8	21.8	4.2	21.9	21.9
hh 68 204 185 460 411 355 85 1836 557 817 1 0.49 0.08 0.09 0.03 0.50 0.39 0.79 0.79 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15	Prop In Lane	1.00		0.65	1.00		1.00	1.00		1.00	1.00		0.05
0.49 0.08 0.09 0.89 0.03 0.50 0.39 0.79 0.51 0.15 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		89	204	182	460	411	355	82	1836	292	817	1985	1081
91 456 413 568 432 374 114 1917 592 817 1 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.		0.49	0.08	0.09	0.89	0.03	0.50	0.39	0.79	0.51	0.15	0.45	0.45
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		91	426	413	268	432	374	114	1917	265	817	1985	1081
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
727 591 59.2 638 442 49.8 72.0 42.6 37.2 45.0 0.0 0.0 0.1 128 0.0 0.4 6.1 3.6 3.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	1.00	1.00	1:00	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1:00	1.00
2.0 0.1 128 0.0 0.4 6.1 3.6 3.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	72.7	59.1	59.2	63.8	44.2	49.8	72.0	42.6	37.2	45.0	17.0	17.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	2.0	0.1	0.1	12.8	0.0	0.4	6.1	3.6	3.3	0.0	0.7	1.3
0.7 0.6 0.6 9.2 0.4 6.5 0.7 18.5 9.8 2.0 74.7 59.2 59.3 76.6 44.2 50.2 78.1 46.2 40.4 45.0 E E E E 600 1778 45.9 6.70 68.2 45.9 1 2 3 4 5 6 7 8 42.0 60.7 25.2 22.1 7.9 94.7 7.2 40.2 6.0 6 5 5 4.7 42 6.0 4.2 5.5 6.0 6 5 5 4.7 78 6.0 4.2 5.5 6.0 7 8 8 9.8 3.4 3.4 3.3 6.1 13.9 0.4 0.1 0.0 7.8 0.0 0.7	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	%ile BackOfQ(50%),veh/ln	0.7	9.0	9.0	9.2	0.4	6.5	0.7	18.5	9.8	2.0	10.3	11.4
E E E D D E D D D D	LnGrp Delay(d),s/veh	74.7	59.2	59.3	9.92	44.2	20.5	78.1	46.2	40.4	45.0	17.7	18.3
66 600 1778 67.0 68.2 45.9 F E E D 1 2 3 4 5 6 7 8 42.0 60.7 25.2 22.1 7.9 94.7 72 40.2 6.0 6 5 47 7 42 6.0 4.2 5 6.2 40.8 19.8 3.4 23.9 3.4 13.3 0.1 13.9 0.4 0.1 0.0 7.8 0.0 0.7	LnGrp LOS	ш	ᆈ	ш	삐			삐					^B
682 459 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 420 607 252 22.1 7.9 94.7 72 40.2 60 6 5 7 7 8 6 7 8 60 7 8 7 7 8 7 7 8 7 7 8 91 139 0.4 0.1 0.0 7.8 0.0 0.7 399	Approach Vol, veh/h		99			009			1778			1488	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 420 607 252 221 79 947 72 4 60 6 5 47 42 60 42 98 757 725 39 75 619 74 0.1 139 0.4 0.1 0.0 78 0.0	Approach Delay, s/veh		0.79			68.2			45.9			20.2	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 420 60.7 25.2 22.1 7.9 94.7 72 4 9.8 '57 '25 '39 '5 61.9 '4.2 6.2 40.8 19.8 3.4 3.4 23.9 3.4 1 0.1 13.9 0.4 0.1 0.0 7.8 0.0	Approach LOS		ш			ш			Ω			O	
1 2 3 4 5 6 7 42.0 60.7 25.2 22.1 7.9 94.7 72 4 6.0 ~6 ~5 ~4.7 ~4.2 6.0 ~4.2 9.8 ~5.7 ~2.5 ~3.9 ~5 61.9 ~4 6.2 40.8 19.8 3.4 3.4 23.9 3.4 1 0.1 13.9 0.4 0.1 0.0 7.8 0.0 D	Timer		2	က	4	2	9	7	∞				
420 607 25.2 22.1 7.9 94.7 7.2 4 6.0 "6 "5 "47 "42 60 "4.2 6.2 408 19.8 34 34 23.9 3.4 0.1 13.9 0.4 0.1 0.0 7.8 0.0 39.9 D	Assigned Phs	<u> </u>	2	m	4	2	9	7	∞				
60 6 7 47 42 60 42 98 75 75 9 7 6 19 4 4 7 0.1 13.9 0.4 0.1 0.0 7.8 0.0 D		42.0	60.7	25.2	22.1	7.9	94.7	7.2	40.2				
9.8 *57 *25 *39 *5 61.9 *4 6.2 40.8 19.8 3.4 3.4 23.9 3.4 0.1 13.9 0.4 0.1 0.0 7.8 0.0 39.9 D	Change Period (Y+Rc), s	0.9	9 *	* 22	* 4.7	* 4.2	0.9	* 4.2	* 5				
6.2 40.8 19.8 3.4 3.4 23.9 3.4 0.1 13.9 0.4 0.1 0.0 7.8 0.0 39.9 D	Max Green Setting (Gmax), s	8.6	* 57	* 25	* 39	* 5	61.9	* 4	* 37				
0.1 13.9 0.4 0.1 0.0 7.8 0.0 39.9 D	Max Q Clear Time (g_c+11), s	6.2	40.8	19.8	3.4	3.4	23.9	3.4	17.3				
	Green Ext Time (p_c), s	0.1	13.9	0.4	0.1	0.0	7.8	0.0	0.7				
	Intersection Summary												
	HCM 2010 Ctrl Delay			39.9									
	HCM 2010 LOS			Q									

N-12772VanalysisIntersections/Synchro7. Ex +C AM.syn HCM 2010 Signalized Intersection Summary

HCM 2010 Signalized Intersection Summary 1: Faraday Ave. & Canon Rd.

0.91 1.00 1900 11 0 0.93 3 20 20 0.04 0.0 0.00 0.00 0.0 0.0 0.0 0.0 0.0 1.00 0.00 0.00 0.00 0.00 0.0 0.0 0.0 33 50.4 D 0.0 10 7 0 1.00 1.00 900 11 0 0.93 3 20 20 0.04 551 33 2.0 2.0 2.0 3.3 59 99 99 99 1.00 1.00 1.00 0.0 0.0 0.0 0.93 90 90 1.00 1.00 1.00 0.00 0.0 0.00 0.00 0.00 0.0 0.0 0.0 0.0 0.0 754 39.9 D 1.00 0.93 467 0.00 609 11.00 0.00 0.0 0.0 0.0 0.0 30.3 5.0 33.0 22.4 1.7 467 0.00 1845 3 0 1.00 1.00 1.00 754 754 0.93 3 889 0.25 754 20.4 20.4 20.4 1.00 0.85 1.00 1.00 1.00 35.5 4.4 0.0 0.0 0.0 33.9 51.2 6.0 32.0 10.2 3.9 1.00 1845 452 2 0.93 3 1578 0.45 0.45 226 1752 8.1 792 0.29 792 1.00 1.00 17.3 0.9 0.0 4.1 18.2 B 9.9 6.0 7.0 7.0 0.0 20 20 20 10 11.00 11.00 11.00 11.00 10.03 3 3 70 70 8.6 5.0 6.0 6.0 0.0 32.7 0.45 0.45 2807 630 1752 30.8 1.00 0.93 790 0.80 790 1.00 1.00 23.5 8.2 8.2 0.0 16.7 51.1 6.0 35.0 33.1 1.6 Ť 1.00 1.00 1845 54 0.93 10.0 6.0 4.0 3.2 0.0 Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s Max O Clear Time (g_c+I1), s %ile BackOfQ(50%),veh/ln Percent Heavy Veh, %
Cap, veh/h
Arrive On Green
Sat Flow, veh/h
Grp Volume(v), veh/h
Grp Sat Flow(s), veh/h
O'D Sarve(g_s), s Upstream Filter(I) Uniform Delay (d), s/veh Incr Delay (d2), s/veh LnGrp LOS Approach Vol, veh/h Approach Delay, s/veh Approach LOS Lane Grp Cap(c), veh/h V/C Ratio(X) Initial Q Delay(d3),s/veh Lane Configurations Traffic Volume (veh/h) Future Volume (veh/h) Parking Bus, Adj Adj Sat Flow, veh/h/In Adj Flow Rate, veh/h Adj No. of Lanes Peak Hour Factor Green Ext Time (p_c), s Number Initial Q (Qb), veh Ped-Bike Adj(A_pbT) Cycle Q Clear(g_c), s Prop In Lane Avail Cap(c_a), veh/h HCM Platoon Ratio LnGrp Delay(d),s/veh HCM 2010 Ctrl Delay HCM 2010 LOS

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Synchro 10 Report Page 1

HCM 2010 Signalized Intersection Summary 2: College Blvd. & El Camino Real

Ex + Cumulative PM 08/03/2017

08/03/2017

Ex + Cumulative PM

Lane Configurations N ← ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑	7	4	†	<i>></i>	\	Ļ	4	•	←	•	۶	-	*
10		B	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
100 1050 130 30 2050 70 100 1050 130 30 2050 70 100 1050 130 30 2050 70 100 100 100 100 100 100 100 1100 100 1	onfigurations	F	+++	R.	r	444	¥C.	E.	₩		K	₩	
100 1050 130 30 2050 70 101 1050 130 30 2050 70 102 103 103 103 103 103 104 105 104 105 104 104 105 106 100 100 100 105 105 104 104 104 105 105 104 104 104 105 105 104 104 104 105 105 104 104 104 105 105 104 104 104 108 109 109 104 109 109 104 104 109 109 104 104 100 100 100 100 100 100 100 100 100 100	(-	8	1050	130	30	2050	70	280	80	30	20	30	8
100		00	1050	130	30	2050	70	280	80	30	20	30	06
100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		2	2	12	-	9	16	3	00	18	7	4	14
100 100 100 100 000 100 100 100 100 100		0	0	0	0	0	0	0	0	0	0	0	0
100 100 100 100 100 100 100 100 100 100		00		1.00	1.00		0.99	1.00		0.95	1.00		0.95
1845 1845		8	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
105 1105 0 32 2188 74 0.095 0.995 0.995 0.995 0.995 3 3 3 3 3 3 3 4 2 2 2 2 2 1757 5036 1568 1757 5036 1559 1757 5036 1568 1757 5036 1559 1757 5036 1568 1757 5036 1559 1757 105 105 105 105 106 107 107 107 107 107 107 107 107 107 108 109 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100		45	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1900
1 1 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		02	1105	0	32	2158	74	611	84	32	53	32	95
1757 1757 1759		_	3	-	-	3	-	2	2	0	2	2	0
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3		95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
1757 1757	avy Veh, %	3	m	3	m	3	m	3	c	c	m	c	3
1757 5036 1568 1757 5036 1559 1757 1036 1568 1757 5036 1559 1757 1679 1568 1757 5036 1559 1757 1679 1568 1757 1679 1559 1750 1750 0.0 1.7 47.0 1.6 1.00 1.00 1.00 1.00 1.00 1.00 1.94 0.08 0.00 0.06 0.83 0.09 1.94 0.08 0.00 0.00 0.00 1.00 1.00 1.00 1.00 1.00		24	1291	402	200	2607	807	446	313	112	481	259	221
1757 5036 1568 1757 5036 1559 1757 1759 1750 1750 1757 1759 1750		03	0.26	0.00	0.28	0.52	0.52	0.13	0.13	0.13	0.14	0.15	0.15
106 1105 0 32 2158 74 1757 1659 1658 1757 1659 1659 4 0 27.2 0.0 1.7 47.0 1.6 1 0 0 1.0 1.0 1.00 1 194 0.86 0.00 0.06 0.83 0.09 1 4 0 1.00 1.00 1.00 1.00 1 0 0 1.00 1.00 1.00 1.00 1 0 0 1.00 0.00 0.00 0.00 1 0 0 1.00 0.00 0.00 0.00 1 0 0 1.00 0.00 0.00 0.00 1 0 0 1.00 0.00 0.00 0.00 1 0 0 1.00 0.00 0.00 1 0 0 1.00 0.00 0.00 1 0 0 0.00 0.00 1 0 0 0.00 0.00 1 0		27	5036	1568	1757	5036	1559	3408	2493	889	3408	1752	1495
1757 1679 1568 1757 1679 1559 1470 1568 1757 1679 1559 1470 156 1470 156 1470 156 1470 156 1470 156 1470 156 1470 156 1470 156 1470 1		02	1105	0	32	2158	74	611	22	26	53	32	95
However, and the control of the cont		57	1679	1568	1757	1679	1559	1704	1752	1630	1704	1752	1495
Ho 27.2 0.0 1.7 47.0 1.6 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0		0.1	27.2	0.0	1.7	47.0	1.6	17.0	3.8	4.2	1.8	2.1	7.5
h 100 100 100 100 100 100 100 100 100 10		0.1	27.2	0.0	1.7	47.0	1.6	17.0	3.8	4.2	1.8	2.1	7.5
hh 154 1291 402 500 2667 897 174 402 500 0.06 0.083 0.09 174 40.86 0.00 0.06 0.083 0.09 175 4 1763 549 500 2667 897 1700 1.00 1.00 1.00 1.00 1.00 1.00 1.0	_	00		1.00	1.00		1.00	1.00		0.55	1.00		1.00
194 0.86 0.00 0.06 0.83 0.09 194 1763 549 500 2607 807 100 1.00 1.00 1.00 1.00 1.00 100 1.00 0.00 1.00 0.00 0		24	1291	402	200	2607	807	446	220	205	481	259	221
F4 1763 549 500 2667 807 100 1.00 1.00 1.00 1.00 1.00 1.00 1.0		94	98.0	0.00	90:0	0.83	0.09	1.37	0.26	0.29	0.11	0.12	0.43
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00		24	1763	549	200	2607	807	446	409	264	481	539	460
1,00 1,00 0,00 1,00 1,00 1,00 1,00 1,00		00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
63.0 46.1 0.0 33.9 26.5 4.1 484.2 7.4 0.0 0.0 3.2 0.2 1 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		8	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00
484.2 7.4 0.0 0.0 3.2 0.2 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		3.0	46.1	0.0	33.9	26.5	4.1	299	51.4	51.6	48.7	48.1	50.4
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		1.2	7.4	0.0	0.0	3.2	0.2	180.7	0.2	0.3	0:0	0.1	0.5
92 13.5 0.0 0.8 22.3 0.7 7 13.5 0.0 0.8 22.3 0.7 1 12.0 C C A 13 2 1 12.0 C C C C C C C C C C C C C C C C C C C		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
541.2 53.5 0.0 33.9 29.6 4.3 2 F D C C A C C A G C C A G C C A C C C A C C C A C C C C		2.5	13.5	0.0	0.8	22.3	0.7	19.2	1.9	1.9	0.8	1.0	3.1
1210 C C A 1210 2264 96.3 28.9 E C 1 2 3 4 5 6 43.0 39.3 22.0 25.7 9.0 6.0 5.0 *6 5.0 6.5 5.0 6.0 5.0 *46 17.0 40.0 4.0 46.5 3.7 29.2 19.0 9.5 6.0 49.0 0.0 4.1 0.0 0.4 0.0 0.0		7 1	53.5	0.0	33.9	29.6	4.3	237.2	51.6	51.8	48.7	48.2	50.9
1210 2264 96.3 2264 1 2 3 4 5 6 1 2 3 4 5 6 13 2 2 2 7 9 73 60 6 6 5 6 65 50 60 50 46 17.0 40.0 4.0 46.5 3.7 29.2 19.0 9.5 6.0 49.0 0.0 4.1 0.0 0.4 0.0 0.0	LOS	_			اد	اد:	∀	-	اٍ				
90.3 28.9 1 2 3 4 5 6 1 2 3 4 5 6 43.0 39.3 22.0 25.7 9.0 73.3 6.0 '6 5.0 6.5 5.0 6.0 5.0 '46 17.0 40.0 4.0 46.5 3.7 29.2 19.0 9.5 6.0 49.0 0.0 4.1 0.0 0.4 0.0 0.0	ch Vol, veh/h		1210			2264			727			180	
1 2 3 4 5 6 1 2 3 4 5 6 43.0 39.3 22.0 25.7 9.0 73.3 6.0 '6 5.0 6.5 5.0 6.0 5.0 '46 17.0 40.0 4.0 46.5 3.7 29.2 19.0 9.5 6.0 49.0 0.0 4.1 0.0 0.4 0.0 0.0	ch Delay, siveri		90.3 F			707			207.0			47.0	
1 2 3 4 5 6 1 2 3 4 5 6 43.0 39.3 22.0 25.7 9.0 6.0 5.0 *46 17.0 40.0 4.0 46.5 3.7 29.2 19.0 9.5 6.0 49.0 0.0 4.1 0.0 0.4 0.0 0.0	CII LOS		_			ر			_			٥	
1 2 3 4 5 6 43.0 39.3 22.0 25.7 9.0 73.3 6.0 *6 5.0 6.5 5.0 6.0 5.0 *46 17.0 40.0 4.0 46.5 3.7 29.2 19.0 9.5 6.0 49.0 0.0 4.1 0.0 0.4 0.0 0.0 0.0		-	2	3	4	2	9	7	8				
43.0 39.3 22.0 25.7 9.0 73.3 6.0 *6 5.0 6.5 5.0 6.0 5.0 *4 17.0 40.0 4.0 46.5 3.7 29.2 19.0 9.5 6.0 49.0 0.0 4.1 0.0 0.4 0.0 0.0 78.0 E		_	2	3	4	2	9	7	8				
5.0 *46 17.0 40.0 4.0 46.5 3.7 29.2 19.0 9.5 6.0 49.0 0.0 4.1 0.0 0.4 0.0 0.0 78.0 F.		0.0	39.3	22.0	25.7	9.0	73.3	24.9	22.8				
3.7 29.2 17.0 40.0 49.0 0.0 0.0 0.0 0.0 0.4 0.0 0.0 0.4 0.0 0.0		0.0	* 46	17.0	40.0V	0.0	46.5	10.0	* AF				
0.0 4.1 0.0 0.4 0.0 78.0 E		2.7	29.2	19.0	9.5	6.0	49.0	3.8	6.2				
		0.0	4.1	0.0	0.4	0.0	0.0	0.0	0.4				
	ction Summary												
	010 Ctrl Delav			78.0									
	010 LOS			ш									
Notes													

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HCM 2010 Signalized Intersection Summary 3: College Blvd. & Faraday Ave.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	r	₹		<i>y</i> -	₩		F	₩		F	₩	
Fraffic Volume (veh/h)	99	490	240	260	460	170	150	330	120	20	210	09
uture Volume (veh/h)	09	490	240	260	460	170	150	330	120	20	210	09
Number	7	4	14	m	∞	18	2	2	12	-	9	16
nitial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		96.0
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
4dj Flow Rate, veh/h	75	612	300	325	575	212	188	412	150	25	262	75
Adj No. of Lanes	-	2	0	-	2	0	2	2	0	2	2	0
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	m	m	m	m	m	m	m	m	m	m	m	m
Cap, veh/h	96	750	368	341	1175	432	220	266	203	71	488	136
Arrive On Green	0.02	0.33	0.33	0.19	0.47	0.47	90.0	0.23	0.23	0.02	0.18	0.18
sat Flow, veh/h	1757	2258	1107	1757	2493	917	3408	2502	866	3408	2681	748
Grp Volume(v), veh/h	75	475	437	325	404	383	188	287	275	25	169	168
3rp Sat Flow(s),veh/h/ln	1757	1752	1613	1757	1752	1658	1704	1752	1648	1704	1752	1676
2 Serve(g_s), s	3.7	21.9	21.9	16.1	13.9	14.0	4.8	13.4	13.7	9.0	7.7	8.0
Cycle Q Clear(g_c), s	3.7	21.9	21.9	16.1	13.9	14.0	4.8	13.4	13.7	9.0	7.7	8.0
Prop In Lane	1.00		69.0	1.00		0.55	1.00		0.55	1.00		0.45
.ane Grp Cap(c), veh/h	96	582	236	341	826	781	220	396	373	71	319	302
//C Ratio(X)	0.78	0.82	0.82	0.95	0.49	0.49	0.85	0.72	0.74	0.35	0.53	0.55
4vail Cap(c_a), veh/h	189	716	629	341	867	820	220	654	615	155	620	593
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Jpstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Jniform Delay (d), s/veh	41.1	27.0	27.0	35.1	16.0	16.0	40.8	31.6	31.7	42.6	32.6	32.8
ncr Delay (d2), s/veh	12.5	0.9	6.5	36.5	0.4	0.5	26.1	2.5	2.9	3.0	1.4	1.5
nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	11.5	10.7	11.3	8.9	6.5	3.1	6.7	6.5	0.3	3.8	3.9
nGrp Delay(d),s/veh	53.7	33.0	33.5	71.6	16.5	16.5	6.99	34.1	34.6	45.5	34.0	34.3
nGrp LOS	O	ပ	ပ	ш	В	В	ш	ပ	ပ	D	ပ	S
Approach Vol, veh/h		684			1112			750			362	
Approach Delay, s/veh		34.8			32.6			42.5			34.9	
Approach LOS		O			O			Ω			O	
limer		2	3	4	2	9	7	∞				
Assigned Phs	1	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	6.3	25.9	21.6	34.3	10.2	22.1	9.3	46.5				
Change Period (Y+Rc), s	4.5	0.9	4.5	2.0	4.5	0.9	4.5	2.0				
Max Green Setting (Gmax), s	4.0	32.9	17.1	36.0	5.7	31.2	9.5	43.6				
Max U Clear Time (g_c+II), s Green Ext Time (n_c) s	0.0	12.7	- 8	7 V V	χ. C	1.6	2.7	16.0				
	0.0	7.0	0.0	t.	0.0	- - -	0.0					
ntersection Summary												
HCM 2010 Ctrl Delay			35.8									
1CM 2010 LOS			a									

Synchro 10 Report Page 5

HCM 2010 Signalized Intersection Summary 4: El Camino Real & Faraday Ave.

Ex + Cumulative PM 08/03/2017

Maintenant	NBL 190 190 190 190 190 190 190 190 190 190
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256 720 870 210 270 370 190 250 720 870 210 270 370 190 270 370 190 270 370 190 270 370 190 270 370 190 370 190 370 190 370 190 370 190 370 190 370 190 370 190 370 190 370 190 370 190 370 190 370 190 370 190 370 190 370 190 370 190 370 370 190 370 370 370 370 370 370 370 370 370 37	190 1450 120 1450 120 1450 120 1
256 720 870 210 270 370 190 1 0 0 0 0 0 0 0 1 100 100 100 100 10	190 1450 120
100	100
0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
100 0.099 100 0.097 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	100 100 109 100 100 100 109 204 1559 129 203 093 093 3 3 3 3 3 83 2045 169 0.24 0.43 0.43 100 204 1106 582 1704 1106 582 1704 1106 582 1704 1679 1764 1800 1451 763 100 100 100 0.56 0.56 100 0.0 100 0.0 1
100	100 100 100 100 100 100 100 100 100 100
1845 1845	1845 1845 1900 204 1859 129 2 3 0.93 0.93 0.93 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
269 774 935 226 290 388 204 279 3 0.93 0.93 0.93 0.93 0.93 0.93 28 120 6 1219 531 830 0.93 2018 1240 550 186 1219 531 830 0.93 2028 1240 550 186 1219 531 830 0.94 2028 1240 550 186 1219 531 830 0.94 2028 1240 550 186 1219 531 830 0.94 2028 1240 550 186 1219 531 830 0.90 1.00 1.00 1.00 1.00 1.00 1.00 1.0	204 1559 179 20 1593 0.93 0.93 3 3 3 3 3 820 2045 169 0.24 0.43 0.43 3408 4731 391 391 204 1106 582 1704 1679 1764 6.3 6.3 36.3 36.3 6.3 36.3 36.3 6.3 36.3 3
100 1093 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0	2 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0.093 0.93 0.93 0.93 0.93 0.93 0.93 0.93	0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93
3 3 4 8 9 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8	8 8 20 4 4 19 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
2.68 1240 350 180 1219 331 830 2.68 1774 3505 1555 1757 3505 1526 3408 204 1757 3505 1555 1757 3505 1526 3408 204 1757 3505 1555 1757 1752 1526 1704 1757 1752 1526 1704 1757 1752 1526 1704 1757 1752 1526 1704 1757 1752 1526 1704 1757 1752 1526 1704 1757 1752 1526 1704 1706 1700 1700 1700 1700 1700 1700 1700	830 2.045 169 9.04 0.43 0.43 3.408 4.731 391 2.04 1106 582 1.03 36.3 36.3 36.3 6.3 36.3 36.3 36.3 1.00 1.00 1.00 0.56 0.56 0.56 0.56 3.96 31.3 31.3 0.0 22 4.1 0.0 0.0 0.0 0.0 3.0 1.72 18.5 3.96 33.4 35.3 1 0.0 2 0.0
269 774 935 226 290 398 204 1757 3505 1555 1757 3505 1556 3408 1757 3505 1556 1757 3505 1556 1704 1757 1752 1555 1757 1752 1556 1704 1757 1752 1556 1704 1757 1752 1556 1704 1757 1752 1556 1704 1757 1752 1556 1704 1706 1706 1706 1706 1706 1706 1706 1706	348 4731 391 204 1106 582 1704 1679 1764 6.3 36.3 36.3 36.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.
269 774 935 226 200 388 204 1757 1752 1556 1704 1757 1752 1556 1704 1757 1752 1556 1704 1757 1752 1556 1704 1757 1752 1556 1704 1757 1752 1556 1704 1757 1752 1556 1704 1706 1700 1700 1700 1700 1700 1700 1700	204 1106 582 1704 1106 582 6.3 36.3 36.3 36.3 1.00 0.25 1.00 1.00 1.00 1.00 1.00 1.00 0.56 0.56 0.56 3.6 31.3 31.3 0.0 2.2 4.1 0.0 0.0 3.0 1.00 0.0 3.0 1.00 0.0 3.0 1.00 0.0 3.0 1.00 0.0 3.0 0.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0
1757 1752 1555 1757 1752 1526 1704 154 23.8 46.0 13.8 7.6 29.9 6.3 150 1.00 1.00 1.00 1.00 208 1240 550 186 1219 531 830 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.01 1.02 1.03 1.04 39.6 1.52 0.7 322.6 134.5 0.0 5.3 1.52 0.7 322.6 134.5 30.2 1.52 0.7 322.6 134.5 30.2 1.5 1.5 6.0 1.0 0.0 1.5 1.5 6.0 1.5 1.5 1.5 6.0 1.5 1.5 1.5 8.1 3.0 1.5 1.5 8.1 3.0 1.5 1.5 8.1 3.0 1.5 1.5 8.1 3.5 1.5 1.5 8.1 3.5 1.5 1.5 8.1 3.5 1.5 1.5 8.1 3.5 1.5 1.5 8.1 3.5 1.5 1.5 8.1 3.5 1.5 1.5 8.1 3.5 1.5 1.5 8.1 3.5 1.5 1.5 8.1 3.5 1.5 1.5 8.1 3.5 1.5 1.5 8.1 3.5 1.5 1.5 8.1 3.5 1.5 1.5 8.1 3.5 1.5 1.5 9.5 1.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 1.5 9.5 9.5 1.5 9.5 9.5	1704 1679 1764 1 6.3 36.3 36.3 36.3 1 6.3 36.3 36.3 36.3 1 100 0.22 3 100 100 100 100 100 100 100 100 100 100
154 23.8 46.0 13.8 7.6 29.9 6.3 150 23.8 46.0 13.8 7.6 29.9 6.3 150 23.8 46.0 13.8 7.6 29.9 6.3 100 100 100 100 100 100 129 0.62 1.70 1.21 0.24 0.75 0.25 129 0.62 1.70 1.21 0.24 0.75 0.25 120 1.00 1.00 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 1.00 0.56 100 1.00 1.00 1.00 1.00 0.56 100 0.0 0.0 0.0 0.0 0.0 116 0.0 0.0 0.0 0.0 0.0 116 0.0 0.0 0.0 0.0 0.0 116 0.0 0.0 0.0 0.0 0.0 117 0.0 0.0 0.0 0.0 118 0.0 0.0 0.0 0.0 119 11.6 0.0 0.1 0.0 0.0 110 1.1 0.0 0.0 0.0 0.0 111 0.0 0.0 0.0 0.0 112 0.0 0.0 0.0 0.0 113 0.0 0.0 0.0 0.0 114 0.0 0.0 0.0 0.0 115 0.0 0.0 0.0 0.0 116 0.0 0.0 0.0 0.0 117 0.0 0.0 0.0 0.0 118 0.0 0.0 0.0 0.0 119 0.0 0.0 0.0 0.0 119 0.0 0.0 0.0 0.0 110 0.0 0.0 0.0 0.0 110 0.0 0.0 0.0 0.0 110 0.0 0.0 0.0 0.0 110 0.0 0.0 0.0 0.0 110 0.0 0.0 0.0 0.0 110 0.0 0.0 110 0.0 0.0 0.0 110 0.0 0.0 0.0 110 0.0 0.0 110 0.0 0.0 110 0.0 0.0 0.0 110 0.0 0.0 110 0.0 0.0 110 0.0 0.0 110 0.0 0.0 110 0.0 0.0 110 0.0 0.0 110 0.0 0.0 110 0.0 0.0 11	6.3 36.3 36.3 16.3 16.3 16.3 16.3 16.3 1
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hh 208 1240 550 186 1219 531 830 129 0.62 170 129 0.62 170 129 0.65 186 1219 531 830 11.29 0.62 170 1.00 1.00 1.00 1.00 1.00 1.00 1.00	830 1451 763 025 0.76 0.76 0.76 830 1451 763 1.10 0.56 0.56 0.56 1.00 30 2.2 4.1 E 0.0 0.0 0.0 3.0 17.2 18.5 3.4 35.3 11 D C D 17.2 18.5 3.4 35.3 11 C C C
129 0.62 1.70 1.21 0.24 0.75 0.25 208 1240 550 186 1219 531 830 100 1.00 1.00 1.00 1.00 1.00 1.00 0.56 eh 57.3 34.8 42.0 58.1 30.2 37.4 39.6 eh/ln 16.9 11.6 69.0 13.6 3.7 13.4 3.0 eh/ln 16.9 11.6 69.0 13.6 3.7 13.8 6.7 eh/ln 18.8 6.2 18.8 51.0 7.3 38.6 eh/ln 2 13.8 6.2 18.8 51.0 3.7 33.3 19.6 b).s 42 6.0 5 5 6.0 6 4.2 eh/ln 3 83.3 15.8 48.0 83 28.2 17.4 eh/ln 18.8 3.15.8 48.0 83 28.2 17.4 eh/ln 18.8 3.15.8 48.0 83 28.2 17.4 eh/ln 18.9 6.0 5 10.0 0.1 4.1 0.0	0.25 0.76 0.76 0.830 1451 763 1.00 0.56 0.56 0.56 0.56 0.50 0.50 0.30 0.00 0.00 0.00 0.00 0.00
208 1240 550 186 1219 531 830 100 1.00 1.00 1.00 1.00 1.00 1.00 1.0	830 1451 763 100 100 100 0.56 0.56 0.56 13 39,6 31.3 31.3 6 0.0 0.0 0.0 30 17.2 18.5 39,6 33.4 35.3 11 1892 7 8
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1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0.56 0.56 0.56 0.56 0.56 0.50 0.56 0.50 0.56 0.50 0.56 0.50 0.50
10.0 2.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	39,0 31,3 31,3 00 00 22 41 50 00 00 00 30 17,2 18,5 39,6 33,4 35,3 11 D C D 1892 34,7 C C
10.2.6 0.7 32.2.6 13.4.5 0.0 5.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
169 11.6 69.0 13.6 30.2 42.7 39.6 F D F F C D D D 13.8 30.2 42.7 39.6 19.8 5.6 36.4 6 192.6 30.2 42.7 39.6 5.6 5.6 5.6 5.6 5.6 5.6 5.6 5.6 5.6 5	30 172 185 39.6 33.4 35.3 11 D C D 1892 34.7 37.7 7 8
219.9 35.6 344.6 192.6 30.2 42.7 39.6 1978	39.6 33.4 35.3 11 D C D C D 189.2 34.7 C C C C C C C C C C C C C C C C C C C
F D F F C D D 1978	1892 D C D 1892 34.7 C C C C C C C C C C C C C C C C C C C
1978 914	1892 34.7 C
16.2 75.8 F F F 6 7 7 13.8 6.2 18.8 51.0 37.7 38.3 19.6 4.2 6.0 '5 '5 6.0 '6 '4.2 11.4 38.3 15.8 48.0 8.3 28.2 17.4 0.0 2.1 0.0 0.0 0.1 4.1 0.0	7
1 2 3 4 5 6 7 138 622 188 510 37,7 38,3 19,6 42 60 *5 *5 60 *6 *4,2 9,6 41,2 *14 *46 11,6 *39 *15 11,4 38,3 15,8 48,0 8,3 28,2 17,4 0.0 2.1 0.0 0.0 0.1 4.1 0.0	7
1 2 3 4 5 6 7 1 3 6 22 18 510 37,7 38,3 19,6 142 60 '5 '5 60 '6 '42 '9,6 41,2 '14 '46 11,6 '39 '15 11,4 38,3 15,8 48,0 8,3 28,2 17,4 0.0 2.1 0.0 0.0 0.1 4,1 0.0	7
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13.8 62.2 18.8 51.0 37.7 38.3 19.6 14.2 6.0 °5 °5 6.0 °6 °4.2 19.6 41.2 °14 °46 11.6 °39 °15 11.4 38.3 15.8 48.0 8.3 28.2 17.4 0.0 2.1 0.0 0.0 0.1 4.1 0.0	7
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11.4 38.3 15.8 48.0 8.3 28.2 17.4 0.0 2.1 0.0 0.0 0.1 4.1 0.0 10.5 9	* 15
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	0.0
HCM 2010 LOS	

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HCM 2010 Signalized Intersection Summary 5: I-5 SB Ramps & Palomar Airport Rd.

Sumula	7100/03/017
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		441			44	¥C_				K.		*
Traffic Volume (veh/h)	0	890	260	0	790	1070	0	0	0	280	0	170
Future Volume (veh/h)	0	890	260	0	790	1070	0	0	0	280	0	170
Number	2	2	12	-	9	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/In	0	1845	1900	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	937	274	0	832	0				611	0	179
Adj No. of Lanes	0	3	0	0	2	-				2	0	_
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	m	0	3	3				m	0	c
Cap, veh/h	0	1430	417	0	1294	579				828	0	381
Arrive On Green	0.00	0.37	0.37	0.00	0.37	0.00				0.24	0.00	0.24
Sat Flow, veh/h	0	4039	1130	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	812	366	0	832	0				611	0	179
Grp Sat Flow(s),veh/h/ln	0	1679	1645	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	5.4	5.5	0.0	5.3	0.0				4.5	0.0	2.6
Cycle Q Clear(g_c), s	0.0	5.4	2.5	0.0	5.3	0.0				4.5	0.0	2.6
Prop In Lane	0.00		69.0	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1240	809	0	1294	579				828	0	381
V/C Ratio(X)	0.00	0.65	99.0	0.00	0.64	0.00				0.74	0.00	0.47
Avail Cap(c_a), veh/h	0	3719	1823	0	3883	1737				1825	0	840
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.1	7.1	0.0	7.1	0.0				9.5	0.0	8.8
Incr Delay (d2), s/veh	0.0	0.5	0.5	0.0	0.2	0.0				0.5	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.5	2.5	0.0	2.6	0.0				2.1	0.0	1.2
LnGrp Delay(d),s/veh	0.0	7.3	7.6	0.0	7.3	0.0				6.6	0.0	9.1
LnGrp LOS		Α	Α		Α					Α		Α
Approach Vol, veh/h		1211			832						790	
Approach Delay, s/veh		7.4			7.3						6.7	
Approach LOS		A			V						A	
Timer		2	3	4	2	9	7	∞				
Assigned Phs		2		4		9						
Phs Duration (G+Y+Rc), s		15.4		11.7		15.4						
Change Period (Y+Rc), s		5.4		2.1		5.4						
Max Green Setting (Gmax), s		30.0		14.5		30.0						
Max Q Clear Time (g_c+11), s		7.5		6.5		7.3						
Green Ext Time (p_c), s		1.8		0.1		1.3						
Intersection Summary												
HCM 2010 Ctrl Delay			8.0									
HCM 20101 OS			Ø									

Synchro 10 Report Page 8

HCM 2010 Signalized Intersection Summary 6: I-5 NB Ramps & Palomar Airport Rd.

Ex + Cumulative PM 08/03/2017

Movement	FB	FBT	FBR	WBI	WBT	WBR	NBI	NBT	NBR	SBI	SBT	SBR
Lane Configurations	*	***			***	N. N.		4	R. R.			
Traffic Volume (veh/h)	220	1250	0	0	1770	1000	06	0	240	0	0	0
Future Volume (veh/h)	220	1250	0	0	1770	1000	06	0	540	0	0	0
Number	2	2	12	-	9	16	3	00	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		96:0	1.00		96:0			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	224	1276	0	0	1806	1020	92	0	221			
Adj No. of Lanes	-	3	0	0	3	2	0	-	2			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	c	3	0	0	3	က	c	က	3			
Cap, veh/h	245	3676	0	0	2817	1489	321	0	231			
Arrive On Green	0.14	0.73	0.00	0.00	0.37	0.37	0.20	0.00	0.20			
Sat Flow, veh/h	1757	5202	0	0	5202	2662	1757	0	2656			
Grp Volume(v), veh/h	224	1276	0	0	1806	1020	92	0	551			
Grp Sat Flow(s), veh/h/ln	1757	1679	0	0	1679	1331	1757	0	1328			
Q Serve(g_s), s	18.9	13.7	0.0	0.0	44.3	48.3	9.9	0.0	30.0			
Cycle Q Clear(g_c), s	18.9	13.7	0.0	0.0	44.3	48.3	9.9	0.0	30.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	245	3676	0	0	2817	1489	351	0	531			
V/C Ratio(X)	0.91	0.35	0.00	0.00	0.64	69.0	0.26	0.00	1.04			
Avail Cap(c_a), veh/h	321	3676	0	0	2817	1489	351	0	531			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	19.0	19.0	1.00	1.00	1.00			
Upstream Filter(I)	0.80	0.80	0.00	0.00	89.0	89.0	1.00	0.00	1.00			
Uniform Delay (d), s/veh	63.7	7.3	0.0	0.0	34.5	35.8	50.7	0.0	0.09			
Incr Delay (d2), s/veh	12.1	0.2	0.0	0.0	0.8	1.8	0.1	0.0	49.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	10.2	6.5	0.0	0.0	20.8	18.2	3.2	0.0	14.6			
LnGrp Delay(d),s/veh	78.8	7.5	0.0	0.0	35.3	37.5	50.8	0.0	109.0			
LnGrp LOS	ш	⋖							۰			
Approach Vol, veh/h		1500			2826			643				
Approach Delay, s/veh		18.2			36.1			100.7				
Approach LOS		B			٥			ш.				
Timer		2	33	4	2	9	7	00				
Assigned Phs		2			2	9		00				
Phs Duration (G+Y+Rc), s		114.9			25.6	89.3		35.1				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		109.5			* 30	74.8		30.0				
Max Q Clear Time (g_c+l1), s		15.7			20.9	50.3		32.0				
Green Ext Time (p_c), s		2.3			0.0	3.9		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			39.0									
HCM 2010 LOS			Ω									

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HCM 2010 Signalized Intersection Summary 7: Paseo Del Norte & Palomar Airport Rd.

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Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	441		F	Ħ	¥	ř.	₹		F	₩.	
Traffic Volume (veh/h)	270	1250	180	240	2130	310	220	120	200	260	130	280
Future Volume (veh/h)	270	1250	180	240	2130	310	220	120	200	260	130	280
Number	2	2	12	-	9	16	က	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		96.0	1.00		96.0
Parking Bus, Adj	1.00	1.00	1.00	1:00	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	281	1302	188	250	2219	323	229	125	208	271	135	292
Adj No. of Lanes	2	3	0	2	4	-	2	2	0	2	2	0
Peak Hour Factor	96:0	96:0	96:0	96:0	96:0	96:0	96:0	96.0	96.0	96.0	96.0	96.0
Percent Heavy Veh, %	3	3	3	3	က	3	က	3	3	c	3	c
Cap, veh/h	325	1460	211	799	3052	906	274	332	285	341	375	323
Arrive On Green	0.10	0.33	0.33	0.47	96.0	96:0	0.08	0.19	0.19	0.10	0.21	0.21
Sat Flow, veh/h	3408	4428	636	3408	6346	1558	3408	1752	1507	3408	1752	1512
Grp Volume(v), veh/h	281	786	503	250	2219	323	229	125	208	271	135	292
Grp Sat Flow(s),veh/h/ln	1704	1679	1711	1704	1586	1558	1704	1752	1507	1704	1752	1512
Q Serve(g_s), s	12.2	41.9	41.9	8.9	6.7	0.5	6.6	9.3	19.5	11.7	8.6	28.2
Cycle Q Clear(g_c), s	12.2	41.9	41.9	8.9	6.7	0.5	6.6	9.3	19.5	11.7	8.6	28.2
Prop In Lane	1.00		0.37	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	325	1107	264	799	3052	906	274	332	285	341	375	323
V/C Ratio(X)	0.87	0.89	0.89	0.31	0.73	0.36	0.83	0.38	0.73	0.80	0.36	0.00
Avail Cap(c_a), veh/h	329	1298	199	199	3052	906	348	456	392	382	473	408
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.85	0.85	0.85	0.41	0.41	0.41	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.99	47.7	47.7	32.3	1.6	0.4	0.89	53.1	57.2	0.99	50.2	57.4
Incr Delay (d2), s/veh	14.6	9.5	16.6	0.0	9.0	0.5	10.8	0.3	2.3	∞ .∞	0.2	17.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	20.9	22.4	3.2	2.3	0.3	2.1	4.5	8.3	5.9	4.8	13.4
LnGrp Delay(d),s/veh	81.5	57.2	64.3	32.4	2.3	0.8	78.7	53.4	59.5	74.8	50.4	75.0
LnGrp LOS	ш	ш	ш	U	A	⋖	ш		ш	ш		Ш
Approach Vol, veh/h		1771			2792			295			869	
Approach Delay, s/veh		63.1			8.			0.99			70.2	
Approach LOS		ш			A			ш			ш	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	1	2	3	4	2	9	7	80				
Phs Duration (G+Y+Rc), s	41.2	55.5	16.3	37.1	18.5	78.1	20.0	33.4				
Change Period (Y+Rc), s	0.9	9 *	* 4.2	2.0	* 4.2	0.9	2.0	* 5				
Max Green Setting (Gmax), s	16.8	* 58	* 15	40.5	* 16	29.0	16.8	* 39				
Max Q Clear Time (g_c+I1), s	8.8	43.9	11.9	30.2	14.2	8.7	13.7	21.5				
Green Ext Time (p_c), s	0.3	9.6	0.1	1.4	0.1	21.4	0.2	1.3				
Intersection Summary												
HCM 2010 Ctrl Delay			36.3									
HCM 2010 LOS			٥									
Notes												

Synchro 10 Report Page 11

HCM 2010 Signalized Intersection Summary 8: Armada Dr. & Palomar Airport Rd.

Ex + Cumulative PM 08/03/2017

Ex + Cumulative PM 08/03/2017

Movement EB			EBR 160 100 00 00 00 00 00 00 00 00 00 00 00 0	WBL MBL	WBT 444 2210 2210 2210 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	MBR 150 150 150 150 150 150 150 150 150 150	NBL 360 360 360 360 11.00 11.00 11.00 375 2 2 2 2 2 3375 375 1757 1757 1760 1160 382	NBT 60 60 60 88 88 80 00 00 00 00 00 00 00 00 00 00	NBR 260 260 260 0 0 0 0.05 1.00 1845 312 2 2 0.96 33 374 0.13	SBL 220 220 220 7 0 1.00	70 70 70 00	SBR 220 220 220 14 0 0 0.05 1.00 1845 229
140 141			160 160 12 0 0 0 0 0 0 0 109 167 167 167 1557 1557 167 1557 1557 167 167 167 167 167 167 167 167 167 16	310 310 10 1.00 1.00 1.00 323 323 333 1757 27.2 27.2 27.2 27.2 27.2 3319	444 2210 2210 6 0 1.00 1.00 1.845 2302 3 3 0.96 3 3 2159 64.3 64.3 64.3	150 150 160 009 1100 1145 1154 1157 1157 000 000 1100 882 000 000	360 360 360 360 11.00 11.00 11.00 375 2 2 2 2 2 3375 3375 1757 1757 160 1160 382	60 60 60 60 60 60 60 60 60 60 60 60 60 6	260 260 260 260 0 0 0 0.95 1.00 1845 312 2 2 0.96 3374 0.13	220 220 7 7 0 1.00	4 0 4 0 8	220 220 220 14 0 0.95 1.00 1845
190 1370 160 310 2210 150 360 60 260 220 70 190 1370 160 310 2210 150 360 60 260 220 70 190 1370 160 310 2210 150 360 60 260 220 70 100 100 100 100 100 100 100 100 100 100 1010 100 100 100 100 100 100 100 100 100 102 103 1845 18			160 160 170 1845 167 167 167 167 167 167 167 167 167 167	310 310 1.00 1.00 1.00 1.00 323 333 1.00 323 1.757 27.2 27.2 27.2 27.2 27.2	2210 6 6 0 0 1.00 1.845 2.302 3 0.96 3 2.159 64.3 64.3 64.3	150 150 160 0 0.99 1.00 1845 156 156 156 157 157 157 157 150 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	360 360 360 360 1.00 1.00 1.00 1.00 375 375 375 0.14 375 1757 1757 160 1.00 382	60 60 60 60 1845 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	260 260 260 0 0 0 0.95 1.00 1845 312 2 2 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	220 220 7 7 0 1.00	0 0 4 0 8	220 220 220 14 0 0.95 1.00 1845 229
190 1370 140 310 2210 150 360 60 260 220 70 100			160 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	310 1.00 1.00 1.00 1.00 3.23 3.31 0.36 1.757 3.23 3.23 1.757 2.7.2 2.7.2 2.7.2 2.7.2 2.7.2 2.7.2 1.00 3.31 3.33 3.33 3.33 3.34 3.35 3.36 3.36 3.37	2210 6 6 0 0 1.00 1.845 2302 3 3 3 0.96 5036 5036 5036 64.3 64.3	150 0 0.99 1.00 1845 156 156 157 1557 0.0 0.0 1.00 882 0.86 1557 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	360 3 3 1.00 1.00 1.00 1.00 3.75 3.32 3.31 3.51 1.75 1.75 1.00 1.00 3.82	0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	260 0 0 0.95 1.00 1845 312 2 2 0.96 3374 0.13	220 7 1.00 1.00	0 4 0	220 14 0 0.95 1.00 1845 229
5			12 0 0.99 1.000 1845 167 167 167 1557 1557 1557 1557 167 167 167 167 167 167 167 167 167 16	1.00 1.00 1.00 1.845 323 3 333 319 0.36 3323 1.757 27.2 27.2 27.2 27.2 27.2	6 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	16 0.09 1.00 1845 15 15 10.06 3 3 882 0.86 1155 0.00 0.00 1.00 1.00 882	3 1.00 1.00 1.00 1.00 1.00 3.75 3.82 0.11 3.51 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	1.00 1.00 0.09 0.00 0.00 0.00 0.00 0.00	18 0 0.095 1.000 1845 312 2 0.96 3 374 0.13	1.00	4 0 8	14 0 0.95 1.00 1845 229
100			0.099 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0 1.00 1.00 1.845 323 1 0.96 3 319 0.36 1.757 1.757 27.2 27.2 27.2 27.2 27.2 27.2	1.00 1.00 1.845 2.302 3 0.96 3 2.159 0.86 2.302 1.679 64.3 64.3	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.00 1.00 1.00 1.00 1.00 3.3 3.2 0.11 3.514 3.514 1.00 1.00 1.00 3.00 1.00 1.00 1.00 3.00 3	100 100 000 000 000 000 000 000 000 000	0.05 1.00 1845 312 2 0.96 3 374 0.13	0 1:00	0 6	0.95 1.00 1845 229
1,00			0.099 1845 167 167 167 168 1829 0.85 1557 167 167 167 167 160 100 100 100 100 100 100 100 100 100	1.00 1.00 1.00 3.23 1.09 3.31 3.31 3.31 3.32 3.32 3.32 3.33 1.75 27.2 27.2 27.2 1.00	1.00 1845 2302 3 0.96 3 2159 0.86 5036 2302 1679 64.3 64.3	0.99 11.00 11.00 11.00 11.00 11.00 11.00 11.00 11.00 11.00 11.00 11.00 11.00 11.00	1.00 1.00 1.00 1.00 2 2 0.96 3 3 3.32 0.11 3.514 1.60 1.60 1.60	1.00 1.00 0 0.06 0.00 0.00 0.00 0.00 0.0	0.95 1.00 1.00 3.12 0.96 3.374 0.13	1.00	5	0.95 1.00 1845 229
100			1.00 167 167 167 167 1657 11557 11557 2.66 2.66 2.66 1.00	1.00 1845 323 10.96 3 319 0.36 1.757 27.2 27.2 27.2 1.00 319	1.00 1.845 2.302 3 0.96 3 2.159 0.86 5.036 5.036 64.3 64.3	1.00 1845 156 156 0.96 3 882 0.86 1557 1557 0.0 0.0 0.0 0.0 882 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	1.00 1845 375 2 0.96 3 3 382 3514 3514 16.0 16.0 16.0	1.00 1.00 0 0.96 0 0.00 0 0.00 0 0.00	1.00 1845 312 2 0.96 3 374 0.13	1.00	5	1.00
1845 1845			1845 167 10.96 3 829 0.85 1157 1167 1100 829 0.20	1845 323 1 0.96 3 319 0.36 1757 27.2 27.2 27.2 27.2 1.00 319	1845 2302 3 0.96 2159 0.86 5036 1679 64.3 64.3	1845 156 156 10.96 3 882 0.86 1557 156 1557 0.0 0.0 0.0 0.0 882 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	375 375 375 332 382 0.11 3514 375 1757 16.0 1.00	0.00 0.00 0.00 0.00 0.00 0.00	312 312 0.96 3 374 0.13		3.	1845
198 147 167 323 2302 156 315 20 312 229 73 198 147 167 323 2302 156 315 20 314 229 73 206 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 31 3 3 3 3 3 3 3 3 3			167 10.96 3 829 0.85 11557 1167 1150 2.6 2.6 1.00 829	323 3 319 0.96 3 319 0.36 1757 27.2 27.2 27.2 27.2 27.2 1.00 319	2302 3 0.96 3 2159 0.86 5036 5036 64.3 64.3	156 10.96 3 882 0.86 11557 11557 0.0 0.0 1.00 882	375 2 0.96 3 382 382 0.11 3514 375 1757 16.0 1.00	0.00 0.	312 2 0.96 374 0.13	1845	1845	229
2 3 1 3 1 2 0 2 2 1 2 3			0.96 3 829 0.85 11557 11557 2.6 2.6 2.6 1.00 829 0.20	0.96 3 319 0.36 1.757 1.757 27.2 27.2 27.2 27.2 319	3 0.96 3 2159 0.86 5036 2302 1679 64.3 64.3	0.96 0.88 0.86 1557 1557 0.0 0.0 1.00 882 0.0	2 0.96 3 382 0.11 3514 375 1757 160 160 160	0.00 0.	2 0.96 3 374 0.13	229	73	,
1,00			3 829 0.85 1157 1157 1257 2.6 2.6 1.00 829 0.20	3 319 0.36 1.757 323 27.2 27.2 27.2 1.00 319	3 2159 0.86 0.86 5036 2302 1679 64.3 64.3	0.0 0.0 0.0 0.0 0.0 0.0 1.00 882 882	3 382 0.11 3514 375 1757 16.0 1.00 382	0.00 0.	374	2	- 3	
3 3			3 829 0.85 1557 167 1557 2.6 2.6 1.00 829 0.20	319 0.36 1757 323 1757 27.2 27.2 27.2 11.00 319	2159 0.86 5036 2302 1679 64.3 64.3	882 0.86 1557 156 1557 0.0 0.0 1.00 882	382 0.11 3514 375 1757 16.0 1.00 382	0.00 0 0.00 0.00 0.00	374	0.96	0.96	0.90
358 2131 829 319 219 882 32 0 314 60 1264 3408 5036 1557 1757 5036 1557 3514 0 0 0 314 0.15 3408 5036 1557 1757 5036 1557 3514 0 0 0 0 13 0.14 0 15 1704 1427 167 323 2302 156 375 0 312 229 73 1704 1679 1557 1757 1699 1557 1757 0 0 1460 1013 0 146 6.6 15.1 2.6 27.2 64.3 0.0 16.0 0.0 11.1 9.3 5.2 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	3,000	2131 0.85 5036 1427 1679 15.1 15.1 2131 0.67	829 0.85 1557 167 1557 2.6 2.6 1.00 829 0.20	319 0.36 1757 323 1757 27.2 27.2 27.2 1.00 319	2159 0.86 5036 2302 1679 64.3 64.3	0.86 1557 1557 1557 0.0 0.0 1.00 882	382 0.11 3514 375 1757 16.0 1.00 382	0.00	0.13	2	200	200
10.33 0.88		0.85 5036 1427 1679 15.1 15.1 2131 0.67	1.00 829 0.20	0.36 323 1757 27.2 27.2 27.2 1.00 319	0.86 5036 2302 1679 64.3 64.3	1557 1567 1557 0.0 0.0 1.00 882 0.18	375 1757 16.0 1.00 382	0.0	0.13	46/	284	231
3408 5030 1537 1737 5030 1537 314 0 0 2912 299 1845 1704 1679 1537 1757 1679 1587 1757 0 1486 1704 1845 1704 1679 1557 1757 1679 1557 1757 1757 1679 1557 1757 1757 1757 1757 1757 1757 17		1427 1679 15.1 15.1 2131 0.67	1557 1557 2.6 1.00 829 0.20	323 1757 27.2 27.2 1.00 319	2302 1679 1679 64.3 64.3	156 1557 0.0 0.0 1.00 882	375 1757 16.0 1.00 382	0.0		0.14	0.15	0.15
1784 1427 167 323 2392 158 158 148 1		1427 1679 15.1 15.1 2131 0.67	167 1557 2.6 2.6 1.00 829 0.20	323 1757 27.2 27.2 1.00 319	2302 1679 64.3 64.3 2159	1557 0.0 0.0 1.00 882 0.18	375 1757 16.0 16.0 382	0.0 0.0	7167	3408	1845	149/
1704 1517 1757 1679 1557 1757 1767 1486 1704 1845 1566 151 2.6 272 64.3 0.0 160 0.0 11.1 9.3 5.2 6.6 15.1 2.6 272 64.3 0.0 160 0.0 11.1 9.3 5.2 2.6 15.1 2.6 272 64.3 0.0 160 0.0 1.1 9.3 5.2 2.6 1.5 1.0		1679 15.1 15.1 2131 0.67	1557 2.6 2.6 1.00 829 0.20	1757 27.2 27.2 1.00 319 1.01	1679 64.3 64.3 2159	1557 0.0 0.0 1.00 882 0.18	1757 16.0 1.00 382	0.0	312	229	73	229
66 15,1 2.6 27,2 64,3 0.0 16,0 0.0 11.1 9,3 5.2 1.0 1.0 1.00 1.00 1.00 1.00 1.00 1.00	Ę	15.1 15.1 2131 0.67	2.6 1.00 829 0.20	27.2 27.2 1.00 319 1.01	64.3 64.3 2159	0.0 0.0 1.00 882	16.0 16.0 1.00 382	0.0	1486	1704	1845	1497
66 15,1 2.6 272 643 0.0 15.0 0 11.1 93 5.2 100 100 100 100 100 100 100 100 100 100	Ę	15.1 2131 0.67	2.6 1.00 829 0.20	27.2 1.00 319 1.01	2159	0.0 1.00 882 0.18	16.0	0.0	11.1	9.3	5.2	16.5
100	£	2131	1.00 829 0.20	319	2159	1.00 882 0.18	382		11.1	9.3	5.2	16.5
258 2131 829 319 2159 882 382 0 0 3/4 467 268 558 2131 829 319 2159 882 382 0 0 818 467 492 200 2.00 2.00 2.00 2.00 2.00 1.00 1.00 1	E	0.67	0.20	1.01	107	0.18	382		00.1	1.00	700	9.1
528 2131 8 467 492 5200 2.00 2.00 2.00 2.00 2.00 1.00 0.00 444 7.8 4.5 4.7 8.0 0.0 0.0 0.0 1.00 1.00 444 7.8 4.5 4.7 8.0 0.0 0.0 1.00 1.00 1.00 444 7.8 4.5 4.7 8.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 60 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.		0.07	0.20	-0.			000	0 0	3/4	40/	787	731
200 2.01 2.02 2.03 2.00 2.00 2.00 1.00 1.00 1.00 1.00 0.01 0.0 0.01 0.0 0.0		2121	07.20	210	2150	000	383	0.00	0.03	747	707	200
0.71 0.71 0.71 0.09 0.09 0.09 1.00 0.00 1.00 1.00 1.0		2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
444 7.8 4.5 47.8 10.7 3.6 66.7 0.0 33.6 59.9 55.9 0.1 1.2 0.4 18.7 31.0 0.0 41.1 0.0 1.9 0.3 0.2 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		0.71	0.71	0.09	0.09	0.09	1.00	0.00	1.00	1.00	1.00	1.00
01 12 04 187 310 00 411 00 19 03 02 00 00 01 01 12 04 187 314 00 010 00 00 00 31 68 11 147 334 00 01 355 602 560 D A A F F A F B B E E 1 126 B D B D B B B B B B B B B B B B B B B		7.8	4.5	47.8	10.7	3.6	1.99	0.0	33.6	59.9	55.9	32.8
00 00 00 01 00 00 00 00 00 00 00 00 00 0		1.2	0.4	18.7	31.0	0.0	41.1	0.0	1.9	0.3	0.2	25.5
3.1 6.8 1.1 14.7 3.4 0.7 9.9 0.0 4.7 4.4 2.7 44.5 9.0 4.9 6.6 4.7 3.7 10.78 0.0 35.5 6.0 56.0 56.0 56.0 56.0 56.0 56.0 56		0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
445. 9 40. 449 605. 411, 3.7 10178 0.0 353 90.2 20.0 1792 1792		0.0	_ <	14.7	33.4	0.7	9.9	0:0	4.7	4.4	7.7	0.5
1792 7781 687 D E 12.6 12.6 12.6 12.6 12.6 12.6 12.6 12.6	y(a),s/ven	9.0	4.9	9.00	41./	3.7	87/01	0.0	35.5	2.09	26.0	58.4
1772 2.801 0681 176 176 176 176 176 176 176 176 176 17		A COLT	∢	-	7 070	∢	-	107	ما	ال	1 5	-
1 2 3 4 5 6 7 8 31.4 69.5 21.0 28.1 30.6 70.3 25.6 23.6 1.5 2.2 46.6 1.1 18.0 18.5 8.6 66.3 11.3 11.3 0.0 7.0 0.0 0.7 0.0 0.0 0.2 0.7 38.6 6.3 11.3 11.3 38.6 6.3 11.3 11.3 5.0 0.7 0.0 0.0 0.2 0.7	Approach Dolay skich	12 6			47 E			75.0			50 0	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 31.4 69.5 21.0 28.1 30.6 70.3 25.6 *4.2 6.0 *4.7 *5 6.0 *6 *5),s 292 77.1 18.0 18.5 86 66.3 11.3 0.0 7.0 0.0 0.7 0.0 0.0 0.0	Approach LOS	B B			0			Э.			ш	
31.4 69.5 21.0 28.1 30.6 70.3 25.6 7.1 2.2 3.4 5 6.7 70.3 25.6 7.2 27.4 66.6 716 740 9.5 76.4 715 7.2 20.2 77.1 18.0 18.5 8.6 66.3 11.3 8.6 5.7 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8	Timor	c	C	_	Ľ	4	7	0				
314 69.5 21.0 28.1 30.6 70.3 25.6 7.3 2.5 7.0 28.1 30.6 70.3 25.6 7.5 2.2 7.1 46.6 16 40 9.5 60 6.3 11.3 7.5 20.0 7.0 0.0 0.7 0.0 0.0	Accionad Dhe	7 (0 0	+ <	ם ע	0 4	, _	a				
8 272 46.6 '4.7 '5 60 '6 '5 5 8 272 46.6 '16 '40 9.5 '64 '15 4 9 15 4 9		69.5	21.0	28.1	30.6	70.3	25.6	23.6				
s · 27 · 46.6 · 16 · 40 · 9.5 · 6.4 · 15 s 292 · 17.1 · 18.0 · 18.5 · 8.6 · 66.3 · 11.3 o.0 · 7.0 · 0.0 · 0.7 · 0.0 · 0.0 · 0.2 38.6 D		0.9	* 4.7	* 5	0.9	9 *	* 5	4.7				
5 292 17.1 18.0 18.5 8.6 66.3 11.3 0.0 7.0 0.0 0.7 0.0 0.0 0.2 38.6 D	S	46.6	* 16	* 40	9.5	* 64	* 15	41.3				
38.6 D	S	1.7	18.0	18.5	9.0	66.3	11.3	13.1				
		0.7	0.0	0.7	0.0	0.0	0.7).				
	Intersection Summary											
	HCM 2010 Ctrl Delay		38.6									
	HCM 2010 LOS		n									

N:\2772\Analysis\Intersections\Synchro\8. Ex +C PM.syn

HCM 2010 Signalized Intersection Summary 9: Hidden Valley Rd. & Palomar Airport Rd.

Ex + Cumulative PM 08/03/2017

Comparations		1	†	~	>	ţ	4	•	—	•	۶	→	*
wething 80 1999 130 110 2570 80 160 40 90 200 50 90 1999 130 110 2570 80 160 40 90 200 50 90 1999 130 110 2570 80 160 40 90 200 50 90 1999 130 110 2570 80 160 100 100 100 100 100 100 100 100 10	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
hypology 130 110 2570 80 160 40 90 200 50 vehhy 80 1990 130 110 2570 80 160 40 90 200 50 vehhy 80 1990 130 110 2570 80 160 40 90 200 50 90 1990 130 110 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lane Configurations	je-	444	¥C	je-	444		jr.	æ		<u>r</u>	+	¥C
hthin 80 1990 130 110 2570 80 160 40 90 200 50 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Traffic Volume (veh/h)	8	1990	130	110	2570	80	160	40	06	200	20	210
h	Future Volume (veh/h)	8	1990	130	110	2570	8	160	40	06	200	20	210
ppf) 1.00	Number	ഹ	7	12	- -	9 0	92	m	∞ α	9	_	4 0	14
The color The	Ped-Bike Adi(A phT)	9	0	000	9	0	0 %	100	0	0 05	100	0	0 96
hrwin 1845 <t< td=""><td>Parking Bus. Adi</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td></t<>	Parking Bus. Adi	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
ehth 85 2117 138 117 2734 85 170 43 96 213 53 s	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1845
1	Adj Flow Rate, veh/h	82	2117	138	117	2734	82	170	43	96	213	53	223
Column C	Adj No. of Lanes	-	co	_	-	m	0	_	-	0	-	_	_
(eh, % 3 <td>Peak Hour Factor</td> <td>0.94</td>	Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
1757 625 825 826 150 68 152 211 330 1757 6036 1550 1757 604 1757 604 1757 604 1757 6036 1550 1757 604 1757 604 1757 604 1757 604 1757 604 1757 604 1757 604 1757 604 1757 604 1757 605 1757 1845 1757 605 1757 1845 1757 605 1757 1845 1757 605 1757 1845 1757 1845 1757 605 1757 1845 1757 175	Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
1757 50.36 150.6 150.6 101.6	Cap, veh/h	47	2254	828	250	2858	88	150	89	152	211	330	269
1757 5036 1550 1757 5014 154 1757 490 1095 1757 1845 1445 1446 1757 138 117 132 175 1948 175 1445 175 145 175 145 175 145 175 145 175 145 175 145 175 145 175 145 175 145 175 145 175 145 175 145 175	Arrive On Green	0.01	0.15	0.15	0.28	1.00	1.00	0.09	0.14	0.14	0.12	0.18	0.18
vehyn 86 2117 138 117 1821 998 170 0 139 213 53 vehyn 1757 679 1811 1757 0 136 127 181 136 127 1845 136 127 1845 136 127 1845 136 128 0 0 128 0 128 0 124 180 3.6 2 2 186 136 3.6	Sat Flow, veh/h	1757	2036	1550	1757	5014	154	1757	490	1095	1757	1845	1504
vehirlin 1757 1679 1550 1757 1679 1811 1757 0 1866 1757 1845 1767 678 1811 1757 0 1866 1757 1845 1768 1767 1845 1768 1768 1768 1769 1768 1769 1769 1769 1769 1769 1769 1769 1769	Grp Volume(v), veh/h	82	2117	138	117	1821	866	170	0	139	213	53	223
1, veh/h 46 82 00 00 128 00 124 180 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6	Grp Sat Flow(s),veh/h/In	1757	1679	1550	1757	1679	1811	1757	0	1586	1757	1845	1504
4.0 62.4 4.6 8.2 0.0 0.0 12.8 0.0 12.4 18.0 3.6 3.6 3.6 3.6 3.6 3.7 3.0 4.7 22.54 8.8 250 1913 103 0.09 1.00 0.06 1.00 3.0 3.1 3.0	Q Serve(g_s), s	4.0	62.4	4.6	8.2	0.0	0.0	12.8	0.0	12.4	18.0	3.6	21.4
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Cycle Q Clear(g_c), s	4.0	62.4	4.6	8.2	0.0	0.0	12.8	0.0	12.4	18.0	3.6	21.4
47 2254 828 250 1913 1032 150 0 220 211 330 1.81 0.94 0.17 0.47 0.95 0.97 1.13 0.00 0.01 0.10 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.01 1.00	Prop In Lane	1.00		1.00	1.00		0.09	1.00		69.0	1.00		1.00
1.81 0.94 0.17 0.47 0.95 0.97 1.13 0.00 0.63 1.01 0.16 4.7 2270 833 2.56 1913 1032 150 0.359 2.11 4.80 0.33 0.33 0.30 2.00 2.00 2.00 1.00 1.00 1.00 0.67 0.67 0.67 0.20 0.20 1.00 1.00 1.00 1.00 0.68 0.10 0.20 0.20 0.20 0.20 0.10 1.00 1.00	Lane Grp Cap(c), veh/h	47	2254	828	250	1913	1032	150	0	220	211	330	569
47 2270 833 256 1913 1032 150 359 211 480 0.33 0.33 0.33 2.00 2.00 1.00	V/C Ratio(X)	1.81	0.94	0.17	0.47	0.95	0.97	1.13	0.00	0.63	1.01	0.16	0.83
0.33 0.33 0.33 2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	47	2270	833	250	1913	1032	120	0	326	211	480	391
0.67 0.67 0.67 0.20 0.20 1.00 0.00 1.00 1.00 1.00 1.00	HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
74.3 61.9 10.7 49.0 0.0 68.6 0.0 61.0 66.0 52.1 6 74.3 61.9 10.7 49.0 0.0 0.0 0.0 0.1 0.0 1.1 64.7 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	0.67	0.67	0.67	0.20	0.20	0.20	1.00	0.00	1.00	1.00	1.00	1.00
4770 67 03 0.1 3.2 68 114.0 0.0 1.1 64.7 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	74.3	61.9	10.7	49.0	0.0	0.0	9.89	0.0	61.0	0.99	52.1	59.4
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	417.0	6.7	0.3	0.1	3.2	8.9	114.0	0.0	7	64.7	0.1	6.3
7.4 305 2.0 4.0 0.8 2.0 11.0 0.0 55 12.5 1.9 491.4 686 10.9 49.1 3.2 6.8 1826 0.0 62.1 130.7 52.2 6 5.240 2936 A F F E D 5.240 80.5 6.2 128.4 92.6 1.2 3 4 5 6 7 8 1.2 3 4 5 6 7 8 1.2 3 4 5 6 7 8 1.2 3 4 5 6 7 8 1.2 3 4 5 6 7 8 1.2 3 4 5 6 7 8 1.2 4.4 14.8 23.4 6.0 2.0 2.0 14.4 0.0 2.7 0.0 0.5 0.0 18.1 0.0 0.4 48.0	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
491.4 686 10.9 49.1 3.2 6.8 1826 0.0 62.1 130.7 52.2 1	%ile BackOfQ(50%),veh/ln	7.4	30.5	2.0	4.0	0.8	2.0	11.0	0.0	2.5	12.5	1.9	9.4
F E B D A A F F E F F 2340	LnGrp Delay(d),s/veh	491.4	9.89	10.9	49.1	3.2	8.9	182.6	0.0	62.1	130.7	52.2	65.7
2340 2936 309 80.5 6.2 128.4 1 2 3 4 5 6 7 8 7 1 2 3 4 5 6 7 8 71 2 3 4 5 6 7 8 72.4 73.1 17.0 32.5 9.0 91.5 23.0 26.5 10.5 6.8 73 39.0 40 26.0 18.0 34 10.2 64.4 14.8 23.4 6.0 2.0 20.0 14.4 0.0 2.7 0.0 0.5 0.0 18.1 0.0 0.4 48.0	LnGrp LOS	-	ш			⋖	⋖	4		ш	-		س
80.5 6.2 128.4 F A S 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 27.4 73.1 170 32.5 90 91.5 23.0 26.5 60 6 42 5.7 5.0 6.0 5.0 5.7 105 6.8 13 39.0 40 26.0 18.0 34 102 64.4 14.8 23.4 6.0 2.0 20.0 14.4 0.0 2.7 0.0 0.5 0.0 18.1 0.0 0.4 48.0	Approach Vol, veh/h		2340			2936			309			489	
1	Approach Delay, s/veh		80.5			6.2			128.4			97.6	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 274 731 170 325 90 915 23.0 6.0 6 742 5.7 5.0 60 5.0 105 68 13 39.0 4.0 26.0 18.0 102 644 148 234 6.0 20 20.0 0.0 2.7 0.0 0.5 0.0 18.1 0.0 0.0 48.0	Approach LOS		ш.			¥			ш.			L.	
274 731 170 32.4 5 6 7 260 6 76 732 340 515 23.0 105 68 13 39.0 40 26.0 18.0 100 27 0.0 0.5 0.0 18.1 0.0 48.0 9.1 8.1 8.2 8.1 8.1 8.1 0.0	Timer	1	2	3	4	2	9	7	8				
274 731 170 325 90 915 230 60 '6 '42 57 50 60 5.0 10.2 644 148 234 6.0 2.0 20.0 0.0 2.7 0.0 0.5 0.0 18.1 0.0 48.0	Assigned Phs	_	2	3	4	2	9	7	8				
60 '6 '42 57 50 60 5.0 '10.5 '68 '13 39.0 4.0 26.0 18.0 10.2 64.4 14.8 23.4 6.0 2.0 20.0 0.0 2.7 0.0 0.5 0.0 18.1 0.0 D.5 0.0 0.5 0.0 18.1 0.0 D.5 0.0 0.5 0.0 18.1 0.0 D.5	Phs Duration (G+Y+Rc), s	27.4	73.1	17.0	32.5	0.6	91.5	23.0	26.5				
105 '68 '13 390 40 260 180 102 644 148 234 6.0 2.0 20.0 0.0 2.7 0.0 0.5 0.0 18.1 0.0 48.0 D	Change Period (Y+Rc), s	0.9	9 *	* 4.2	2.7	2.0	0.9	2.0	* 5.7				
102 644 148 234 60 20 200 1 0.0 2.7 0.0 0.5 0.0 18.1 0.0 48.0 D	Max Green Setting (Gmax), s	10.5	89 _*	* 13	39.0	4.0	26.0	18.0	* 34				
0.0 2.7 0.0 0.5 0.0 18.1 0.0 48.0 D	Max Q Clear Time (g_c+11), s	10.2	64.4	14.8	23.4	0.9	2.0	20.0	14.4				
	Green Ext Time (p_c), s	0.0	2.7	0.0	0.5	0.0	18.1	0.0	0.4				
	Intersection Summary												
	HCM 2010 Ctrl Delay			48.0									
Notes	HCM 2010 LOS			D									
	Notes												

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Synchro 10 Report Page 15

HCM 2010 Signalized Intersection Summary 10: College Blvd. & Palomar Airport Rd.

Ex + Cumulative PM 08/03/2017

Comparison Com		1	†	-	/	ļ	1	•	—	4	۶	→	*
14	Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
180 1320 280 270 1570 100 190 240 160 40 420 180 1320 280 270 1570 100 190 240 160 40 420 180 1320 280 270 1570 100 190 240 160 40 420 100 1	Lane Configurations	£	444	R.	K	444	¥C.	K.	*	R.	*	*	×.
180 1320 280 270 1670 100 190 240 160 40 420 100	Traffic Volume (veh/h)	180	1320	280	270	1670	100	190	240	160	40	420	570
5 2 12 1 6 16 3 8 18 7 4 100 0 <td>Future Volume (veh/h)</td> <td>180</td> <td>1320</td> <td>280</td> <td>270</td> <td>1670</td> <td>100</td> <td>190</td> <td>240</td> <td>160</td> <td>40</td> <td>420</td> <td>570</td>	Future Volume (veh/h)	180	1320	280	270	1670	100	190	240	160	40	420	570
100	Number	2	2	12		9	16	3	∞	18	7	4	14
100	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
100 100	Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
1845 1845	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
202 1483 315 303 1876 112 213 270 180 45 472 2 3 1 2 3 <td>Adj Sat Flow, veh/h/ln</td> <td>1845</td>	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
2 3 1 2 3 1 2 1	Adj Flow Rate, veh/h	202	1483	315	303	1876	112	213	270	180	42	472	640
0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89	Adj No. of Lanes	2	3	-	2	m	-	2	2	-		_	-
3 3	Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
411 2058 641 355 1994 588 223 110 492 59 504 3024 3082 0.10 0.38 0.38 0.38 0.07 0.32 0.03 102 0.03 0.03 100 0.32 0.03 0.03 103	Percent Heavy Veh, %	3	3	3	3	3	က	3	3	3	3	3	3
0.24 0.82 0.82 0.10 0.38 0.38 0.07 0.32 0.32 0.03 0.27 202 1483 156 3.08 1366 136 156 1405 156 1405 156 1405 156 1757 1845 1757 1845 1757 1846 1757 1845 1757 1845 1757 1846 1757 1846 1757 1846 1757 1846 1757 1846 1757 1846 1760 100 100 100	Cap, veh/h	411	2058	641	322	1904	288	223	1110	492	26	504	613
3408 5686 1568 3408 5686 1568 3408 1569 1568 3408 1569 156 170 180 157 1845 175 1846 175 1848 175 1846 175 1848 175 1845 175 1846 175 1845 175 1845 175 1845 175 1845 175 1845 175 1845 175 1845 175 1845 175 1845 175 1845 175 1845 175 1845 175 1845 175 1845 175 1845 175 175 175 175 175 175 175 175 175 175 176	Arrive On Green	0.24	0.82	0.82	0.10	0.38	0.38	0.07	0.32	0.32	0.03	0.27	0.27
202 1483 315 303 1876 112 213 270 180 472 1704 1679 1568 1704 1679 156 1704 1757 186 173 184 184 184 177 186 173 184 185 177 186 173 186 177 186 184 184 184 184 184 185 186 184 185 184 185 184 185 184 185 184 185 186 184 185 186 184 185 186 184 185 186 184 185 186 187 186 184 185 185 186 187 186 187 186 186 187 186 187 186 187 186 187 186 187 186 187 186 187 186 187 186 187 186 187 187	Sat Flow, veh/h	3408	5036	1568	3408	5036	1556	3408	3505	1553	1757	1845	1551
1704 1679 1568 1704 1679 1556 1704 1752 1553 1757 1845 177 1946 6.9 131 554 6.0 9.3 86 134 38 375 1.00	Grp Volume(v), veh/h	202	1483	315	303	1876	112	213	270	180	45	472	640
7.7 19.6 6.9 13.1 55.4 6.0 9.3 8.6 13.4 3.8 37.5 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Grp Sat Flow(s),veh/h/ln	1704	1679	1568	1704	1679	1556	1704	1752	1553	1757	1845	1551
7.7 19.6 6.9 13.1 55.4 6.0 93 8.6 13.4 38 37.5 4.1 1.00 4.1 1.00	Q Serve(g_s), s	7.7	19.6	6.9	13.1	55.4	0.9	9.3	9.8	13.4	3.8	37.5	41.0
100 1.00 1.00 1.00 1.00 1.00 1.00 1.00		7.7	19.6	6.9	13.1	55.4	0.9	9.3	9.6	13.4	3.8	37.5	41.0
411 2058 641 355 1904 588 223 1110 492 59 504 489 2058 641 920 019 096 024 024 037 076 094 200 200 200 200 100 100 100 100 100 100	Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
0.49 0.72 0.49 0.88 0.99 0.19 0.96 0.24 0.37 0.76 0.94 1 489 2.058 6.41 9.20 19.04 588 2.23 1110 492 8.5 5.04 2.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00	Lane Grp Cap(c), veh/h	411	2058	641	322	1904	288	223	1110	492	26	204	613
489 2068 641 920 1904 588 223 1110 492 85 504 200 200 200 100 100 100 100 100 100 100	V/C Ratio(X)	0.49	0.72	0.49	0.85	0.99	0.19	96:0	0.24	0.37	0.76	0.94	1.04
200 2.00 2.00 1.00 1.00 1.00 1.00 1.00 1	Avail Cap(c_a), veh/h	489	2058	641	920	1904	288	223	1110	492	82	204	613
0.45 0.45 0.45 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
529 9.9 5.1 66.1 46.2 21.7 699 31.9 39.6 71.8 53.2 60 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	0.45	0.45	0.45	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
02 1.0 1.2 2.3 1/5 0/7 4/6 0/0 0.2 11.0 248 04 05 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 36 9.0 3.1 6.3 288 2.7 5.9 4.1 5.8 20 226 53.1 10.9 6.3 68.4 63.7 22.4 117.5 38.0 39.8 82.8 78.0 2000 2291 66.3 86.9 117.5 38.0 39.8 82.8 78.0 14.4 E E C F D D F F 1 2 3 4 5 6 7 8 19 6.5 15.6 4.7 6.3 6.3 5.3 1.5 11.5 4.7 6.3 6.3 4.3 5.3 1.5 15.1 21.6 11.3 43.0 9.7 57.4 58 15.5 6.5 0.0 0.0 0.2 0.0 0.0 1.2 51.5 51.5	Uniform Delay (d), s/veh	52.9	6.6	5.1	66.1	46.2	21.7	6.69	37.9	39.6	71.8	53.2	45.4
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), siveh	0.7	0.1	7.7	2.3	1/.5	0.7	47.6	0.0	0.2	0.1	24.8	48.3
36 90 31 6.3 28 8 2.7 59 4.1 58 2.0 226 531 10.9 6.3 68.4 6.3.7 224 1175 38.0 39.8 12.8 78.0 D B R E E C D D F E 2000	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53.1 10.9 6.3 68.4 6.3.7 22.4 11.75 38.0 39.8 82.8 78.0 2000 2000 1.44 62.3 1.44 62.3 64.0 66.3 1.57 1.42 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.	%ile BackOfO(50%),veh/ln	3.6	0.6	3.1	6.3	28.8	2.7	2.9	4.1	2.8	2.0	22.6	25.7
D B A E E C F D D F 2000 2291 663 663 663 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 42 640 93 533 1 42 640 93 533 1 5 15 11 21 3 4 5 6 7 8 1 5 8 70 244 630 93 533 1 5 15 1 21,6 11,3 430 9,7 57,4 58 154 5 15 6.5 0.0 0.0 0.2 0.0 0.0 1.2 5 15 5 15 5 15	LnGrp Delay(d),s/veh	53.1	10.9	6.3	68.4	63.7	22.4	117.5	38.0	39.8	82.8	78.0	93.7
2000 2291 663 643 640 8 8 E E E E E E E E E E E E E E E E E	LnGrp LOS			⋖	ᆈ	ᆈ	ပ	-			-	ᆈ	۱
144 623 640 B E E E E E E E E E E E E E E E E E E E	Approach Vol, veh/h		2000			2291			663			1157	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 19.8 67.6 15.6 47.0 244 630 9.3 1.5 *41 *38 *9.8 *41 *22 *57 *7.3 3. *15.1 21.6 11.3 430 9.7 57.4 5.8 0.5 6.5 0.0 0.0 0.2 0.0 0.0	Approach Delay, s/veh		14.4			62.3			64.0			86.9	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 19.8 67.6 15.6 40.0 24.4 630 9.3 1.5 41 38 9.8 41 22 57 7.3 5.5 15.1 21.6 11.3 430 9.7 57.4 5.8 0.5 6.5 0.0 0.0 0.2 0.0 0.0	Approach LOS		В			ш			ш			ட	
19.8 67.6 15.6 47.0 24.4 63.0 9.3 4.2 5.4 63.0 9.3 4.2 5.3 1.5 41.0 24.4 63.0 9.3 4.2 5.5 15.1 21.6 11.3 43.0 9.7 57.4 5.8 5.5 0.0 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Timer	_	2	3	4	5	9	7	8				
198 676 156 470 244 630 93 *4.2 *6.3 *5.8 *6 *6.3 *6.3 *4.2 5. *41 *38 *98 *41 *22 *57 *7.3 5. *15.1 *21.6 *11.3 *43.0 9.7 57.4 5.8 0.5 6.5 0.0 0.0 0.2 0.0 0.0 51.5 51.5 D	Assigned Phs	_	2	3	4	2	9	7	8				
74.2 '6.3 '5.8 '6 '6.3 '6.3 '4.2 0,5 '41 '38 '9.8 '41 '22 '57 '7.3 4 1),5 15.1 21.6 11.3 43.0 9.7 57.4 5.8 1 0.5 6.5 0.0 0.0 0.2 0.0 0.0 51.5 D	Phs Duration (G+Y+Rc), s	19.8	9.79	15.6	47.0	24.4	63.0	9.3	53.3				
741 .38 .9.8 .41 .22 .57 .73 15.1 21.6 11.3 43.0 9.7 57.4 5.8 0.5 6.5 0.0 0.0 0.2 0.0 0.0 51.5 D	Change Period (Y+Rc), s	* 4.2	* 6.3	* 5.8	9 *	* 6.3	* 6.3	* 4.2	2.8				
s 15.1 21.6 11.3 43.0 9.7 57.4 5.8 0.5 6.5 0.0 0.0 0.2 0.0 0.0 51.5 D	Max Green Setting (Gmax), s	* 41	* 38	* 9.8	* 41	* 22	* 57	* 7.3	43.7				
05 6.5 0.0 0.0 0.2 0.0 0.0 0.0 1.5 51.5 D	Max Q Clear Time (g_c+I1), s	15.1	21.6	11.3	43.0	6.7	57.4	2.8	15.4				
	Green Ext Time (p_c), s	0.5	6.5	0.0	0.0	0.5	0.0	0.0	1.2				
	Intersection Summary												
	HCM 2010 Ctrl Delay			51.5									
Motoc	HCM 2010 LOS			D									
	Notos												

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HCM 2010 Signalized Intersection Summary 11: Camino Vida Roble & Palomar Airport Rd.

Ex + Cumulative PM 08/03/2017

	4	†	r	-	Ļ	1	•	—	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	×	4413		<u>, -</u>	4413		F	æ,		<i>y</i> -	*	¥
Traffic Volume (veh/h)	40	1640	260	20	1440	20	380	40	180	390	130	200
Future Volume (veh/h)	4	1640	260	20	1440	20	380	40	180	330	130	200
Number	വ	2	12	-	9	16	co ·	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		96.0	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	43	1783	283	24	1565	24	413	43	196	424	141	217
Adj No. of Lanes	-	3	0	-	က	0	2	-	0	-	-	_
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	က	3	3	3	3	3	3	3	3
Cap, veh/h	172	1833	288	61	1708	26	461	24	247	377	512	422
Arrive On Green	0.10	0.45	0.42	0.03	0.34	0.34	0.14	0.19	0.19	0.21	0.28	0.28
Sat Flow, veh/h	1757	4363	982	1757	4990	172	3408	280	1278	1757	1845	1520
Grp Volume(v), veh/h	43	1368	869	24	1053	266	413	0	239	424	141	217
Grp Sat Flow(s),veh/h/ln	1757	1679	1690	1757	1679	1805	1704	0	1559	1757	1845	1520
Q Serve(g_s), s	3.4	59.8	61.3	4.6	45.1	45.1	17.9	0.0	21.9	32.2	0.6	13.7
Cycle Q Clear(q_c), s	3.4	59.8	61.3	4.6	45.1	45.1	17.9	0.0	21.9	32.2	0.6	13.7
Prop In Lane	1.00		0.41	1.00		0.10	1.00		0.82	1.00		1.00
Lane Grp Cap(c), veh/h	172	1411	710	19	1149	618	461	0	301	377	512	422
V/C Ratio(X)	0.25	0.97	0.98	0.89	0.92	0.92	0.00	0.00	0.79	1.12	0.28	0.51
Avail Cap(c_a), veh/h	172	1411	710	61	1247	0/9	263	0	382	377	546	450
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	97.79	42.5	43.0	72.1	47.3	47.3	63.8	0.0	57.7	58.9	42.4	26.3
Incr Delay (d2), s/veh	0.3	17.7	30.0	74.4	12.8	20.6	13.2	0.0	6.5	84.5	0.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	31.2	34.4	3.5	23.0	26.0	9.3	0.0	10.0	24.5	4.6	2.8
LnGrp Delay(d),s/veh	62.8	60.2	73.0	146.5	60.1	67.9	77.0	0.0	64.2	143.4	42.5	26.7
LnGrp LOS	ш	ш	ш	띡	ш	ш	ш		ш	ᅵ		ပ
Approach Vol, veh/h		2109			1673			652			782	
Approach Delay, s/veh		64.5			65.5			72.3			92.8	
Approach LOS		ш			ш			ш			ш.	
Timer		2	33	4	2	9	7	00				
Assigned Phs	—	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	9.4	69.4	24.5	46.7	21.1	27.7	37.2	34.0				
Change Period (Y+Rc), s	* 4.2	* 6.4	* 4.2	* 5	* 6.4	* 6.4	* 5	* 5				
Max Green Setting (Gmax), s	* 5.2	* 56	* 25	* 44	* 5.3	* 56	* 32	* 37				
Max Q Clear Time (g_c+11), s	9.9	63.3	19.9	15.7	5.4	47.1	34.2	23.9				
Green Ext Time (p_c), s	0.0	0.0	0.4	0.8	0.0	4.2	0.0	0.8				
Intersection Summary												
HCM 2010 Ctrl Delay			70.1									
HCM 2010 LOS			ш									
Motor												
NOTES.												

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HCM 2010 Signalized Intersection Summary 12: Yarrow Dr./McClellan & Palomar Airport Rd.

Ex + Cumulative PM 08/03/2017

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Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	4413		۴	4413		۴	+	¥.		4	
Traffic Volume (veh/h)	40	1820	70	70	1370	120	150	20	300	110	20	70
Future Volume (veh/h)	40	1820	70	70	1370	120	150	20	300	110	20	2
Number	ഹ	5	12	- 0	9 0	16	_	4 (14	m	∞ α	9 0
milal Q (Qb), ven	0 6	0	0 0	0 0	0	0 0	0 0	>	0 0	0 0	0	0 0
Ped-bike Auj(A_por) Parking Bits Adi	8.6	1 00	1.00	100	100	100	100	100	100	1.00	1 00	1 00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	44	2022	78	78	1522	133	167	22	333	122	22	78
Adj No. of Lanes	<u></u>	m	0	_	က	0	_	_	_	0	-	0
Peak Hour Factor	06.0	0.00	0.00	06:0	06:0	06:0	06:0	06:0	06:0	06:0	06:0	06:0
Percent Heavy Veh, %	3	m	3	3	3	m	3	3	e	m	m	8
Cap, veh/h	22	2245	98	346	2960	258	307	440	361	188	37	102
Arrive On Green	0.03	0.45	0.45	0.20	0.63	0.63	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1757	4968	191	1757	4708	411	1268	1845	1515	635	154	427
Grp Volume(v), veh/h	44	1364	736	78	1085	220	167	22	333	222	0	0
Grp Sat Flow(s),veh/h/ln	1757	1679	1802	1757	1679	1762	1268	1845	1515	1216	0	0
Q Serve(g_s), s	3.7	56.3	26.7	9.9	26.6	26.6	0.0	1.4	32.2	24.0	0.0	0.0
Cycle Q Clear(g_c), s	3.7	56.3	26.7	9.6	26.6	26.6	22.6	1.4	32.2	25.4	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.23	1.00		1.00	0.55		0.35
Lane Grp Cap(c), veh/h	22	1517	814	346	2110	1108	307	440	361	327	0	0
V/C Ratio(X)	0.77	0.90	0.90	0.23	0.51	0.51	0.54	0.05	0.92	89.0	0.00	0.00
Avail Cap(c_a), veh/h	712	1746	937	346	2110	1108	369	230	435	386	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	00.1	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/ven	72.0	38.0	38.1	20.6	15.3	15.3	52.1	44.0	55.8	53.0	0.0	0.0
Incr Delay (d2), siveh	o	6.8	15.3	0.1	0.0	J.,	9.0	0.0	20.9	2.5	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	27.8	31.7	2.7	12.5	13.3	6.4	0.7	15.5	ω ι ω ι	0.0	0.0
LnGrp Delay(d),s/veh	80.1	46.9	53.4	20.7	16.2	17.0	52.7	44.0	/9/	55.5	0.0	0.0
LnGrp LOS	۲					m			ш	ш		
Approach Vol, veh/h		2144			1733			522			222	
Approach Delay, s/veh		49.8			18.0			67.6			55.5	
Approach LOS		D			n			ш			ш	
Timer	—	2	3	4	2	9	7	∞				
Assigned Phs	-	2		4	2	9		∞				
Phs Duration (G+Y+Rc), s	35.6	73.8		40.7	9.1	100.3		40.7				
Change Period (Y+Rc), s	0.9	9 *		4.9	* 4.2	0.9		4.9				
Max Green Setting (Gmax), s	13.8	* 78		43.1	* 61	31.0		43.1				
Max Q Clear Time (g_c+I1), s	7.6	28.7		34.2	2.7	28.6		27.4				
Green Ext Time (p_c), s	0.0	0.6		0.8	0.0	1.6		6.0				
Intersection Summary												
HCM 2010 Ctrl Delay			40.2									
HCIM ZOTO EOS			ם									
Notes												

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HCM 2010 Signalized Intersection Summary 13: El Camino Real & Palomar Airport Rd.

Ex + Cumulative PM 08/03/2017

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Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	+++	*	K.	444	N. W.	F	444	N.	F	444	*-
Traffic Volume (veh/h)	380	1610	170	220	1040	510	380	1020	260	770	970	180
Future Volume (veh/h)	380	1610	170	220	1040	510	380	1020	260	770	970	180
Number	വ	2	12	-	9	16	n	∞ (18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.0	6	0.99	1.00	6	0.99	1.00	6	1.00	1.00	00	0.99
Parking Bus, Adj	00.1	00.1	1.00	00.1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Flow Rate, veh/h	404	1713	181	285	1106	543	404	1085	678	819	1032	191
Adj No. of Lanes	2	m	-	2	3	2	2	c	2	2	3	_
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	co	3	3	3	3	3	3	3	3	3	3	co
Cap, veh/h	453	1343	413	386	1244	674	409	1277	1013	704	1712	737
Arrive On Green	2400	0.27	1550	2400	0.08	0.08	2400	0.25	0.25	0.21	0.34	0.34
Sat Flow, velifit	0400	3030	0001	2400	2020	07/7	2400	2020	00/7	2400	2020	1004
Grp Volume(V), venyn Crp Set Elewi(s) vebibilia	404	17.13	181	1704	16.70	1243	1704	1670	1200	1704	1670	1554
O Serve(a s) s	17.5	40.0	10.6	17.0	32.6	18.7	17.8	30.7	11.0	31.0	25.5	111
Cycle O Clear(a_c). s	17.5	40.0	10.6	17.0	32.6	18.2	17.8	30.7	11.0	31.0	25.5	11.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	453	1343	413	386	1244	674	409	1277	1013	704	1712	737
V/C Ratio(X)	0.89	1.28	0.44	1.51	0.89	0.81	0.99	0.85	0.62	1.16	09.0	0.26
Avail Cap(c_a), veh/h	591	1343	413	386	1244	674	409	1578	1177	704	1712	737
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.61	0.61	0.61	1.00	1.00	1.00	0.00	0.09	0.09
Uniform Delay (d), s/veh	64.0	22.0	24.2	72.2	8.99	25.1	62.9	53.3	38.9	59.5	41.1	23.8
Incr Delay (d2), s/veh	11.2	129.9	0.3	239.6	5.1	4.1	41.1	7.2	2.9	75.4	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	34.7	4.6	20.9	15.8	7.3	10.7	15.1	4.5	21.9	11.9	4.7
LnGrp Delay(d),s/veh	75.1	184.9	24.4	311.8	71.9	29.2	107.0	9.09	41.8	135.0	41.2	23.8
LnGrp LOS	ш	ш	ပ	띡	ш	U	ш	ш	۵	띡	۵	ပ
Approach Vol, veh/h		2298			2234			2117			2042	
Approach Delay, s/veh		153.0			124.3			63.8			77.2	
Approach LOS		ш.			ш.			ш			ш	
Timer		2	33	4	2	9	7	00				
Assigned Phs	—	2	m	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	23.0	46.0	24.0	57.0	25.9	43.1	37.0	44.0				
Change Period (Y+Rc), s	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9				
Max Green Setting (Gmax), s	17.0	40.0	18.0	51.0	26.0	31.0	22.0	47.0				
Max Q Clear Time (g_c+I1), s	19.0	45.0	19.8	27.5	19.5	34.6	33.0	32.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	2.8	0.4	0.0	0.0	5.3				
Intersection Summary												
HCM 2010 Ctrl Delay			1.901									
HCM 2010 LOS			ш									

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Synchro 10 Report Page 23

HCM 2010 Signalized Intersection Summary 14: Innovation Way/Loker Ave. & Palomar Airport Rd.

Ex + Cumulative PM 08/03/2017

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	×	+++	R.	K	441		K	*	¥.	×	*	×
Traffic Volume (veh/h)	120	2550	320	70	1600	09	200	40	170	110	99	330
Future Volume (veh/h)	120	2550	320	70	1600	09	200	40	170	110	09	330
Number	2	2	12	-	9	16	m	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		96.0	1.00		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	125	2656	333	73	1667	62	208	42	177	115	62	344
Adj No. of Lanes	-	3	-	-	3	0	-	-	-	-	-	
Peak Hour Factor	96.0	96.0	96.0	96.0	96.0	96.0	96:0	96:0	96.0	96:0	96:0	0.96
Percent Heavy Veh, %	c	m	m	3	m	m	~	3	m	m	3	3
Cap, veh/h	149	2595	881	71	2408	06	115	419	344	136	442	363
Arrive On Green	0.03	0.17	0.17	0.08	0.97	0.97	0.07	0.23	0.23	0.08	0.24	0.24
Sat Flow, veh/h	1757	5036	1511	1757	4982	185	1757	1845	1514	1757	1845	1516
Grp Volume(v), veh/h	125	2656	333	73	1123	909	208	42	177	115	62	344
Grp Sat Flow(s),veh/h/ln	1757	1679	1511	1757	1679	1810	1757	1845	1514	1757	1845	1516
Q Serve(g_s), s	9.01	77.3	16.5	6.1	5.1	5.1	9.8	2.7	13.1	6.7	4.0	33.5
Cycle Q Clear(g_c), s	9.01	77.3	16.5	6.1	5.1	2.1	9.8	2.7	13.1	6.7	4.0	33.5
Prop In Lane	1.00		1.00	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	149	2595	881	71	1622	875	115	419	344	136	442	363
V/C Ratio(X)	0.84	1.02	0.38	1.02	69.0	69.0	1.81	0.10	0.51	0.85	0.14	0.95
Avail Cap(c_a), veh/h	704	2595	881	71	1622	875	115	453	371	141	480	394
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.72	0.72	0.72	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	71.9	62.2	14.6	6.89	1.4	1.4	70.1	45.8	37.1	68.3	44.9	56.1
Incr Delay (d2), s/veh	0.5	12.8	0.1	7.96	— 8.	3.3	397.6	0:0	0.4	32.9	0.1	30.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	39.0	6.9	4.8	1.9	2.4	17.4	1.4	5.5	0.9	2.0	17.1
LnGrp Delay(d),s/veh	72.4	75.0	14.7	165.9	3.2	4.6	467.7	45.9	37.5	101.2	42.0	86.4
LnGrp LOS	ш	니	В	니	A	⋖	니			ᅵ		"
Approach Vol, veh/h		3114			1802			427			521	
Approach Delay, s/veh		68.5			10.2			247.9			84.7	
Approach LOS		ш			В			ш			ш	
Timer	-	2	33	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	12.1	83.3	14.0	40.6	16.9	78.5	15.8	38.8				
Change Period (Y+Rc), s	0.9	9 *	* 4.2	* 4.7	* 4.2	0.9	* 4.2	* 4.7				
Max Green Setting (Gmax), s	4.8	* 77	* 9.8	* 39	09 _*	22.0	* 12	* 37				
Max Q Clear Time (g_c+I1), s	8.1	79.3	11.8	35.5	12.6	7.1	11.7	15.1				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.4	0.1	6.2	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			65.1									
HCM 2010 LOS			ш									

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HCM 2010 Signalized Intersection Summary 15: El Fuerte St. & Palomar Airport Rd.

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Cumulative	200,000
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	444	ĸ.	K.	4413		<u> </u>	4₽		1	4₽	
Traffic Volume (veh/h)	70	2520	290	220	1460	40	180	8	370	280	150	90
Future Volume (veh/h)	02	2520	230	220	1460	40	180	8	370	280	120	09
Number	2	2	12	—	9	16	m	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	72	2598	299	292	1505	41	186	93	381	289	155	62
Adj No. of Lanes	2	3		2	3	0	2	2	0	2	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	က	33	co	33	က	co	co	က	3	33	co
Cap, veh/h	629	1871	578	631	1769	48	229	397	343	279	610	234
Arrive On Green	0.39	0.74	0.74	90:0	0.12	0.12	0.07	0.23	0.23	0.08	0.25	0.25
Sat Flow, veh/h	3408	5036	1555	3408	5036	137	3408	1752	1514	3408	2470	946
Grp Volume(v), veh/h	72	2598	299	292	1003	543	186	93	381	289	108	109
Grp Sat Flow(s),veh/h/ln	1704	1679	1555	1704	1679	1816	1704	1752	1514	1704	1752	1664
Q Serve(g_s), s	2.0	22.7	12.0	24.8	44.0	44.0	8.1	6.5	34.0	12.3	7.4	7.9
Cycle Q Clear(g_c), s	2.0	55.7	12.0	24.8	44.0	44.0	8.1	6.5	34.0	12.3	7.4	7.9
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	1.00		0.57
Lane Grp Cap(c), veh/h	629	1871	578	631	1180	638	229	397	343	279	433	411
V/C Ratio(X)	0.11	1.39	0.52	06:0	0.85	0.85	0.81	0.23	1.11	1.03	0.25	0.27
Avail Cap(c_a), veh/h	629	1871	578	1370	17.75	096	232	397	343	279	433	411
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.48	0.48	0.48	0.50	0.50	0.50	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.7	19.3	13.7	0.69	62.4	62.4	0.69	47.4	28.0	8.89	45.3	45.5
Incr Delay (d2), s/veh	0.0	176.6	1.6	1.0	4.1	7.2	17.9	0.1	81.7	65.9	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	52.5	5.3	11.8	21.2	23.5	4.4	3.2	22.0	8.2	3.6	3.6
LnGrp Delay(d),s/veh	37.7	195.8	15.2	70.0	999	9.69	86.9	47.5	139.7	131.8	45.5	45.7
LnGrp LOS	۵	띡	В	ш	ш	ш	띡		띡	ш	۵	
Approach Vol, veh/h		2969			2113			099			206	
Approach Delay, s/veh		173.8			68.2			111.9			94.8	
Approach LOS		ш			Ш			ш			ш	
Timer		2	က	4	2	9	7	00				
Assigned Phs	-	2	33	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	32.0	61.7	14.3	42.0	35.0	58.7	17.3	39.0				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	2.0	0.9	9 *	2.0	* 5				
Max Green Setting (Gmax), s	09 *	24.0	* 10	36.1	2.0	* 79	12.3	* 34				
Max O Clear Time (g_c+I1), s	26.8	57.7	10.1	6.6	4.0	46.0	14.3	36.0				
Green Ext Time (p_c), s	1.0	0.0	0.0	0.7	0.0	6.7	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			125.2									
HCM 2010 LOS			ш									

Synchro 10 Report Page 26

HCM 2010 Signalized Intersection Summary 16: Melrose Dr. & Palomar Airport Rd.

Ex + Cumulative PM 08/03/2017

Movement Lane Configurations	EBL											
Lane Configurations		EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
,	K	444	æ	K	444	R	K	Ħ	×	K	**	K
Iraffic Volume (veh/h)	1070	1950	270	270	1020	- 08	300	700	260	190	610	820
Future Volume (veh/h)	1070	1950	570	270	1020	80	300	700	260	190	610	820
Number	2	2	12	-	9	16	m	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	1138	2074	909	287	1085	82	319	745	277	202	646	872
Adj No. of Lanes	2	3	-	2	3	-	2	4	-	2	2	2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	m	3	3	3	m	3	m	m	m	3
Cap, veh/h	1100	2444	756	314	1222	376	186	1430	493	509	778	1495
Arrive On Green	0.32	0.49	0.49	0.09	0.24	0.24	0.05	0.23	0.23	90.0	0.22	0.22
Sat Flow, veh/h	3408	5036	1558	3408	5036	1549	3408	6346	1547	3408	3505	2722
Grp Volume(v), veh/h	1138	2074	909	287	1085	85	319	745	277	202	646	872
Grp Sat Flow(s),veh/h/ln	1704	1679	1558	1704	1679	1549	1704	1586	1547	1704	1752	1361
Q Serve(g_s), s	48.4	54.1	36.3	12.5	31.2	5.5	8.2	15.5	22.3	8.9	26.5	0.0
Cycle Q Clear(g_c), s	48.4	54.1	36.3	12.5	31.2	5.5	8.2	15.5	22.3	8.9	26.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1100	2444	756	314	1222	376	186	1430	493	209	778	1495
V/C Ratio(X)	1.03	0.85	0.80	0.92	0.89	0.23	1.71	0.52	0.56	16.0	0.83	0.58
Avail Cap(c_a), veh/h	1100	2444	756	314	1222	376	186	1523	516	509	872	1567
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.8	33.8	17.7	67.5	54.8	31.3	70.9	51.0	42.6	70.2	22.7	22.7
Incr Delay (d2), s/veh	19.2	0.4	6.0	29.5	8.0	0.1	342.2	0.1	0.7	52.2	2.7	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	25.7	25.0	15.7	7.2	15.4	2.4	12.7	9.9	6.7	2.7	13.5	11.9
LnGrp Delay(d),s/veh	70.0	34.1	18.6	0.79	62.8	31.4	413.1	51.1	43.3	122.4	61.4	23.0
LnGrp LOS	ш	ပ	В	니	ш	ပ	니			니	ᆈ	ျ
Approach Vol, veh/h		3818			1457			1341			1723	
Approach Delay, s/veh		42.4			1.79			135.6			49.2	
Approach LOS		O			ш			ب			٥	
Timer	_	2	3	4	5	9	7	8				
Assigned Phs	-	2	m	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	18.0	78.8	14.2	39.0	54.4	42.4	13.4	39.8				
Change Period (Y+Rc), s	* 4.2	0.9	0.9	* 5.7	0.9	9 *	* 4.2	0.9				
Max Green Setting (Gmax), s	* 14	9.07	8.2	* 37	48.4	* 36	* 9.2	36.0				
Max Q Clear Time (g_c+l1), s	14.5	56.1	10.2	28.5	50.4	33.2	10.9	24.3				
Green Ext Time (p_c), s	0.0	9.3	0.0	3.3	0.0	1.4	0.0	2.8				
Intersection Summary												
HCM 2010 Ctrl Delay			63.2									
HCM 2010 LOS			ш									
No.												

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HCM 2010 Signalized Intersection Summary 17: El Camino Real & Town Garden Rd.

Ex + Cumulative PM 08/03/2017

		١	٠				-	-	-		•	
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		₩	¥C	je-	æ		je-	444	¥C	F	444	¥c_
Traffic Volume (veh/h)	170	20	120	230	40	190	70	1300	200	250	1630	20
Future Volume (veh/h)	170	20	120	230	40	190	20	1300	200	250	1630	20
Number Initial O (Oh) vah	~ 0	4 0	4 0	m c	∞ ⊂	<u> </u>	ഹ വ	2 0	12	- c	9 0	16
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00	•	0.96	1.00	>	0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	175	21	124	237	41	196	72	1340	206	258	1680	52
Adj No. of Lanes	0	-	-			0	-	3	-	-	3	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	236	78	224	328	20	240	02	1182	360	206	2503	775
Arrive On Green	0.15	0.15	0.15	0.19	0.19	0.19	0.04	0.23	0.23	0.29	0.50	0.50
Sat Flow, veh/h	1577	189	1496	1757	269	1287	1757	5036	1535	1757	5036	1558
Grp Volume(v), veh/h	196	0	124	237	0	237	72	1340	206	258	1680	52
Grp Sat Flow(s),veh/h/ln	1766	0	1496	1757	0	1556	1757	1679	1535	1757	1679	1558
2 Serve(g_s), s	15.9	0.0	11.5	19.0	0.0	21.9	0.9	35.2	17.8	18.4	37.8	2.6
Cycle Q Clear(g_c), s	15.9	0.0	11.5	19.0	0.0	21.9	0.9	35.2	17.8	18.4	37.8	2.6
Prop In Lane	0.89		1.00	1.00		0.83	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	264	0	224	328	0	290	2	1182	360	206	2503	775
V/C Ratio(X)	0.74	0.00	0.55	0.72	0.00	0.82	1.02	1.13	0.57	0.51	0.67	0.07
4vail Cap(c_a), veh/h	447	0	379	468	0	415	2	1182	360	206	2503	775
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1:00	1:00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Unitorm Delay (d), s/veh	61.0	0.0	59.1	57.4	0.0	58.5	72.0	57.4	50.7	44.6	28.5	19.6
Incr Delay (d2), s/veh	9.1	0.0	0.8		0.0	2.5	114.3	71.2	6.5	0.4	1.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	0.0	4.8	9.3	0:0	6.6	2.1	24.1	8.2	0.6	17.8	1.2
LnGrp Delay(d),s/veh	97.9	0.0	59.9	28.6	0.0	64.0	186.7	128.6	57.2	45.0	29.9	19.8
LnGrp LOS	삐		삐	ш		삐	ᅵ	띡	ᆈ		ပ	^B
Approach Vol, veh/h		320			474			1618			1990	
Approach Delay, s/veh		61.5			61.3			122.1			31.6	
Approach LOS		ш			ш			ı			O	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	1	2		4	2	9		8				
Phs Duration (G+Y+Rc), s	49.6	41.6		26.6	10.2	81.0		32.2				
Change Period (Y+Rc), s	* 6.4	* 6.4		* 4.2	* 4.2	* 6.4		4.2				
Max Green Setting (Gmax), s		35		, i	9 0	* 47		40.0				
wax u clear IIme (g_c+II), s	7	31.2		6.71	0.0	39.8		23.9				
Green Ext Time (p_c), s	0.0	0.0		8.0	0:0	8.4		7.1				
Intersection Summary												
HCM 2010 Ctrl Delay			70.2									
HCM 2010 LOS			ш									

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HCM 2010 Signalized Intersection Summary 18: El Camino Real & Camino Vida Roble

Ex + Cumulative PM 08/03/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	je.	4	R.		4		E.	*	¥c.	r	444	
Traffic Volume (veh/h)	280	10	460	10	10	10	170	1320	10	30	1710	100
Future Volume (veh/h)	280	10	460	10	10	10	170	1320	10	30	1710	100
Number	7	4	14	m	∞	18	2	2	12	-	9	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		96.0	1.00		0.92	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1900	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	196	0	280	10	10	10	175	1361	10	31	1763	103
Adj No. of Lanes		0	2	0	-	0	2	2	-	-	3	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	က	3	3	3	3	3	3	က	3	3	3
Cap, veh/h	387	0	999	38	38	38	114	1917	820	39	2606	152
Arrive On Green	0.22	0.00	0.22	0.07	0.07	0.07	0.03	0.55	0.55	0.02	0.54	0.54
Sat Flow, veh/h	1757	0	3025	553	553	553	3408	3505	1554	1757	4861	284
Grp Volume(v), veh/h	196	0	280	30	0	0	175	1361	10	31	1217	649
Grp Sat Flow(s),veh/h/ln	1757	0	1513	1659	0	0	1704	1752	1554	1757	1679	1787
Q Serve(g_s), s	14.7	0.0	27.7	5.6	0.0	0.0	2.0	43.1	0.4	5.6	39.6	39.7
Cycle Q Clear(g_c), s	14.7	0.0	27.7	5.6	0.0	0.0	2.0	43.1	0.4	5.6	39.6	39.7
Prop In Lane	1.00		1.00	0.33		0.33	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	387	0	999	115	0	0	114	1917	820	39	1800	928
V/C Ratio(X)	0.51	0.00	0.87	0.26	0.00	0.00	1.54	0.71	0.01	0.79	89.0	0.68
Avail Cap(c_a), veh/h	445	0	99/	443	0	0	114	1917	820	47	1800	928
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1:00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1:00	1.00
Uniform Delay (d), s/veh	51.3	0.0	56.4	66.2	0.0	0.0	72.5	25.2	15.5	73.0	25.3	25.4
Incr Delay (d2), s/veh	1.0	0.0	6.7	1.2	0.0	0.0	282.1	2.3	0.0	51.7	2.1	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%lle BackOrU(50%),ven/in	7.7	0.0	17.5	7.1	0.0	0.0	0.0	41.7	1.7	2 5	8.0	20.5
LnGrp Delay(d),s/ven	52.4	0.0	 	6/.4	0.0	0.0	354.6	27.4	15.5	124.7	27.4	29.7
Lucrp LUS		ì	ш	ш	d		-	ا ا	2	-		
Approach Vol, veh/h		9//			30			1546			/681	
Approach Delay, swen		97.9			4.7			04.4			79.0	
Approach LOS		ш			ш			ш			೮	
Timer	—	2	33	4	2	9	7	00				
Assigned Phs	τ-	2		4	2	9		8				
Phs Duration (G+Y+Rc), s	9.4	88.1		38.0	11.0	86.4		14.6				
Change Period (Y+RC), s	0.9	0.0		2	0.0	0.0		4.2				
Max Green Setting (Gmax), s	4.0	46.8		* 38	2.0	45.8		40.0				
Max Q Creal Time (g_c+II), s	0.4	1.0		1.67	0.0	7.14		0.4				
oleen Ext IIIIe (p_c), s	0.0	C		7.7	0.0	0.0		- -				
Intersection Summary												
HCM 2010 Ctrl Delay			48.5									
HCM 2010 LOS			۵									

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HCM 2010 Signalized Intersection Summary 19: El Camino Real & Poinsettia Ln.

Ex + Cumulative PM 08/03/2017

	EBL	EBT	FRR	WBI	WBT	WDD	IOIN	1		CBI		0
	ŀ		1	אטר		WDK	NBL	NBT	NBR	JOC	SBT	SBR
	F	4₽		F	₩		F	444	¥	F	444	
	10	10	10	290	30	120	20	1280	490	220	1890	20
	9	10	10	290	30	120	20	1280	490	220	1890	20
	7	4	14	m	∞	18	2	2	12	-	9	16
	0 8	0	0	0 0	0	0	0 5	0	0	0 0	0	0 0
	00.1	9	0.94	00.1	6	0.96	1.00		0.99	1.00		0.98
	00.1	00.1	00.1	00.1	00.1	00.1	00.1	00.1	00.1	00.1	00.1	1.00
_	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	=	=	=	312	32	129	22	1376	527	237	2032	22
	2	2	0	2	2	0	2	m		2	3	0
	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	co	co	co	m	c	m	m	m	m	m	co	3
Cap, veh/h	33	207	169	358	376	325	889	2837	879	282	2221	24
ireen	0.01	0.12	0.12	0.10	0.21	0.21	0.20	0.56	0.56	0.08	0.43	0.43
Sat Flow, veh/h 34	3408	1782	1457	3408	1752	1512	3408	5036	1560	3408	5135	26
Grp Volume(v), veh/h	=	11	11	312	32	129	22	1376	527	237	1328	726
/ln 1	1704	1752	1487	1704	1752	1512	1704	1679	1560	1704	1679	1833
	0.5	8.0	1.0	13.5	2.2	11.0	0.8	24.6	19.8	10.3	55.7	55.8
g_c), s	0.5	8.0	1.0	13.5	2.2	11.0	0.8	24.6	19.8	10.3	55.7	55.8
	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.03
o(c), veh/h	33	204	173	358	376	325	889	2837	879	282	1452	793
	0.33	0.02	90:0	0.87	0.09	0.40	0.03	0.49	09.0	0.84	0.91	0.92
/h	91	456	387	427	625	539	889	2837	879	357	1524	832
0	8.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	00.1	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
eh .	73.8	29.0	29.0	1.99	47.1	9.09	48.1	19.7	7.6	8.79	40.0	40.0
	2.1	0.0	0.1	13.9	0.0	0.3	0.0	9.0	3.0	11.0	10.4	17.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
eh/In	0.2	0.4	0.4	7.1	1.1	4.6	0.4	11.5	9.5	5.3	27.9	32.0
y(d),s/veh	75.9	29.0	59.1	80.1	47.2	50.9	48.1	20.3	10.6	78.8	50.4	57.0
	ш	ш	ш	ш				U	В	ш		Ш
Approach Vol, veh/h		33			473			1925			2291	
Approach Delay, s/veh		64.7			6.69			17.9			55.4	
Approach LOS		ш			ш			В			ш	
Timer		2	က	4	2	9	7	∞				
Assigned Phs	—	2	3	4	2	9	7	8				
	16.6	90.5	20.7	22.1	36.3	70.9	5.7	37.2				
Change Period (Y+Rc), s * .	4.2	0.9	* 5	* 4.7	0.9	9 *	* 4.2	* 5				
Max Green Setting (Gmax), s *	* 16	57.4	* 19	* 39	2.0	* 68	* 4	* 54				
:+I1), s	12.3	26.6	15.5	3.0	2.8	57.8	2.5	13.0				
Green Ext Time (p_c), s (0.5	24.7	0.2	0.1	0.0	7.1	0.0	0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			41.7									
HCM 2010 LOS			O									
Noton												

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HCM 2010 Signalized Intersection Summary 1: Faraday Ave. & Canon Rd.

Ex + Cumulative + NT Project (PAL1) AM 08/24/2017

HCM 2010 Signalized Intersection Summary 2: College Blvd. & El Camino Real

Ex + Cumulative + NT Project (PAL1) AM 08/24/2017

EBL 100 100 100 100 100 100 100 100 100 10	↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑	EBR 7 5560 560 600 600 600 600 600 600 600 60	MBL 70 70 70 70 70 70 70 11.00 11.00 11.00 11.00 3 3 99 90.06 1757 78 78 78 78 78 78 78 78 78 78 78 78 78	WWBT 790 790 790 6 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	MBR 10 10 10 10 10 10 10 10 10 10 10 10 10	NBL 170 170 1.00 1.00 1.00	01 0 0 €	NBR 20 20	38L 10	SBT 40 10 10 10 10 10 10 10 10 10 10 10 10 10	SBR 10
10 10 10 10 10 10 10 11 11 11 11 11 17 17 17 17 17 17 17 17			70 70 70 1.00 1.00 1.00 1845 78 78 78 78 78 78 78 78 78 44 44 4.4	474 790 790 6 0 0 11.00 1845 878 2 2 0.90 3 31068 11068 33642 3434	10 10 16 0 0 0.95 11 0 0 0 0 0 0 0 0 0 13 0 0 0 0 0 0 0 0	170 170 3 3 0 1.00 1.00 1845 217	⇔ 0 0 °	20	10	♣ € €	10
10 10 10 10 10 10 11 11 17 17 17 10 10 10 10 10 10 10 10 10 10 10 10 10			70 70 1 0 0 1.00 1845 78 78 78 3 3 99 0.06 1757 78 4.4 4.4	790 6 6 0 0 0 11.00 1845 878 2 2 0.90 0.90 3 3542 434 434 1752	10 10 10 10 10 10 10 10 10 10 10 10 10 1	170 170 3 0 1.00 1.00 1845 217	9 9 9	20	10	0 0 0	10
10 1.00 1.			70 1.00 1.00 1.00 1.00 1.00 3 3 3 9 0.06 1.757 4.4 4.4	790 6 0 0 11.00 1845 878 2 2 0.90 3 3 11068 0.30 33542 434 1752 23.0	10 10 0.05 11.00 11.00 0.90 0.30 13 13	170 3 0 1.00 1.00 1845	9	20	10	10	1
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00			1 0 0 11.00 1845 78 1 0.00 3 99 99 99 1757 78 1757 1757	6 0 0 11.00 1845 878 2 0.90 3 11068 0.30 3542 434 434	16 0.95 1.00 17 11 0.00 3 0.30 44	1.00 1.00 1.00 217					2 :
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00			1.00 1.00 1.00 1.00 3 3 99 99 0.06 1757 78 1757 1757	1.00 11.00 2 2 0.90 3 11068 0.30 3542 434 1752	0.95 11.00 111 0.90 3 3 44 44	1.00 1.00 1845 217	∞ ⊂	<u> </u>	_ <	4 0	4 0
1.00 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			1.00 1845 1845 10.90 3 3 99 90.06 1757 1757 1757 1.00	11.00 1845 878 2 0.90 3 11068 0.30 3542 434 1752	1.00 1900 11 0 0 0.90 3 3 13 0.30 44	1.00 1845 217		1.00	1.00		0.91
1845 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			1845 78 10.00 3 99 0.06 1757 78 78 74 4.4	1845 878 2 0.90 3 11068 0.30 9.34 434 1752 23.0	1900 111 0 0.90 3 3 13 0.30 44	1845 217	1.00	1.00	1.00	1.00	1.00
11 0.90 0.90 3 3 3 1757 11 11 1157 1 100 0.4 0.4 0.04 0.04 0.04 0.04 0.04			78 1 0.90 3 99 0.006 1757 78 1757 4.4	878 2 0.90 3 1068 0.30 3542 434 1752 23.0	0.00 0.90 0.30 0.30	217	1845	1900	1900	1845	1900
0.0 3 3 574 1 1757 1 1757 1 1757 1 1757 1 100 574 1			1 3 99 0.06 7757 78 778 4.4 4.4	2 0.90 3 1068 0.30 3542 434 1752 23.0	0.90 0.30 0.30	c	0	0	11	11	=
0.90 (0.90 3 99 0.06 1757 78 1757 4.4 4.4	0.90 3 1068 0.30 3542 434 1752	0.90	7	-	0	0		0
3 574 1 1757 1 1757 1 1757 1 1757 1 0.4 0.4 0.7 574 1			3 99 0.06 1757 78 1757 4.4 4.4	3 1068 0.30 3542 434 1752 23.0	0.30	0.00	0.00	0.00	0.00	0.00	0.90
574 1 0.33 (0.33 (1.757 1 1757 1 1757 1 1.00 5.74 1 0.4 0.4 1.00 5.74 1 0.02 1 0.02 (1.757 1 1.00 1	, , ,		99 0.06 1757 78 1757 4.4 4.4	1068 0.30 3542 434 1752 23.0	13 0.30 44	3	3	3	3	3	3
0.35 1757 11 1757 1757 1.00 5.74 1.00 5.74 1.00			78 78 1757 4.4 4.4 4.4	434 434 1752 23.0	0.30	407	214	0	20	50	20
1757 1 1757 1 0.4 0.4 1.00 574 1			78 1757 4.4 4.4 1.00	434 1752 23.0		3514	1845	0.00	551	551	551
1757 0.4 0.4 1.00 574 1	ľ		4.4 4.4 4.4 1.00	1752	455	217	0	0	33	0	0
0.4 0.4 1.00 574 1 0.02			4.4 4.4 1.00	23.0	1834	1757	1845	0	1652	0	0
-c), s 0.4 1.00 1, veh/h 574 1 0.02 (1.00	4.4		23.0	2.8	0.0	0.0	2.0	0.0	0.0
1.00 h 574 0.02		1.00	1.00	23.0	23.0	2.8	0.0	0.0	2.0	0.0	0.0
h 574 0.02		770			0.02	1.00		0.00	0.33		0.33
0.02		//0	66	528	223	407	214	0	26	0	0
	_	0.71	0.78	0.82	0.82	0.53	0.00	0.00	0.55	0.00	0.00
5/4 0		877	141	613	642	1160	609	0	66	0	0
1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
00.1		1.00	00.1	1.00	1.00 1.00	1.00	0.00	0.00	1.00	0.00	0.00
		4.0 4.0	10.0	32.4 13 E	12.0	7. 0	0.0	0.0	4.7	0.0	0.0
0.0	0.0	8.4	7.01	0.0	0.5.0	8.0	0.0	0.0	3.0	0.0	0.0
0.0		12.4	0.0	12.1	12.6	0.0	0.0	0.0	0.0	0.0	0 0
20.00		15.4	4.7	13.1	15.0	42.5	0.0	0.0	60.3	0.0	0.0
0.22		20.2	ў С П	£ C	‡: C	77	0.0	0.0	ŧ. C	0.0	0.0
) Alder let	044	اد	4	770			717			22	
4	17.0			104			47.5			200	
	۲. a			0.0			47.3			4.00	
Short Co.	د			٥			٥			٥	
imer 1	2	3	4	2	9	7	∞				
_	2		4	2	9		∞				
3 11.7 6	63.2		9.8	38.7	36.1		9.91				
0.9	0.9		2.0	0.9	0.9		2.0				
8.0	31.0		0.9	4.0	35.0		33.0				
11), s 6.4	31.2		4.0	2.4	25.0		7.8 1.8				
s 0:0	0:0		0.0	0.0	5.1		0.5				
ntersection Summary											
HCM 2010 Ctrl Delay	.,	34.5									
ICM 2010 LOS		ပ									
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10 Report	Page 1
Synchro	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<i>y</i> -	444	* _	-	444	¥C	£	₩		£	₩.	
Traffic Volume (veh/h)	40	2032	220	140	582	40	100	40	10	80	92	8
Future Volume (veh/h)	40	2032	270	140	285	40	100	40	9 ;	e 1	0.	8;
Number	2	7.	1.5	- 0	9	91	.n	∞ (Σ 0	_ 0	4	14
Initial Q (Qb), veh	0 0	0	0 0	0 0	0	0 0	0 6	0	0 10	0 6	0	0 10
Ped-Bike Adj(A_pb1)	00.1	,	00.1	00.1	,	00.1	00.1	,	0.95	00.1	,	0.95
Parking Bus, Adj	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	43	2209	0	152	633	43	109	43	=	87	9/	87
Adj No. of Lanes	-	က	-	-	က	-	2	2	0	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	33	33	3	co	က	3	co	3	3	3	co
Cap, veh/h	22	2072	645	408	3123	896	105	400	46	105	254	216
Arrive On Green	0.03	0.41	0.00	0.23	0.62	0.62	0.03	0.14	0.14	0.03	0.14	0.14
Sat Flow, veh/h	1757	5036	1568	1757	5036	1560	3408	2766	673	3408	1752	1494
Grp Volume(v), veh/h	43	2209	0	152	633	43	109	26	28	87	9/	87
Grp Sat Flow(s),veh/h/ln	1757	1679	1568	1757	1679	1560	1704	1752	1687	1704	1752	1494
Q Serve(g_s), s	3.2	53.5	0.0	9.5	7.1	1.4	4.0	1.7	1.8	3.3	2.0	6.9
Cycle Q Clear(g_c), s	3.2	53.5	0.0	9.5	7.1	1.4	4.0	1.7	1.8	3.3	2.0	6.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.40	1.00		1.00
Lane Grp Cap(c), veh/h	22	2072	645	408	3123	896	105	254	244	105	254	216
V/C Ratio(X)	0.78	1.07	0.00	0.37	0.20	0.04	1.04	0.10	0.11	0.83	0.30	0.40
Avail Cap(c_a), veh/h	89	2072	645	408	3123	896	105	539	519	105	539	460
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.5	38.3	0.0	42.0	10.7	9.6	63.0	48.3	48.3	62.7	49.7	50.5
Incr Delay (d2), s/veh	29.9	40.0	0.0	0.2	0.1	0.1	98.9	0.1	0.1	38.3	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfO(50%),veh/ln	2.0	32.4	0.0	4.6	3.3	9.0	3.3	0.8	0.9	2.1	2.5	2.9
LnGrp Delay(d),s/veh	92.4	78.3	0.0	42.2	10.9	6.7	162.6	48.3	48.4	100.9	49.9	50.9
LnGrp LOS	니	니			В	A	니			니		۵
Approach Vol, veh/h		2252			828			163			250	
Approach Delay, s/veh		78.6			16.6			124.7			0.89	
Approach LOS		ш			œ			ш.			ш	
Timer	-	2	က	4	2	9	7	∞				
Assigned Phs	—	2	m	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	36.2	59.5	0.6	25.3	9.1	9.98	0.6	25.3				
Change Period (Y+Rc), s	0.9	9 *	2.0	6.5	2.0	0.9	2.0	6.5				
Max Green Setting (Gmax), s	10.0	* 54	4.0	40.0	2.0	58.5	4.0	40.0				
Max Q Clear Time (g_c+I1), s	11.5	55.5	0.9	8.9	5.2	9.1	5.3	3.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.5	0.0	2.5	0.0	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			65.3									
HCM 2010 LOS			ш									
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Notes												

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HCM 2010 Signalized Intersection Summary 3: College Blvd. & Faraday Ave.

Ex + Cumulative + NT Project (PAL1) AM 08/24/2017 HCM 2010 Signalized Intersection Summary 4: El Camino Real & Faraday Ave.

Ex + Cumulative + NT Project (PAL1) AM 08/24/2017

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Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u></u>	₩.		r	₩.		K.	₩.		F	₽	1
Traffic Volume (veh/h)	20	390	130	160	380	09	210	200	300	190	320	06
Future Volume (veh/h)	20	330	130	160	380	9	210	500	300	190	320	06
Number	_ <	4 0	4 0	m	∞ α	9	വ	5	12	- c	9 0	16
milai Q (Qb), ven	0 5	0	0 6	0 6	0	0 6	0 6	0	0 6	0 6	0	0 6
Ped-Bike Adj(A_pb1)	3.5	5	1.97	8.6	0	100	9 6	0	100	00.1	1	1001
Adi Sat Flow. veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	24	424	141	174	413	92	228	217	326	207	380	86
Adj No. of Lanes		2	0	_	2	0	2	2	0	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	က	က	3	3	3	က	က	က	က	co
Cap, veh/h	8	691	227	154	942	147	299	504	438	290	783	199
Arrive On Green	0.05	0.27	0.27	60.0	0.31	0.31	60.0	0.29	0.29	60.0	0.29	0.29
Sat Flow, veh/h	1757	2571	845	1757	3025	472	3408	1752	1521	3408	2749	669
Grp Volume(v), veh/h	54	287	278	174	238	240	228	217	326	207	240	238
Grp Sat Flow(s),veh/h/ln	1757	1752	1664	1757	1752	1745	1704	1752	1521	1704	1752	1696
Q Serve(g_s), s	2.2	10.6	10.8	6.5	8.0	8.1	4.8	7.4	14.4	4.4	8.4	8.6
Cycle Q Clear(g_c), s	2.2	10.6	10.8	6.5	8.0	8.1	4.8	7.4	14.4	4.4	8.4	9.8
Prop In Lane	1.00		0.51	1.00		0.27	1.00		1.00	1.00		0.41
Lane Grp Cap(c), veh/h	8	471	447	154	546	543	299	204	438	290	466	483
V/C Ratio(X)	89.0	0.61	0.62	1.13	0.44	0.44	0.76	0.43	0.74	0.71	0.48	0.49
Avail Cap(c_a), veh/h	135	853	810	154	872	898	299	734	638	299	734	711
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.8	23.6	23.7	33.7	20.3	20.3	33.0	21.4	23.9	33.0	21.9	22.0
Incr Delay (d2), s/veh	6.7	1.3	1.4	110.7	0.5	9:0	10.9	9.0	2.7	7.5	0.7	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	5.3	5.1	7.9	3.9	4.0	2.7	3.7	6.3	2.4	4.2	4.1
LnGrp Delay(d),s/veh	44.4	24.9	25.1	144.4	20.8	20.9	43.9	22.0	26.6	40.5	22.6	22.8
LnGrp LOS		U	ပ	ш	ပ	ပ		ပ	ပ		ပ	ပ
Approach Vol, veh/h		619			652			177			989	
Approach Delay, s/veh		26.7			53.8			30.4			28.1	
Approach LOS		O			Ω			O			ပ	
Timer	-	2	3	4	2	9	7	∞				
Assigned Phs	—	2	က	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	10.8	27.3	11.0	24.9	11.0	27.1	7.9	28.0				
Change Period (Y+Rc), s	4.5	0.9	4.5	2.0	4.5	0.9	4.5	2.0				
Max Green Setting (Gmax), s	6.5	31.0	6.5	36.0	6.5	31.0	5.7	36.8				
Max Q Clear Time (g_c+I1), s	6.4	16.4	8.5	12.8	8.9	9.01	4.2	10.1				
Green Ext Time (p_c), s	0.0	2.7	0.0	3.3	0.0	2.4	0.0	2.7				
Intersection Summary												
HCM 2010 Ctrl Delay			34.6									
HCM 2010 LOS			O									

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Configurations Fig. Fig. Fig. Fig. Will Will		1	†	1	-	ļ	4	•	—	4	۶	→	*
	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
40 199 100 131 780 170 722 110 440 1562 40 190 100 131 780 170 722 110 440 1562 7 4 190 100 131 780 170 722 112 1 6 1 0	Lane Configurations	*	ŧ	¥L.	۴	‡	*	F	4413		F	444	_
100 100 131 780 170 720 722 110 440 1562 100 0	Traffic Volume (veh/h)	40	190	100	131	780	170	720	722	110	440	1562	220
100	Future Volume (veh/h)	40	190	100	131	780	170	720	722	110	440	1562	220
100	Number	7	4	14	m	∞	18	2	2	12	-	9	19
1,00	Initial O (Ob), veh	0 5	0	0	0 0	0	0 [0 0	0	0	0 0	0	_ 8
1,00	Ped-Bike Adj(A_pb1)	1.00	9	0.99	1.00	,	0.67	1.00	,	0.98	00.1	,	5.0
1845 1845 1845 1845 1845 1845 1846 1845	Parking Bus, Adj	1.00	1.00	1.00	1.00	1:00	1:00	1.00	1.00	1.00	1.00	1.00	0.1
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	184
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Adj Flow Rate, veh/h	43	707	10 ₉	142	848	185	/83	782	120	4/8	869L	236
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Adj No. of Lanes		7	- 6	- 6	7	- 6	7		0	7.	6	
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.9
205 1340 550 105 102 443 2024 3460 525 414 1511 1717 3505 1355 1757 3505 1229 0.59 0.79 0.79 0.12 0.30 (1757 3505 1255 1757 3505 1252 3408 4402 668 3408 5036 1757 1752 1555 1757 1752 1552 1757 1757	Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	(.,
0.12 0.02 0.05 0.05 0.05 0.05 0.05 0.05 0.0	Cap, veh/h	202	1240	220	105	1021	443	2024	3460	525	414	1511	466
1757 3505 1555 1757 3505 1522 3408 4402 668 3408 5035 1757 1552 1555 1757 3505 1752 1552 1757 1552 1552 1757 1552 1552 1757 1552 1757 1752 1552 1757 1552 1757 1752 1	Arrive On Green	0.12	0.35	0.35	90.0	0.29	0.29	0.59	0.79	0.79	0.12	0.30	0.30
1757 1767	Sat Flow, veh/h	1757	3202	1555	1757	3505	1522	3408	4402	899	3408	2036	155,
1157 1752 1855 1757 1752 1822 1704 1679 1712 1704 1679 1712 1705 1705 1705 1705 1705 1705 1705 1705	Grp Volume(v), veh/h	43	207	109	142	848	185	783	264	308	478	1698	239
29 5.3 4.3 7.8 29,4 17.8 15.7 6.0 6.1 15.8 39.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	Grp Sat Flow(s), veh/h/ln	1757	1752	1555	1757	1752	1522	1704	1679	1712	1704	1679	155,
29 5.3 4.3 7.8 29.4 17.8 15.7 6.0 6.1 15.8 39.0 1 10.0 1.00 1.00 1.00 1.00 1.00 1.00	Q Serve(g_s), s	2.9	5.3	4.3	7.8	29.4	17.8	15.7	0.9	6.1	15.8	39.0	16.
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Cycle Q Clear(g_c), s	5.9	5.3	4.3	7.8	29.4	17.8	15.7	0.9	6.1	15.8	39.0	16.
205 1240 556 105 1021 443 2024 2639 1346 414 1511 202 1235 0123 1023 1023 112 (2) 202 1240 556 105 102 1286 588 2024 2639 1346 414 1511 112 (2) 202 1240 556 105 1286 588 2024 2639 1346 414 1511 112 (2) 202 1240 550 105 1286 588 2024 2639 1346 414 1511 112 (2) 202 1240 523 134 414 1511 12 (2) 202 288 13.4 61.1 43.1 72.1 33 6 571 455 53 103 03 03 03 03 03 03 03 03 03 03 03 03 0	Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.39	1.00		1.0
021 047 020 135 083 042 039 023 125 115 172 02 1205 1204 550 135 083 042 039 023 1240 120 120 1200 1200 1200 1200 1200 1	Lane Grp Cap(c), veh/h	202	1240	220	105	1021	443	2024	2639	1346	414	1511	46
205 1240 550 105 1286 558 2024 2639 1346 414 1511 1100 1.00 1.00 1.00 1.00 1.00 1.00	V/C Ratio(X)	0.21	0.17	0.20	1.35	0.83	0.42	0.39	0.23	0.23	1.15	1.12	0.5
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	202	1240	220	105	1286	228	2024	2639	1346	414	1511	466
1,00 1,00 1,00 1,00 1,00 1,00 0,79 0,79 0,79 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
h 520 288 134 6f.1 43.1 72.1 139 3.6 3.6 57.1 45.5 5 2.3 0.3 0.8 206.4 3.1 0.2 0.0 0.2 0.3 9.3 650 h 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.79	0.79	0.79	1.00	1.00	1.0
23 0.3 0.8 2064 3.1 0.2 0.0 0.2 0.3 934 65.0 hln 15.2 do 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Uniform Delay (d), s/veh	52.0	28.8	13.4	61.1	43.1	72.1	13.9	3.6	3.6	57.1	45.5	37.0
hylin 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Incr Delay (d2), s/veh	2.3	0.3	0.8	206.4	3.1	0.2	0.0	0.2	0.3	93.4	65.0	4.0
15 2.6 2.0 9.8 14.7 7.5 7.4 2.8 2.9 12.8 27.1 54.3 2.9.1 14.2 267.5 46.2 72.3 14.0 3.8 3.9 15.5 1105 5.8 2.9 1.4.2 267.5 46.2 72.3 14.0 3.8 3.9 15.5 1105 27.6 77.0 8.5 111.6 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 3 4 5 6 7 8 1 4.2 5 6 7 8 1 5 6 7 8 1 7 7 7 7 7 1 7 7 7 7 1 8 7 7 7 1 8 7 7 7 1 8 7 1 8 7 8 7 8 8 7 8 8 7 9 8 7 9 8 7	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Ö 1
04.3 27.1 14.2 20.3 40.2 12.3 14.0 3.8 3.7 19.0 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10	%ile BackOfQ(50%),veh/ln	2. 5	2.6	2.0	9.8	14.7	7.5	7.4	2.8	2.9	12.8	27.1	7.
27.6 77.0 8.5 7.7 8.8 7.7 7.0 8.5 7.8 8.5 7.8 8.5 7.8 8.5 7.8 8.5 8.5 8.5 8.5 8.5 8.5 8.5 8.5 8.5 8	Liferip Delay(u),s/veri	24.3	- 67	7.4.7	C./02	40.7	72.3	0.4.0	2.0 V	5.5	120.5	0.01	4
359 1175 1088 376 77.0 8.5 C E A A 5 6 7 8 S 200 1100 120 510 850 450 201 429 S 34 6 7 8 6 7 8 S 34 6 0 34.2 5 60 7 85 S 34 6 0 34.2 5 60 7 85 S 34 6 0 34.2 5 60 36 36 36 36 36 36 36 36 36 36 36 36 36	Lucipinos		اد	2	-	٦	۳	۵	A S	∢	-	_ L	
2.7.0	Approach Vol. ven/h		359			2/11			8891			2415	
1 2 3 4 5 6 7 200 110.0 12.0 51.0 85.0 45.0 20.1 1.42 6.0 14.2 5 6.0 6 5 17.8 41.0 7.8 46 17.8 39 6.1 17.8 81. 9.8 7.3 17.7 41.0 4.9 0.0 4.5 0.0 1.1 0.0 0.0 0.0	Approach Delay, swell		0.77			P. L						о 	
1 2 3 4 5 6 7 200 1100 120 51 85 6 7 200 1100 120 51 85 6 0 16 41.0 7.8 76 178 39 6.1 17.8 8.1 9.8 7.3 17.7 41.0 4.9 0.0 4.5 0.0 1.1 0.0 0.0 0.0 68.2 E	Apploacii EO3)			_			C			-	
1 2 3 4 5 6 7 7 200 110.0 12.0 51.0 85.0 45.0 20.1 1.0 12.0 51.0 85.0 45.0 20.1 1.1 8 41.0 7.8 81.1 9.8 7.3 17.7 41.0 4.9 0.0 4.5 0.0 1.1 0.0 0.0 0.0 0.0 68.2 E.	Timer	_	2	3	4	2	9	7	8				
200 1100 12.0 51.0 85.0 45.0 20.1 14.2 56.0 6.0 5.6 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Assigned Phs	1	2	3	4	2	9	7	8				
. 42 60 .42 .5 60 .6 .5 .16 41.0 .78 .46 17.8 .39 .6.1 178 81 98 7.3 17.7 410 49 0.0 4.5 0.0 1.1 0.0 0.0 0.0 68.2 E	Phs Duration (G+Y+Rc), s	20.0	110.0	12.0	51.0	82.0	45.0	20.1	42.9				
. 16 41.0 . 7.8 . 46 17.8 . 39 . 6.1 17.8 8.1 9.8 7.3 17.7 410 4.9 0.0 4.5 0.0 1.1 0.0 0.0 0.0 68.2 E	Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	* 5	0.9	9 *	* 5	* 5				
178 8.1 9.8 7.3 17.7 410 49 0.0 4.5 0.0 1.1 0.0 0.0 0.0 68.2 E	Max Green Setting (Gmax), s	* 16	41.0	* 7.8	* 46	17.8	* 39	* 6.1	* 48				
0.0 4.5 0.0 1.1 0.0 0.0 0.0 0.0 68.2 E	Max Q Clear Time (g_c+I1), s	17.8	8.1	8.6	7.3	17.7	41.0	4.9	31.4				
	Green Ext Time (p_c), s	0.0	4.5	0.0		0.0	0.0	0.0	4.2				
	Intersection Summary												
	HCM 2010 Ctrl Delay			68.7									
	HCM 2010 LOS			3 ш									
		ı											П

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HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL1) AM 5: I-5 South On-Ramp/I-5 SB Ramps & Palomar Airport Rd.

Movement EB1 EB1 EB1 MB1		1	†	>	>	ţ	4	•	←	*	٠	-	*
↑↑↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑	Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
0 540 80 0 689 312 0 0 1163 0 1 540 80 0 689 312 0 0 1163 0 1 0 0 0 0 0 0 0 1100 0 <td>Lane Configurations</td> <td></td> <td>4413</td> <td></td> <td></td> <td>*</td> <td>*-</td> <td></td> <td></td> <td></td> <td>K.</td> <td></td> <td>W.</td>	Lane Configurations		4413			*	*-				K.		W.
0 540 80 0 680 312 0 0 1 4 4 1 6 16 7 4 1 6 10 0	Traffic Volume (veh/h)	0	540	8	0	089	312	0	0	0	1163	0	390
5 2 12 1 6 16 7 4 1.00 1.00 0	Future Volume (veh/h)	0	540	8	0	089	312	0	0	0	1163	0	390
100	Number	2	2	12	-	9	16				7	4	14
1,00	Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
1,00	Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
0 1845 1945 1845 1845 1845 1845 1845 1845 1845 1845 0 0 3 0 0 2 1 2 0 0 3 0 0 2 0 0 2 0 <t< td=""><td>Parking Bus, Adj</td><td>1.00</td><td>1:00</td><td>1.00</td><td>1:00</td><td>1.00</td><td>1:00</td><td></td><td></td><td></td><td>1.00</td><td>1.00</td><td>1.00</td></t<>	Parking Bus, Adj	1.00	1:00	1.00	1:00	1.00	1:00				1.00	1.00	1.00
0 0.00 89 0 756 0 1725 0 0 0 3 3 3 3 3 0	Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1845				1845	0	1845
0 3 0 0 2 1 2 0 0.90	Adj Flow Rate, veh/h	0	009	68	0	756	0				1292	0	433
0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90	Adj No. of Lanes	0	3	0	0	2	-				2	0	_
0 1316 133	Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
0.00 0.30 0.30 0.00 0.30 0.00 0.42 0.00 0.30 0.00 0.00 0.30 0.00 0	Percent Heavy Ven, %	0 0	3,171	ري در	0 0	3	37				3 2	0 0	2 11/
0.00 4604 650 0.00	Cap, veryn	0 8	0 00	56.0	0 8	1039	400				4741	0 0	000
0 452 237 0 756 0 1292 0 0 1679 1730 0 756 0 0 1292 0 0 0 40 41 00 71 000 1100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Sat Flow veh/h	9.0	4604	0.30	900	3597	1568				3408	0.00	1568
0 1679 1730 0 1752 1568 17704 0 0 0 0 4.0 4.1 0.0 7.1 0.0 1 13.1 0.0 0 0 0 4.1 0.0 7.1 0.0 1 13.1 0.0 0 0 0 0 4.1 0.0 7.1 0.0 1 13.1 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Gm Volume(v) web/h	0	452	237	0	756	0				1292	0	433
0.0 4.0 4.1 0.0 7.1 0.0 13.1 0.0 0.0 4.0 4.1 0.0 7.1 0.0 13.1 0.0 0.0 4.0 4.1 0.0 7.1 0.0 1.00 1.00 0.0 9.6 51.3 0 1039 465 1424 0 0.0 0.2 2202 11.35 0 0.03 0.09 1.00 1.00 1.00 1.00 1.00 0.00 0.09 0.09 0.09 0.00	Gro Sat Flow(s).veh/h/ln	0	1679	1730	0	1752	1568				1704	0	1568
0.0 4.0 4.1 0.0 7.1 0.0 13.1 0.0 0.0 0.0 0.0 0.38 0.00 10.0 10.0 10.0 0.0 0.38 0.00 10.0 10.0 10.0 10.0 0.0 0.45 0.46 0.00 0.73 0.06 0.91 0.00 1.00 1.00 1.00 1.00 1.00 1.00	Q Serve(g_s), s	0.0	4.0	4.1	0.0	7.1	0.0				13.1	0.0	8.2
0.00 0.38 0.00 1.00 1.00 1.00 0.00 0.038 0.00 1.00 1.00 1.00 0.045 0.045 0.045 0.00 0.03 0.00 0.03 0.00 0.03 0.00 0.03 0.00 0.03 0.00 0.03 0.00 0.00 1.00 1	Cycle Q Clear(g_c), s	0.0	4.0	4.1	0.0	7.1	0.0				13.1	0.0	8.2
0.00 996 513 0 1039 465 11424 0 0 0.00 0.025 0.045 0.046 0.00 0.273 0.000 0.00 0.01 0.00 1.00 1.00 1.00 1.	Prop In Lane	0.00		0.38	0.00		1.00				1.00		1.00
0.00 0.45 0.46 0.00 0.73 0.00 0.00 0.00 0.00 0.00 0.00	Lane Grp Cap(c), veh/h	0	966	513	0	1039	465				1424	0	922
1,00 1,00	V/C Ratio(X)	0.00	0.45	0.46	0.00	0.73	0.00				0.91	0.00	99.0
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Avail Cap(c_a), veh/h	0	2202	1135	0	2298	1028				2356	0	1084
0.00 1.00 1.00 0.00 1.00 0.00 1.00 0.00 0.0 0.	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
0.0 105 105 0.0 11.6 0.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Upstream Filter(I)	0.00	1:00	1.00	0.00	1:00	0.00				1.00	0.00	1.00
00 01 02 00 04 00 20 00 00 00 00 00 00 00 00 00 00 18 19 00 34 00 120 00 00 106 108 00 120 00 63 00 00 106 108 00 120 00 63 00 00 107 120 00 120 00 120 00 120 00 130 00 120 00 130 00 120 00 140 00 00 00 00 00 00	Uniform Delay (d), s/veh	0.0	10.5	10.5	0.0	11.6	0.0				10.0	0.0	8.6
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	0.0	0.1	0.2	0.0	0.4	0.0				2.0	0.0	0.4
0.0 1.8 1.9 0.0 3.4 0.0 6.3 0.0 0.0 1.6 10.8 0.0 12.0 0.0 12.0 0.0 12.0 0.0 12.0 0.0 12.0 0.0 12.0 0.0 12.0 0.0 12.0 0.0 12.0 0.0 12.0 12	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
00 106 108 00 120 00 120 00 120 00 120 00 120 00 120 00 120 00 120 00 120 1725 10.7 8 120 11.3 11.3 11.3 11.3 11.3 11.3 11.3 11.	%ile BackOfQ(50%),veh/ln	0.0	-0.8	1.9	0.0	3.4	0.0				6.3	0.0	3.6
689 756 B 689 756 10.7 12.0 B A B B B B 1 2 3 4 5 6 7 8 16.3 20.5 16.3 5.4 5.1 5.4 24.1 25.4 24.1 6.1 15.1 9.1 0.9 0.3 1.1	LnGrp Delay(d),s/veh	0.0	10.6	10.8	0.0	12.0	0.0				12.0	0.0	9.0
689 756 10.7 12.0 B B B B 1 2 3 4 5 6 7 8 16.3 20.5 16.3 5.4 5.1 5.4 6.1 15.1 9.1 0.9 0.3 1.1	LnGrp LOS					m							۷
10.7 12.0 B	Approach Vol, veh/h		689			756						1725	
1 2 3 4 5 6 7 8 2 4 5 6 7 8 16.3 20.5 16.3 5.4 5.1 5.4 24.1 25.4 24.1 6.1 15.1 9.1 0.9 0.3 1.1	Approach Delay, s/veh		10.7			12.0						11.3	
1 2 3 4 5 2 4 6 16.3 20.5 5.4 5.1 24.1 25.4 6.1 15.1 0.9 0.3	Approach LOS		В			В						В	
2 4 16.3 20.5 5.4 5.1 24.1 25.4 6.1 15.1 0.9 0.3	Timer		2	က	4	2	9	7	00				
16.3 20.5 5.4 5.1 24.1 25.4 6.1 15.1 0.9 0.3 11.3 B	Assigned Phs		2		4		9						
5.4 5.1 24.1 25.4 6.1 15.1 0.9 0.3 11.3 B	Phs Duration (G+Y+Rc), s		16.3		20.5		16.3						
24.1 25.4 6.1 15.1 0.9 0.3 11.3 B	Change Period (Y+Rc), s		5.4		5.1		5.4						
5.1 15.1 15.1 S	Max Green Setting (Gmax), s		24.1		25.4		24.1						
0.9 11.3 EB	Max Q Clear Time (g_c+I1), s		6.1		15.1		9.1						
	Green Ext Time (p_c), s		0.9		0.3		-						
	Intersection Summary												
	HCM 2010 Ctrl Delay			11.3									
	HCM 2010 LOS			В									

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HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL1) AM 6: I-5 NB Ramps & Palomar Airport Rd.

Movement Lane Configurations												
Lane Configurations	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
,	¥	444			444	N/N		₩	N. N.			
Traffic Volume (veh/h)	8	1633	0	0	862	452	70	0	1202	0	0	C
Future Volume (veh/h)	88	1633	0	0	862	452	70	0	1202	0	0	0
Number	2	2	12	-	9	16	3	∞	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		96.0	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	85	1684	0	0	886	466	72	0	1239			
Adj No. of Lanes	_	3	0	0	3	2	0	_	2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	102	2295	0	0	1835	962	824	0	1265			
Arrive On Green	90:0	0.46	0.00	0.00	0.12	0.12	0.47	0.00	0.47			
Sat Flow, veh/h	1757	5202	0	0	5202	2640	1757	0	2696			
Grp Volume(v), veh/h	82	1684	0	0	688	466	72	0	1239			
Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1320	1757	0	1348			
Q Serve(g_s), s	6.5	38.3	0.0	0.0	23.1	23.1	3.2	0.0	63.2			
Cycle Q Clear(g_c), s	6.5	38.3	0.0	0.0	23.1	23.1	3.2	0.0	63.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	102	2295	0	0	1835	962	824	0	1265			
V/C Ratio(X)	0.81	0.73	0.00	0.00	0.48	0.48	0.09	0.00	0.98			
Avail Cap(c_a), veh/h	161	2295	0	0	1835	962	956	0	1421			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.63	0.63	0.00	0.00	0.81	0.81	1.00	0.00	1.00			
Uniform Delay (u), siven	7.00	1.12	0.0	0.0	64.5	44.5	20.0	0.0	20.0			
Incl Delay (uz), sveli	t C	5.0	0.0	0.0	; c	+ 0	0.0	0.0				
Wile BackOfO(50%) veh/ln	3.00	17.9	0.0	0.0	10.9	0.0	2.0	0.0	26.5			
LnGrp Delay(d),s/veh	69.5	32.5	0.0	0.0	50.1	50.7	20.6	0.0	54.2			
LnGrp LOS	ш	ပ			D	۵	ပ		D			
Approach Vol, veh/h		1766			1355			1311				
Approach Delay, s/veh		34.2			50.3			52.4				
Approach LOS		ပ			D			O				
Timer	-	2	က	4	2	9	7	∞				
Assigned Phs		2			2	9		∞				
Phs Duration (G+Y+Rc), s		69.2			12.8	56.4		70.8				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		55.7			* 13	38.2		73.8				
Max Q Clear Time (g_c+I1), s		40.3			8.5	25.1		65.2				
Green Ext Time (p_c), s		3.1			0.0	1.5		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			44.5									
HCM 2010 LOS			۵									

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HCM 2010 Signalized Intersection Summary 7: Paseo Del Norte & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL1) AM 0824/2017

HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL1) AM 8: Armada Dr. & Palomar Airport Rd.

National Color Nati		1	Ť	-	*		,		-	L	k	+	,
YI ↑↑↑ ↑	Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
130 2585 130 100 1004 200 130 40 100 90 40 130 2585 130 100 1004 200 130 40 100 90 40 130 2585 130 100 1004 200 130 40 100 90 40 140 140 140 140 140 140 140 140 140 140 150 140 140 140 140 140 140 140 140 140 150 150 140 140 140 140 140 140 140 140 150 150 140 140 140 140 140 140 140 140 150 150 150 140 140 140 140 140 140 140 150 150 150 140 150 140 140 140 140 150 150 150 150 140 140 140 140 140 150 150 150 140 140 140 140 140 150 150 150 140 140 140 140 140 140 150 150 150 140 140 140 140 140 140 150 150 150 140 140 140 140 140 140 150 150 150 150 140 140 140 140 140 150 150 150 150 140 140 140 140 140 150 150 150 150 140 140 140 140 140 150 150 150 150 140 140 140 140 140 150 150 150 150 140 140 140 140 140 150 150 150 150 140 140 140 140 140 150 150 150 150 150 140 140 140 150 150 150 150 150 150 140 140 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 1	Lane Configurations	F	4413		K.	Ħ	*-	K	₩		K.	₽	
130 2565 130 100 1084 200 130 40 100 90 40 9 0	Traffic Volume (veh/h)	130	2585	130	100	1084	200	130	40	100	06	40	80
5 2 12 1 6 16 3 8 18 7 4 100 0 <td>Future Volume (veh/h)</td> <td>130</td> <td>2585</td> <td>130</td> <td>100</td> <td>1084</td> <td>200</td> <td>130</td> <td>40</td> <td>100</td> <td>06</td> <td>40</td> <td>80</td>	Future Volume (veh/h)	130	2585	130	100	1084	200	130	40	100	06	40	80
1.00	Number	വ	7	12	- 0	9	91	с	∞ α	9 9	7	4 (14
1,00	Initial Q (Qb), ven	0 6	0	0 0	0 0	О	0 0	0 0	0	0 10	0 0	О	0 0
1845 1845 1846 1845 1846 1845 1846 1845 1846 1845 1846 1845 1846 1845 1846 1845 1846	Ped-Bike Adj(A_pb1)	8 8	5	0.98	00.1	00	0.99	1.00	00	1.00	1.00	100	0.95
138 2750 138 105 135 275 138 105 <td>Adi Sat Flow vehihilin</td> <td>1845</td> <td>1845</td> <td>1900</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1900</td> <td>1845</td> <td>1845</td> <td>1900</td>	Adi Sat Flow vehihilin	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
2 3 0 2 4 1 2 2 0 2 2 3	Adj Flow Rate, veh/h	138	2750	138	106	1153	213	138	43	106	96	43	85
094 152 <td>Adj No. of Lanes</td> <td>2</td> <td>c</td> <td>0</td> <td>2</td> <td>4</td> <td>-</td> <td>2</td> <td>2</td> <td>0</td> <td>2</td> <td>2</td> <td>0</td>	Adj No. of Lanes	2	c	0	2	4	-	2	2	0	2	2	0
3 3	Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
1439 3148 155 122 1533 432 185 259 221 127 219 2028 0443 0443 0471 242 3408 068 0.08 0.08 0.06 0.15 0.04 0.12 3408 1911 242 3408 6346 1548 3408 1752 1495 3408 1752 142 70.7 73.6 4.3 24.9 113 5.6 3.0 9.1 3.9 3.1 1.00 2.1 0.87 0.89 0.87 0.75 0.49 0.75 0.10 1.00 2.1 0.87 0.89 0.87 0.75 0.49 0.75 0.10 1.00 2.2 152 1151 122 330 0.3 0.3 0.3 0.3 0.1 0.0 1.00 2.3 5.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
0.28 0.43 0.43 0.04 0.02 0.02 0.01 0.02 0.02 0.01 0.02 0.02 0.01 0.04 0.01 0.04 0.01 0.04 0.01 0.04 0.04 0.01 0.04 0.04 0.01 0.08 0.18 0.04 0.17 0.01 0.09 0.04 0.17 0.04 0.04 0.02 0.18 0.04 0.17 0.04 1.06 1.02 0.04 0.17 0.04 1.04 1.58 1.54 1.04 1.75 1496 1.75 1496 1.75 1496 1.75 1496 1.75 1496 1.75 1496 1.75 1496 1.75 1496 1.75 1496 1.75 1496 1.75 1498 1.75 1496 1.75 149 1.75 149 1.75 149 1.75 149 1.75 149 1.75 149 1.75 149 1.75 149 1.75 149 1.75 149	Cap, veh/h	1439	3148	155	122	1533	432	185	259	221	127	219	185
3408 4911 242 3408 6546 1548 3408 1752 1495 3408 1752 138 1865 1023 106 1132 213 343 106 96 43 42 707 736 43 249 113 56 30 9.1 39 3.1 100 707 736 43 249 113 56 30 9.1 39 3.1 100 107 736 43 249 113 56 30 9.1 39 3.1 100 107 736 43 249 113 56 30 9.1 39 3.1 100 087 075 109 100 100 100 100 100 100 100 100 100 100 1100 100 100 100 100 100 100 100 100 100 100 100 100	Arrive On Green	0.28	0.43	0.43	0.01	0.08	0.08	0.02	0.15	0.15	0.04	0.12	0.12
138 1865 1023 106 1153 213 138 43 106 96 43 1704 1704 1586 1548 1704 1752 149 175 4.2 70.7 73.6 4.3 24.9 11.3 56 3.0 9.1 3.9 3.1 1.00 0.87 0.73 6.43 24.9 11.3 56 3.0 9.1 3.9 3.1 1.00 0.87 0.73 1.00	Sat Flow, veh/h	3408	4911	242	3408	6346	1548	3408	1752	1495	3408	1752	1485
1704 1679 1796 1704 1586 1548 1704 1752 1495 1704 1752 1495 1704 1752 1495 1704 1752 1495 1707 136 4.3 24.9 11.3 5.6 3.0 9.1 3.9 3.1 1.00 0.13 0.13 0.13 0.13 0.14 0.15	Grp Volume(v), veh/h	138	1865	1023	106	1153	213	138	43	106	96	43	82
42 70,7 73.6 4.3 24.9 11.3 5.6 3.0 9.1 3.9 1.00 0.13 1.00 1.00 1.00 1.00 1.00 1.00 1.439 2152 1151 1.22 1533 432 185 259 221 127 0.10 0.87 0.89 0.87 0.75 0.17 0.00 1.00 <	Grp Sat Flow(s),veh/h/ln	1704	1679	1796	1704	1586	1548	1704	1752	1495	1704	1752	1485
42 70.7 73.6 4.3 24.9 11.3 5.6 3.0 9.1 3.9 1.00 0.03 0.13 1.00	Q Serve(g_s), s	4.2	70.7	73.6	4.3	24.9	11.3	9.6	3.0	9.1	3.9	3.1	7.4
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Cycle Q Clear(g_c), s	4.2	70.7	73.6	4.3	24.9	11.3	9.6	3.0	9.1	3.9	3.1	7.4
1439 2152 1151 122 1533 432 185 259 221 127 10.0 0.87 0.89 0.87 0.75 0.49 0.75 0.17 0.48 0.76 0.49 0.75 0.17 0.48 0.76 0.49 0.75 0.17 0.48 0.76 0.49 0.75 0.17 0.48 0.76 0.49 0.75 0.17 0.10 0.00 0.0 0.0 0.3 0.3 0.33 0.33 0.3	Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		1.00
0.10 0.87 0.89 0.87 0.75 0.49 0.75 0.17 0.48 0.76 0.49 0.75 0.17 0.48 0.76 0.49 0.75 0.49 0.75 0.17 0.48 0.76 0.49 0.75 0.49 0.75 0.17 0.20 0.05 0.04 0.44 0.47 0.77 0.73 0.33 0.33 1.00 1.00 1.00 1.00 0.00 0.2 3 5.0 36.3 0.23 3.5 3.5 3.5 3.5 3.5 3.5 3.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Lane Grp Cap(c), veh/h	1439	2152	1151	122	1533	432	182	259	221	127	219	185
1439 2152 1151 122 3010 793 236 488 416 127 0.04 0.04 0.04 0.04 0.04 0.04 0.04 0.0	V/C Ratio(X)	0.10	0.87	0.89	0.87	0.75	0.49	0.75	0.17	0.48	0.76	0.20	0.46
0.67 0.67 0.67 0.33 0.33 1.00 1.00 1.00 1.00 0.05 0.64 0.44 0.74 0.77 0.77 0.77 1.00 1.00 1.00 1.00 0.00 2.3 5.3 6.89 6.03 35.3 65.3 52.1 54.7 6.68 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Avail Cap(c_a), veh/h	1439	2152	1151	122	3010	793	236	488	416	127	432	366
0.44 0.44 0.47 0.77 0.77 1.00 1.00 1.00 1.00 1.00 1.0	HCM Platoon Ratio	0.67	0.67	0.67	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
305 345 35.3 689 60.3 35.3 65.3 52.1 54.7 66.8 60.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Upstream Filter(I)	0.44	0.44	0.44	0.77	0.77	0.77	1:00	1:00	1.00	1.00	1.00	1.00
0.0 2.3 5.0 36.3 2.7 3.1 6.4 0.1 0.6 20.8 2.0 3.35 38.2 2.7 11.3 5.2 2.8 1.5 3.8 2.2 30.5 36.8 40.3 105.1 63.0 38.4 71.6 52.2 55.3 87.6 2.0 3.30 40.3 105.1 63.0 38.4 71.6 52.2 55.3 87.6 30.26 147.2 2.8 1.5 3.8 2.2 30.5 30.5 6.7 1.2 5.2 5.2 1.4 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Uniform Delay (d), s/veh	30.5	34.5	35.3	68.9	60.3	35.3	65.3	52.1	54.7	8.99	22.0	56.9
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	0.0	2.3	2.0	36.3	2.7	3.1	6.4	0.1	9.0	20.8	0.2	0.7
20 335 382 27 113 52 28 15 38 22 305 368 403 1651 630 384 716 522 55.3 87.6 C D D F E D E F 3026 1472 287 37.7 62.5 62.7 62.7 1 2 3 4 5 6 7 8 92 95.7 12.6 22.5 65.1 39.8 9.4 25.7 42 60 50 *5 60 *6 *4.2 5.0 63 756 76 78 60 0.6 0.5 0.1 6.9 0.0 0.6	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.5 36.8 40.3 105.1 63.0 38.4 71.6 52.2 55.3 87.0 62.5 62.7 62.7 62.7 62.7 62.7 62.7 62.7 62.7	%ile BackOfQ(50%),veh/ln	2.0	33.5	38.2	2.7	11.3	5.2	2.8	1.5	ب ص ر	2.2	7.5	3.1
30.26	LnGrp Delay(d), s/veh	30.5	36.8	40.3	105.1	63.0	38.4	9.17	52.2	55.3	9./8	55.1	5/.5
3026 14/2 28/1 307 625 627 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 92 95.7 126 225 65.1 398 9,4 25.7 4,2 60 50 °5 60 °6 °4.2 5.0 6,3 756 76 9,4 66 55.3 39.0 6,3 756 76 9,4 65 66 59 11.1 0.0 0.0 0.0 0.5 0.1 6,9 0.0 0.6	LnGrp LOS	اد			-	إلا		ш	ء ا	ال	-	ш ;	الد
3.7 625 627 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 9.2 95.7 12.6 22.5 65.1 39.8 9.4 25.7 4.2 60 50 °5 60 °6 °4.2 5.0 6.3 71.4 9.7 °35 10.0 °6 °5.2 39.0 6.3 75.6 7.6 9.4 6.2 26.9 5.9 11.1 0.0 0.0 0.0 0.5 0.1 6.9 0.0 0.6	Approach Vol, veh/h		3026			1472			287			224	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 92 95.7 12.6 22.5 65.1 39.8 9.4 5 5 71.4 9.7 35 100 66 5.2 00 00 00 05 0.1 6.9 0.0 47.9	Approach Delay, siven		31.1			62.5			7.79			6.69	
1 2 3 4 5 6 7 92 95.7 126 225 65.1 398 9.4 5 42 60 50 °5 65.1 398 9.4 5 5 71.4 9.7 °35 100 °66 °5.2 5 63 756 76 9.4 6.2 26.9 5.9 0 00 00 00 0.5 0.1 6.9 0.0	Apploadil LOS		ם			۵			۵			u	
1 2 3 4 5 6 7 7 9 9 2 9 5 7 12 6 22 5 65 1 39 8 9 4 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9	Timer	-	2	3	4	2	9	7	∞				
92 95.7 12.6 22.5 65.1 39.8 9.4 3.4 2.5 65.0 5.0 6 4.2 2.5 60.0 6 4.2 3.5 71.4 9.7 35 10.0 6.6 5.2 2.5 0.0 0.0 0.0 0.5 0.1 6.9 0.0 47.9 D. 47.9	Assigned Phs	1	2	3	4	2	9	7	8				
742 60 50 °5 60 °6 °42 °5 71.4 9,7 °35 100 °66 °52 °6 °0 0.0 0.0 0.5 0.1 6.9 0.0 47.9 D	Phs Duration (G+Y+Rc), s	9.5	95.7	12.6	22.5	65.1	39.8	9.4	25.7				
. 5 714 9.7 *35 10.0 *66 *5.2 6.3 756 7.6 9.4 6.2 26.9 5.9 0.0 0.0 0.5 0.1 6.9 0.0 47.9	Change Period (Y+Rc), s	* 4.2	0.9	2.0	* 5	0.9	9 *	* 4.2	2.0				
6.3 75.6 7.6 9.4 6.2 26.9 5.9 0.0 0.0 0.0 0.5 0.1 6.9 0.0 47.9	Max Green Setting (Gmax), s	* 5	71.4	6.7	* 35	10.0	99 *	* 5.2	39.0				
0.0 0.0 0.5 0.1 6.9 0.0 47.9 D	Max Q Clear Time (g_c+I1), s	6.3	75.6	7.6	9.4	6.2	26.9	5.9	1.1				
	Green Ext Time (p_c), s	0.0	0.0	0.0	0.5	0.1	6.9	0.0	9.0				
	Intersection Summary												
	HCM 2010 Ctrl Delay			47.9									
	HCM 2010 LOS			٥									
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	N. N.	444	R _	F	444	ĸ.	14	¢	ĸ.	1	+	*
Traffic Volume (veh/h)	160	2365	190	110	1084	190	110	30	170	110	30	70
Future Volume (veh/h)	160	2365	190	110	1084	190	110	30	170	110	30	20
Number	2	2	12	-	9	16	3	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	,	1.00	1.00	,	0.99	1.00	,	0.94	1.00	1	0.94
Parking Bus, Adj	00 !	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	00!	1:00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	170	2516	202	1117	1153	202	1117	0	202	117	32	74
Adj No. of Lanes	2	m	-	-	3	-	2	0	2	2	-	_
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	က	co	3	က	က	3	3	က	3	က	3	3
Cap, veh/h	1405	3241	1067	118	1439	499	141	0	329	122	198	158
Arrive On Green	0.82	1.00	1.00	0.02	0.09	0.09	0.04	0.00	0.11	0.04	0.11	0.11
Sat Flow, veh/h	3408	5036	1561	1757	5036	1551	3514	0	2956	3408	1845	1475
Grp Volume(v), veh/h	170	2516	202	117	1153	202	117	0	202	117	32	74
Grp Sat Flow(s),veh/h/ln	1704	1679	1561	1757	1679	1551	1757	0	1478	1704	1845	1475
Q Serve(g_s), s	1.4	0.0	0.0	9.3	31.4	12.0	4.6	0.0	7.8	4.8	2.2	3.0
Cycle Q Clear(g_c), s	1.4	0.0	0.0	9.3	31.4	12.0	4.6	0.0	7.8	4.8	2.2	3.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1405	3241	1067	118	1439	499	141	0	329	122	198	158
V/C Ratio(X)	0.12	0.78	0.19	0.99	0.80	0.40	0.83	0.00	19.0	96:0	0.16	0.47
Avail Cap(c_a), veh/h	1405	3241	1067	118	2266	754	141	0	857	122	527	421
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.26	0.26	0.26	0.80	0.80	0.80	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.3	0.0	0.0	68.4	59.5	48.4	66.7	0.0	43.2	67.4	26.8	11.9
Incr Delay (d2), s/veh	0.0	0.5	0.1	71.3	3.9	1.9	31.2	0.0	0.7	8.89	0.1	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfO(50%),veh/ln	9.0	0.2	0.0	6.9	15.2	5.4	2.9	0.0	3.2	3.4	1.1	1.2
LnGrp Delay(d),s/veh	7.3	0.5	0.1	139.7	63.4	50.3	67.6	0.0	43.9	136.2	56.9	12.7
LnGrp LOS	Α	Α	Α	ч	Е	D	Ь		D	Ь	Е	В
Approach Vol, veh/h		2888			1472			319			223	
Approach Delay, s/veh		6.0			9.79			63.7			83.9	
Approach LOS		A			ш			ш			Ŀ	
Timer	-	2	3	4	2	9	7	∞				
Assigned Phs	-	2	33	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	13.6	96.1	10.3	20.0	63.7	46.0	10.0	20.3				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.7	*	0.9	9 *	*	4.7				
Max Green Setting (Gmax), s		65.1	* 5.6	* 40	11.5	* 63	* 5	40.6				
Max Q Clear Time (g_c+I1), s		2.0	9.9	2.0	3.4	33.4	8.9	8.6				
Green Ext Time (p_c), s		22.6	0.0	0.2	0.2	9.9	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			28.8									
HCM 2010 LOS			S									
Notes												

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Synchro 10 Report Page 11

HCM 2010 Signalized Intersection Summary 9: Hidden Valley Rd. & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL1) AM 08/24/2017

HCM 2010 Signalized Intersection Summary 10: College Blvd. & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL1) AM 08/24/2017

Movement EB	EBL EBT EBR WBL WBT WBR NBL		1	†	<u> </u>	/	Ļ	1	•	—	4	۶	→	*
1		Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
140	140 2445 100 70 1294 140 70	Lane Configurations	r	444	¥C.	<u>,-</u>	444		jr.	æ		<u>,-</u>	*	¥C
140 2445 100 70 1294 140 70 20 100 60 10 100 00 00 0 0 0 0 0 0	140 2445 100 70 1294 140 70	Traffic Volume (veh/h)	140	2445	100	70	1294	140	70	20	100	09	10	70
100	100	Future Volume (veh/h)	140	2445	100	70	1294	140	70	70	100	09	10	70
100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	വ	2	12	_	9	16	m	∞	18	7	4	14
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.95	1.00		0.95
1845 1845 1845 1845 1940 1845 1845 1940 1845	1845 1845 1845 1845 1940 1845	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
19	151	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1845
0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93	1	Adj Flow Kate, ven/h	151	6797	80	ς, '	1391	121	ς, '	77	801	69	= '	72
172 2464 830 31 3	175 2464 830 316 2657 288 79 75 75 75 75 75 75 75 75 75 75 75 75 75	Adj No. of Lanes	- 0	3		- 00	3	0 0	- 00		0 00	- 00	L 00	000
172 2464 830 316 2657 288 79 32 155 82 238 152 6020 0.98 0.98 0.98 0.98 1.00 1.00 0.05 0.12 0.12 0.13 1.15 1.2629 1.15 1.05 1.05 1.15 1.15 1.05 1.05 1.05 1.15 1.15 1.05 1.05 1.05 1.05 1.15 1.15 1.05 1.05 1.05 1.05 1.15 1.15 1.05 1.05 1.05 1.05 1.05 1.05 1.05 1.15 1.15 1.05 1.00 1.00 0.00 0.00 1.14 5.1 0.7 1.00	172 2464 830 316 2657 288 79 0.20 0.98 0.98 1.00 1.00 0.05 1757 50.38 1552 1757 4594 499 1757 1757 1679 1552 1757 1679 1754 1757 1679 1552 1757 1679 1756 1757 1679 1552 1757 1679 1756 1757 1679 1552 1757 1679 1736 1757 1679 1552 1757 1679 1736 1758 1679 1552 1757 1679 1758 1679 1552 1757 1679 1758 1679 136 142 1004 79 1758 1679 138 142 1004 79 1759 1679 1679 1736 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750 1750	Percent Heavy Veh %	2.0	2.5	5. %	5.0	5. %	5.0	5.0	0.70	0.70	0.73	0.73	
157 26.9 1.00 1	0.20 0.99 0.98 0.36 1.00 1.00 0.05 1.757 50.26 1.757 45.94 499 1757 1.75	Can weh/h	177	2464	830	316	2,457	288	0 02	3 9	155	83	238	192
175 5036 1522 1757 4594 499 1757 260 1275 1757 1845 1757 1565 1757 1757 1845 1757 1757 1845 1757 1845 1757 1845 1757 1845 1757 1845 1757 175	1757 5036 1552 1757 4594 499 1757 1579 1589 1757 1579 1	Arrive On Green	00.00	0 08	000	0.36	100	100	0 05	0.17	0.10	0.05	013	0.13
151 2629 108 75 1016 526 75 0 130 65 11 1757 1679 1552 7757 1679 7736 7757 0 1535 7757 1845 117 685 0.11 4.2 0.0 0.0 6.0 0.0 11.4 5.1 0.7 1.00 1.00 1.00 0.29 1.00 0.83 1.00 172 2464 830 316 1942 1004 79 0 187 82 238 183 2464 830 316 1942 1004 79 0 100 1.00 238 2464 830 316 1942 1004 79 0 100 1.00 240 2.00 2.00 2.00 2.00 2.00 1.00 1.00 1.00 254 1.5 0.2 831 0.0 0.0 0.0 0.0 0.0 254 1.5 0.2 831 0.0 0.0 0.0 0.0 0.0 254 1.5 0.2 831 0.0 0.0 0.0 0.0 0.0 255 1.5 0.2 381 0.0 0.0 0.0 0.0 0.0 256 1.5 0.2 381 0.0 0.0 0.0 0.0 0.0 257 1.5 0.2 381 0.0 0.0 0.0 0.0 0.0 258 0.1 2.0 0.2 0.4 4.7 0.0 4.9 2.8 0.4 258 0.1 2.0 0.2 0.4 4.7 0.0 4.9 2.8 0.4 258 0.1 2.0 0.2 0.4 4.7 0.0 0.0 0.0 259 0.0 0.0 0.0 0.0 0.0 0.0 260 0.0 0.0 0.0 0.0 0.0 0.0 270 0.0 0.0 0.0 0.0 0.0 280 0.1 2.3 4 5 6 7 8 281 0.0 0.0 0.0 0.0 0.0 282 0.0 0.0 0.0 0.0 283 0.0 0.0 0.0 0.0 283 0.0 0.0 0.0 0.0 283 0.0 0.0 0.0 0.0 283 0.0 0.0 0.0 0.0 283 0.0 0.0 0.0 283 0.0 0.0 0.0 284 5 6 7 8 5 6.0 6.0 6.0 6.0 6 0.0 0.0 0.0 0.0 7 134 7 8 7 8 7 8 8 7 7 8 9 7 134 7 9 7 134 7 0 7 134	151 2629 108 75 1016 526 75 1757 1679 1552 1757 1679 1736 1757 177 685 0.1 4.2 0.0 0.0 6.0 1.0 1.00 1.00 0.0 0.0 0.0 1.7 2464 830 316 1942 1004 79 0.88 1.07 0.13 0.24 0.25 0.52 0.95 0.88 1.07 0.13 0.24 0.25 0.52 0.95 0.88 1.07 0.13 0.24 0.25 0.52 0.95 0.89 1.07 0.13 0.24 0.20 0.0 0.200 2.00 2.00 2.00 1.00 0.201 2.00 2.00 2.00 0.0 0.202 0.203 0.00 0.0 0.203 0.203 0.00 0.0 0.204 0.204 0.00 0.0 0.0 0.205 0.00 0.00 0.0 0.206 0.00 0.00 0.0 0.207 0.00 0.00 0.00 0.208 0.1 2.0 0.00 0.209 0.1 38.2 0.8 1.5 149.7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 2 3 4 5 6 7 3 1 2 3 3 4 5 6 7 1 2 3 3 3 3 3 3 1 2 3 3 3 3 3 3 0 0 0 0 0 0 0 0 0 0	Sat Flow. veh/h	1757	5036	1552	1757	4594	499	1757	260	1275	1757	1845	1488
1757 1679 1552 1757 1679 1736 1757 0 1535 1757 1845 1 1 685 0.11 42 0.0 0.0 6.0 0.0 11.4 5.1 0.7 1.0 1.0 1.0 0.0 0.0 0.0 0.0 11.4 5.1 0.7 1.0 1.0 0.39 1.0 0.38 1.0 0.3 0.	1757 1679 1552 1757 1679 1736 1757 1757 1679 1755 1679 1736 1757	Gro Volume(v). veh/h	151	2629	108	75	1016	526	75	0	130	9	=======================================	75
11.7 685 0.1 42 0.0 0.0 6.0 0.0 11.4 5.1 0.7 1.0 0.0 11.0 0.0 0.0 0.0 0.0 0.0 0.0 11.4 5.1 0.7 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	11.7 68.5 0.1 4.2 0.0 0.0 6.0 11.7 68.5 0.1 4.2 0.0 0.0 6.0 11.0 10.0 1.0 1.0 1.0 1.0 0.0 6.0 11.0 0.1 0.1 1.0 1.0 0.0 6.0 1.0 0.8 1.0 1.0 1.0 0.0 0.0 6.0 1.0 0.2 200 2.0 2.0 2.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	Grp Sat Flow(s),veh/h/ln	1757	1679	1552	1757	1679	1736	1757	0	1535	1757	1845	1488
117 685 01 42 00 60 0.0 114 51 0.7 118 685 01 142 00 00 60 0.0 114 51 0.7 119 2464 830 316 1942 1004 79 0 187 82 238 088 1.07 013 024 052 052 095 000 0.70 0.79 0.05 0.82 2464 830 316 1942 1004 79 0 100 1.00 1.00 0.42 0.42 0.42 0.77 0.77 0.77 1.00 0.00 1.00 1.00 1.00	117 685 0.1 42 0.0 6.0 1.00 1.00 1.00 6.0 1.00 1.00 0.13 0.29 1.00 0.88 1.07 0.13 0.24 0.52 0.52 0.95 0.2 2.88 2464 830 316 1942 1004 79 0.08 1.07 0.13 0.24 0.52 0.52 0.95 0.20 2.00 2.00 2.00 2.00 2.00 0.00 0.0	O Serve(g_s), s	11.7	68.5	0.1	4.2	0.0	0.0	0.9	0.0	11.4	5.1	0.7	6.5
1100 100 100 100 029 100 083 100 1102 2464 830 316 1942 1004 79 0 187 82 238 100 88 107 013 024 052 052 059 000 070 079 0.05 0.08 107 073 024 0.08 107 073 070 079 0.09 0.00 0.00 0.00 0.00 0.00 0	100 1100 1100 1100 1100 1100 1100 1100	Cycle Q Clear(g_c), s	11.7	68.5	0.1	4.2	0.0	0.0	0.9	0.0	11.4	5.1	0.7	6.5
172 2464 830 316 1942 1004 79 0 187 82 238 82 2464 830 316 1942 1004 79 0 0 187 82 238 82 2464 830 316 1942 1004 79 0 0 187 80 238 82 2464 830 316 1942 1004 79 0 0 400 173 514 2.00 2.00 2.00 2.00 2.00 2.00 1.00 1.00	172 2464 830 316 1942 1004 79 288 1-07 0.13 0.24 0.52 0.52 0.95 0.95 288 2464 830 316 1942 1004 79 2.00 2.00 2.00 2.00 2.00 1.00 1 0.42 0.42 0.42 0.77 0.77 1.00 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.83	1.00		1.00
0.88 1.07 0.13 0.24 0.52 0.95 0.00 0.70 0.79 0.05 2.8 2464 8.30 316 1942 1004 79 0 0 0.70 0.79 0.05 2.80 2.00 2.00 2.00 2.00 2.00 2.00 1.00 1.0	0.88 1.07 0.13 0.24 0.52 0.95 0.52 0.52 0.95 0.52 0.52 0.52 0.52 0.52 0.52 0.52 0.5	Lane Grp Cap(c), veh/h	172	2464	830	316	1942	1004	79	0	187	82	238	192
2.80 2464 8:30 316 1942 1004 79 0 400 113 514 2.00 2.00 2.00 2.00 2.00 100 100 100 100 100 0.42 0.42 0.47 0.77 0.77 100 0.00 100 100 100 0.00 0.	2.28 2464 830 316 1942 1004 79 2.09 2.00 2.00 2.00 2.00 100 0.42 0.42 0.42 0.77 0.77 0.77 1.00 0 8.7 34.4 0.1 0.1 0.8 15 83.0 6.0 18.8 0.1 2.0 0.2 0.4 4.7 64.1 35.9 0.4 382 0.8 1.5 149.7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 31.2 74.5 10.5 23.8 18.7 87.0 11.6 2 8 6.7 0.6 0.0 0.0 0.0 0.0 8 6.7 0.6 0.6 0.0 0.0 8 6.7 0.6 0.0 0.0 0.0 8 6.7 0.0 0.0 0.0 0.1 0.1 9.9 0.0 8 6.7 0.0 0.0 0.0 0.1 0.1 9.9 0.0	V/C Ratio(X)	0.88	1.07	0.13	0.24	0.52	0.52	0.95	0.00	0.70	0.79	0.05	0.39
2.00 2.00 2.00 2.00 2.00 1.00 1.00 1.00	2.00 2.00 2.00 2.00 2.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	238	2464	830	316	1942	1004	62 5	0 0	400	113	514	414
55.4 1.5 0.2 38.1 0.0 0.0 66.7 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	0.42 0.42 0.47 0.77 1.00 0.00 0.00 0.00 0.00 0.00 0.0	HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	00.1	1.00	1.00	1.00	1.00	1.00
8.4 15 0.2 38.1 0.0 0.0 0.0 59.0 59.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	28.4 1.5 0.2 38.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Upstream Filter(I)	0.42	0.42	0.42	0.77	0.77	0.77	1.00	0.00	1.00	1.00	1.00	1.00
8.7 344 0.11 0.11 0.08 115 330 0.00 1.00 0.00 0.00 0.00 0.00 0.00	8.7 344 0.1 0.1 0.8 1.5 83.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/ven	55.4	ς: 	0.7	38.	0.0	0.0	7.00	0.0	29.0	00.0	53.4	55.9
6.0 18.8 0.4 38.2 0.8 1.5 149.7 0.0 60.8 81.4 53.4 18.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14	6.0 188 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Indr Delay (dz), Siven	× ×	34.4	- 0	- 0	8.0	ر دن د	83.0	0.0	Σ. C	4.0	0.0	0.0
64.1 35.9 0.1 4 38.2 0.2 0.4 4.7 0.0 60.8 81.4 53.4 18. E F A D A A A F E F D E F D B 15.1 197. 0.0 60.8 81.4 53.4 18. 2888 16.1 16.1 2.8 6.2 8.3 8.3 66.9 D A A F F F F E E F D B A A F F F F F E E F D B A A F F F F F F F E E F D B A A F F F F F F F F F F F F F F F F F	64.1 35.9 04 38.2 0.2 04 14.7 64.1 35.9 04 38.2 0.8 15 149.7 6.2 88.8 16.7 6.7 6.2 8.8 15.149.7 6.2 8.9 15.149.7 6.2 8.9 15.149.7 6.2 8.9 15.149.7 6.2 8.9 15.149.7 6.2 8.9 15.149.7 6.2 8.9 15.149.7 6.2 8.9 15.149.7 6.2 8.9 15.149.7 6.2 8.9 15.149.7 6.2 8.9 15.149.7 6.2 8.9 15.149.7 6.2 8.9 15.149.7 6.2 8.9 15.149.7 6.2 8.9 15.149.7 6.2 8.9 15.149.7 6.2 8.9 15.1	Wile Beek (COV) week	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	288 1617 A A F E 2888 1617 A A F E 2888 1617 A A F E 288 1617 A A F E 6 7 7 1 2 3 4 5 6 7 7 1 2 3 4 5 6 7 7 1 6 3 8 6 2 7 1 6 7 8 6 1 6 6 7 6 7 8 6 1 6 6 6 8 6 9 1 7 1 6 3 8 6 2 7 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1	Volle DackOTQ(307%), Vervill	0.0	35.0	- 0	38.2	7.0	4. C	1.40.7	0.0	4.4 8 09	0.7	53.4	7.7
2888 1617 205 36.0 2.8 93.3 1.2 2 3 4 5 6 7 8 31.2 74.5 10.5 23.8 18.7 87.0 11.6 22.7 5 6.1 6.9 6.3 39.0 19.0 54.8 9.0 37 5 6.2 0.0 0.0 0.1 0.1 9.9 0.0 0.4 283 268 278 288 288 288 288 288 288 288 288 28	2888 1617 28 360 28 4 5 6 7 1 1 2 3 4 5 6 7 1 1 2 3 4 5 6 7 1 1 2 3 4 5 6 7 1 1 2 3 4 5 6 7 1 1 2 3 4 5 6 7 1 1 2 3 4 5 6 7 1 1 2 3 4 5 6 7 1 1 6 3 6 0 5 0 8 6 1 7 6 1 6 1 7 6 1 6 1 7 6 1 6 1 7 6 1 7 6 1 7 6 1 7 6 1 7 6 1 7 6 1 7 7 1 1 6 1 7 6 1 7 7 1 1 1 1	Lingto LOS	- -		÷ <	2.00	0: A	2 A	1	2	Э. П	- 1		5
36.0 2.8 93.3 1 2 3 4 5 6 7 8 F F 6 7 8 31.2 74.5 10.5 23.8 18.7 87.0 11.6 22.7 6.0 6 42 5.7 5.0 6.0 5.0 5.7 5 6.1 6.9 6.3 39.0 19.0 54.8 9.0 '3.7 5 6.2 70.5 80 8.5 13.7 2.0 7.1 13.4 0.0 0.0 0.0 0.1 0.1 9.9 0.0 0.4 C 28.3 C 28.3 C 28.3	36.0 2.8 A A 5 6 7 7 1 2 3 4 5 6 7 7 1 2 3 4 5 6 7 7 1 2 3 4 5 6 7 7 1 5 0 6 0 5 0 0 0 0 0 0 0 0 1 0 1 9 9 0 0 0 0 0 0 0	Approach Vol. veh/h		2888		1	1617			205	ı		151	
1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 312 745 105 238 187 870 116 22.7 50 6.0 5.0 5.7 5 6.1 69 6.3 39.0 19.0 54.8 90 °5.7 5 6.2 70.5 8.0 8.5 13.7 2.0 7.1 13.4 0.0 0.0 0.0 1.1 0.1 9.9 0.0 0.4	1 2 3 4 5 6 7 1 2 3 4 5 6 7 31.2 74.5 10.5 23.8 18.7 87.0 11.6 6 °6 °6 °4 2 5.7 5.0 6.0 5.0 8 6.1 °69 °6.3 39.0 19.0 54.8 90 10.0 0.0 0.0 0.1 0.1 9.9 0.0	Approach Delay, s/veh		36.0			2.8			93.3			6.99	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 312 745 105 238 187 870 116 60 6 42 53 50 60 5.0 5 6.1 '69 '6.3 39.0 19.0 548 9.0 5 6.2 70.5 8.0 8.5 13.7 2.0 7.1 0.0 0.0 0.0 1.1 0.1 9.9 0.0	1 2 3 4 5 6 7 1 2 3 4 5 6 7 31.2 74.5 10.5 23.8 18.7 87.0 11.6 5 6.1 '69 '6.3 39.0 19.0 54.8 9.0 5 6.2 70.5 8.0 8.5 13.7 2.0 7.1 0.0 0.0 0.0 0.1 0.1 9.9 0.0	Approach LOS		Ω			A			ш			ш	
11	1 2 3 4 5 6 7 7 870 116 80 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0	Timer	-	2	က	4	2	9	7	∞				
312 74.5 10.5 23.8 18.7 87.0 11.6 6.0 °6 °4.2 57 5.0 6.0 5.0 °5.0 °5.0 °5.0 °5.0 °5.0 °5.0 °5.	31.2 74.5 10.5 23.8 18.7 87.0 11.6 6.0 °.6 °.4 2 5.7 5.0 6.0 5.0 °.0 s. 0.0 6.0 5.0 °.0 s. 0.0 6.3 39.0 19.0 54.8 9.0 5.0 °.0 0.0 0.0 0.0 0.1 0.1 9.9 0.0 7.1 C.8 3.3 5.0 5.0 5.0 °.0 0.0 0.0 0.1 0.1 9.9 0.0 °.0 °.0 °.0 °.0 °.0 °.0 °.0 °.0 °.0	Assigned Phs	-	2	m	4	2	9	7	∞				
60 *6 *42 \$7 \$50 \$60 \$50 \$50 \$50 \$50 \$50 \$50 \$50 \$50 \$50 \$5	60 *6 *42 \$7 \$50 \$60 \$50 \$50 \$50 \$50 \$50 \$50 \$50 \$50 \$50 \$5	Phs Duration (G+Y+Rc), s	31.2	74.5	10.5	23.8	18.7	87.0	11.6	22.7				
s 6.1 '69 '6.3 39.0 19.0 54.8 9.0 s 6.2 70.5 8.0 8.5 13.7 2.0 7.1 0.0 0.0 0.0 0.1 0.1 9.9 0.0 28.3 C	s 6.1 '69 '6.3 39.0 19.0 54.8 9.0 s 6.2 70.5 8.0 8.5 13.7 2.0 7.1 .0.0 0.0 0.0 0.1 0.1 9.9 0.0 28.3	Change Period (Y+Rc), s	0.9	9 *	* 4.2	2.7	2.0	0.9	2.0	* 5.7				
28.3 C C C C C C C C C C C C C C C C C C C	5 0.0 0.0 0.0 0.1 0.1 9.9 0.0 2.8.3 C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C	Max Green Setting (Gmax), s	6.1	69 *	* 6.3	39.0	19.0	54.8	9.0	* 37				
28.3 C	283 C	(I)	0.0	0.0	0.00	0.0	13.7	0.0	- 0	13.4				
			9	9	9	5	-	7:3	5	t o				
		Intersection Summary												
Notes	HCM 2010 LOS Notes	HCM 2010 Ctrl Delay			28.3									
Notes	Notes	HCM 2010 LOS			ی									
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Synchro	

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Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	444	K _	K.	444	K _	K.	₩	X _	je-	+	¥
Traffic Volume (veh/h)	700	1675	150	150	1024	20	180	440	250	20	190	180
Future Volume (veh/h)	66 ,	1675	150	150	1024	20	180	440	250	20	190	180
Number Initial O (Oh) veh	<u>م</u> ح	7 0	72 0	- c	o c	9 0	m c	∞ ⊂	∞ ⊂	~ <	4 0	4 0
Ped-Bike Adi(A pbT)	1.00		1.00	1.00		0.99	1.00	>	0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	753	1801	161	161	1101	24	194	473	569	54	204	194
Adj No. of Lanes	2	3	-	2	3	-	2	2		-	-	_
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	cs.
Cap, veh/h	1149	2661	828	207	1194	367	248	789	348	69	330	804
Arrive On Green	0.67	1.00	1.00	90.0	0.24	0.24	0.07	0.23	0.23	0.04	0.18	0.18
Sat Flow, veh/h	3408	5036	1568	3408	5036	1548	3408	3505	1547	1757	1845	1542
Grp Volume(v), veh/h	753	1801	161	161	1101	54	194	473	569	54	204	194
Grp Sat Flow(s),veh/h/ln	1704	1679	1568	1704	1679	1548	1704	1752	1547	1757	1845	1542
Q Serve(g_s), s	18.1	0.0	0.0	6.5	29.9	3.3	7.8	16.9	22.8	4.3	14.3	0.0
Cycle Q Clear(g_c), s	18.1	0.0	0.0	6.5	29.9	3.3	7.8	16.9	22.8	4.3	14.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1149	2661	828	207	1194	367	248	789	348	69	330	804
V/C Ratio(X)	99.0	0.68	0.19	0.78	0.92	0.15	0.78	09.0	0.77	0.78	0.62	0.24
Avail Cap(c_a), veh/h	1149	2661	828	214	1241	382	248	1054	465	114	240	086
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.44	0.44	0.44	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.1	0.0	0.0	64.8	52.1	30.5	63.8	48.6	50.9	66.7	53.1	18.7
Incr Delay (d2), s/veh	0.5	9.0	0.2	14.4	13.0	0.8	13.6	0.3	3.00	7.0	0.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	0.5	0.1	3.5	15.3	7.5	4.2	8.7	10.1	2.2	7.4	4.1
LnGrp Delay(d),s/veh	18.5	9.0	0.2	79.2	65.2	31.4	77.4	48.9	54.7	73.6	53.8	18.8
LnGrp LOS	m	⋖	⋖	ш	ш	U	ш			ш		⁸
Approach Vol, veh/h		2715			1316			936			452	
Approach Delay, s/veh		9.6			65.5			56.4			41.1	
Approach LOS		∢			ш			ш			a	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	-	2	co	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	12.7	80.3	16.0	31.0	53.5	39.5	6.7	37.3				
Change Period (Y+Rc), s	* 4.2	* 6.3	* 5.8	9 *	* 6.3	* 6.3	* 4.2	2.8				
	φ ω ω	09 *	* 10	* 41	* 34	* 35	* 9.1	42.1				
Max U Clear IIIme (g_c+II), s	8.5 0	75.0	8.6	16.3	70.1	31.9	0.3	24.8				
Green Ext Time (p_c), s	0.0	10.9	0.0	0.9	1.3	7.3	0:0	2.1				
Intersection Summary												
HCM 2010 Ctrl Delay			31.9									
HCM 2010 LOS			ပ									
Notes												
MOTOS												

HCM 2010 Signalized Intersection Summary 11: Camino Vida Roble & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL1) AM 08/24/2017

EX +	
HCM 2010 Signalized Intersection Summary	12: Yarrow Dr./McClellan & Palomar Airport Rd.

Cumulative + NT Project (PAL1) AM 08/24/2017

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	-	441		r	441		F	\$		۳	*	¥C
Traffic Volume (veh/h)	142	1493	370	190	1082	330	130	06	09	09	30	52
Future Volume (veh/h)	142	1493	370	190	1082	330	130	8	09	09	30	25
Number	2	2	12	-	9	16	m	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		96.0	1.00	,	0.96	1.00	,	0.96	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1:00	1:00	1.00	1:00	1:00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	154	1623	402	207	1176	326	141	86	92	92	33	27
Adj No. of Lanes	-	m	0	-	m	0	2		0	-	_	—
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	m	3	3	3	3	3	3	33	m	3	m
Cap, veh/h	533	2148	524	228	1315	401	184	158	105	82	274	222
Arrive On Green	0.30	0.54	0.54	0.13	0.35	0.35	0.02	0.16	0.16	0.02	0.15	0.15
Sat Flow, veh/h	1757	4008	978	1757	3781	1154	3408	1015	673	1757	1845	1495
Grp Volume(v), veh/h	154	1356	699	207	1044	491	141	0	163	99	33	57
Grp Sat Flow(s),veh/h/ln	1757	1679	1629	1757	1679	1578	1704	0	1689	1757	1845	1495
Q Serve(g_s), s	10.0	47.1	48.6	17.4	44.2	44.2	6.1	0.0	13.5	5.5	2.3	2.8
Cycle Q Clear(g_c), s	10.0	47.1	48.6	17.4	44.2	44.2	6.1	0.0	13.5	5.5	2.3	2.8
Prop In Lane	1.00		09:0	1.00		0.73	1.00		0.40	1.00		1.00
Lane Grp Cap(c), veh/h	533	1799	873	228	1168	549	184	0	263	82	274	222
V/C Ratio(X)	0.29	0.75	0.77	0.91	0.89	0.89	0.77	0.00	0.62	0.79	0.12	0.26
Avail Cap(c_a), veh/h	533	1799	873	247	1419	199	186	0	430	94	467	379
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.9	27.1	27.4	64.4	46.3	46.3	70.0	0.0	59.2	70.8	55.4	17.4
Incr Delay (d2), s/veh	0.1	3.0	6.4	31.1	10.6	19.7	15.4	0.0	6.0	28.2	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	22.6	23.3	10.4	22.2	22.2	3.3	0.0	6.4	ري دي	1.2	1.2
LnGrp Delay(d),s/veh	40.0	30.1	33.8	95.4	26.9	0.99	85.4	0.0	60.1	0.66	22.5	17.6
LnGrp LOS		ပ	ပ	ᅵ	ᆈ	ш	ᅵ		삐	ᅵ	ᆈ	^m
Approach Vol, veh/h		2179			1742			304			155	
Approach Delay, s/veh		31.9			64.1			71.8			29.8	
Approach LOS		ပ			ш			ш			ш	
Timer	-	2	3	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	23.7	8.98	12.3	27.2	51.9	9.89	11.2	28.3				
Change Period (Y+Rc), s	* 4.2	* 6.4	* 4.2	* 5	* 6.4	* 6.4	* 4.2	* 5				
Max Green Setting (Gmax), s	* 21	* 63	* 8.2	* 38	* 21	* 63	∞ *	* 38				
Max Q Clear Time (g_c+I1), s	19.4	20.6	8.1	4.8	12.0	46.2	7.5	15.5				
Green Ext Time (p_c), s	0.0	6.9	0.0	0.2	0.1	0.9	0.0	9.0				
Intersection Summary												
HCM 2010 Ctrl Delay			48.5									
HCM 2010 LOS			D									
School												
Moles												
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Repo	Page 19
Synchro	

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Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	4413		r	4413		r	*	*-		4	
Traffic Volume (veh/h)	73	1300	180	280	1420	128	20	- 1	09	45	9	22
Future Volume (veh/h)	73	1300	180	280	1420	128	20	11	09	45	10	22
Number	2	2	12		9	16	7	4	14	3	∞	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		96.0	1.00		0.98	0.98		0.95	0.98		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	82	1461	202	315	1596	144	26	12	19	21	Ξ	25
Adj No. of Lanes	-	3	0		m	0	-	-		0	_	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	101	1584	219	694	3312	298	223	251	203	141	34	22
Arrive On Green	90.0	0.36	0.36	0.39	0.71	0.71	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1757	4446	614	1757	4694	423	1331	1845	1491	757	248	406
Grp Volume(v), veh/h	82	1103	290	315	1141	266	99	12	19	87	0	0
Grp Sat Flow(s),veh/h/ln	1757	1679	1703	1757	1679	1760	1331	1845	1491	1411	0	0
Q Serve(g_s), s	6.9	47.2	47.3	19.8	22.7	22.8	0.0	8.0	6.1	6.9	0.0	0.0
Cycle Q Clear(g_c), s	6.9	47.2	47.3	19.8	22.7	22.8	6.2	0.8	6.1	8.3	0.0	0.0
Prop In Lane	1.00		0.36	1.00		0.24	1.00		1.00	0.59		0.29
Lane Grp Cap(c), veh/h	101	1196	209	694	2368	1242	223	251	203	230	0	0
V/C Ratio(X)	0.81	0.92	0.92	0.45	0.48	0.48	0.25	0.05	0.33	0.38	0.00	0.00
Avail Cap(c_a), veh/h	120	1276	647	694	2368	1242	386	481	386	403	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1:00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.69	46.3	46.3	33.5	6.6	6.6	58.6	56.3	28.6	59.4	0.0	0.0
Incr Delay (d2), s/veh	1.	13.0	21.9	0.2	0.7		0.2	0.0	0.3	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	24.1	25.9	9.7	10.7	11.4	2.1	0.4	2.5	33	0.0	0.0
LnGrp Delay(d),s/veh	81.0	59.3	68.2	33.6	9.01	11.2	58.9	56.4	58.9	59.8	0.0	0.0
LnGrp LOS	٠	ш	ا		8	m	ш	ш	ا	۳		
Approach Vol, veh/h		1745			2055			135			87	
Approach Delay, s/veh		63.2			14.3			58.7			29.8	
Approach LOS		ш			m			ш			ш	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	—	2		4	2	9		∞				
Phs Duration (G+Y+Rc), s	65.2	59.4		25.3	12.9	111.8		25.3				
Change Period (Y+Rc), s	0.9	9 *		4.9	* 4.2	0.9		4.9				
Max Green Setting (Gmax), s	38.8	* 57		39.1	* 13	83.0		39.1				
Max Q Clear Time (g_c+l1), s	21.8	49.3		8.2	8.9	24.8		10.3				
Green Ext Time (p_c), s	0.4	4.1		0.2	0.0	8.6		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			38.0									
HCM 2010 LOS			٥									
Notes												

HCM 2010 Signalized Intersection Summary
13: El Camino Real & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL1) AM 08/24/2017

Vovement EBL Lane Configurations Maintenant Columne (vehin) 182 Future Volume (vehin) 182 Number 5 Initial O (Ob), veh 0 Parking Bus, Add 1,00 Add Sat Flow, vehinhin 1845 Add Flow Rate, vehin 198 Add Mo O (Lanes 2, 2) Ocal How Factor 0,00	EBL	EBT	EBR	MRI		0 0		NRT	NRP	SBI	TOO	CDD
	: 6	1		VVDL	WBT	WBR	NBL	2	101	200	SBI	SDR
,	00	+++	*	K.	444	N. N.	K	444	N. N.	K.	444	N.
,	70	931	322	720	1602	640	173	099	440	260	1050	343
,	82	931	322	720	1602	640	173	099	440	290	1050	343
·	2	2	12	_	9	16	3	8	18	7	4	14
, i	0	0	0	0	0	0	0	0	0	0	0	0
	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.99
_	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	345	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
	8	1012	320	783	1741	969	188	717	478	609	1141	373
	7	က	-	2	3	2	2	3	2	2	3	
	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
avy Veh, %	3	3	m	m	e	r	m	c	c	m	m	3
	516	1266	386	454	1175	989	236	1544	1214	203	1944	838
_	0.15	0.25	0.25	0.09	0.16	0.16	0.07	0.31	0.31	0.15	0.39	0.39
Sat Flow, veh/h 34	3408	5036	1549	3408	5036	2724	3408	5036	2760	3408	5036	1556
Grp Volume(v), veh/h	86	1012	350	783	1741	969	188	717	478	609	1141	373
/ln 1	1704	1679	1549	1704	1679	1362	1704	1679	1380	1704	1679	1556
2 Serve(g_s), s	7.9	28.2	32.8	20.0	35.0	35.0	8.2	17.3	9.5	22.3	27.0	5.2
_c), s	7.9	28.2	32.8	20.0	35.0	35.0	8.2	17.3	9.2	22.3	27.0	5.2
Prop In Lane 1.	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
p(c), veh/h	516	1266	389	454	1175	989	236	1544	1214	207	1944	838
_	0.38	0.80	0.90	1.72	1.48	1.09	0.80	0.46	0.39	1.20	0.59	0.45
/h	268	1343	413	454	1175	989	545	1544	1214	207	1944	838
0	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
	1.00	1.00	1.00	0.09	0.09	0.00	1.00	1.00	1.00	0.09	0.09	0.09
eh E	57.4	52.6	54.3	68.3	63.3	63.3	8.89	45.0	10.9	63.8	36.5	8.5
	0.2	3.0	20.4	326.2	217.2	45.5	2.3	1.0	1.0	92.7	0.1	0.2
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
eh/In	3.7	13.5	16.2	30.0	39.9	17.2	3.9	8.2	3.6	17.0	12.5	5.5
y(d),s/veh	57.5	9.29	74.7	394.5	280.4	108.8	71.1	43.0	11.9	156.6	36.7	8.7
	ш	Ш	ш	ഥ	띡	ш	ш		В	띡		A
Approach Vol, veh/h		1560			3220			1383			2123	
Approach Delay, s/veh		60.1			271.1			36.1			1.99	
Approach LOS		ш			ш			O			ш	
imer	-	2	3	4	2	9	7	00				
Assigned Phs	_	2	3	4	2	9	7	8				
G+Y+Rc), s	26.0	43.7	16.4	63.9	28.7	41.0	28.3	52.0				
	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9				
S	20.0	40.0	24.0	45.0	25.0	32.0	20.0	46.0				
2+I1), s	22.0	34.8	10.2	29.0	6.6	37.0	24.3	19.3				
Green Ext Time (p_c), s (0.0	2.4	0.2	5.5	0.3	0.0	0.0	3.9				
ntersection Summary												
HCM 2010 Ctrl Delay			139.6									
HCM 2010 LOS			ш									

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Synchro 10 Report Page 23

HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL1) AM 14: Innovation Way/Loker Ave. & Palomar Airport Rd. 08/24/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	-	444	×.	۴	443		F	*	*	r	*	¥c_
Traffic Volume (veh/h)	310	1281	210	160	2592	150	140	70	09	30	30	120
Future Volume (veh/h)	310	1281	210	160	2592	150	140	70	09	30	30	120
Number	2	2	12	_	9	16	3	ω	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.99	1.00		96.0	1.00		0.95
Parking Bus, Adj	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	337	1392	228	174	2817	163	152	9,	9	33	£,	130
Adj No. of Lanes	-	က	-	-	က	0	-	-	-	-	—	_
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	c	3	c	c	3	c	c	3	c	3	c	3
Cap, veh/h	354	1525	534	632	2303	131	91	322	262	42	270	219
Arrive On Green	0.40	0.61	0.61	0.72	0.95	0.95	0.02	0.17	0.17	0.02	0.15	0.15
Sat Flow, veh/h	1757	5036	1492	1757	4873	276	1757	1845	1503	1757	1845	1495
Grp Volume(v), veh/h	337	1392	228	174	1923	1057	152	16	99	33	33	130
Grp Sat Flow(s), veh/h/ln	1757	1679	1492	1757	1679	1792	1757	1845	1503	1757	1845	1495
Q Serve(g_s), s	27.8	36.6	3.3	5.2	70.9	70.9	7.8	5.3	2.7	2.8	2.3	12.2
Cycle Q Clear(g_c), s	27.8	36.6	3.3	5.2	70.9	70.9	7.8	5.3	2.7	2.8	2.3	12.2
Prop In Lane	1.00		1.00	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	354	1525	534	632	1586	847	91	322	262	42	270	219
V/C Ratio(X)	0.95	0.91	0.43	0.28	1.21	1.25	1.66	0.24	0.25	0.78	0.12	0.59
Avail Cap(c_a), veh/h	762	2192	731	632	1586	847	91	464	378	11	443	326
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.36	0.36	0.36	0.09	0.03	0.09	1.00	00.1	1.00	00.1	00.1	00.1
Uniform Delay (d), siven	44.0	8.17	0.00	7.7	- 4	- 4.	71.1	53.3	7.71	11.3	55.6	59.9
Incr Delay (dz.), s/ven	7.0	- 6	6.0	0.0	- 6	4.7	341.9	- o	7.0	7.1.	- 6	0.0
Initial Q Delay(d3),S/ven	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%lle BackOrU(50%),ven/in	13.7	- 2	4.7	7.5	46.3	53.2	12.5	7.7		 	7.1	0.00
Lingip Delay(u),s/veri	40.0	6.18	ν. <	7.4.7	7.00.	0.0	413.0	23.2	4.7	84.0	7.00	00.8
LINGIPLUS		ا ر	∢	2		1	1	٦	۵	-	<u>ا</u> ا	ا"
Approach Vol, veh/h		1957			3154			293			196	
Approach Delay, swen		د. ای د. ر			0.10			230.9			03.9	
Approach LOS		د			_			_			ш	
Timer	-	2	3	4	2	9	7	8				
Assigned Phs	-	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	6.65	51.4	12.0	26.7	34.5	76.9	7.8	30.9				
Change Period (Y+Rc), s	0.9	9 *	* 4.2	* 4.7	* 4.2	0.9	* 4.2	* 4.7				
Max Green Setting (Gmax), s	21.8	_* 65	* 7.8	* 36	_* 65	22.0	* 6.1	* 38				
Max Q Clear Time (g_c+I1), s	7.2	38.6	8.6	14.2	29.8	72.9	4.8	7.3				
Green Ext Time (p_c), s	0.2	6.9	0.0	0.3	0.4	0.0	0.0	0.3				
Intersection Summary												
HCM 2010 Ctrl Delay HCM 2010 LOS			82.3 F									

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HCM 2010 Signalized Intersection Summary 15: El Fuerte St. & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL1) AM 08/24/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	444	*-	K.	4413		K.	₩		F	₩	
Traffic Volume (veh/h)	110	1141	180	340	2912	180	140	110	140	09	20	40
Future Volume (veh/h)	110	1141	180	340	2912	180	140	110	140	09	20	40
Number	വ	2	12	- -	9	16	co o	ω (9 9	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	9 5	5	0.99	1.00	5	0.98	1.00	5	0.95	1.00	00	0.98
Parking Bus, Adj	10.45	10.U0	10.00	10.U0	1000	00.1	10.00	1045	1000	1045	1045	1000
Adj Flow Rate, veh/h	120	1240	196	370	3165	136	152	120	152	65	54	43
Adj No. of Lanes	2	က	-	2	m	0	2	2	0	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	33	3	က	33	co	33	co	က	က	co
Cap, veh/h	347	2845	881	417	2780	168	132	269	230	102	281	199
Arrive On Green	0.20	1.00	1.00	0.24	1.00	1.00	0.04	0.15	0.15	0.03	0.14	0.14
Sat Flow, veh/h	3408	5036	1560	3408	4849	294	3408	1752	1497	3408	1943	1377
Grp Volume(v), veh/h	120	1240	196	370	2169	1192	152	120	152	99	48	49
Grp Sat Flow(s),veh/h/ln	1704	1679	1560	1704	1679	1785	1704	1752	1497	1704	1752	1567
Q Serve(g_s), s	4.5	0.0	0.0	15.7	0.0	86.0	2.8	9.3	14.3	2.8	3.6	4.1
Cycle Q Clear(g_c), s	4.5	0:0	0.0	15.7	0.0	86.0	2.8	9.3	14.3	2.8	3.6	4.1
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		0.88
Lane Grp Cap(c), veh/h	347	2845	881	417	1925	1024	132	269	230	102	254	227
V/C Katio(X)	0.35	0.44	0.22	0.89	1.13	10.16	1.15	0.45	0.66	120	0.19	0.22
Avail Cap(c_a), ven/h	34/	2845		81.91	1925	1024	132	403	344	120	397	355
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	9.6	00.1	1.00	00.1	1.00	8.6
Upiform Delay (d) shop	55.7 1	0.70	0.7	55.7 7	0.0	0.0	1.00	7.77	00.1 00.1	00.1	1.00	1.00
Incr Delay (d2) s/ven	0.7	0.0	0.0	0.2	57.9	75.0	125.5	0.4	1.7	4.5	100	0.00
Initial O Delay(d3).s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.1	0.1	7.4	15.5	21.3	5.0	4.6	0.9	1.4	8.	8:
LnGrp Delay(d),s/veh	9.29	0.3	0.4	55.9	57.9	75.0	197.6	58.1	61.0	76.5	299	56.8
LnGrp LOS	Е	Α	Α	Е	Н	ч	н	Е	Е	Е	Е	Е
Approach Vol, veh/h		1556			3731			424			162	
Approach Delay, s/veh		4.6			63.2			109.2			9.49	
Approach LOS		A			ш			ш.			ш	
Timer	-	2	3	4	2	9	7	8				
Assigned Phs	-	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	22.5	90.7	10.0	26.7	21.3	92.0	8.7	28.0				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	2.0	0.9	9 *	* 4.2	2.0				
Max Green Setting (Gmax), s	_* 67	24.0	* 5.8	34.0	4.8	98 *	* 5.3	34.5				
Max Q Clear Time (g_c+11), s	17.7	2.0	7.8	6.1	6.5	88.0	4.8	16.3				
Green Ext Time (p_c), s	9.0	9.6	0.0	0.3	0.0	0.0	0.0	6.0				
Intersection Summary												
HCM 2010 Ctrl Delay			51.0									
HCM 2010 LOS			D									
Notes												

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HCM 2010 Signalized Intersection Summary 16: Melrose Dr. & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL1) AM 08/24/2017

		,	۰									
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	444	¥	F	444	¥	K.	Ħ	¥	F	‡	*
Traffic Volume (veh/h)	200	871	140	110	1692	09	620	620	210	80	720	1300
Future Volume (veh/h)	200	871	140	110	1692	09	970	970	210	8	720	1300
Number	2	2	12	—	9	16	3	∞ (18	7	4	14
Initial C (Cb), ven	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	60	0.99	1.00	,	0.99	1.00	7	0.99	1.00	6	0.99
Parking Bus, Adj	100	100	100	100	1001	1045	100	100	1045	1000	1000	1000
Adj Sat Flow, vervimi Adj Flow Rate, veh/h	515	868	144	113	1744	650	639	639	216	82	747	1340
Adi No. of Lanes	2	· ·	-	2	m	; -	2	4	-	2	5	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	c	c	3
Cap, veh/h	559	2200	089	156	1544	476	495	2187	809	125	827	1096
Arrive On Green	0.33	0.87	0.87	0.02	0.31	0.31	0.15	0.34	0.34	0.04	0.24	0.24
Sat Flow, veh/h	3408	5036	1557	3408	5036	1553	3408	6346	1554	3408	3505	2725
Grp Volume(v), veh/h	515	868	144	113	1744	62	639	639	216	82	742	1340
Grp Sat Flow(s),veh/h/ln	1704	1679	1557	1704	1679	1553	1704	1586	1554	1704	1752	1362
O Serve(g_s), s	21.8	5.3	2.2	4.9	46.0	3.7	21.8	11.0	14.8	3.6	30.8	27.3
Cycle Q Clear(g_c), s	21.8	5.3	2.2	4.9	46.0	3.7	21.8	11.0	14.8	3.6	30.8	27.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	229	2200	089	156	1544	476	495	2187	809	125	827	1096
V/C Ratio(X)	0.92	0.41	0.21	0.72	1.13	0.13	1.29	0.29	0.36	0.65	0.90	1.22
Avail Cap(c_a), ven/h	286	2200	089	218	1544	4/6	495	7.817	909	164	848	11.12
HCM Platoon Katio	7.00	7.00	7.00	00.1	0.1	00.1	00.1	00.1	00.1	8.5	9.5	3.5
Upsu cann I mer (I)	49.5	5.7	0.70	70.6	52.0	27.1	64.1	35.8	32.4	713	35.7	23.0
Incr Delay (d2), s/veh	17.6	0.5	9.0	3.3	67.0	9.0	145.1	0:0	0.1	2.2	11.7	108.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	2.4	1.0	2.4	30.9	1.6	20.2	4.8	6.3	1.7	16.3	26.7
LnGrp Delay(d),s/veh	67.1	6.2	6.1	73.9	119.0	27.6	209.2	35.9	32.5	73.5	67.2	131.7
LnGrp LOS	Е	Α	Α	Ш	Ь	C	ш	D	ပ	Е	Е	F
Approach Vol, veh/h		1557			1919			1494			2164	
Approach Delay, síveh		26.3			113.4			109.5			107.4	
Approach LOS		O			ш			ш			ш	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	1	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	11.1	71.5	26.0	41.4	30.6	52.0	6.7	57.7				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	9 *	0.9	9 *	* 4.2	0.9				
Max Green Setting (Gmax), s	9.6 *	36.0	* 22	* 36	25.8	* 46	* 7.2	20.6				
Max U Clear Time (g_c+IT), s	6.9	5.7	23.8	32.8	23.8	48.0	5.6	8.9				
Green Ext Time (p_c), s	0.0	3.9	0.0	2.3	0.3	0.0	0.0	7.8				
Intersection Summary												
HCM 2010 Ctrl Delay HCM 2010 LOS			91.7 F									

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HCM 2010 Signalized Intersection Summary 17: El Camino Real & Town Garden Rd.

Ex + Cumulative + NT Project (PAL1) AM 08/24/2017 HCM 2010 Signalized Intersection Summary 18: El Camino Real & Camino Vida Roble

Ex + Cumulative + NT Project (PAL1) AM 08/24/2017

Lanc Charles Lanc		1	†	<u> </u>	/	ļ	1	•	—	•	۶	→	*
60 20 50 140 50 70 160 1863 160 140 1432 7 4 14 3 8 18 18 5 12 12 14 14 14 14 14 14 14 14 14 14 14 14 14	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
60 20 56 140 50 70 146 1343 160 140 1432 7 4 14 14 2 8 18 18 5 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Lane Configurations		€	¥	<u>, </u>	¢Ŷ		F	444	¥	r	444	¥C.
60 20 50 140 50 70 160 183 160 140	Traffic Volume (veh/h)	09	50	20	140	20	70	160	1363	160	140	1432	06
100	Future Volume (veh/h)	99	20	20	140	20	20	160	1363	160	140	1432	06
100	Number	7	4	14	က	∞ (9	2	2	12	-	9	16
1,00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
1,00	Ped-Bike Adj(A_pb1)	1.00		0.94	00.1		0.95	1.00		0.98	1.00		0.99
1,000 1845	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.4	Adj Sat Flow, veh/h/ln	1900	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1845
0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94	Adj Flow Rate, veh/h	64	71	23	149	23	74	170	1450	170	149	1523	96
0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94	Adj No. of Lanes	0	-	-	-	—	0	-	က	-	-	က	_
3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
131 43 143 230 88 123 150 1289 394 658 2819 1339 439 1468 1757 676 943 1757 636 0.25 0.37 0.156 1349 439 1468 1757 676 943 1757 1757 1679 1537 1757 1679 1358 0 53 149 0 127 170 1450 1757 1679 136 0 51 121 0 0 111 128 384 139 87 286 137 0 1468 1757 0 1411 128 384 139 87 286 138 0 51 121 0 0 111 128 384 139 87 286 139 0 37 0 0 0 0 0 0 0 100 100 100 100 100 0 0 0 0	Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	co
1339	Cap, veh/h	131	43	143	230	88	123	120	1289	394	658	2819	873
1339 439 1468 1757 676 943 1757 5036 1537 1757 5036 1757 175	Arrive On Green	0.10	0.10	0.10	0.13	0.13	0.13	0.09	0.26	0.26	0.37	0.56	0.56
1778 0 53 149 0 127 170 1450 170 149 1523 148 0 1468 1757 0 1619 1757 1679 1537 179 1468 1757 0 1619 1757 1679 1537 1797 1679 1537 1678 1637 163	Sat Flow, veh/h	1339	439	1468	1757	929	943	1757	2036	1537	1757	2036	1560
1778 0 468 7157 0 1619 7157 1679 1679 1679 1678 1679 1679 1678 1679 1678 1679 1678 1679 1678 1679 1678 1679 1678	Grp Volume(v), veh/h	82	0	53	149	0	127	170	1450	170	149	1523	96
68 0.0 5.1 12.1 0.0 11.1 12.8 38.4 13.9 8.7 28.6 0.5 0.5 1.12.1 0.0 11.1 12.8 38.4 13.9 8.7 28.6 0.5 0.5 1.12.1 0.0 11.1 12.8 38.4 13.9 8.7 28.6 0.5 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1	Grp Sat Flow(s),veh/h/ln	1778	0	1468	1757	0	1619	1757	1679	1537	1757	1679	1560
68 0.0 5.1 12.1 0.0 11.1 12.8 38.4 13.9 8.7 28.6 1.0 0.75 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Q Serve(g_s), s	8.9	0.0	5.1	12.1	0.0	11.1	12.8	38.4	13.9	8.7	28.6	4.3
0.75 1,00 1,00 0.88 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,	Cycle Q Clear(g_c), s	8.9	0.0	5.1	12.1	0.0	11.1	12.8	38.4	13.9	8.7	28.6	4.3
114 0 143 230 0 211 150 1289 334 658 2819 1450 0 037 0.656 0.00 0.60 1.13 1.12 0.43 0.023 0.54 150 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	Prop In Lane	0.75		1.00	1.00		0.58	1.00		1.00	1.00		1.00
0.49 0.00 0.37 0.66 0.00 0.60 1.13 1.12 0.43 0.23 0.54 450 0 0 372 468 0 0 432 150 1289 394 668 2819 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	Lane Grp Cap(c), veh/h	174	0	143	230	0	211	120	1289	394	658	2819	873
450	V/C Ratio(X)	0.49	0.00	0.37	0.65	0.00	09.0	1.13	1.12	0.43	0.23	0.54	0.11
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	420	0	372	468	0	432	120	1289	394	658	2819	873
1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
h 641 0.0 634 619 0.0 615 686 558 467 32.1 208 0.8 0.0 0.6 1.2 0.0 1.0 1140 66.7 3.4 0.1 0.7 h 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Upstream Filter(I)	1:00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
0.8 0.0 0.6 1.2 0.0 114.0 66.7 3.4 0.1 0.7 http://dx.edu/discretized-colored-	Uniform Delay (d), s/veh	64.1	0.0	63.4	61.9	0.0	61.5	9.89	22.8	46.7	32.1	20.8	15.5
hy 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Incr Delay (d2), s/veh	0.8	0:0	9.0	1.2	0.0	1.0	114.0	2.99	3.4	0.1	0.7	0.3
hthn 3.4 0.0 2.1 6.0 0.0 5.0 11.0 25.8 6.3 4.2 13.5 6.4 9 0.0 63.9 63.1 0.0 62.5 1826 12.5 50.1 3.2 1.2 16. 1 1 2 8 6.3 8 1.7 1790 1768 1768 1769 1768 1769 1768 1769 1768 1769 1768 1769 1768 1769 1768 1769 1768 1769 1768 1769 1768 1769 1768 1769 1768 1768 1769 1769 1768 1769 1769 1768 1769 1769 1769 1769 1769 1769 1769 1769	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Color Colo	%ile BackOfQ(50%),veh/ln	3.4	0.0	2.1	0.9	0.0	2.0	11.0	25.8	6.3	4.2	13.5	1.9
E E E F F D C	LnGrp Delay(d),s/veh	64.6	0.0	63.9	63.1	0.0	62.5	182.6	122.5	50.1	32.1	21.6	15.7
138 276 1790 646 628 121.4 E E E F F 7 2 3 4 5 6 7 8 7 8 62 448 188 170 90.4 23.8 1.5 62.6 448 18 170 90.4 23.8 2.5 64 64 64 42 42 64 42 3.5 10.7 40.4 88 148 30.6 14.1 5 0.1 0.0 0.3 0.0 5.5 0.7 F F 8 72 42 42 64 88 13 40 40.0 14.1 5 10.7	LnGrp LOS	ш		ш	ш		ш	띡	띡		ပ	ပ	В
1	Approach Vol, veh/h		138			276			1790			1768	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 626 448 188 170 904 64 64 64 42 42 64 107 404 88 148 306 0.1 0.0 0.3 0.0 5.5	Approach Delay, s/veh		9.49			62.8			121.4			22.2	
1 2 3 4 5 6 7 626 448 188 170 904 64 64 64 72 18 770 904 15 38 13 40 107 404 88 148 306 0.1 0.0 0.3 0.0 5.5	Approach LOS		ш			ш			ш			O	
1 2 4 5 6 62.6 44.8 17.0 90.4 62.6 44.8 17.0 90.4 15 .38 17.0 90.4 10.7 40.4 8.8 14.8 30.6 0.1 0.0 0.3 0.0 5.5 71.2	Timer	_	2	3	4	2	9	7	00				
626 448 188 17.0 90.4 -64 -64 -42 -42 -6.4 -15 -38 -38 -13 -40 10.7 40.4 8.8 14.8 30.6 0.1 0.0 0.3 0.0 5.5 71.2	Assigned Phs	_	2		4	2	9		∞				
6.4 6.4 42 42 6.4 15 38 38 13 40 4 10.7 40.4 8.8 14.8 30.6 0.1 0.0 0.3 0.0 5.5 71.2	Phs Duration (G+Y+Rc), s	62.6	44.8		18.8	17.0	90.4		23.8				
715 *38 *38 *13 *40 10.7 40.4 8.8 14.8 30.6 0.1 0.0 0.3 0.0 5.5 771.2	Change Period (Y+Rc), s	* 6.4	* 6.4		* 4.2	* 4.2	* 6.4		4.2				
10.7 40.4 8.8 14.8 30.6 1 0.1 0.0 0.3 0.0 5.5 71.2 E	Max Green Setting (Gmax), s	* 15	38		* 38	* 13	* 40		40.0				
0.1 0.0 0.3 0.0 5.5 71.2 E	Max Q Clear Time (g_c+I1), s	10.7	40.4		8.8	14.8	90.6		14.1				
17	Green Ext Time (p_c), s	0.1	0.0		0.3	0.0	5.5		0.7				
11	Intersection Summary												
HCM 2010 LOS E	HCM 2010 Ctrl Delay			71.2									
Notice	HCM 2010 LOS			ш									
	Notes												

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Movement Fell Fell Fell Well Wel													
Highericipors	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Jume (vehft) 60 10 90 10 10 421 1443 10 20 1382 Oulne (vehft) 60 10 10 10 10 421 1443 10 20 1382 Oulne (vehft) 60 10 0 <th< td=""><td>Lane Configurations</td><td>je-</td><td>4</td><td>¥</td><td></td><td>4</td><td></td><td>F</td><td>‡</td><td>*-</td><td>r</td><td>444</td><td></td></th<>	Lane Configurations	je-	4	¥		4		F	‡	*-	r	444	
Obly veh 60 10 90 10 10 421 143 10 20 382 Cob), veh 0	Traffic Volume (veh/h)	09	10	06	10	10	10	421	1443	10	20	1382	260
Object Object<	Future Volume (veh/h)	09	10	06	10	10	10	421	1443	10	20	1382	260
1.00	Number	7	4	14	3	8	18	2	2	12	-	9	16
1,000	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
100	Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.92	1.00		0.98	1.00		0.98
1845 1845 1845 1940 1845 1946 1845 1845 1845 1846 1440 140 10 10 2 2 2 1 1 3 3 3 3 3 3 3 3	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
140	Adj Sat Flow, veh/h/ln	1845	1845	1845	1900	1845	1900	1845	1845	1845	1845	1845	1900
1	Adj Flow Rate, veh/h	45	0	119	10	10	10	439	1503	10	21	1440	271
1,096 0,96	Adj No. of Lanes	-	0	7	0	-	0	2	2	-	_	m	0
15	Peak Hour Factor	96.0	96.0	96.0	96.0	96.0	96:0	96:0	96:0	96:0	96:0	96:0	0.96
164	Percent Heavy Veh, %	3	3	3	3	3	က	က	က	3	33	3	3
1757 0.09 0.00 0.09 0.07 0.07 0.07 0.08 0.31 0.31 0.38 0.62 1757 0 1464 1659 0 0 1704 1752 1543 1757 1445 1757 0 1464 1659 0 0 1704 1752 1543 1757 1759 1757 0 1464 1659 0 0 1704 1752 1543 1757 1679 1760 0 0 5.8 2.6 0.0 0 120 468 0.7 1.1 29.5 1.00 0 1.00 0.33 0.03 1.00 1.00 1.00 1.00 0.44 0.25 0.0 0.0 120 468 0.7 1.1 29.5 1.00 0.44 0.25 0.0 0.0 1.0 1.00 1.00 1.00 1.00 0.34 0.0 0.0 0.0 1.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.0 0.0 1.0 1.00 1.00 1.00 1.00 1.00 1.00 0.0 0.0 0.0 1.00 1.00 1.00 1.00 1.00 1.00 0.0 0.0 0.0 1.00 1.00 1.00 1.00 0.0 0.0 0.0 0.0 1.00 1.00 1.00 0.0 0.0 0.0 0.0 1.00 1.00 1.00 0.0 0.0 0.0 0.0 1.00 1.00 1.00 1.00 0.0 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	Cap, veh/h	164	0	274	38	38	38	273	1094	481	675	2615	491
1757 0 2929 553 553 3408 3505 1543 1757 4245 145	Arrive On Green	0.09	0.00	0.09	0.07	0.07	0.07	0.08	0.31	0.31	0.38	0.62	0.62
1757 1767 178 17	Sat Flow, veh/h	1757	0	2929	553	553	553	3408	3505	1543	1757	4245	797
1757 0 1464 1659 0 0 1704 1752 1543 1757 1679 1836 0.0 5.8 2.6 0.0 0.0 1.20 46.8 0.7 1.1 29.5 1.00 0.0 1.0	Grp Volume(v), veh/h	45	0	119	30	0	0	439	1503	10	21	1138	573
36 00 58 26 00 00 120 468 07 111 295 36 00 58 26 00 00 120 468 07 111 295 100 00 33 100 120 468 07 111 295 100 00 33 100 120 100 1.00 1.00 100 100 100 100 100 100 100 100 100 1	Grp Sat Flow(s),veh/h/ln	1757	0	1464	1659	0	0	1704	1752	1543	1757	1679	1685
36 00 58 26 00 00 120 468 07 11 295 100 100 100 100 100 100 100 100 100 100	Q Serve(g_s), s	3.6	0.0	2.8	5.6	0.0	0.0	12.0	46.8	0.7	1.7	29.5	29.7
Holo 100 033 100 100 100 100 100 100 100 100	Cycle Q Clear(g_c), s	3.6	0.0	5.8	2.6	0.0	0.0	12.0	46.8	0.7	1:1	29.5	29.7
hh 164 0 274 115 0 0 273 1094 481 675 2069 1027 0.00 0.44 0.26 0.00 0.00 1.61 1.37 0.02 0.03 0.55 445 0 70 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Prop In Lane	1.00		1.00	0.33		0.33	1.00		1.00	1.00		0.47
0.27 0.00 0.44 0.26 0.00 0.00 1.61 1.37 0.02 0.03 0.55 145 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Grp Cap(c), veh/h	164	0	274	115	0	0	273	1094	481	675	2069	1038
H45 0 742 443 0 0 273 1094 481 675 2069 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	V/C Ratio(X)	0.27	0.00	0.44	0.26	0.00	0.00	1.61	1.37	0.02	0.03	0.55	0.55
reh 633 0.00 4.3 66.2 0.0 0.00 1.00 1.00 1.00 1.00 1.00 1.0	Avail Cap(c_a), veh/h	445	0	742	443	0	0	273	1094	481	675	5069	1038
ch/ln 128 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
ceh 633 0.0 64.3 66.2 0.0 0.0 69.0 51.6 35.7 288 16.7 ceh 63.3 0.0 64.3 66.2 0.0 0.0 291.0 174.3 0.1 0.0 1.1 ceh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Upstream Filter(I)	1:00	0.00	1.00	1.00	0.00	0.00	1:00	1.00	1.00	1.00	1.00	1.00
eh 0.9 0.0 1.1 1.2 0.0 0.0 291.0 174.3 0.1 0.0 1.1 eh/ln 18 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Uniform Delay (d), s/veh	63.3	0.0	64.3	66.2	0.0	0.0	0.69	51.6	35.7	28.8	16.7	16.7
eth 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	ncr Delay (d2), s/veh	0.9	0.0	7	1.2	0.0	0.0	291.0	174.3	0.1	0.0	Ξ	2.1
cehilin 18 0.0 2.4 1.2 0.0 0.0 16.7 49.1 0.3 0.5 13.9 cehilin 18 0.0 2.4 1.2 0.0 0.0 3600 225.9 35.8 13.9 cehilin 18 0.0 6.3 6.7 4 0.0 0.0 3600 225.9 35.8 17.8 E F F D C B E 164 E 30 1962 D C E B E F F D C B E E F F D C B E E F F F D C B E E F F F D C B E E F F F D C B E E F F F D C B E E F F F D C B E E F F F D C B E E F F F D C B E E F F F D C B E E F F F D C B E E F F F D C B E E F F F D C B E E F F F D C B E E F F F D C B E E F F F F D C B E E F F F F D C B E E E F F F F D C B E E E F F F D C B E E E F F F D C B E E E F F F F D C B E E E F F F F D C B E E E E F F F F D C B E E E E F F F F D C B E E E E F F F F D C B E E E E F F F F D C B E E E E E E E F F F F D C B E E E E E E E E E E E E F F F D C B E E E E E E E E E E E E E E E E E E	nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(4) 2 0.0 65.3 67.4 0.0 0.0 360.0 225.9 35.8 28.8 17.8 E E E F D C B E I 164 30 1952 1732 1732 1732 1732 E E E F D C B E E E F D C B E E E F D C B E E E F D C B E E E F D C B E E E F D C B E E E E F D C B E E E E F D C B E E E E F D C B E E E E E F D C B E E E E E F D C B E E E E E F D C B E E E E E F D C B E E E E E E E E E E E E E E E E E E	%ile BackOfQ(50%),veh/In	<u>~</u>	0.0	2.4	1.2	0.0	0.0	16.7	49.1	0.3	0.5	13.9	14.3
h 65.0 67.4 265.1 b C C C C C C C C C C C C C C C C C C	LnGrp Delay(d),s/veh	64.2	0.0	65.3	67.4	0.0	0.0	360.0	225.9	35.8	28.8	17.8	18.9
h 65.0 67.4 255.1 65.0 67.4 255.1 65.0 67.4 255.1 7 8 8 8 8 8 8 12.0 38.8 40.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	LnGrp LOS	ш		ш	ш			-	-		اد	m	
h 65.0 67.4 255.1 E F F F F 6.0 6.0 7 8 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Approach Vol, veh/h		164			30			1952			1732	
E E E E C 7 1 2 3 4 5 6 7 7 1 2 3 4 5 6 7 1 1 2 2 4 5 6 7 1 1 2 2 4 5 6 6 7 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	Approach Delay, s/veh		65.0			67.4			255.1			18.3	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 4 5 6 6 1 3,5 6.0 6.0 8.4 5,15 6.0 6.0 7.5 6.0 6.0 5,15 6.0 6.0 7.5 6.0 6.0 5,17 7.8 14.0 31.7 5,18 0.0 0.0 0.6 0.0 5.6 139.8	Approach LOS		ш			ш			ш			В	
(c), s 63.6 52.8 19.0 18.0 98.4 (c), s 63.6 52.8 19.0 18.0 98.4 (c), s 6.0 6.0 (c) 5.5 6.0 6.0 (c) 5.5 (c) 6.0 5.0 (c) 6.0 (c)	Timer		2	3	4	2	9	7	∞				
tc), s 63.6 52.8 19.0 18.0 98.4 (2), s 6.0 6.0 (6.0 (6.0 (6.0 (6.0 (6.0 (6.0 (Assigned Phs	—	2		4	2	9		∞				
), s 6.0 6.0 ° 5 6.0 6.0 6.0 max), s 4.0 46.8 ° 38 12.0 38.8 2.0 6.0 5.5 5.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	Phs Duration (G+Y+Rc), s	9.69	52.8		19.0	18.0	98.4		14.6				
5 may, s 40 46.8 *38 12.0 38.8 c+11), s 3.1 48.8 7.8 14.0 31.7 c+11), s 0.0 0.0 0.6 0.0 5.6 c+139.8 F	Change Period (Y+Rc), s	0.9	0.9		* 5	0.9	0.9		4.2				
C+ff), s 3.1 48.8 7.8 14.0 31.7 , s 0.0 0.0 0.6 0.0 5.6 / 139.8	Max Green Setting (Gmax), s		46.8		* 38	12.0	38.8		40.0				
, s 0.0 0.0 0.0 0.6 0.0 5.6 139.8 F	Max Q Clear Time (g_c+I1), s		48.8		7.8	14.0	31.7		4.6				
139.	Green Ext Time (p_c), s	0.0	0.0		9.0	0.0	9.9		0.1				
139	Intersection Summary												
	HCM 2010 Ctrl Delay			130 R									
	HCM 2010 Clil Delay			23.0									
	HOM ZOLO LOO			-									

N\2772\Analysis\Intersections\Synchro\0. Ex +PAL1+ C AM.syn

HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL1) AM 19: El Camino Real & Poinsettia Ln.

3017 0.59 5102 886 1679 22.0 1985 11.00 11.00 11.00 0.7 0.0 10.3 17.7 B B 1491 C 0 1.00 1.00 1.22 122 2 2 2 0.90 260 260 12 0.99 1.00 1845 289 1 0.90 0.36 0.36 0.36 0.36 289 21.7 21.7 1.00 552 1.00 1.00 3.2 3.2 3.2 9.8 40.2 *5 *37 17.3 0.7 1.00 1845 1460 3 0.90 3 1838 0.36 5036 1460 1460 1460 38.9 1838 0.79 1917 1.00 1.00 1.00 3.6 0.0 0.0 0.0 D D D D D D MARCON MA 7.2 4.2 * 4 3.4 0.0 94.7 6.0 61.9 24.0 7.8 1.00 1845 11 2 0.90 3 3 411 0.23 1752 1752 0.7 0.03 1.00 1.00 0.0 0.0 0.0 0.4 44.2 D D D D D E E E 5 7.9 4.2 * 5 3.4 0.0 * 4.7 * 39 3.4 0.1 25.2 *5 *25 19.8 0.4 39.9 D 1.00 1845 22 2 0.90 3 2.68 0.12 2303 1.6 1.2 204 0.08 456 1.00 1.00 0.1 0.0 0.0 0.6 59.2 67.0 F 60.7 * 57 40.9 13.8 Ť 0 1.00 1.00 33 33 2 0.90 41.9 6.0 9.8 6.2 0.1 Assigned Phs
Phs Duration (G+Y+RC), s
Change Period (Y+RC), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_C+I1), s Parking Bus, Adj Adj Sat Flow, vehhinn Adj Flow Rate, vehh Adj No. of Lanes Peak Hour Factor Percent Heavy Veh, % Cap, vehh Arrive On Green Sat Flow, vehh Grip Vdume(y), vehVh Grip Sat Flow(s), vehVh Op Sat Flow(s), sehVh %ile BackOfQ(50%),veh/ln Lane Grp Cap(c), veh/h V/C Ratio(X) Avail Cap(c_a), veh/h HCM Platoon Ratio Upstream Filter(I) Uniform Delay (d), s/veh Incr Delay (d2), s/veh Initial Q Delay(d3),s/veh LnGrp LOS Approach Vol, veh/h Approach Delay, s/veh Approach LOS Lane Configurations
Traffic Volume (veh/h)
Future Volume (veh/h)
Number
Initial Q (Qb), veh
Ped-Bike Adj(A_pbT) Green Ext Time (p_c), s Intersection Summary
HCM 2010 Ctrl Delay
HCM 2010 LOS Cycle Q Clear(g_c), s Prop In Lane LnGrp Delay(d),s/veh

Synchro 10 Report Page 34

N:\2772\Analysis\Intersections\Synchro\9. Ex +PAL1+ C AM.syn

HCM 2010 Signalized Intersection Summary 1: Faraday Ave. & Canon Rd.

ummary Ex + Cumulative + NT Project (PAL1) PM

) PM	
oject (PAL1) PM	08/24/2017

Control of the cont		4	†	>	-	ţ	4	•	•	•	۶	→	*
10 10 10 10 10 10 10 10	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
56 940 220 20 420 10 610 10 90 10 10 10 10 10 10 10 10 10 10 10 10 10	Lane Configurations	r	₩		*	₩		<i>y</i> -	4			4	
10 50 940 220 20 420 10 610 10 90 10 10 10 10 10	Traffic Volume (veh/h)	20	940	220	20	420	10	610	10	06	10	10	10
1.00	Future Volume (veh/h)	20	940	220	20	420	10	610	10	06	10	10	10
100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	2	2	12	_	9	16	3	∞	18	7	4	14
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
1.00 1.00	Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		96.0	1.00	,	1.00	1.00	,	0.91
Nat	Parking Bus, Adj	1.00	1:00	1:00	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00
1	Adj Sat Flow, veh/h/In	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1900
1	Adj Flow Rate, veh/h	24	1011	237	22	452	=	754	0	0	=	=	=
0.93	Adj No. of Lanes	-	2	0	_	2	0	2		0	0	-	0
3 3	Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
69 1266 296 70 1578 38 889 467 0 20 20 20 0.04 0.04 0.04 0.04 0.04 0.0	Percent Heavy Veh, %	3	m	m	m	3	3	m	3	3	m	3	3
1757 1752 1757 2495 245 0.00 0.00 0.004 0.04 0.04 0.04 0.45	Cap, veh/h	69	1266	296	20	1578	38	886	467	0	20	20	20
1757 2807 656 1757 3493 85 3514 1845 0 551 551 184 185 1	Arrive On Green	0.04	0.45	0.45	0.04	0.45	0.45	0.25	0.00	0.00	0.04	0.04	0.04
54 630 618 22 226 237 754 6 0 33 0 1757 1752 1710 1757 1752 1826 1757 1845 0 0 20 0 0 30 308 31.1 1.2 81 82 204 0.0 0.0 2.0 0	Sat Flow, veh/h	1757	2807	929	1757	3493	82	3514	1845	0	551	551	551
1757 1752 1757 1856 0 1652 0 30 30.8 31.1 1.2 81 82 20.4 0.0 0.0 2.0 0 1.00 0.38 31.1 1.2 81 82 20.4 0.0 0.0 2.0 0.0 1.00 0.38 1.00 0.05 1.00 0.00 0.33 0.0 0.78 0.80 0.80 0.31 0.29 0.85 0.00 0.0 0.5 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.0	Grp Volume(v), veh/h	54	930	618	22	226	237	754	0	0	33	0	0
30 308 311 12 81 82 204 00 00 20 00 00 00 00 00 00 00 00 00 00	Grp Sat Flow(s),veh/h/ln	1757	1752	1710	1757	1752	1826	1757	1845	0	1652	0	0
3.0 30.8 31.1 1.2 8.1 8.2 20.4 0.0 0.0 2.0 0.0 0.3 0.0 0.3 0.0 0.3 0.0 0.3 0.0 0.3 0.0 0.0	Q Serve(g_s), s	3.0	30.8	31.1	1.2	8.1	8.2	20.4	0.0	0.0	2.0	0.0	0.0
1.00 0.38 1.00 0.38 1.00 0.38 1.00 0.38 0.08 0.08 0.08 0.08 0.08 0.09 0.09 0.0	Cycle Q Clear(g_c), s	3.0	30.8	31.1	1.2	8.1	8.2	20.4	0.0	0.0	2.0	0.0	0.0
69 790 771 70 792 825 889 467 0 59 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Prop In Lane	1.00		0.38	1.00		0.02	1.00		0.00	0.33		0.33
0.78 0.89 0.89 0.31 0.29 0.29 0.85 0.00 0.00 0.55 0.00 0.123 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Grp Cap(c), veh/h	69	790	771	70	792	825	886	467	0	26	0	0
123 790 771 70 792 825 1160 609 0 99 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	V/C Ratio(X)	0.78	0.80	0.80	0.31	0.29	0.29	0.85	0.00	0.00	0.55	0.00	00.0
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	123	790	171	70	792	825	1160	609	0	66	0	0
1100 1100 1100 1100 1100 1100 100 000 0	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
476 235 236 467 7173 713 355 00 00 474 00 70 82 86 113 09 44 00	Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	00.00	1.00	0.00	0.00
7.0 8.2 8.6 113 0.9 0.9 44 0.0 0.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	47.6	23.5	23.6	46.7	17.3	17.3	35.5	0.0	0.0	47.4	0.0	0.0
1.6 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	7.0	8.2	9.8	11.3	6:0	6:0	4.4	0.0	0.0	3.0	0.0	0.0
1.6 16.7 16.4 0.8 4.1 4.3 10.4 0.0 0.0 0.9 0.0 1.7 17 32.2 57.9 18.2 18.1 39.9 0.0 0.0 50.4 0.0 1.8 2 2 5.7 18.2 18.1 39.9 0.0 0.0 50.4 0.0 1.8 2 3 4 5 6 7 8 1.0 51.1 86 9.9 51.2 30.3 2.0 6.0 6.0 5.0 6.0 3.2 33.1 4.0 5.0 10.2 22.4 0.0 1.6 0.0 0.0 3.9 1.7 32.7 32.7	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54.7 31.7 32.2 57.9 18.2 18.1 39.9 0.0 0.0 50.4 0.0 D C C E B B D D D 32.9 20.0 39.9 50.0 0.0 50.4 0.0 T 2 3 4 5 6 7 8 10.0 51.1 8.6 9 51.2 30.3 50.6 6.0 6.0 5.0 6.0 5.0 5.0 4.0 35.0 6.0 7.0 32.0 33.0 32.7 32.7 S4.7 31.7 32.2 57.9 18.2 18.1 39.9 0.0 0.0 0.0 3.9 T754 0.0 0.0 0.0 0.0 0.0 0.0 0.0 T754 0.0 0.0 0.0 0.0 0.0 0.0 T754 0.0 0.0 0.0 0.0 0.0 T754 0.0 0.0 0.0 0.0 0.0 0.0 T755 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	%ile BackOfO(50%),veh/ln	1.6	16.7	16.4	0.8	4.1	4.3	10.4	0.0	0.0	6.0	0.0	0.0
1302	LnGrp Delay(d),s/veh	54.7	31.7	32.2	57.9	18.2	18.1	39.9	0.0	0.0	50.4	0.0	0.0
1302 485 754 32.9 200 39.9 C C B D D 1 2 3 4 5 6 7 8 100 51.1 86 9.9 51.2 30.3 6.0 6.0 6.0 7.0 32.0 33.0 3.2 33.1 4.0 5.0 10.2 22.4 0.0 1.6 0.0 0.0 3.9 1.7 C C C B D C C C C C C C C C C C C C C C	LnGrp LOS		ပ	ပ		m	m						
32.9 200 39.9 C C C C C C C C C C C C C C C C C C	Approach Vol, veh/h		1302			485			754			33	
1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 100 51.1 86 9.9 51.2 30.3 6.0 6.0 6.0 6.0 5.0 4.0 35.0 6.0 6.0 5.0 3.2 33.1 4.0 5.0 10.2 22.4 0.0 1.6 0.0 0.0 3.9 1.7	Approach Delay, s/veh		32.9			20.0			39.9			50.4	
1 2 3 4 5 6 7 1 2 4 5 6 7 1 0 51.1 8 4 5 6 6 0 6 0 50 60 60 4.0 35.0 6.0 7.0 32.0 3.2 33.1 4,0 5.0 10.2 0.0 1.6 0.0 0.0 3.9	Approach LOS		೮			В			a			O	
10 51.1 86 9.9 51.2 100 51.1 86 9.9 51.2 80 60 60 40 350 60 60 32 33.1 40 50 10.2 00 1.6 00 0.0 3.9 C	Timer	-	2	3	4	2	9	7	8				
100 511 86 99 512 60 60 60 60 40 350 60 60 32 331 40 50 102 00 16 00 3.9 237	Assigned Phs	_	2		4	2	9		8				
60 60 60 60 40 350 60 60 32 33.1 40 50 102 00 1.6 0.0 0.0 3.9 C	Phs Duration (G+Y+Rc), s	10.0	51.1		9.8	6.6	51.2		30.3				
40 350 60 70 320 32 33.1 40 50 102 00 16 00 00 3.9 C	Change Period (Y+Rc), s	0.9	0.9		2.0	0.9	0.9		2.0				
3.2 33.1 4.0 5.0 10.2 0.0 1.6 0.0 0.0 3.9 32.7 C	Max Green Setting (Gmax), s	4.0	35.0		0.9	7.0	32.0		33.0				
s 0.0 1.6 0.0 0.0 32.7 C	Max Q Clear Time (g_c+I1), s	3.2	33.1		4.0	2.0	10.2		22.4				
		0.0	1.6		0.0	0.0	3.9		1.7				
ı	Intersection Summary												
2010 LOS	HCM 2010 Ctrl Delay			32.7									
Notes	HCM 2010 LOS			O									
	Notes												

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Synchro 10 Report Page 1

HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL1) PM 2: College Blvd. & El Camino Real 08/24/2017

	1	†	<u> </u>	-	Ļ	1	•	—	•	٠	→	*
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	,	444	% _	F	444	¥C	F	4₽		K.	4₽	
Traffic Volume (veh/h)	100	1052	130	30	2052	70	280	80	30	20	30	8
Future Volume (veh/h)	100	1052	130	30	2052	70	280	80	30	20	30	8
Number	2	2	12		9	16	3	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		66.0	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	105	1107	0	32	2160	74	611	84	32	53	32	95
Adj No. of Lanes	_	က	-		m	-	2	2	0	2	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	m	c	3	m	m	3	3	m	3	m	m	co
Cap, veh/h	24	1293	403	499	2607	807	446	313	112	481	259	221
Arrive On Green	0.03	0.26	0.00	0.28	0.52	0.52	0.13	0.13	0.13	0.14	0.15	0.15
Sat Flow, veh/h	1757	5036	1568	1757	5036	1559	3408	2493	688	3408	1752	1495
Grp Volume(v), veh/h	105	1107	0	32	2160	74	611	22	26	53	32	95
Grp Sat Flow(s),veh/h/ln	1757	1679	1568	1757	1679	1559	1704	1752	1630	1704	1752	1495
Q Serve(g_s), s	4.0	27.2	0.0	1.7	47.1	1.6	17.0	3.8	4.2	1.8	2.1	7.5
Cycle Q Clear(g_c), s	4.0	27.2	0.0	1.7	47.1	1.6	17.0	3.8	4.2	1.8	2.1	7.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.55	1.00		1.00
Lane Grp Cap(c), veh/h	24	1293	403	499	2607	807	446	220	202	481	259	221
V/C Ratio(X)	1.94	98.0	0.00	90:0	0.83	60.0	1.37	0.26	0.29	0.11	0.12	0.43
Avail Cap(c_a), veh/h	24	1763	549	499	2607	807	446	209	264	481	539	460
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.0	46.0	0.0	33.9	26.5	4.1	299	51.4	51.6	48.7	48.1	50.4
Incr Delay (d2), s/veh	484.2	7.4	0.0	0.0	3.2	0.5	180.7	0.2	0.3	0.0	0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.2	13.5	0.0	0.8	22.6	0.7	19.2	1.9	1.9	0.8	1.0	3.1
LnGrp Delay(d),s/veh	547.2	53.5	0.0	34.0	29.7	4.3	237.2	51.6	51.8	48.7	48.2	50.9
LnGrp LOS	니			ပ	ပ	A	니					
Approach Vol, veh/h		1212			2266			727			180	
Approach Delay, s/veh		96.2			28.9			207.6			49.8	
Approach LOS		ш.			O			ш			D	
Timer	-	2	3	4	2	9	7	8				
Assigned Phs	_	2	co	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	42.9	39.4	22.0	25.7	0.6	73.3	24.9	22.8				
Change Period (Y+Rc), s	0.9	9 *	2.0	6.5	2.0	0.9	6.5	* 6.5				
Max Green Setting (Gmax), s	2.0	* 46	17.0	40.0	4.0	46.5	12.0	* 45				
Max Q Clear Time (g_c+I1), s	3.7	29.2	19.0	9.5	0.9	49.1	3.8	6.2				
Green Ext Time (p_c), s	0.0	4.2	0.0	0.4	0.0	0.0	0.0	0.4				

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78.0 E

Intersection Summary HCM 2010 Ctrl Delay HCM 2010 LOS

HCM 2010 Signalized Intersection Summary 3: College Blvd. & Faraday Ave.

Ex + Cumulative + NT Project (PAL1) PM 08/24/2017

HCM 2010 Signalized Intersection Summary 4: El Camino Real & Faraday Ave.

Ex + Cumulative + NT Project (PAL1) PM 08/24/2017

EBL 100 100 100 100 100 100 100 100 100 10		WBL 260 260 260 3 3 3 1.00 1.00 1.00 1.00 3.32 3.25 1.00 1.757 1.6.1 16.1 16.1 16.1 16.1	WBT 460 460 8 8 8 0 0 11.00 2 2 5.75 5.75 5.75 2.49 4.04 11.75	WBR 170 170 18 18 0.098 1.000 212 0.080 3 432 432 0.47 14.0 14.0 14.0 14.0 14.0 14.0 14.0 14.0	NBL 150 150 1.00 1.00 1.00 1.00 2 2 0.80 3 2 2.20 0.80 3 4.88 1.704 4.88 1.704 4.88 1.704 1.704 4.88 1.706 3.006 3	NBT 330 330 2 0 0 0 1100 11845 412 2 2 0.80 3 566 0.23 2502 2502 287 11752 11752 113.4	NBR 120 120 120 0 0.97 11.00 150 0 0.80 3 20 3 20 3 20 150 164 899 899 13.7 13.7 13.7 0.5 164 899 899 899 899 899 899 899 899 899 89	SBL 20 20 20 20 1.00 1.00 1.00 2 2 2 2 2 2 2 2 2 3 3 7 1 7 1 0.08 0 80 0 80 0 80 0 1 0 0 0 0 0 0 0 0 0	SBT 210 210 210 6 6 0 0 0 1100 11845 262 262 262 263 3 3 8 88 0.18 2681 1169 11752 7.7 7.7 7.7 7.7 3.319	SBR 60 60 60 10 10 10 00 00 00 00 00 00 10 10 10 10
60 60 60 60 60 60 60 60 60 60 60 60 60 6		260 260 3 3 3 1.00 1.00 1.00 1.845 3.25 3.25 3.341 0.19 1.6.1 16.1 16.1 16.1	460 460 460 8 8 0 0 1.00 1.00 2.80 2 2.575 2.575 2.0.47 2.493 4.04 13.9 13.9 13.9	170 170 18 0.098 1.000 212 0.80 3 432 432 143 1440 114.0 114.0 114.0 114.0 114.0	150 150 100 100 1100 1100 1100 1100 110	4th 330 330 2 0 0 0 1100 11845 412 2 2 0.80 3 566 0.23 2502 287 11752 113.4	120 120 0 0.97 1.00 150 0 0.80 3 2.03 2.03 899 899 1648 113.7 13.7 0.55 168 168 178 178 189 189 189 189 189 189 189 189 189 18	20 20 20 1.00 1.00 1.00 1.00 2 2 2 2 2 2 2 2 2 3 3 7 1 7 1 0.00 1.00 1.00 1.00 1.00 1.00 1	4th 210 210 6 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	60 60 60 00 00 00 10 00 10 00 13 00 13 13 13 14 16 16 16 16 16 16 16 16 16 16 16 16 16
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000 1.00 1.00 1.00 1.00 1.00 1.00 1.00		260 3 0 1.00 1.00 1.00 1.00 3 3 3.34 1.00 1.00 3.41 1.00 3.41 1.00 3.41 1.00 3.41 1.00 3.41 1.00 3.41 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	460 8 8 0 0 11.00 11845 5.75 5.75 0.80 3 3 11175 1175 113.9 13.9	170 0 0.98 1.00 1900 212 0 0.80 3 432 432 917 917 14.0 14.0 0.55 781	150 1.00 1.00 1.00 1.00 1.00 2 2 0.80 3 2.20 0.06 3.408 1.00 1.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 3.0	330 0 0 1.00 1845 412 2 0.80 3 3 566 0.23 2502 287 1752 13.4 13.4	120 0.97 1.00 1900 1900 150 0.80 3 203 899 899 13.7 13.7 13.7 13.7 13.7 13.7	20 1.00 1.00 1.00 1.00 2 2 2 2 2 2 2 3 3 3 3 3 408 2 0.00 2 0.00 2 0.00 3 3 408 3 170 0 0.00 2 0.00 0 0 0 0 0 0 0 0 0 0 0 0	210 6 6 0 0 1.00 1.845 2 262 2 263 3 3 488 0.18 2.681 1.152 7.7 7.7	00 00 00 00 00 00 00 00 00 00 00 00 00
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1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		1.00 1845 325 325 1 0.80 3 3 3 341 0.19 1757 1757 16.1 16.1 16.1 16.1 16.1 16.1 16.1 16.	1.00 1845 575 2 0.80 3 1175 2493 404 1752 13.9 13.9 826 0.49	0.98 1.00 1900 212 0 0.80 3 3 432 917 917 14.0 14.0 14.0 0.55 781	1.00 1.00 1.00 1.00 2 2 0.80 3 3 2.20 0.06 1.00 4.8 4.8 4.8 1.00 2.20	1.00 1845 412 2 0.80 3 566 0.23 2502 287 287 1752 13.4	0.97 1.00 1900 0.80 3 203 0.23 0.23 899 13.7 113.7	1.00 1.00 1.00 1.00 2 2 2 2 0.80 3 3 7 1 7 1 1704 0.6 0.6 0.6 0.6 0.6 0.6 0.6 0.0 0.0 0.0	1.00 1845 262 2 2 0.80 3 3 488 0.18 2681 1752 7.7 7.7 7.7	0.96 100 100 100 136 136 136 138 136 148 168 169 169 169 169 169 169 169 169 169 169
1.00 1.00		100 1845 125 1008 3 3 341 019 1757 16.1 16.1 16.1 100 334 1757 16.1 16.1 16.1 16.1 1757 1757 1757 1757 1757 1757 1757 17	1.00 1845 575 2 0.80 3 1175 2493 404 1752 13.9 13.9 826 0.49	1.00 212 0 0.80 3 432 0.47 917 14.0 14.0 0.55 781	1.00 1845 188 2 20 0.80 3 220 0.06 3408 1704 4.8 4.8 1.00 220 220	1.00 1845 412 2 0.80 3 566 0.23 2502 287 1752 13.4 13.4	1.00 1900 1900 0.80 3 203 0.23 0.23 899 13.7 113.7	1.00 1845 25 25 25 0.80 3408 3408 25 1704 0.6 0.6	1.00 1845 262 2 2 0.80 3 488 0.18 2681 1152 7.7 7.7	1.000 1900 75 0.80 0.80 3 136 0.18 748 748 168 1676 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0
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75 9 0.80 0.00 0.00 1757		325 3 3 3 341 1757 1757 16.1 16.0 1.00 341 10.0 341	575 2 0.80 3 1175 2493 404 1752 13.9 13.9 826 0.49	212 0 0.080 3 432 0.47 917 14.0 14.0 0.55 781	188 220 0.80 3 220 0.06 1704 4.8 1.00 220 0.85	412 2 0.80 3 3 566 0.23 2502 287 1752 13.4 13.4	150 0 0.80 3 203 203 0.23 899 899 13.7 13.7 13.7	25 2 0.80 3 77 77 71 0.02 3408 25 1704 0.6 0.6	262 2 0.80 3 488 0.18 2681 1752 7.7 7.7 7.7	75 0 0.80 3 136 0.18 748 748 168 168 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0
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0.80 0.80 0.80 0.00 0.00 0.00 0.00 0.00		0.80 3 341 1757 1757 1757 16.1 16.1 1.00 341 0.95	0.80 3 3 1175 2493 404 1752 13.9 13.9 13.9 826 0.49	0.80 3 432 0.47 917 383 14.0 14.0 0.55 781	0.80 3 220 0.06 3408 1704 4.8 4.8 4.8 1.00 0.85	0.80 3 3 566 0.23 2502 287 1752 13.4 13.4	0.80 3 203 0.23 899 275 1648 13.7 13.7 0.55	0.80 3 77 0.02 3408 25 1704 0.6 0.6	0.80 3 488 0.18 2681 1752 7.7 7.7 319	0.80 136 136 0.18 748 748 1676 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0
3 9 8 9 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9		341 0.19 1757 1757 1757 16.1 16.1 1.00 341 0.95 341	3 1175 0.47 2493 404 1752 13.9 13.9 826 0.49	3 432 0.47 917 383 1658 14.0 0.55 781	3 220 0.06 3408 1704 4.8 4.8 1.00 220 0.85	3 566 0.23 2502 287 1752 13.4 13.4	3 203 0.23 899 275 1648 13.7 13.7 13.7 0.55	3 71 0.02 3408 25 1704 0.6 0.6	3 488 0.18 2681 169 1752 7.7 7.7 7.7	3 136 0.18 748 748 1676 8.0 8.0 8.0 8.0 9.45 305 0.55
96 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		341 0.19 1757 325 1757 16.1 1.00 341 0.95	1175 2493 404 11752 13.9 13.9 826 0.49	432 0.47 917 383 1658 14.0 0.55 781 0.49	220 0.06 3408 188 1704 4.8 4.8 1.00 220 0.85	566 0.23 2502 287 1752 13.4 13.4	203 0.23 899 275 1648 13.7 13.7 0.55	71 0.02 3408 25 1704 0.6 0.6	488 0.18 2681 169 1752 7.7 7.7 319	136 0.18 748 168 1676 8.0 8.0 8.0 8.0 305 305 305 593
0.05		0.19 1757 325 1757 16.1 1.00 341 0.95 341	0.47 2493 404 1752 13.9 13.9 826 0.49	383 1658 14.0 14.0 0.55 781 0.49	0.06 3408 1704 4.8 1.00 220 0.85	0.23 2502 287 1752 13.4 13.4	0.23 899 275 1648 13.7 0.55 373	0.02 3408 1704 0.6 0.6	0.18 2681 169 1752 7.7 7.7 319	0.18 748 1676 8.0 8.0 8.0 0.45 305 0.55
1757 2 1757 1 1757 1 1.00 9.0.78 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	`	325 325 1757 16.1 16.1 1.00 341 0.95 341	2493 404 1752 13.9 13.9 826 0.49	917 383 1658 14.0 14.0 0.55 781 0.49	3408 1704 4.8 4.8 1.00 220 0.85	287 1752 13.4 13.4 396	275 275 1648 13.7 13.7 0.55 373	3408 25 1704 0.6 0.6	169 1752 7.7 7.7 319	748 1676 8.0 8.0 8.0 0.45 305 0.55
75 1757 1757 1757 1.00 9.00 1.		325 1757 16.1 16.1 1.00 341 0.95 341	404 1752 13.9 13.9 826 0.49	383 1658 14.0 14.0 0.55 781 0.49	188 1704 4.8 4.8 1.00 220 0.85	287 1752 13.4 13.4	275 1648 13.7 13.7 0.55 373	25 1704 0.6 0.6 1.00	169 1752 7.7 7.7 319	168 1676 8.0 8.0 8.0 0.45 305 0.55 593
1757 1 1757 1 1.00 9.6 0.78 0.78 0.78 0.78 0.78 0.79 0.00 0.00 0.00 0.00 0.00 0.00 0.00	` I	1757 16.1 16.1 1.00 341 0.95 341	1752 13.9 13.9 826 0.49	1658 14.0 14.0 0.55 781 0.49	1704 4.8 4.8 1.00 220 0.85	1752 13.4 13.4 396	1648 13.7 13.7 0.55 373	1704 0.6 0.6 1.00	1752 7.7 7.7 319	1676 8.0 8.0 8.0 0.45 305 0.55 593
3.7 3.7 3.7 3.7 3.6 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7		16.1 16.1 1.00 341 0.95 341	13.9 13.9 826 0.49 867	14.0 14.0 0.55 781 0.49	4.8 4.8 1.00 220 0.85	13.4	13.7 13.7 0.55 373	0.6	7.7	8.0 8.0 0.45 305 0.55 0.55
3.7 (1.00		16.1 1.00 341 0.95 341	13.9 826 0.49 867	14.0 0.55 781 0.49	4.8 1.00 220 0.85	13.4	13.7 0.55 373	1.00	319	8.0 0.45 305 0.55 593
1.00 0.78 0.78 1.00 1.00 1.00 1.10 0.0 0.0 0.0 0.0 0.0		341 0.95 341	826 0.49 867	0.55 781 0.49	1.00 220 0.85	396	373	1.00	319	305 305 0.55 593
9% 0.7% 0.7% 0.7% 0.7% 0.7% 0.7% 0.7% 0.7		341	826 0.49 867	781	220	396	373		319	305 0.55 593
0.78 1 1.00 1 1.		341	0.49	0.49	0.85			71	0 11 0	0.55
189 1.00 1.00 1.125 0.0 0.1 0.1 0.1 1.25 0.1 1.35 0.1 1.35 0.1 1.35 0.1 1.35 0.1 1.35 0.1 1.35 0.1 1.35 0.1 1.35 0.1 1.35 0.1 1.35 0.1 1.35 0.1 1.35 0.1 1.35 0.1 1.35 0.1 1.35 0.1 1.35 0.1 1.35 0.1 1.35 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1		341	867		-	0.72	0.74	0.35	0.03	593
1.00 1.00 1.00 1.00 0.0 0.00 0.00 0.00		5		820	220	654	615	155	620	i
1.00 1.10 12.5 12.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		9	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
41.1 12.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
12.5 0.0 0.0 0.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	,	35.1	16.0	16.0	40.8	31.6	31.7	42.6	32.6	32.8
2.1 2.1 5.3.7 5.3.7 6.3 6.3		36.5	0.4	0.5	26.1	2.5	2.9	3.0	1.4	1.5
2.1 53.7 D		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53.7 D 1 1 1 8.3		11.3	8.9	6.5	3.1	6.7	6.5	0.3	3.8	3.9
D 1 1 2 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	3.0 33.5	71.6	16.5	16.5	6.99	34.1	34.6	45.5	34.0	34.3
6.3		ш	В	В	ш	ပ	ပ	۵	ပ	O
6.3	786		1112			750			362	
6.3	4.8		32.6			42.5			34.9	
1 6.3	S		ပ			D			O	
6.3	2 3	4	2	9	7	∞				
6.3	2 3	4	2	9	7	8				
U V		34.3	10.2	22.1	9.3	46.5				
4.5	6.0 4.5	2.0	4.5	0.9	4.5	2.0				
s 4.0		36.0	5.7	31.2	9.5	43.6				
Max Q Clear Time (g_c+I1), s 2.6 15.7	5.7 18.1	23.9	8.0	10.0	5.7	16.0				
0.0		4.0	0.0	0.	0.0	0.0				
ntersection Summary										
HCM 2010 Ctrl Delay	35.8									
HCM 2010 LOS	D									

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Report	Page 5
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Synchro	

Movement	Marchant												
High-relptons 260 720 870 271 270 370 190 1452 121 230 992 oldrawe (veloth) 260 720 870 271 270 370 190 1452 121 230 992 oldrawe (veloth) 260 720 870 271 270 370 190 1452 121 230 992 oldrawe (veloth) 260 720 870 271 270 370 190 1452 121 230 992 oldrawe (veloth) 260 720 870 271 270 370 190 1452 121 230 992 oldrawe (veloth) 260 710 100 100 100 100 100 100 100 100 10	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Juline (vehft) 250 720 810 211 270 370 190 1452 121 230 992 olume (vehft) 250 720 810 211 270 370 190 1452 121 230 992 olume (vehft) 7 4 14 3 8 18 18 5 2 12 12 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lane Configurations	<i>y</i> -	‡	*	je-	‡	*	F	4413		F	444	*-
Obly veh 250 720 870 211 270 370 190 142 12 30 992 Cob), veh 0	Traffic Volume (veh/h)	250	720	870	211	270	370	190	1452	121	230	992	20
Object Ob	Future Volume (veh/h)	250	720	870	211	270	370	190	1452	121	230	992	70
100	Number	7	4	14	n	∞	18	2	2	12	-	9	16
1,00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
100	Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.98	1.00		0.99
1845 1845	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
269 774 935 227 290 398 204 1561 130 247 1067 1 2 1 2 1 2 1 2 3 <td>Adj Sat Flow, veh/h/ln</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1900</td> <td>1845</td> <td>1845</td> <td>1845</td>	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
1 2 1 1 2 1 1 2 1 1 2 2 1 1 1 2 2 1 3 3 3 3	Adj Flow Rate, veh/h	569	774	935	227	290	398	204	1561	130	247	1067	22
093 093 093 093 093 093 093 093 093 093	Adj No. of Lanes	-	2	-	-	2		2	m	0	2	m	_
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
208 1240 550 186 1219 531 834 2051 171 255 1255 1757 3805 1855 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.	Percent Heavy Veh, %	co	3	co	3	က	က	co	က	33	3	3	33
1757 3656 1555 1757 3656 1556 3408 4728 393 3408 5036 1757 3505 1555 1757 3505 1556 1555 1757 360 1708 5039 240 4724 3037 240 4724 3035 250 1555 1757 360 1556 1556 1757 1752 1556 1757 1752 1556 1757 1752 1556 1757 1752 1556 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1670 1700 1700 1700 1700 1700 1700 1700	Cap, veh/h	208	1240	220	186	1219	531	834	2051	171	252	1255	386
1757 3505 1555 1757 3505 1526 3408 4728 393 3408 5036 1757 3505 1525 1757 3505 1525 1757 3505 3408 224 1067 1757 1752 1256 1767 1754 17	Arrive On Green	0.12	0.35	0.35	0.11	0.35	0.35	0.24	0.43	0.43	0.07	0.25	0.25
1757 1752 1555 1256 1704 1619 1863 247 1067 174 177 175 1556 1556 1704 1619 1704 1619 1704 1619 1704 1619 1704 1619 1704 1619 1704 1619 1704 1619 1704 1619 1704 1619 1704 1619 1704 1705 1706	Sat Flow, veh/h	1757	3505	1555	1757	3505	1526	3408	4728	393	3408	5036	1549
1757 1752 1555 1757 1752 1256 1704 1679 1764 1704 1679 154 125 125 125 125 124	Grp Volume(v), veh/h	569	774	935	227	290	398	204	1108	583	247	1067	22
154 238 460 138 76 299 63 363 363 94 262 156 238 154 238 460 138 7.6 299 63 363 363 363 94 262 100 100 100 100 0 0.22 10.00 100 100 100 0.00 0.	Grp Sat Flow(s),veh/h/ln	1757	1752	1555	1757	1752	1526	1704	1679	1764	1704	1679	1549
154 238 460 138 76 299 63 363 363 364 262 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Q Serve(g_s), s	15.4	23.8	46.0	13.8	7.6	29.9	6.3	36.3	36.3	9.4	26.2	1.3
100	Cycle Q Clear(g_c), s	15.4	23.8	46.0	13.8	7.6	29.9	6.3	36.3	36.3	9.4	26.2	1.3
Hy 208 1240 550 186 1219 531 834 1457 765 225 1555 1259 126 1240 550 186 1219 531 834 1457 765 252 1519 100 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.22	1.00		1.00
1.29 0.62 1.70 1.22 0.24 0.75 0.24 0.76 0.76 0.98 0.88 1.20 1.24 0.56 1.70 1.02 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Grp Cap(c), veh/h	208	1240	220	186	1219	531	834	1457	765	252	1255	386
208 1240 550 186 1219 531 834 1457 765 252 1519 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	V/C Ratio(X)	1.29	0.62	1.70	1.22	0.24	0.75	0.24	92.0	92.0	0.98	0.85	0.06
Honor 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0	Avail Cap(c_a), veh/h	508	1240	220	186	1219	531	834	1457	765	252	1519	467
here 100 100 100 100 100 055 055 055 100 100	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
ceh 57.3 34.8 42.0 58.1 30.2 37.4 39.4 31.1 31.1 66.1 46.5 et a 16.2 6 0.7 32.6 136.5 0.0 5.3 0.0 2.1 4.0 51.2 7.4 et a 16.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	1:00	1.00	1.00	1.00	1.00	1.00	0.55	0.55	0.55	1.00	1.00	1:00
1626 0.7 3226 1365 0.0 53 0.0 2.1 4.0 51.2 7.4	Uniform Delay (d), s/veh	57.3	34.8	45.0	58.1	30.2	37.4	39.4	31.1	31.1	60.1	46.5	30.2
eh 00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	162.6	0.7	322.6	136.5	0.0	5.3	0.0	2.1	4.0	51.2	7.4	0.3
cehilin 16.9 11.6 69.0 13.8 3.7 13.4 3.0 17.2 18.5 6.2 13.0 13.0 13.0 13.0 13.0 13.0 13.0 13.0	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
219; 35,0 364,6 194,6 30.2 42.7 39,5 33.2 35,1 1113 35,9 F D F F C D D C D F D T 1978 915 76,4 34,5 64.1 F E E C E E T 2 3 4 5 6 7 8 T 3 4 5 6 7 8 T 3 4 5 6 7 8 T 3 4 5 6 7 8 T 3 4 5 6 7 8 T 4.2 6.0 5 5 6.0 6 74 T 5 13.8 62,4 188 51.0 37.8 38,4 19,6 50.2 T 6 10.0 0.0 0.1 4.1 0.0 1.8 T 7 8 7 8 7 8 8 7 9 8 7 9 9 9 9 9 9 9 9 9	%ile BackOfQ(50%),veh/ln	16.9	9.11	0.69	13.8	3.7	13.4	3.0	17.2	18.5	6.2	13.0	0.6
h 1978 915 1895 h 2 D F F F C D D C D F F F C D D C D F F C D D C D F C D D F C D D F C D D F C D D F C D D F C D D F C D D F C D D F C D D F C D D F C D D F C D D F C D D F C D D F C D D F C D D D D	LnGrp Delay(d),s/veh	219.9	35.6	364.6	194.6	30.2	42.7	39.5	33.2	35.1	111.3	53.9	30.5
to 1978 915 1895 1895 1895 1895 1895 1895 1895	LnGrp LOS	4		4	4	ပ			ပ		4		
h 2162 764 345 F E C C C C C C C C C C C C C C C C C C	Approach Vol, veh/h		1978			915			1895			1336	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 3 8 6.4 18 8 51.0 37.8 38.4 19.6 3),5 4.2 6.0 '5 '5 6.0 '6 '4.2 c-t11),5 11.4 38.3 15.8 48.0 8.3 28.2 17.4 (5 0.0 2.1 0.0 0.0 0.1 4.1 0.0	Approach Delay, s/veh		216.2			76.4			34.5			64.1	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 3 4 5 6 7 3,5 4,2 6,0 *5 *5 6,0 *6 *4.2 c-H),5 11,4 38.3 15.8 48.0 8.3 28.2 17.4 5 0.0 2.1 0.0 0.0 0.1 4.1 0.0	Approach LOS		ш			ш			O			ш	
Co, s 13.8 62.4 18.8 51.0 37.8 38.4 19.6 7 18.8 51.0 37.8 38.4 19.6 37.8 37.8 38.4 19.6 37.8 37.8 38.4 19.6 37.8 37.8 38.2 19.6 37.8 37.8 38.4 19.6 37.8 37.8 37.8 38.2 17.8 37.8 37.8 37.8 37.8 37.8 37.8 37.8 3	Timer	_	2	က	4	2	9	7	∞				
(c), s 13.8 62.4 18.8 51.0 37.8 38.4 19.6 51.0 51.8 5.0 6.0 6 4.2 51.0 51.8 5.0 6.0 6 4.2 51.0 51.8 5.0 6.0 6 4.2 51.0 51.8 5.0 6.0 6 41.2 1.4 46.0 11.6 39 15.0 6.1 6.0 6.0 6.1 6.1 6.1 6.0 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1	Assigned Phs	-	2	33	4	2	9	7	∞				
), s '4,2 6,0 '5 '5 6,0 '6 '4,2 max), s '9,6 41,2 '14 '46 11,6 '39 '15 (5,0 0.0 0.1 4.1 0.0 0.0 0.1 4.1 0.0 0.0 0.1 4.1 0.0 0.0 0.1 4.1 0.0 0.0 0.1 4.1 0.0 0.0 0.0 0.1 4.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Phs Duration (G+Y+Rc), s	13.8	62.4	18.8	51.0	37.8	38.4	19.6	50.2				
inax), s *9.6 41.2 *14 *46 11.6 *39 *15 C+II), s 11.4 38.3 15.8 48.0 8.3 28.2 17.4 (s 0.0 2.1 0.0 0.0 0.1 4.1 0.0 105.9	Change Period (Y+Rc), s	* 4.2	0.9	* 5	* 5	0.9	9 *	* 4.2	* 5				
C4II), s 11.4 38.3 15.8 48.0 8.3 28.2 17.4 (s 0.0 2.1 0.0 0.0 0.1 4.1 0.0 105.9	Max Green Setting (Gmax), s		41.2	* 14	* 46	11.6	* 39	* 15	* 44				
, s 0.0 2.1 0.0 0.0 0.1 4.1 0.0 10.5.9 F	Max Q Clear Time (g_c+I1), s		38.3	15.8	48.0	8.3	28.2	17.4	31.9				
	Green Ext Time (p_c), s	0.0	2.1	0.0	0.0	0.1	4.1	0.0	6				
	Intersection Summary												
	HCM 2010 Ctrl Delay			105.0									
TCM ZUID LOS	new zolo cui belay			103.4									
	HCM ZUIU LUS			_									

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HCM 2010 Signalized Intersection Summary 5: I-5 SB Ramps & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL1) PM 08/24/2017

Ex + Cumulative + NT Project (PAL1) PM 08/24/2017

HCM 2010 Signalized Intersection Summary 6: I-5 NB Ramps & Palomar Airport Rd.

		ì	•	•			-	-	_		•	
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations		444			44	* _				5		*
raffic Volume (veh/h)	0	890	260	0	790	1072	0	0	0	583	0	170
-uture Volume (veh/h)	0	890	260	0	790	1072	0	0	0	583	0	170
Number	ഹ	5	12	- -	9 0	9 0				~ c	4 0	14
Ped-Bike Adi(A pbT)	100	>	100	100	>	100				100	>	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	937	274	0	832	0				614	0	179
Adj No. of Lanes	0	3	0	0	2	-				2	0	_
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	3	0	က	3				3	0	3
Sap, veh/h	0	1429	417	0	1293	578				831	0	382
Arrive On Green	0.00	0.37	0.37	0.00	0.37	0.00				0.24	0.00	0.24
sat Flow, veh/h	0	4039	1130	0	3597	1568				3408	0	1568
Srp Volume(v), veh/h	0	812	399	0	832	0				614	0	179
3rp Sat Flow(s),veh/h/ln	0	1679	1645	0	1752	1568				1704	0	1568
2 Serve(g_s), s	0.0	5.5	5.5	0.0	5.3	0.0				4.5	0.0	2.6
Sycle Q Clear(g_c), s	0.0	5.5	5.5	0.0	5.3	0.0				4.5	0.0	2.6
Prop In Lane	0.00		69.0	0.00		1.00				1.00		1.00
ane Grp Cap(c), veh/h	0	1238	607	0	1293	578				831	0	382
//C Ratio(X)	0.00	99.0	99.0	0.00	0.64	0.00				0.74	0.00	0.47
Avail Cap(c_a), veh/h	0	3716	1821	0	3879	1735				1823	0	839
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Jpstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
Jniform Delay (d), s/veh	0.0	7.1	7.1	0.0	7.1	0.0				9.5	0.0	8.7
ncr Delay (d2), s/veh	0.0	0.5	0.5	0.0	0.2	0.0				0.5	0.0	0.3
nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.5	2.5	0.0	2.6	0.0				2.1	0.0	1.2
.nGrp Delay(d),s/veh	0.0	7.3	7.6	0.0	7.3	0.0				6.6	0.0	9.1
nGrp LOS		Α	Α		Α					Α		A
Approach Vol, veh/h		1211			832						793	
Approach Delay, s/veh		7.4			7.3						6.7	
Approach LOS		A			A						V	
imer	-	2	က	4	2	9	7	∞				
Assigned Phs		2		4		9						
Phs Duration (G+Y+Rc), s		15.4		11.7		15.4						
Change Period (Y+Rc), s		5.4		5.1		5.4						
Max Green Setting (Gmax), s		30.0		14.5		30.0						
Max Q Clear Time (g_c+11), s		7.5		6.5		7.3						
Green Ext Time (p_c), s		1.8		0.1		1.3						
ntersection Summary												
HCM 2010 Ctrl Delay			8.0									

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Movement Lane Configurations Traffic Volume (veh/h)	FBI											
Lane Configurations Traffic Volume (veh/h)	LDL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (veh/h)	je.	444			444	K.K.		₩	K.			
	220	1253	0	0	1772	1003	06	0	542	0	0	
Future Volume (veh/h)	220	1253	0	0	1772	1003	06	0	542	0	0	0
Number	ഹ	7	15	- -	9 0	9 0	m c	∞ <	∞ 0			
Ped-Bike Adi(A phT)	1 00	>	1 00	100	0	0 0 0	100	0	960			
Parking Bus. Adi	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	224	1279	0	0	1808	1023	92	0	553			
Adj No. of Lanes	-	m	0	0	m	2	0	-	2			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	3	က	0	0	3	3	3	3	3			
Cap, veh/h	245	3676	0	0	2817	1489	351	0	531			
Arrive On Green	0.14	0.73	0.00	0.00	0.37	0.37	0.20	0.00	0.20			
Sat Flow, veh/h	1757	5202	0	0	5202	2662	1757	0	2656			
Grp Volume(v), veh/h	224	1279	0	0	1808	1023	92	0	553			
Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1331	1757	0	1328			
Q Serve(g_s), s	18.9	13.8	0.0	0.0	44.3	48.5	9.9	0.0	30.0			
Cycle Q Clear(g_c), s	18.9	13.8	0.0	0.0	44.3	48.5	9.9	0:0	30.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	245	3676	0	0	2817	1489	351	0	531			
V/C Ratio(X)	0.91	0.35	0.00	0.00	0.64	69:0	0.26	0.00	1.04			
Avail Cap(c_a), veh/h	351	3676	0	0	2817	1489	351	0	531			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	19.0	19.0	1.00	1.00	1.00			
Upstream Filter(I)	0.80	0.80	0.00	0.00	0.68	89.0	1.00	0.00	1.00			
Uniform Delay (d), s/veh	63.7	7.3	0.0	0.0	34.5	35.8	20.7	0.0	0.09			
Incr Delay (d2), s/veh	15.1	0.2	0.0	0.0	0.8	.	0.1	0.0	20.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	10.2	6.3	0.0	0.0	20.8	18.3	3.2	0.0	14.7			
LnGrp Delay(d),s/veh	78.8	7.5	0.0	0.0	35.3	37.6	50.8	0.0	110.1			
LnGrp LOS	ш	⋖							-			
Approach Vol, veh/h		1503			2831			645				
Approach Delay, s/veh		18.2			36.1			101.7				
Approach LOS		В			٥			ш.				
Timer	_	2	3	4	2	9	7	∞				
Assigned Phs		2			2	9		00				
Phs Duration (G+Y+Rc), s		114.9			25.6	89.3		35.1				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		109.5			* 30	74.8		30.0				
Max Q Clear Time (g_c+I1), s					20.9	20.2		32.0				
Green Ext Time (p_c), s		2.3			0.0	3.9		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			39.2									
HCM 2010 LOS												
I CIMI ZOTO ECO			٥									

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HCM 2010 Signalized Intersection Summary
7: Paseo Del Norte & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL1) PM 0824/2017

ummary Ex + Cumulative + NT Project (PAL1) PM 8824/2017

HCM 2010 Signalized Intersection Summary 8: Armada Dr. & Palomar Airport Rd.

Configurations Fig.	Movement Lane Configurations Traffic Volume (veh/h) Future Volume (veh/h)	EBL	₩₩ ₩₩	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	Lane Configurations Traffic Volume (veh/h) Future Volume (veh/h)	KK	444		K	****	¥c.	1			M	₩	
270 1255 180 240 2135 310 220 120 200 260 130 270 1255 180 240 2135 310 220 120 200 20 130 1 0 0 <t< td=""><td>Traffic Volume (veh/h) Future Volume (veh/h)</td><td></td><td></td><td></td><td></td><td>Ē</td><td></td><td>F</td><td>(</td><td></td><td>F</td><td></td><td></td></t<>	Traffic Volume (veh/h) Future Volume (veh/h)					Ē		F	(F		
270 1255 180 240 2135 310 220 120 260 130 100 0 <td>Future Volume (veh/h)</td> <td>270</td> <td>1255</td> <td>180</td> <td>240</td> <td>2135</td> <td>310</td> <td>220</td> <td>120</td> <td>200</td> <td>260</td> <td>130</td> <td>280</td>	Future Volume (veh/h)	270	1255	180	240	2135	310	220	120	200	260	130	280
5 2 12 1 6 16 3 8 18 7 4 100 0 <td>1</td> <td>270</td> <td>1255</td> <td>180</td> <td>240</td> <td>2135</td> <td>310</td> <td>220</td> <td>120</td> <td>200</td> <td>260</td> <td>130</td> <td>280</td>	1	270	1255	180	240	2135	310	220	120	200	260	130	280
1,00	Number	2	2	12	_	9	16	c	∞	18	7	4	14
1,00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
1,00	Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		96.0	1.00		96.0
1845 1845 1900 1845 1845 1845 1845 1945 1845 1845 1945 1845 1845 1945 1845 1845 1945 1845 1845 1945 <td< td=""><td>Parking Bus, Adj</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td></td<>	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
281 1307 188 250 2224 322 125 20 2 2 0 2 3	Adj Sat Flow, veh/h/In	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
2 3 0 2 4 1 2 2 0 2 2 4 1 2 2 0	Adj Flow Rate, veh/h	281	1307	188	250	2224	323	229	125	208	271	135	292
0.96 0.09 0.09 <td< td=""><td>Adj No. of Lanes</td><td>2</td><td>co</td><td>0</td><td>7</td><td>4</td><td>-</td><td>7</td><td>2</td><td>0</td><td>2</td><td>2</td><td>0</td></td<>	Adj No. of Lanes	2	co	0	7	4	-	7	2	0	2	2	0
3 3	Peak Hour Factor	96:0	96:0	96:0	96.0	96.0	96:0	96:0	96.0	96.0	96.0	96.0	96.0
3.25 1461 210 799 3052 906 274 332 285 341 375 0.10 0.33 0.33 0.47 0.96 0.08 0.19 0.19 0.10 0.21 3408 4431 6.52 2.50 2.224 3.23 229 1.52 1507 3408 1752 1907 3408 1752 1907 3408 1752 1907 3408 1752 1907 3408 1752 1907 3408 1752 1907 3408 1752 1907 3408 1752 1907 3408 1752 1907 3408 1752 1907 3408 1752 1908 1752 1908 1752 1908 1750	Percent Heavy Veh, %	3	c	3	m	m	3	cs	3	m	m	c	c,
0.10 0.33 0.33 0.47 0.96 0.06 0.19 0.19 0.10 0.21 34.08 4.94 16.5 2.60 2.224 152.8 3408 0.15 3408 1752 135 28 4.91 6.5 2.60 2.224 3.23 2.29 125 0.08 271 135 112.2 4.21 6.8 6.7 0.5 9.9 9.3 19.5 11.7 9.8 112.2 4.21 6.8 6.7 0.5 9.9 9.3 19.5 11.7 9.8 110.0 2.0 1.00 2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00<	Cap, veh/h	325	1461	210	799	3052	906	274	332	285	341	375	323
3408 4431 637 3408 6346 1558 3408 1752 1507 3408 1752 178 179 178 178 179 178 179 170 170 170 170 170 170 170 170 170 170 170 170 <	Arrive On Green	0.10	0.33	0.33	0.47	96.0	96:0	0.08	0.19	0.19	0.10	0.21	0.21
281 990 505 250 2224 323 229 125 208 271 135 1704 4079 1711 1704 186 1558 1704 175 170 175 122 42.1 42.1 6.8 6.7 0.5 99 9.3 19.5 11.7 9.8 122 42.1 42.1 6.8 6.7 0.5 99 9.3 19.5 11.7 9.8 1100 100 0.37 100	Sat Flow, veh/h	3408	4431	637	3408	6346	1558	3408	1752	1507	3408	1752	1512
1704 1679 1711 1704 1586 1558 1704 1752 1507 1704 1752 1722 42.1 6.8 6.7 0.5 9.9 9.3 19.5 11.7 9.8 1.22 42.1 6.8 6.7 0.5 9.9 9.3 19.5 11.7 9.8 1.20 0.37 1.00 0.37 1.00 0.00 0.37 1.00 0.00 0.03 0.34 0.35 0.34 0.35 0.34 0.35 0.35 0.34 0.35 0.34 0.35 0.35 0.36 0.38 0.38 0.33	Grp Volume(v), veh/h	281	066	202	250	2224	323	229	125	208	271	135	292
122 42.1 42.1 6.8 6.7 0.5 9.9 9.3 19.5 11.7 9.8 124 42.1 42.1 6.8 6.7 0.5 9.9 9.3 19.5 11.7 9.8 100 325 1107 564 799 3052 906 274 332 285 341 375 101 102 103 103 103 202 206 274 332 285 341 375 102 103 100 2.00 2.00 2.00 1.00 1.00 103 103 100 2.00 2.00 2.00 1.00 1.00 104 9.7 9.8 0.41 0.41 0.41 1.00 1.00 1.00 105 0.85 0.85 0.41 0.41 0.41 1.00 1.00 1.00 106 0.0 0.0 0.0 0.0 0.0 0.0 107 0.0 0.0 0.0 0.0 0.0 0.0 108 0.1 0.1 0.1 0.1 0.1 109 0.1 0.1 0.1 0.1 0.1 109 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 100 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 100 0.1 0.	Grp Sat Flow(s),veh/h/ln	1704	1679	1711	1704	1586	1558	1704	1752	1507	1704	1752	1512
122 42.1 42.1 6.8 6.7 0.5 9.9 9.3 19.5 11.7 9.8 11.0 13.5 11.07 6.8 6.7 0.5 1.00 1.00 1.00 1.00 23.6 11.07 6.8 6.7 7.9 20.5 20.6 274 23.2 28.5 341 375 23.7 23.8 23.8 23.1 23.2 23.8 23.3 23.3 23.8 23.8 23.8 23.2 23.0 20.0 1.00 1.00 1.00 1.00 23.8 23.8 241 0.41 0.41 0.01 1.00 1.00 1.00 23.8 23.8 241 0.41 0.41 0.01 1.00 1.00 1.00 24.8 27.8 27.8 27.3 28.8 27.2 25.8 27.8 27.3 27.3 28.8 27.2 25.8 27.8 27.3 27.3 27.3 28.8 27.2 25.8 27.8 27.3 27.3 27.3 27.3 25.8 27.3 27.3 27.3 27.3 27.3 25.8 27.3 27.3 27.3 27.3 27.3 25.9 27.9 27.9 27.3 27.3 27.3 25.9 27.9 27.9 27.3 27.3 27.3 25.9 27.9 27.9 27.3 27.3 27.3 25.9 27.9 27.3 27.3 27.3 27.3 25.9 27.9 27.9 27.3 27.3 27.3 25.9 27.9 27.9 27.3 27.3 25.9 27.9 27.9 27.3 27.3 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 25.9 27.9 27.9 27.9 25.9 27.9 27.9 25.9 27.9 27.9 25.9 27.9 27.9 25.9 27.9 27.9 25.9 27.9 27.9 25.9 27.9 27.9 25.9 27.9 27.9 25.9 27.9 27.9 25.9 27.9 27.9 25.9 27.9 27.9 25.9 27.9 27.9 25.9 27.9 27.9 25.9 27.9 27.9 25.9 27.9 27.9 25.9 27.9 27.9 25.9 27.9 27.9 25.9	Q Serve(g_s), s	12.2	42.1	42.1	8.9	6.7	0.5	6.6	9.3	19.5	11.7	8.6	28.2
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Cycle Q Clear(g_c), s	12.2	42.1	42.1	8.9	6.7	0.5	6.6	9.3	19.5	11.7	8.6	28.2
325 1107 564 799 3052 906 274 332 285 341 375 687 689 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.	Prop In Lane	1.00		0.37	1.00		1.00	1.00		1.00	1.00		1.00
0.87 0.89 0.89 0.31 0.73 0.36 0.83 0.38 0.73 0.80 0.36 0.35 1.276 6.50 799 0.505 9.06 348 456 392 0.89 0.34 0.35 0.80 0.36 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35	Lane Grp Cap(c), veh/h	325	1107	264	199	3052	906	274	332	282	341	375	323
359 1276 650 799 3052 906 348 456 392 382 473 1.00 1.00 200 200 200 100 </td <td>V/C Ratio(X)</td> <td>0.87</td> <td>0.89</td> <td>0.89</td> <td>0.31</td> <td>0.73</td> <td>0.36</td> <td>0.83</td> <td>0.38</td> <td>0.73</td> <td>0.80</td> <td>0.36</td> <td>0.00</td>	V/C Ratio(X)	0.87	0.89	0.89	0.31	0.73	0.36	0.83	0.38	0.73	0.80	0.36	0.00
1.00 1.00 2.00 2.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	326	1276	920	799	3052	906	348	426	392	382	473	408
0.85 0.85 0.85 0.84 0.41 0.41 1.00 1.00 1.00 1.00 1.00 1.0	HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
66.9 47.8 47.8 32.3 1.6 0.4 68.0 53.1 57.2 66.0 50.2 146. 0.9 146.	Upstream Filter(I)	0.85	0.85	0.85	0.41	0.41	0.41	1:00	1.00	1.00	1.00	1.00	1.00
146 97 169 00 06 05 108 03 2.3 8.8 0.2 64 21.0 22.6 3.2 2.3 0.8 78.7 53.4 59.5 74.8 50.4 815 575 647 32.3 2.3 0.8 78.7 53.4 59.5 74.8 50.4 F E E C A A R E D E E D 1776 22.6 3.2 2.3 0.8 78.7 53.4 59.5 74.8 50.4 F E E C A A R E D E E 63.4 4.8 66.0 F E E 1.1 2 3 4 5 6 7 8 8 64.0 6.0 3.3 4 65.0 6.0 3.3 4 65.0 6.0 7.0 3.3 65.1 18.5 78.1 20.0 33.4 66.0 6 42 50 42 60 50 50 5 67.1 19 30.2 14.2 87 13.7 215 68.8 4.1 19 30.2 14.2 87 13.7 215 69.3 5.4 0.1 1.4 0.1 21.5 0.2 1.3	Uniform Delay (d), s/veh	6.99	47.8	47.8	32.3	1.6	0.4	0.89	53.1	57.2	0.99	50.2	57.4
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	14.6	6.7	16.9	0.0	9.0	0.5	10.8	0.3	2.3	89.	0.2	17.6
64 210 226 32 23 03 5.1 45 8.3 5.9 48 815 575 647 32.3 0.8 787 53.4 59.5 74.8 60.4 776 2797 66.0 E E D E D E D E D E D E D E D E D E D	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
815 575 647 323 23 08 787 534 595 748 504 F	%ile BackOfQ(50%),veh/ln	6.4	21.0	22.6	3.2	2.3	0.3	2.1	4.5	8.3	5.9	4.8	13.4
F E E C A A E D E E C A 1776	LnGrp Delay(d),s/veh	81.5	57.5	64.7	32.3	2.3	0.8	78.7	53.4	59.5	74.8	50.4	75.0
1776 2797 562 63.4	LnGrp LOS	띡	ш	ш	ပ	⋖	⋖	ш		ш	ш		ا۳
63.4 4.8 66.0 E A A 5 6 7 8 1 2 3 4 5 6 7 8 41.2 55.4 16.3 37.1 18.5 78.1 20.0 33.4 6.0 6 42 50 42 60 5.0 5 17.8 45.1 11.9 30.2 14.2 87 13.7 21.5 0.3 5.4 0.1 1.4 0.1 21.5 0.2 1.3 B 36.3 36.3 36.3	Approach Vol, veh/h		1776			2797			295			869	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 4.12 55.4 16.3 37.1 18.5 78.1 20.0 6.0 6 7 4.2 50. 4.2 6.0 5.0 17.8 57 15 40.5 16 59.0 16.8 8.8 44.1 11.9 30.2 14.2 8.7 13.7 0.3 5.4 0.1 1.4 0.1 21.5 0.2 D	Approach Delay, s/veh		63.4			4.8			0.99			70.2	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 412 554 163 37.1 185 78.1 20.0 0 3 6 42 50 42 50 50 178 57 15 40.5 142 8.7 13.7 0.3 54 0.1 1.4 0.1 21.5 0.2 0.3 53.3	Approach LOS		ш			A			ш			ш	
1 2 55.4 16.3 37.4 18.5 78.1 20.0 41.2 55.4 16.3 37.1 18.5 78.1 20.0 17.8 *57 *15 40.5 *14.2 8.7 18.7 0.3 5.4 0.1 1.4 0.1 21.5 0.2 36.3 36.3 36.3	Timer		2	က	4	വ	9	7	00				
41.2 55.4 16.3 37.1 18.5 78.1 20.0 6.0 '6 '42 50 '42 50 '42 50 5.0 17.8 '57 '15 40.5 '16 59.0 16.8 88 44.1 11.9 30.2 14.2 8.7 13.7 0.3 5.4 0.1 1.4 0.1 21.5 0.2 36.3	Assigned Phs	-	2	က	4	2	9	7	8				
60 '6 '42 50 '42 60 50 178 '57 '15 405 '16 590 168 ' 88 441 11.9 302 142 87 137 2 0.3 5.4 0.1 1.4 0.1 21.5 0.2 36.3 D	Phs Duration (G+Y+Rc), s	41.2	55.4	16.3	37.1	18.5	78.1	20.0	33.4				
178 *57 *15 40.5 *16 59.0 16.8 8.8 44.1 11.9 30.2 14.2 8.7 13.7 0.3 5.4 0.1 1.4 0.1 21.5 0.2 36.3 D	Change Period (Y+Rc), s	0.9	9 *	* 4.2	2.0	* 4.2	0.9	2.0	* 2				
88 441 11.9 30.2 14.2 8.7 13.7 0.3 5.4 0.1 1.4 0.1 21.5 0.2 36.3 D	Max Green Setting (Gmax), s	17.8	* 57	* 15	40.5	* 16	26.0	16.8	* 39				
0.3 5.4 0.1 1.4 0.1 21.5 0.2 36.3 D	Max Q Clear Time (g_c+I1), s	8.8	44.1	11.9	30.2	14.2	8.7	13.7	21.5				
	Green Ext Time (p_c), s	0.3	5.4	0.1	1.4	0.1	21.5	0.2	1.3				
	Intersection Summary												
	HCM 2010 Ctrl Delay			36.3									
	HCM 2010 LOS			Q									

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10 Report	Page 11
Synchro	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	444	¥.	r	444	¥.	F	£,	¥	F	*	*
Traffic Volume (veh/h)	190	1375	160	310	2215	150	360	09	260	220	0/	220
Future Volume (veh/h)	190	1375	160	310	2215	150	360	09	260	220	70	220
Number	2	2	12	_	9	16	က	ω	18	7	4	14
Initial Q (Qb), veh	0 0	0	0	0 0	0	0	0 0	0	0 10	0 0	0	0 10
Ped-Bike Adj(A_pb1)	9.1	00	1.00	1.00	00	100	1.00	00	0.95	00.1	00	0.95
Adi Sat Elem vightlin	1045	1001	1045	1045	1045	1001	1001	1001	1045	1045	10.10	10.45
Adj Sat Flow, ventrim Adj Flow Rate, veh/h	108	1432	167	323	2307	156	375	1843	312	220	73	220
Adj No of Lanes	0	3041	2	1	2007	120	C	0 0	212	777	<u> </u>	1
Peak Hour Factor	960	960	960	96.0	96.0	960	96.0	960	960	96.0	96 0	96 0
Percent Heavy Veh. %	8	~	~	~	8	~	~	~	3	8	~	3
Cap, veh/h	228	2131	829	319	2159	882	382	0	374	467	284	231
Arrive On Green	0.33	0.85	0.85	0.36	98.0	98.0	0.11	0.00	0.13	0.14	0.15	0.15
Sat Flow, veh/h	3408	5036	1557	1757	5036	1557	3514	0	2972	3408	1845	1497
Grp Volume(v), veh/h	198	1432	167	323	2307	156	375	0	312	229	73	229
Grp Sat Flow(s),veh/h/ln	1704	1679	1557	1757	1679	1557	1757	0	1486	1704	1845	1497
Q Serve(g_s), s	9.9	15.2	5.6	27.2	64.3	0.0	16.0	0.0	11.1	9.3	5.2	16.5
Cycle Q Clear(g_c), s	9.9	15.2	5.6	27.2	64.3	0.0	16.0	0.0	11.1	9.3	5.2	16.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	2131	829	319	2159	882	382	0	374	467	284	231
V/C Ratio(X)	0.35	0.67	0.20	1.01	1.07	0.18	0.98	0.00	0.83	0.49	0.26	0.99
Avail Cap(c_a), veh/h	228	2131	829	319	2159	887	387	0	818	467	492	366
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1:00	1.00	1.00
Upstream Filter(I)	0.71	0.71	0.71	0.09	0.09	0.09	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.4	7.8	4.5	47.8	10.7	3.6	66.7	0.0	33.6	59.9	55.9	32.8
Incr Delay (d2), s/veh	0.1	1.2	0.4	18.7	32.0	0.0	41.1	0.0	1.9	0.3	0.5	25.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	6.9	 :	14.7	33.6	0.7	6.6	0:0	4.7	4.4	2.7	8.5
LnGrp Delay(d),s/veh	44.5	0.6	4.9	9.99	42.7	3.7	107.8	0.0	35.5	60.2	26.0	58.4
LnGrp LOS		⋖	⋖	-	-	⋖	۰			ш	ш	ا۳
Approach Vol, veh/h		1797			2786			289			531	
Approach Delay, sweh		12.6			43.3			75.0			28.8	
Approach LOS		В			O			ш			ч	
Timer		2	3	4	2	9	7	∞				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	31.4	69.5	21.0	28.1	30.6	70.3	25.6	23.6				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.7	* 5	0.9	9 *	* 5	4.7				
Max Green Setting (Gmax), s	* 27	46.6	* 16	* 40	9.5	* 64	* 15	41.3				
Max Q Clear Time (g_c+I1), s	29.2	17.2	18.0	18.5	9.8	66.3	11.3	13.1				
Green Ext Time (p_c), s	0.0	7.1	0.0	0.7	0.0	0.0	0.2	0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			39.0									
HCM 2010 LOS			O									
Notes												

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HCM 2010 Signalized Intersection Summary 9: Hidden Valley Rd. & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL1) PM 08/24/2017

HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL1) PM 10: College Blvd. & Palomar Airport Rd.

FBL FBT FBR WBL								
No. 100 No. 100 No. 100	EBT _	WBT	WBR NBI	3L NBT	NBR	SBL	SBT	SBR
86 1995 130 110 8 1995 130 110 5 2 12 12 1 0 0 0 0 0 1 0 0 100 1 0 10 100 1 0 0 0 0	× +++	4413				r	*	¥
80 1995 130 110 2 0 0 0 0 1.01 1.00 1.00 1.00 1.00 1.01 1.00 1.00 1.00 1.00 1.02 1.02 1.03 1.02 1.00 1.02 1.02 1.03 1.00 1.00 1.02 1.02 1.03 1.00 1.00 1.03 1.03 1.03 1.00 1.00 1.04 1.00 1.00 1.00 1.00 1.04 1.00 1.00 1.00 1.05 1.00 1.00 1.00 1.05 1.00 1.00 1.00 1.05 1.00 1.00 1.00 1.00 1.00 1.00 1	1995 130	2575	80 16	160 40	06	200	20	210
5 2 12 1 100 0 0 0 1100 100 100 100 100 1 1845 1845 1845 1845 1147 2 1 3 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1995 130	25.75			06	200	20	210
100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 12	9	16	3	9	7	4	14
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0 0				0 10	0 6	0	0
1845 1845	100 100	8	1.00	1.00	1.00	00.1	100	1.00
85 2122 138 117 2 1 4 0.4 0.94 0.94 0.94 0.94 0.94 0.94 0.9	1845 1845 7				1900	1845	1845	1845
1 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2122 138				96	213	53	223
0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94	3				0	-	-	_
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0.94 0.94	0.94		0.94 0.94	0.94	0.94	0.94	0.94
47 2255 828 250 22 1757 5036 1550 1757 5036 1550 1757 167 1757 1679 1550 1757 167 1757 167 1757 167 1757 167 1757 167 1757 167 1757 167 1757 167 1757 167 1757 167 1757 167 1757 167 1757 167 1757 167 1757 175	3 3	3			3	3	3	3
1757 5036 1550 1757 171 171 172 1757 5036 1550 1757 1757 1757 1679 1757 1757 1679 1757 1757 1757 1679 1757 1757 1757 1757 1757 1757 1757 17	2255 828				152	211	330	269
1757 5036 1550 1757 5036 1550 1757 517	0.15 0.15		1.00 0.0	Ŭ	0.14	0.12	0.18	0.18
18	5036 1550		154 1757	57 490	1095	1757	1845	1504
1757 1679 1550 1757 140	2122 138			170 0	139	213	53	223
40 626 46 82 40 626 46 82 100 1.00 1.00 1.00 1.01 1.00 1.01 1.00 1.02 1.00 1.03 0.33 0.33 0.00 0.33 0.33 0.00 0.43 0.33 0.33 0.00 0.67 0.67 0.67 0.19 0.10 41.6 6.8 0.3 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.1 2 3 4 1 3 3.00 1 3 4 1 4 5 57 1 5 6 6 148 1 5 6 6 148 1 7 8 6 6 148 1 8 6 6 6 148 1 8 6 6 6 148 1 9 6 148 1 1 2 3 4 1 1 2 3 4 1 2 3 4 1 3 4 1 4 5 57 1 5 6 6 148 1 6 6 148 1 7 8 105 6 46 148 1 8 9 0 0 0.5	1679 1550 1				1586	1757	1845	1504
40 626 46 82 100 1.00 1.00 1.00 1 1.01 2258 828 250 11 1 1.81 0.94 0.17 0.47 0 1 2.01 2.00 1.00 1 0.07 0.67 0.67 0.19 0 1 1.01 0.00 0.0 0.0 0.0 1 1.01 0.00 0.0 0.0 1 1.01 0.00 0.0 1 1.01 0.00 0.0 1 1.01 0.00 0.0 1 1.01 0.00 0.0 1 1.01 0.00 0.00	62.6 4.6	0.0	0.0		12.4	18.0	3.6	21.4
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	62.6 4.6	0:0		12.8 0.0	12.4	18.0	3.6	21.4
1, 1, 1, 1, 225, 828, 250, 11, 1, 1, 1, 220, 833, 250, 11, 1, 220, 833, 260, 11, 1, 1, 220, 833, 200, 200, 200, 200, 200, 200, 200, 2	1.00				69.0	1.00		1.00
181 094 0.17 0.47 0.47 0.47 0.43 0.33 0.33 0.33 0.30 0.33 0.33 0.00 0.40 0.17 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.4	2255 828	,			220	211	330	269
47 2270 833 250 11 0.33 0.33 0.33 250 11 0.43 620 106 490 0.1 0.67 0.67 0.67 0.67 0.19 0.19 0.19 0.19 0.19 0.19 0.19 0.19	0.94 0.17			0	0.63	1.01	0.16	0.83
0.33 0.33 0.33 2.00 2 0.457 0.67 0.67 0.67 0.67 0.67 0.67 0.67 0.67 0.67 0.00	2270 833				326	211	480	391
0.67 0.67 0.67 0.19 C 1743 6.20 10.6 49.0 1769 6.8 0.3 0.1 1760 0.0 0.0 0.0 0.0 1741 6.8 1.3 0.1 174 30.6 2.0 4.0 174 30.6 2.0 4.0 175 23.45 B D F 2345 B D F 2345 B D F 1 2 3 4 4 1 2 3 4 1 3 6.0 6.6 7.3 1 2 3 4 1 3 6.0 6.6 7.3 1 4 5.7 1 5 6.46 14.8 23.4 1 6 6.0 0.5 1 7 8 10.5 6.46 14.8 23.4 1 8 0.0 2.6 0.0 0.5	0.33 0.33				1.00	1.00	1.00	1.00
h 743 620 106 490 1 4160 68 100 00 00 1 1 400 00 00 00 00 1 4912 68 7 109 49.1 1 5345 B D 2345 B D 2345 B D 24 1 3 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 3 39.0 1 3 4 1 2 3 4 1 3 30.0 1 3 4 1 3 30.0 1 3 4 1 3 3 4 1 4 3 3 4 1 4	0.67 0.67			٥	1.00	1.00	1.00	1.00
10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	62.0 10.6	0.0			61.0	0.99	52.1	59.4
hyln 20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	6.8 0.3	3.2	-		1.	64.7	0.1	6.3
hin 7,4 30,6 2.0 40 491.2 68.7 10,9 49,1 F E B D 2345 2345 80.7 F 1 2 3 4 7 27.3 73.2 17.0 32.5 8.60 6 42 5.7 8.80, 6 42 5.7 8.80, 6 42 5.7 8.80, 6 42 5.7 8.80, 6 42 5.7 8.80, 6 42 5.7 8.80, 6 42 5.7 8.80, 6 42 5.7 8.80, 6 42 5.7 8.80, 6 6 42 5.7 8.80, 6 6 42 5.7 8.80, 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	0.0 0.0	0.0		0.0 0.0	0.0	0.1	0.0	0.0
491.2 68.7 10.9 49.1 F E B D 2345 80.7 80.7 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 3 50.0 5.6 4.2 5.7 1 3 6.0 6.0 6.5 5 0.0 2.6 0.0 0.5 5 0.0 2.6 0.0 0.5	30.6 2.0	0.8	1		5.5	12.5	1.9	9.4
1 2 345 D 2 2345 B 0 7 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 3 5 60 6 76 742 1 3 390 1 1 5 646 148 234 1 1 5 00 2.6 0.0 0.5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	68.7 10.9	3.2	6.9 182.6	0.0 9.	62.1	130.7	52.2	65.7
2345 22 80.7 F 60.7 F 7 1 2 3 4 1, 2 27.3 73.2 17.0 32.5 8 60 6 42 5.7 8 60 76 74.2 5.7 10.5 64.6 14.8 23.4 11), 2 0.0 2.6 0.0 0.5 8 48.1	B B	⋖	⋖		ш	-		الا
1 2 3 4 F F 1 2 3 4 1, 2 27.3 73.2 17.0 32.5 100, 2 646 148 29.0 111), 5 10.5 64.6 148 23.4 111), 5 0.0 2.6 0.0 0.5 111, 5 0.0 2.6 0.0 0.5	2345	2941		306			489	
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 3 2 7.3 73.2 17.0 32.5 1ax), s 10.5 '66 '4.2 5.7 1ax), s 10.5 64.6 148 334 1 0.0 2.6 0.0 0.5 1 48.1	80.7	6.3		128.4			92.6	
1 2 3 4 1 2 3 4 27.3 73.2 170 32.5 60 6 42 5.7 10.5 68 13 39.0 10.2 64.6 14.8 23.4 0.0 2.6 0.0 0.5	_	T		_			_	
1 2 3 4 27.3 73.2 17.0 32.5 10.5 68 13 39.0 10.2 64.6 14.8 23.4 0.0 2.6 0.0 0.5 48.1		2	9	7 8				
273 732 170 325 60 '6 '42 5.7 105 '68 '13 390 102 646 148 234 00 26 00 05	2 3							
60 6 42 57 105 68 113 39.0 102 646 148 23.4 0.0 2.6 0.0 0.5 48.1	73.2 17.0							
105 *68 *13 390 102 646 148 234 00 26 00 05 481	* 6 * 4.2			•				
0.0 2.6 0.0	* 68 * 13			18.0 * 34				
2.0 2.0	2.6 0.0	0.0	0.2	0.0				
	2.0 0.0							
	48.1							
HCM 2010 LOS	Q							
SetoN								

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Synchro 10 Report Page 15

Marchenian Fig. Fig. Fig. Wig.		1	†	<u> </u>	-	ļ	1	•	—	4	۶	→	*
	Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
189 1325 289 270 1475 100 190 240 160 40 420 180 1325 280 270 1457 100 190 240 160 40 420 180 1325 280 270 1457 100 100 0.09 1.00 0.09 1.00	Lane Configurations	ř.	444	¥	F	444	¥.	F	‡	¥.	<u>, </u>	*	*
180 1325 280 270 1675 100 190 240 160 40 420 100 0	Traffic Volume (veh/h)	180	1325	280	270	1675	100	190	240	160	40	420	570
100	Future Volume (veh/h)	180	1325	780	270	1675	100	190	240	160	40	420	270
100	Number	ഹ	2	12	- -	9 0	91	m	∞ <	∞ 0	7	4 0	4 0
1,00	Ped-Bike Adi(A pbT)	1.00	>	1.00	1.00	>	0.99	1.00	>	0.99	1.00	>	0.99
1845 1845	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
202 1489 315 303 1882 112 213 270 180 45 472 2 3 1 2 3 1 2 1 <td>Adj Sat Flow, veh/h/ln</td> <td>1845</td>	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
2 3 1 2 3 1 2 1	Adj Flow Rate, veh/h	202	1489	315	303	1882	112	213	270	180	45	472	640
0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89	Adj No. of Lanes	2	n	_	2	3	-	2	2	-	_	-	_
3 3	Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
411 2056 641 355 1904 588 223 1110 492 59 504 0.24 0.28 0.01 0.38 0.38 0.38 0.07 0.32 0.03 0.27 3.08 6.08 1.56 3.08 1.38 0.38 0.38 0.38 0.39 0.32 0.03 0.27 3.08 5.08 1.56 3.08 1.38 1.38 1.38 1.75 1.84 4.72 1.7 1.98 6.9 13.1 55.7 6.0 9.3 8.6 1.34 3.8 37.5 1.10 1.00 <td>Percent Heavy Veh, %</td> <td>3</td> <td>3</td> <td>က</td> <td>3</td> <td>co</td> <td>co</td> <td>3</td> <td>3</td> <td>m</td> <td>m</td> <td>3</td> <td>3</td>	Percent Heavy Veh, %	3	3	က	3	co	co	3	3	m	m	3	3
0.24 0.82 0.82 0.10 0.38 0.38 0.07 0.22 0.03 0.07 3408 50.36 156.8 3408 50.86 136.5 3408 136.3 175.7 1845 170 100 100 100 100 100 100 100	Cap, veh/h	411	2058	641	322	1904	288	223	1110	492	26	504	613
3408 5036 1568 3408 5036 1556 3408 3505 1553 1757 1845 175 1845 175 1845 175 1845 175 1845 175 1845 177 184 45 477 177 178 69 13.1 55.7 60 9.3 86 134 38 37.5 100	Arrive On Green	0.24	0.82	0.82	0.10	0.38	0.38	0.07	0.32	0.32	0.03	0.27	0.27
202 1489 315 303 1882 112 213 270 180 45 472 77 198 6.9 13.1 55.7 6.0 9.3 86 134 38 37.5 7.7 19.8 6.9 13.1 55.7 6.0 9.3 86 134 38 37.5 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.10 2.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2.00 2.00 2.00 1.00	Sat Flow, veh/h	3408	5036	1568	3408	5036	1556	3408	3505	1553	1757	1845	1551
1704 1679 1568 1704 1679 1556 1704 1752 1553 1757 1845 1777 198 6.9 13.1 55.7 6.0 9.3 86 13.4 3.8 37.5 1.00	Grp Volume(v), veh/h	202	1489	315	303	1882	112	213	270	180	45	472	640
77 198 69 131 557 60 93 86 134 38 375 77 198 69 131 557 60 93 86 134 38 375 1.00 411 2058 641 355 1904 588 223 1110 492 59 504 489 2058 641 908 099 019 096 024 037 076 094 480 2058 641 100 100 100 100 100 100 100 529 99 51 661 463 217 699 379 396 110 529 99 51 661 463 217 699 379 396 110 529 99 51 661 463 217 699 379 396 110 520 00 00 00 00 00 00 00 00 00 00 00 00 52 99 51 661 463 217 699 379 396 118 52 9 99 51 661 463 217 699 379 396 118 52 9 99 81 63 29 27 116 52 9 99 81 63 28 28 1110 52 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Grp Sat Flow(s),veh/h/ln	1704	1679	1568	1704	1679	1556	1704	1752	1553	1757	1845	1551
17 19.8 6.9 13.1 55.7 6.0 9.3 86 13.4 3.8 37.5 100 1.00 1.00 1.00 1.00 1.00 1.00 411 20.8 1.00 1.00 1.00 1.00 1.00 449 0.72 0.49 0.85 0.99 0.19 0.96 0.24 0.37 0.76 0.94 200 2.00 1	Q Serve(g_s), s	7.7	19.8	6.9	13.1	55.7	0.9	9.3	9.8	13.4	3.8	37.5	41.0
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Cycle Q Clear(g_c), s	7.7	19.8	6.9	13.1	55.7	0.9	9.3	9.8	13.4	3.8	37.5	41.0
411 2058 641 355 1904 588 223 1110 492 59 504 489 2058 641 920 019 0196 024 024 037 076 099 449 2058 619 0196 024 024 037 076 0194 22 02 200 2.00 1.00 1.00 1.00 1.00 1.00	Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
0.49 0.72 0.49 0.88 0.99 0.19 0.96 0.24 0.37 0.76 0.94 489 2.058 6.41 9.20 1.094 588 2.3 1110 49.2 85 5.04 2.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00	Lane Grp Cap(c), veh/h	411	2058	641	322	1904	288	223	1110	492	26	204	613
489 2058 641 920 1904 588 223 1110 492 85 504 200 200 200 100 100 100 100 100 1.00 1.	V/C Ratio(X)	0.49	0.72	0.49	0.85	0.99	0.19	96:0	0.24	0.37	9.70	0.94	1.04
2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	489	2058	641	920	1904	288	223	1110	492	82	204	613
0.45 0.45 0.45 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
529 9.9 5.1 66.1 46.3 21.7 699 31.9 39.6 71.8 53.2 60.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Upstream Filter(I)	0.45	0.45	0.45	1.00	1.00	1:00	1.00	1.00	1:00	1.00	1.00	1.00
02 1.0 1.2 2.3 181 0.7 476 0.0 0.2 110 248 04 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 36 9.0 31 6.3 29.0 2.7 5.9 4.1 58 20 226 53.1 10.9 6.3 68.4 64.4 22.4 117.5 38.0 39.8 62.8 78.0 2006 22.9 6.3 6.4 64.4 22.4 117.5 38.0 39.8 62.8 78.0 14.4 E E C F D D F F E 1 2 3 4 5 6 7 8 19 6.5 15.6 4.0 24.4 63.0 93.5 33 1.2 4 5 6 7 8 1.3 4.2 6.3 5.8 4.0 5.3 6.3 43.7 2.5 15.1 21.8 11.3 43.0 9.7 57.7 58 15.4 2.6 6.5 0.0 0.0 0.2 0.0 0.0 1.2 2.7 7.7 5.8 15.4 2.7 6.3 6.5 0.0 0.0 0.2 0.0 0.0 1.2 2.7 7.7 5.8 15.4 2.8 17.8 11.3 43.0 9.7 57.7 58 15.4 2.9 1.0 1.2 58 15.4 2.9 1.0 1.2 58 15.4 2.9 1.0 1.0 1.2 58 15.4 2.9 1.0 1.0 1.2 58 15.4 2.9 1.0 1.0 1.2 58 15.4	Uniform Delay (d), s/veh	52.9	6.6	5.1	1.99	46.3	21.7	6.69	37.9	39.6	71.8	53.2	45.4
00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	0.2	1.0	1.2	2.3	18.1	0.7	47.6	0:0	0.2	11.0	24.8	48.3
36 90 31 6.3 290 2.7 59 4.1 58 20 226 53.1 10.9 6.3 684 6.44 224 1175 380 398 828 780 D B R E C C F D D B R 2006 A 2297 6.63 1157 14.4 62.9 64.0 8.9 87 1 2 3 4 5 6 7 8 19.8 67.6 15.6 47.0 24.4 630 93 533 1.5 41 38 98 41 22 57 73 88 1.5 15.1 21.8 11.3 43.0 9.7 57.7 58 15.4 5 6.5 0.0 0.0 0.2 0.0 0.1 12	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53.1 10.9 6.3 68.4 64.4 22.4 1175 38.0 39.8 82.8 78.0 D B A E E C F D D F E E 2006 66.3 1157 14.4 62.9 64.0 86.9 14.4 62.9 64.0 86.9 14.4 62.9 64.0 86.9 14.4 62.9 64.0 86.9 15.9 64.0 86.9 16.9 64.0 86.9 17.15 8 6.7 8 18.15 11.8 11.3 43.0 9.3 53.3 18.15 11.8 11.3 43.0 9.7 57.7 58 15.4 19.1 65.5 6.5 0.0 0.0 0.2 0.0 0.0 1.2 19.1 61.7 10.2 65.5 0.0 0.0 0.2 0.0 0.0 1.2	%ile BackOfQ(50%),veh/ln	3.6	0.6	3.1	6.3	29.0	2.7	2.9	4.1	ည်	2.0	22.6	25.7
D B A E C F D D F	LnGrp Delay(d),s/veh	53.1	10.9	6.3	68.4	64.4	22.4	117.5	38.0	39.8	82.8	78.0	93.7
2006 2297 663 14,4 62.9 640 18 6.0 15 15 17 8 19 6.0 15 18 11.3 430 9.7 57.7 58 15.4 1.5 15.1 21.8 11.3 430 9.7 57.7 58 15.4 1.5 6.5 0.0 0.0 0.2 0.0 0.0 1.2 1.5 17.7 58 15.4 1.6 17.7 58 15.4 1.7 18 11.3 430 9.7 57.7 58 15.4 1.7 18 11.3 430 9.7 57.7 58 15.4 1.7 18 11.3 430 9.7 57.7 58 15.4	LnGrp LOS			⋖	ш	ᆈ	ပ	ᅵ			ᅵ	ш	۱
144 62.9 640 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 3 3 4 5 6 7 8 1 4 5 6 7 8 1 8 67.6 15.6 47.0 24.4 630 9.3 53.3 1 8 7.8 15.1 21.8 11.3 43.0 9.7 57.7 73 43.7 5 15.1 21.8 11.3 43.0 9.7 57.7 58 15.4 5 15.7 56 5 0.0 0.0 0.2 0.0 0.0 1.2 5 1.7 5	Approach Vol, veh/h		2006			2297			663			1157	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 198 6/5 15,6 47,0 24,4 630 9,3 -4,2 6,3 5,8 6 3 6,3 4,2 .s '41 '38 '9,8 '41 '22 '57 '7,3 .s 15,1 21,8 11,3 430 9,7 5,7 5,8 0.5 6.5 0.0 0.0 0.2 0.0 0.0	Approach Delay, sheh		14.4			67.9			64.0			86.9	
1 2 3 4 5 6 7 19.8 67.6 47.0 24.4 630 93 14.2 6.3 58 6 6 7 5. 15.1 21.8 11.3 430 9.7 57.7 58 0.5 6.5 0.0 0.0 0.2 0.0 0.0 D	Approach LOS		В			ш			ш			ш	
198 676 156 470 244 630 93 442 633 58 6 633 63 42 5. *41 *38 9.8 *41 *22 *57 73 5. \$151 21.8 11.3 430 9.7 \$7.7 58 0.5 6.5 0.0 0.0 0.2 0.0 0.0 51.7	Timer	_	2	3	4	2	9	7	8				
198 676 156 470 244 630 93 -4.2 '6.3 '58 '6 '6.3 '6.3 '4.2 -5. 15.1 21.8 11.3 43.0 9.7 57.7 58 0.5 6.5 0.0 0.0 0.2 0.0 0.0 51.7	Assigned Phs	_	2	3	4	2	9	7	8				
74.2 '6.3 '5.8 '6 '6.3 '6.3 '4.2 5.	Phs Duration (G+Y+Rc), s	19.8	9.79	15.6	47.0	24.4	63.0	9.3	53.3				
5. 3. 41 .38 .9.8 .41 .22 .57 .7.3 .5.8 .5.15.1 21.8 11.3 43.0 9.7 57.7 5.8 .0.6 6.5 0.0 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Change Period (Y+Rc), s	* 4.2	* 6.3	2.8	9 *	* 6.3	* 6.3	* 4.2	2.8				
1,5 15.1 21.0 11.3 43.0 7.1 37.1 3.0 1.6 1.6 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		. 41	338	* 9.8	41	* 22	57	7.3	43.7				
51.7 0.0 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Max Q cleal IIIIle (g_c+II), s	- 0	0.12	3.0	45.0	7.7	7.76	0.0	10.4				
	Green Extrime (p_c), s	0.0	0.0	0.0	0.0	7.0	0.0	0.0	7:1				
	Intersection Summary												
2010 LOS	HCM 2010 Ctrl Delay			51.7									
Notac	HCM 2010 LOS			O									
	Motoc												

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HCM 2010 Signalized Intersection Summary 11: Camino Vida Roble & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL1) PM 08/24/2017

ons eh/h) eh/h) obT)	EBL	EBT	FRD	WBL	TO/W	WDD	IGIN	H	0012	ē	F	0
			LUN		MDI	WDR	NBL	NBI	NBK	SBL	SBI	SBR
	-	441		<u>r</u>	441		1	æ		<u>r</u>	*	*
	42	1643	260	20	1443	20	380	40	180	390	130	202
	45	1643	260	20	1443	22	380	40	180	330	130	202
	വ	2	12	_	9	16	m	∞	18	7	4	14
	0	0	0	0	0	0	0	0	0	0	0	0
	1.00		96.0	1.00		96:0	1.00		96.0	1.00		0.97
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
_	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	46	1786	283	24	1568	24	413	43	196	424	141	220
Adj No. of Lanes	_	3	0	_	က	0	2	-	0	_	_	_
	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	e	3	c	m	c	3	m	3	m	m	m	3
	171	1834	287	61	1710	26	461	24	247	377	512	422
_	0.10	0.42	0.42	0.03	0.34	0.34	0.14	0.19	0.19	0.21	0.28	0.28
Sat Flow, veh/h	1757	4364	684	1757	4990	172	3408	280	1278	1757	1845	1520
Grp Volume(v), veh/h	46	1369	700	54	1055	292	413	0	239	424	141	220
/ln	1757	1679	1690	1757	1679	1805	1704	0	1559	1757	1845	1520
	3.6	6.69	61.4	4.6	45.2	45.2	17.9	0.0	21.9	32.2	0.6	13.9
Sycle Q Clear(g_c), s	3.6	59.9	61.4	4.6	45.2	45.2	17.9	0.0	21.9	32.2	0.6	13.9
	1.00		0.40	1.00		0.10	1.00		0.82	1.00		1.00
ane Grp Cap(c), veh/h	171	1411	710	19	1151	619	461	0	301	377	512	422
	0.27	0.97	0.99	0.89	0.92	0.92	0.00	0.00	0.79	1.12	0.28	0.52
Ę	171	1411	710	61	1247	0.29	263	0	382	377	546	450
0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	1.00	1.00	1.00	1.00	1:00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
eh	62.7	42.6	43.0	72.1	47.2	47.2	63.8	0.0	27.7	58.9	42.4	26.4
ncr Delay (d2), s/veh	0.3	17.9	30.3	74.4	12.8	20.7	13.2	0.0	6.5	84.5	0.1	0.4
nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
eh/In	9.	31.3	34.6	3.5	23.0	26.1	9.3	0.0	10.0	24.5	4.6	5.9
y(d),s/veh	63.0	9.09	73.4	146.5	1.09	6.79	0.77	0.0	64.2	143.4	42.5	26.8
	Ш	ш	ш	ഥ	ш	ш	ш		ш	띡	۵	
Approach Vol, veh/h		2115			1676			652			785	
Approach Delay, s/veh		64.8			65.5			72.3			97.6	
Approach LOS		ш			ш			ш			ш	
imer	_	2	3	4	2	9	7	8				
Assigned Phs	-	2	3	4	2	9	7	8				
	9.4	69.4	24.5	46.7	21.0	57.8	37.2	34.0				
	* 4.2	* 6.4	* 4.2	* 5	* 6.4	* 6.4	* 5	* 5				
S	* 5.2	* 56	* 25	* 44	* 5.3	* 56	* 32	* 37				
Max Q Clear Time (g_c+I1), s	9.9	63.4	19.9	15.9	9.6	47.2	34.2	23.9				
Green Ext Time (p_c), s	0.0	0.0	0.4	8.0	0.0	4.2	0.0	8.0				
ntersection Summary												
HCM 2010 Ctrl Delay			70.1									
HCM 2010 LOS			ш									

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HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL1) PM 12: Yarrow Dr./McClellan & Palomar Airport Rd.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	je-	4413		r	4413		je-	*	¥.		4	
Traffic Volume (veh/h)	43	1820	70	70	1370	128	150	21	300	117	21	7
Future Volume (veh/h)	43	1820	70	70	1370	128	150	21	300	117	71	7
Number	2	2	12	-	9	16	7	4	14	3	∞ (Ψ.
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	_ ;
Ped-Bike Adj(A_pbT)	1.00	4	0.96	1.00	9	0.98	0.99		0.97	0.99	9	0.97
Parking Bus, Adj	00.1	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	00.1	1.00
Adj Sat Flow, ven/h/ln	1845	1845	1900	1845	1845	0061	1845	1845	1845	1900	1845	1900
Adj Flow Kate, ven/n	φ -	7707	∞ <	ρ-	7791	147	/0/	7	333	130	7	× ×
Auj No: OI Laires Doak Hour Eactor	- 000	000	000	000	000	000	000	000	000	000	000	000
Percent Heavy Veh %	0.40	0.70	0.90	0.90	0.40	0.90	0.90	0.90	0.90	0.90	0.30	
Can. veh/h	69	2245	86	346	7927	273	304	440	361	190	34	6
Arrive On Green	0.04	0.45	0.45	0.20	0.63	0.63	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1757	4968	191	1757	4678	436	1264	1845	1515	638	143	414
Grp Volume(v), veh/h	48	1364	736	78	1092	572	167	23	333	234	0	
Grp Sat Flow(s),veh/h/ln	1757	1679	1802	1757	1679	1757	1264	1845	1515	1195	0	
Q Serve(g_s), s	4.1	56.3	29.7	9.6	27.1	27.1	0.0	1.4	32.2	26.4	0.0	0.0
Cycle Q Clear(g_c), s	4.1	56.3	26.7	9.6	27.1	27.1	22.4	1.4	32.2	27.8	0.0	0.0
Prop In Lane	1.00		0.11	1.00		0.25	1.00		1.00	0.56		0.35
Lane Grp Cap(c), veh/h	62	1517	814	346	2101	1099	304	440	361	322	0	
V/C Ratio(X)	0.77	0.00	0.90	0.23	0.52	0.52	0.55	0.05	0.92	0.73	0.00	0.0
Avail Cap(c_a), veh/h	712	1746	937	346	2101	1099	366	230	432	381	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	00.1	00.1	0.1
Upstream Filter(I)	00.1	00.1	1.00	00.1	1.00	1.00	00.1	1.00	00.1	1.00	0.00	0.00
Uniform Delay (d), s/veh	71.8	38.0	38.1	9.09	15.6	15.6	52.0	44.1	55.8	54.1	0.0	0.0
Incr Delay (dz), s/veh	7.5	5.0	15.3	0.1	0.0	8. 6	9.0	0.0	20.9	4.2	0.0	0.0
Wile BackOfO(50%) veh/lin	0.0	0.0	21.7	0.0	12.7	13.6	0.0	0.0	15.5	0.0	0.0	0.0
InGra Delay(d) s/yeh	79.2	46.9	53.4	50.7	16.5	17.3	52.6	44.1	76.6	583	0.0	0.0
LnGrp LOS	ш	٥	٥	D	В	B	Q	٥	ш	ш	;	
Approach Vol, veh/h		2148			1742			523			234	
Approach Delay, s/veh		49.8			18.3			67.5			58.3	
Approach LOS		O			В			ш			ш	
Timer		2	က	4	2	9	7	∞				
Assigned Phs	-	2		4	2	9		8				
Phs Duration (G+Y+Rc), s	35.6	73.8		40.7	9.5	6.66		40.7				
Change Period (Y+Rc), s	0.9	9 *		4.9	* 4.2	0.9		4.9				
Max Green Setting (Gmax), s	_	* 78		43.1	* 61	31.0		43.1				
Max Q Clear Time (g_c+I1), s		28.7		34.2	6.1	29.1		29.8				
Green Ext Time (p_c), s	0.0	0.6		8.0	0.1	1.3		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			40.4									
HCM 201010S			_									
10 M 20 10 EOO			_									

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HCM 2010 Signalized Intersection Summary 13: El Camino Real & Palomar Airport Rd.

0.099 11.00 Ex + Cumulative + NT Project (PAL1) PM 08/24/2017 1032 1679 25.5 25.5 0.60 41.2 D 2046 77.1 0.34 5036 1.00 0.09 41.1 0.0 7 0 1.00 1.00 845 819 704 0.21 3408 819 704 31.0 31.0 11.00 704 704 704 709 60.0 60.0 60.0 60.0 71.9 0 1.00 1.00 1845 628 11.00 1.00 1.00 1.00 1.00 1.00 2.9 2.9 0.0 4.5 0.94 0.25 0.25 2760 628 628 1380 1.00 1845 1085 44.0 6.0 47.0 32.7 5.3 0.94 1277 0.85 1578 1.00 1.00 7.2 0.0 0.0 60.5 0.25 1085 1679 30.7 30.7 3 0 1.00 1.00 1845 407 37.0 6.0 22.0 33.0 0.0 0.94 510 16 0 0.99 1.00 1845 543 2 671 0.08 1363 1363 1363 148.2 1.00 671 671 671 671 7.3 29.4 42.9 6.0 31.0 34.7 0.0 0.89 0.89 0.33 0.61 67.0 5.4 0.0 15.9 26.1 6.0 26.0 19.6 0.4 1.00 1845 1109 1240 0.08 5036 1109 1679 32.7 386 0.04 3408 585 17.0 17.0 17.0 1.51 386 0.33 0.61 72.2 239.6 0.0 57.0 6.0 51.0 27.5 5.8 1.00 1.00 1.00 2 2 2 2 0.94 172 172 12 0 0.99 1.00 1845 183 0.94 24.0 6.0 18.0 19.9 0.0 1343 0.27 5036 1715 1679 40.0 1343 1.28 1.00 1.00 55.0 55.0 0.0 34.8 34.8 0.94 46.0 6.0 40.0 42.0 0.0 Ť 5 0 1.00 1.00 1845 407 383 0.94 23.0 6.0 17.0 19.0 0.0 Assigned Phs
Phs Duration (G+Y+RC), s
Change Period (Y+RC), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_C+I1), s Upstream Filter(I) Uniform Delay (d), s/veh Incr Delay (d2), s/veh %ile BackOfO(50%),veh/ln Percent Heavy Veh, %
Cap, veh/h
Arrive On Green
Sat Flow, veh/h
Grp Volume(i), veh/h
Grp Sat Flow(s), veh/h
O Sar Flow(s), s Initial Q Delay(d3),s/veh LnGrp LOS Approach Vol, veh/h Approach Delay, s/veh Approach LOS Parking Bus, Adj Adj Sat Flow, veh/h/In Adj Flow Rate, veh/h Adj No. of Lanes Peak Hour Factor Lane Grp Cap(c), veh/h V/C Ratio(X) Green Ext Time (p_c), s Intersection Summary HCM 2010 Ctrl Delay HCM 2010 LOS Lane Configurations Traffic Volume (veh/h) Cycle Q Clear(g_c), s Prop In Lane Avail Cap(c_a), veh/h HCM Platoon Ratio Future Volume (veh/h) Ped-Bike Adj(A_pbT) LnGrp Delay(d),s/veh Number Initial Q (Qb), veh

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Synchro 10 Report Page 23

Ex + Cumulative + NT Project (PAL1) PM 08/24/2017 HCM 2010 Signalized Intersection Summary 14: Innovation Way/Loker Ave. & Palomar Airport Rd.

Movement EB EB WB WB WB WB WB WB				•									
120 2552 320 70 1662 60 200 40 170 110 60 120 2552 320 70 1662 60 200 40 170 110 60 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
120 2552 320 70 1602 60 200 40 170 170 60 120 2552 320 70 1602 60 200 40 170 170 170 120 120 1252 320 70 1602 60 200 40 170 170 170 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1845 184	Lane Configurations	F	444	¥C	r	4413		r	*	¥.	je-	*	*-
120 2552 330 70 1602 60 200 40 170 110 60 100	Traffic Volume (veh/h)	120	2552	320	70	1602	09	200	40	170	110	99	330
5	Future Volume (veh/h)	120	2552	320	70	1602	09	200	40	170	110	09	330
1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	2	2	12	_	9	16	m	8	18	7	4	14
100	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
100	Ped-Bike Adj(A_pbT)	1.00		96.0	1.00		0.99	1.00		0.97	1.00		0.97
1845 1845	Parking Bus, Adj	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
125 2668 333 73 1669 62 208 42 177 175 62 175 62 63 63 63 63 63 63 63	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1845
1 1 2 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Adj Flow Rate, veh/h	125	2658	333	73	1669	62	508	42	177	112	62	344
0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	Adj No. of Lanes	-	က	-	.	က	0	-	-	-	-	-	<u> </u>
149 2595 881 71 2408 89 115 419 344 136 442 1757 5036 1511 1757 4982 185 1757 1045 1316 412 1757 5036 1511 1757 4982 185 1757 1045 1316 1316 1316 1757 5036 1511 1757 4982 185 1757 1045 1316 1757 1758 1511 1757 4982 185 1757 1045 1316 106 77.3 16.5 6.1 5.1 5.1 9.8 2.7 131 9.7 4.0 106 77.3 16.5 6.1 5.1 5.1 9.8 2.7 131 9.7 4.0 106 77.3 16.5 6.1 5.1 5.1 9.8 2.7 131 9.7 4.0 107 108 109 100 100 100 100 100 108 102 0.38 102 0.69 0.69 181 0.10 0.10 109 2595 881 71 1622 875 115 453 371 449 109 2595 881 71 1622 875 115 453 371 449 109 200 200 200 100 100 100 100 100 200 200 200 100 100 100 100 100 200 200 200 100 100 100 100 200 200 200 100 100 100 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 100 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 200 200 200 200 100 200 2	Peak Hour Factor	96.0	96.0	96.0	96.0	96:0	96:0	96:0	96:0	96:0	96:0	96:0	0.96
149 2895 881 71 2408 89 715 419 344 715	Percent Heavy Veh, %	3	3	3	က	3	3	3	3	3	3	3	3
1757 5036 1511 1757 4992 1957 1945 1514 1757 1845 1757 1757 1845 1757	Cap, veh/h	149	2595	881	71	2408	88	115	419	344	136	442	363
1757 5036 1511 1757 4992 185 1757 1845 1514 1757 1845 1757 1845 1757 1845 1757 1845 1757 1845 1757 1845 1757 1845 1757 1845 1757 1845 10.6 17.7 115 6.2 1.0	Arrive On Green	0.03	0.17	0.17	0.08	0.97	0.97	0.07	0.23	0.23	0.08	0.24	0.24
125 2658 333 73 1124 607 208 42 177 115 62 1757 1845 1544 1757 1845 1544 1757 1845 1544 1757 1845 1544 1757 1845 1544 1757 1845 1544 1757 1845 1544 1757 1845 1544 1757 1845 1544 1757 1845 1734 173 140 100	Sat Flow, veh/h	1757	5036	1511	1757	4982	185	1757	1845	1514	1757	1845	1516
1757 1679 1511 1757 1679 1810 1757 1845 1514 1757 1845 106 106 106 173 1655 61 5.1 51 98 2.7 131 9.7 4.0 1.00 1	Grp Volume(v), veh/h	125	2658	333	73	1124	209	208	42	177	115	62	344
10.6 77.3 16.5 6.1 5.1 5.8 98 2.7 13.1 9.7 4.0 1.00	Grp Sat Flow(s),veh/h/ln	1757	1679	1511	1757	1679	1810	1757	1845	1514	1757	1845	1516
s 106 77.3 16.5 6.1 5.1 5.1 98 2.7 13.1 97 4.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Q Serve(g_s), s	10.6	77.3	16.5	6.1	5.1	5.1	8.6	2.7	13.1	6.7	4.0	33.5
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		10.6	77.3	16.5	6.1	5.1	5.1	8.6	2.7	13.1	6.7	4.0	33.5
149 2595 881 71 1622 875 115 419 344 136 442 084 1.02 0.38 1.02 0.69 0.69 1.81 0.10 0.51 0.85 0.14 704 2.955 881 71 1.622 875 115 453 371 141 489 0.33 0.39 0.09 0.07 0.72<	Prop In Lane	1.00		1.00	1.00		0.10	1.00		1.00	1.00		1.00
084 102 0.38 102 0.69 0.69 181 0.10 0.51 0.85 0.14 0.70 2595 881 71 1622 875 115 453 371 141 480 0.33 0.33 0.33 2.00 2.00 1.00 1.00 1.00 1.00 1.00 0.09 0.09 0	Lane Grp Cap(c), veh/h	149	2595	881	71	1622	875	115	419	344	136	442	363
704 2595 881 71 1622 875 115 453 371 141 480 033 033 033 2.00 2.00 1.00 1.00 1.00 1.00 00.09 0.072 0.72 1.00 1.00 1.00 1.00 1.09 0.022 14.6 68.9 1.4 1.4 70.1 45.8 37.1 68.3 44.9 10.0 0.0 0.0 0.0 0.3 0.0 0.0 0.0 0.0 0.0 0.0	V/C Ratio(X)	0.84	1.02	0.38	1.02	69.0	69.0	1.81	0.10	0.51	0.85	0.14	0.95
0.33 0.33 0.33 2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	704	2595	881	71	1622	875	115	453	371	141	480	394
0.09 0.09 0.09 0.72 0.72 0.72 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.0	HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
719 62.2 146 68.9 1.4 1.4 70.1 45.8 37.1 68.3 44.9 0.5 0.5 14.6 68.9 1.4 1.4 70.1 45.8 37.1 68.3 44.9 0.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	0.09	0.09	0.09	0.72	0.72	0.72	1.00	1.00	1.00	1.00	1.00	1:00
05 13.1 0.1 96.7 1.8 3.3 39.76 0.0 0.4 32.9 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	71.9	62.2	14.6	6.89	1.4	1.4	70.1	45.8	37.1	68.3	44.9	56.1
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	0.5	13.1	0.1	7.96	<u>~</u> ∞	3.3	397.6	0.0	0.4	32.9	0.1	30.3
52 39.1 6.9 4.8 1.9 2.4 17.4 1.4 5.5 6.0 2.0 72.4 75.3 14.7 165.9 3.2 4.7 46.77 45.9 37.5 101.2 45.0 E F F B A A A F D D D F D 3116 8.7 102 247.9 84.7 1 2 3 4 5 6 7 8 12.1 83.3 14.0 40.6 16.9 78.5 15.8 38.8 6.0 6 4.2 4.7 4.2 6.0 4.2 4.7 4.8 77 98 39 60 22.0 12 37 8.1 79.3 11.8 35.5 12.6 7.1 11.7 15.1 0.0 0.0 0.0 0.4 0.1 6.2 0.0 0.4 65.2 39.1 11.8 35.5 12.6 7.1 11.7 15.1 65.2 5.3 5.3 5.3 5.3 5.3 5.3 5.3 5.3 5.3 5.3	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12.4 75.3 14.7 165.9 3.2 4.7 467.7 45.9 37.5 101.2 45.0 E F B F A A F D D F F D D F S21.0 E E B F A A F B B F A A F B B B B B B B B B	%ile BackOfO(50%),veh/ln	2.5	39.1	6.9	8.	1:0	2.4	17.4	4.	2.5	0.9	2.0	17.1
S	LnGrp Delay(d),s/veh	72.4	75.3	14.7	165.9	3.2	4.7	467.7	45.9	37.5	101.2	45.0	86.4
8.17	LnGrp LOS	ᅵ	4	۵	-	⋖	⋖	-			4		٦
68.7 10.2 247.9 E	Approach Vol, veh/h		3116			1804			427			521	
1 2 3 4 5 6 7 12.1 83.3 14.0 40.6 16.9 78.5 15.8 6.0 6 4.2 4.7 4.2 60 4.2 4.8 77 9.8 39 60 22.0 12 8.1 79.3 11.8 35.5 12.6 7.1 11.7 0.0 0.0 0.0 0.4 0.1 6.2 0.0	Approach Delay, s/veh		68.7			10.2			247.9			84.7	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 12.1 83.3 14.0 16.5 16.9 785 15.8 6.0 6 4.2 4.7 4.2 6.0 4.2 4.8 77 9.8 39 60 22.0 12. 8.1 79.3 11.8 35.5 12.6 7.1 11.7 0.0 0.0 0.0 0.4 0.1 6.2 0.0	Approach LOS		ш			В			ш.			ш.	
12.1 833 14 5 6 7 12.1 833 140 406 16.9 78.5 15.8 6.0 6 42 4.7 4.2 60 4.2 4.8 77 9.8 39 60 220 12 8.1 79.3 11.8 35.5 12.6 7.1 11.7 0.0 0.0 0.0 0.4 0.1 6.2 0.0 65.2 E	Timer	-	2	3	4	2	9	7	8				
12.1 83.3 14.0 40.6 16.9 78.5 15.8 6.0 *6 *4.2 *4.7 *4.2 60 *4.2 48 *77 *9.8 *39 *60 2.20 *12 81 79.3 11.8 35.5 12.6 7.1 11.7 0.0 0.0 0.0 0.4 0.1 6.2 0.0 6.5.2 E	Assigned Phs	_	2	m	4	2	9	7	8				
60 .6 .4.2 .4.7 .4.2 60 .4.2 4.8 .77 .9.8 .39 .60 220 .12 8.1 79.3 11.8 35.5 12.6 7.1 11.7 0.0 0.0 0.0 0.4 0.1 6.2 0.0 65.2 E	Phs Duration (G+Y+Rc), s	12.1	83.3	14.0	40.6	16.9	78.5	15.8	38.8				
48 '77 '98 '39 '60 22.0 '12 8.1 '79.3 11.8 35.5 12.6 7.1 11.7 0.0 0.0 0.0 0.4 0.1 6.2 0.0 65.2 E	Change Period (Y+Rc), s	0.9	9 *	* 4.2	* 4.7	* 4.2	0.9	* 4.2	* 4.7				
81 793 118 35.5 12.6 7.1 11.7 1 0.0 0.0 0.0 0.4 0.1 6.2 0.0 65.2 E	Max Green Setting (Gmax), s	4.8	* 77	* 9.8	* 39	09 _*	22.0	* 12	* 37				
.s 0.0 0.0 0.0 0.4 0.1 6.2 0.0 65.2 E	Max Q Clear Time (g_c+I1), s	8.1	79.3	11.8	35.5	12.6	7.1	11.7	15.1				
	Green Ext Time (p_c), s	0.0	0.0	0.0	0.4	0.1	6.2	0.0	0.4				
	Intersection Summary												
HCM 2010 LOS E	HCM 2010 Ctrl Delay			65.2									
	HCM 2010 LOS			ш									

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HCM 2010 Signalized Intersection Summary 15: El Fuerte St. & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL1) PM 08/24/2017

Ex + Cumulative + NT Project (PAL1) PM	08/24/2017	
HCM 2010 Signalized Intersection Summary	16: Melrose Dr. & Palomar Airport Rd.	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	K.	444	¥C.	K.	4413		K	₩		K.	₽ ₽	
raffic Volume (veh/h)	2	2522	290	220	1462	40	180	8	370	280	150	09
-uture Volume (veh/h)	70	2522	290	220	1462	40	180	06	370	280	150	09
Number	2	2	12	-	9	16	3	∞	18	7	4	14
nitial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1:00	1.00	1.00	1:00	1.00	1:00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
4dj Flow Rate, veh∕h	72	2600	299	292	1507	41	186	93	381	289	155	62
Adj No. of Lanes	2	က	-	2	3	0	2	2	0	2	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	657	1871	278	631	1772	48	229	397	343	279	610	234
Arrive On Green	0.39	0.74	0.74	90:0	0.12	0.12	0.07	0.23	0.23	0.08	0.25	0.25
sat Flow, veh/h	3408	5036	1555	3408	5036	137	3408	1752	1514	3408	2470	946
3rp Volume(v), veh/h	72	2600	299	292	1005	543	186	93	381	289	108	109
3rp Sat Flow(s),veh/h/In	1704	1679	1555	1704	1679	1816	1704	1752	1514	1704	1752	1664
2 Serve(g_s), s	2.0	55.7	12.0	24.8	44.0	44.0	8.1	6.5	34.0	12.3	7.4	7.9
Cycle Q Clear(g_c), s	2.0	55.7	12.0	24.8	44.0	44.0	8.1	6.5	34.0	12.3	7.4	7.9
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	1.00		0.57
ane Grp Cap(c), veh/h	657	1871	278	631	1181	636	229	397	343	279	433	411
//C Ratio(X)	0.11	1.39	0.52	0.90	0.85	0.85	0.81	0.23	1.7	1.03	0.25	0.27
Avail Cap(c_a), veh/h	657	1871	278	1370	1775	096	232	397	343	279	433	411
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
pstream Filter(I)	0.48	0.48	0.48	0.50	0.50	0.50	1:00	9:	1.00	1.00	1.00	1.00
Jniform Delay (d), s/veh	37.8	19.3	13.7	0.69	62.4	62.4	0.69	47.4	28.0	8.89	45.3	45.5
ncr Delay (d2), s/veh	0.0	0.//1	9. 0	1.0	F. 4	7.7	17.9	0.1	81.7	62.9	0.1	0.1
niiai U Deiay(d3),swen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackUtU(50%),ven/in	0.1	55.6	5.3	8. 6	21.2	23.5	4.4	3.2	22.0	8.7	3.6	3.6
nGrp Delay(d),s/ven	3/.8	196.3	15.2	0.0/	66.5	9.69	86.9	4/.5	139.7	131.8	45.5	45.7
nGrp LOS		-	m	ш	ш	ш	-		-	-		
Approach Vol, veh/h		2971			2115			099			206	
Approach Delay, s/veh		174.3			68.2			111.9			94.8	
pproach LUS		_			ш			_			_	
imer	-	2	3	4	2	9	7	8				
Assigned Phs	,	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	32.0	61.7	14.3	42.0	34.9	58.8	17.3	39.0				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	2.0	0.9	9 *	2.0	* 5				
Max Green Setting (Gmax), s	09 :	24.0	* 10	36.1	2.0	* 79	12.3	* 34				
Max Q Clear Time (g_c+I1), s	26.8	57.7	10.1	6.6	4.0	46.0	14.3	36.0				
Green Ext Time (p_c), s	1.0	0.0	0.0	0.7	0.0	6.7	0.0	0.0				
ntersection Summary												
HCM 2010 Ctrl Delay			125.4									
HCM 2010 LOS			ш									
Notes												
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10 Report	Page 26
Synchro	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	444	W _	1	444	K _	1	Ш	*	<u> </u>	44	K. K.
Traffic Volume (veh/h)	1070	1952	220	270	1022	80	300	700	260	190	610	820
Future Volume (veh/h)	1070	1952	570	270	1022	80	300	700	260	190	610	820
Number Initial O (Oh) veh	<u>م</u> ح	7 0	7.5	- c	o c	9 0	m c	∞ ⊂	<u> </u>	~ c	4 C	41 0
Ped-Bike Adi(A pbT)	1.00	>	0.99	1.00	>	0.99	1.00		0.99	1.00	>	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	1138	2077	909	287	1087	82	319	745	277	202	649	872
Adj No. of Lanes	2	3	-	2	3		2	4		2	2	2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	1100	2444	756	314	1222	376	186	1430	493	509	778	1495
Arrive On Green	0.32	0.49	0.49	0.09	0.24	0.24	0.05	0.23	0.23	90.0	0.22	0.22
Sat Flow, veh/h	3408	5036	1558	3408	5036	1549	3408	6346	1547	3408	3202	2722
Grp Volume(v), veh/h	1138	2077	909	287	1087	82	319	745	277	202	649	872
Grp Sat Flow(s),veh/h/ln	1704	1679	1558	1704	1679	1549	1704	1586	1547	1704	1752	1361
Q Serve(g_s), s	48.4	54.2	36.3	12.5	31.3	5.5	8.2	15.5	22.3	8.9	26.5	0.0
Cycle Q Clear(g_c), s	48.4	54.2	36.3	12.5	31.3	5.5	8.2	15.5	22.3	8.9	26.5	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1100	2444	756	314	1222	376	186	1430	493	209	778	1495
V/C Ratio(X)	1.03	0.85	0.80	0.92	0.89	0.23	1.71	0.52	0.56	0.97	0.83	0.58
Avail Cap(c_a), veh/h	1100	2444	756	314	1222	376	186	1523	516	209	872	1567
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.8	33.8	17.7	67.5	54.9	31.3	70.9	51.0	42.6	70.2	22.7	22.7
Incr Delay (d2), s/veh	19.2	0.4	0.9	29.5		0.1	342.2	0.1	0.7	52.2	2.7	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	25.7	25.1	15.7	7.2	15.4	2.4	12.7	8.9	9.7	5.7	13.5	11.9
LnGrp Delay(d),s/veh	70.0	34.2	18.6	97.0	63.0	31.4	413.1	51.1	43.3	122.4	61.4	23.0
LnGrp LOS	٠	ပ	m	-		ပ	4			٠	ш	ال
Approach Vol, veh/h		3821			1459			1341			1723	
Approach Delay, sweh		42.4			8.79			135.6			49.2	
Approach LOS		۵			ш			_			n	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	1	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	18.0	78.8	14.2	39.0	54.4	42.4	13.4	39.8				
Change Period (Y+Rc), s	* 4.2	0.9	0.9	* 5.7	0.9	9 *	* 4.2	0.9				
Max Green Setting (Gmax), s	14	70.6	8.2	* 37	48.4	, 36	* 9.2	36.0				
Gross Ext Time (9_c+11), s	0.4 C. C	200.7	7.0	20.07	4.00	22.2	6.0	24.3				
Green Ext nime (p_c), s	0.0	4.3	0.0	5.5	0.0	4.	0.0	7.0				
Intersection Summary												
HCM 2010 Ctrl Delay			63.2									
HCM 2010 LOS			ш									
Notes												
COLON												

HCM 2010 Signalized Intersection Summary 17: El Camino Real & Town Garden Rd.

Ex + Cumulative + NT Project (PAL1) PM 08/24/2017

HCM 2010 Signalized Intersection Summary 18: El Camino Real & Camino Vida Roble

08/24/2017

Ex + Cumulative + NT Project (PAL1) PM

0.09 11.00 10.00 1 2503 0.67 2503 1.00 1.00 1.5 1.5 0.0 1.00 1845 1682 992 0 1.00 845 258 506 0.29 757 258 757 118.4 118.4 11.00 0.51 506 0.51 1.00 1.00 1.00 0.0 9.0 0.98 1.00 1.00 206 206 17.8 17.8 17.8 1.00 3.60 0.57 3.80 1.00 1.00 6.5 6.5 6.5 6.5 6.5 6.5 360 0.23 1535 1182 1.14 1.00 1.00 57.4 72.2 0.0 24.2 32.2 4.2 40.0 23.9 1.2 1.00 1845 1343 0.23 0.23 5036 1343 1679 35.2 35.2 1621 0.97 5 0 11.00 11.00 1845 72 1 0.97 3 70 0.04 190 0 0.96 11.00 1900 0 0 0.97 * 6.4 * 47 * 47 39.8 4.8 10.2 * 6 8.0 0.0 1.00 3 50 0.19 269 0.0 0.0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 474 61.3 E 26.6 * 4.2 * 38 17.9 0.8 3 0 1.00 1.00 1845 237 1 1 328 0.19 1757 70.6 E 120 120 14 0 0.95 1.00 124 0.97 0.97 3 28 0.15 189 0.0 0.0 0.00 0.00 0.00 0.0 0.0 0.0 0.0 0.0 * 35 * 35 37.2 0.0 1.00 1 320 61.5 F Ť 170 1.00 175 0.97 236 0.15 1577 196 1766 115.9 115.9 0.89 264 0.74 447 1.00 1.00 1.6 0.0 7.9 62.6 49.6 *18 20.4 0.0 Max Q Clear Time (g_c+I1), s Assigned Phs Phs Duration (G+Y+Rc), s Change Period (Y+Rc), s Max Green Setting (Gmax), s %ile BackOfQ(50%),veh/ln Percent Heavy Veh, %
Cap, veh/h
Arrive On Green
Sat Flow, veh/h
Grp Volume(v), veh/h
Grp Sat Flow(s), veh/h
O'D Sarve(g_s), s Upstream Filter(I) Uniform Delay (d), s/veh LnGrp LOS Approach Vol, veh/h Approach Delay, s/veh Approach LOS Lane Grp Cap(c), veh/h V/C Ratio(X) Initial Q Delay(d3),s/veh Parking Bus, Adj Adj Sat Flow, veh/h/ln Adj Flow Rate, veh/h Adj No. of Lanes Peak Hour Factor Green Ext Time (p_c), s Cycle Q Clear(g_c), s Prop In Lane Lane Configurations Traffic Volume (veh/h) Avail Cap(c_a), veh/h HCM Platoon Ratio Future Volume (veh/h) Ped-Bike Adj(A_pbT) Incr Delay (d2), s/veh LnGrp Delay(d),s/veh HCM 2010 Ctrl Delay HCM 2010 LOS Number Initial Q (Qb), veh

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Synchro 10 Report Page 30

Movement EB		1	†	*	-	Ļ	4	•	←	•	۶	→	•
Hydrachers	Movement	EBE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
June (vehf) 280 10 44i 10 10 17i 1323 10 30 17i Ob, veh 7 4 4 1 1 1 17 133 10 30 171 Ob, veh 7 0<	Lane Configurations	je-	4	¥C.		4		F	*	*-	*	444	
Obj. veh 260 veh 461 10 10 10 171 1323 10 30 1712 Obj. veh 10 0 0 0 0 0 0 0 0 0	Traffic Volume (veh/h)	280	10	461	10	10	10	171	1323	10	30	1712	100
Oblyveth 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Future Volume (veh/h)	280	10	461	10	10	10	171	1323	10	30	1712	100
100	Number	7	4	14	3	00	18	2	2	12	-	9	16
1,00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
1,00	Ped-Bike Adj(A_pbT)	1.00		96.0	1.00		0.92	1.00		0.99	1.00		0.98
1845 1845 1846 1804 1845 <td< td=""><td>Parking Bus, Adj</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td></td<>	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
196 0 581 10 10 176 1364 10 31 1765 1 0 2 0 0 1	Adj Sat Flow, veh/h/ln	1845	1845	1845	1900	1845	1900	1845	1845	1845	1845	1845	1900
1 0 2 0 1 0 2 1 1 0 1 0 1 0 1 0	Adj Flow Rate, veh/h	196	0	281	10	10	10	176	1364	10	31	1765	103
0.97 0.07 0.00 0.02 0.07 0.07 0.03 0.55 0.55 0.05 0.03 0.54 1.09 0.93 0.54 1.09 0.03 1.02 0.02 0.07 <td< td=""><td>Adj No. of Lanes</td><td>-</td><td>0</td><td>2</td><td>0</td><td></td><td>0</td><td>2</td><td>2</td><td>-</td><td>-</td><td>3</td><td>0</td></td<>	Adj No. of Lanes	-	0	2	0		0	2	2	-	-	3	0
3 3	Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
387 0 667 38 38 114 1916 849 39 2605 1752 0 0 202 0	Percent Heavy Veh, %	c	3	c	c	c	c	3	c	3	3	3	2
1757 0.02 0.02 0.02 0.05 175 4861 1757 0 3026 553 553 553 369 155 1679 1679 1767 0 1513 1659 0 0 176 175 1573 1679 147 0.0 27.8 2.6 0.0 0 50 433 0 26 396 140 0.0 27.8 2.6 0.0 0 1704 1752 1554 1757 1679 140 0.0 27.8 2.6 0.0 0.0 50 433 0.4 2.6 396 1147 0.0 27.8 2.6 0.0 0.0 50 433 0.4 2.6 396 1447 0.0 27.8 2.6 0.0 0.0 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	Cap, veh/h	387	0	199	38	38	38	114	1916	846	36	2605	152
1757 0 3026 553 553 3408 3505 154 175 4861 196 0 581 30 0 0 170 1364 10 31 1218 175 0 581 3 0 0 1704 1364 10 31 1218 147 0.0 27.8 2.6 0.0 0.0 50 433 0.4 26 396 100 0.0 27.8 2.6 0.0 0.0 50 433 0.4 26 396 100 0.0 27.8 2.6 0.0 0.0 50 433 0.4 26 396 100 0.0 0.0 0.0 110 100	Arrive On Green	0.22	0.00	0.22	0.07	0.07	0.07	0.03	0.55	0.55	0.02	0.54	0.54
196 0 581 30 0 176 1364 10 31 1218 1757 0 1513 1659 0 0 170 1752 1679 1775 1679 1787 1679 1787 1679 1679 1787 1679 1787 1679 1787 1679 1787 1679 1799 1700 1700 1700 1700 1700 1700 1700 1700 1700<	Sat Flow, veh/h	1757	0	3026	553	553	223	3408	3505	1554	1757	4861	283
1757 0 1513 1659 0 1704 1752 1554 1757 1679 14.7 0.0 27.8 2.6 0.0 0.0 50 43.3 0.4 2.6 39.6 14.7 0.0 27.8 2.6 0.0 0.0 50 43.3 0.4 2.6 39.6 1.00 1.00 0.33 1.00 <td>Grp Volume(v), veh/h</td> <td>196</td> <td>0</td> <td>581</td> <td>30</td> <td>0</td> <td>0</td> <td>176</td> <td>1364</td> <td>10</td> <td>31</td> <td>1218</td> <td>650</td>	Grp Volume(v), veh/h	196	0	581	30	0	0	176	1364	10	31	1218	650
14.7 0.0 27.8 2.6 0.0 5.0 43.3 0.4 2.6 39.6 11.7 0.0 27.8 2.6 0.0 5.0 43.3 0.4 2.6 39.6 11.0 0.27.8 2.6 0.0 0.0 5.0 43.3 0.4 2.6 39.6 0.51 0.00 0.33 1.00 1.	Grp Sat Flow(s),veh/h/ln	1757	0	1513	1659	0	0	1704	1752	1554	1757	1679	1787
14.7 0.0 27.8 2.6 0.0 0.0 5.0 43.3 0.4 2.6 39.6 1.00	Q Serve(g_s), s	14.7	0.0	27.8	5.6	0.0	0.0	2.0	43.3	0.4	5.6	39.6	39.8
1,00		14.7	0.0	27.8	5.6	0.0	0.0	2.0	43.3	0.4	5.6	39.6	39.8
387 0 667 115 0 0 114 1916 849 39 1799 0.51 0.00 0.87 0.26 0.00 0.00 1.55 0.71 0.01 0.79 0.68 445 0 766 443 0 0 0.00 1.55 0.71 0.01 0.79 0.68 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Prop In Lane	1.00		1.00	0.33		0.33	1.00		1.00	1.00		0.16
0.51 0.00 0.87 0.26 0.00 0.00 155 0.71 0.01 0.79 0.68 445 0 766 443 0 0 0 114 1916 849 47 1799 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Grp Cap(c), veh/h	387	0	199	115	0	0	114	1916	849	39	1799	958
445 0 766 443 0 0 114 1916 849 47 1799 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.10 1.00 1.00 1.00 1.00 1.00 1.00 1.00 51.3 0.0 56.4 66.2 0.0 0.0 725 25.2 15.5 73 25.4 1.0 0.0 <td< td=""><td>V/C Ratio(X)</td><td>0.51</td><td>0.00</td><td>0.87</td><td>0.26</td><td>0.00</td><td>0.00</td><td>1.55</td><td>0.71</td><td>0.01</td><td>0.79</td><td>89.0</td><td>0.68</td></td<>	V/C Ratio(X)	0.51	0.00	0.87	0.26	0.00	0.00	1.55	0.71	0.01	0.79	89.0	0.68
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	445	0	99/	443	0	0	114	1916	849	47	1799	958
1.00 0.00 1.00 1.00 0.00 0.00 1.00 1.00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
51.3 0.0 56.4 66.2 0.0 0.0 72.5 25.2 15.5 73.0 25.4 1.0 0.0 0.0 9.7 1.2 0.0 0.0 2858 2.3 0.0 5.1 2.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1:00	1.00
1.0 0.0 9,7 1,2 0.0 0.0 8258 23 0.0 51,7 21 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Uniform Delay (d), s/veh	51.3	0.0	56.4	66.2	0.0	0.0	72.5	25.2	15.5	73.0	25.4	25.4
100 0.00 0	Incr Delay (d2), s/veh	1.0	0.0	9.7	1.2	0.0	0.0	285.8	2.3	0.0	51.7	2.1	3.9
7.2 0.0 12.5 1.2 0.0 0.0 6.9 21.4 0.2 1.8 18.8 52.3 0.0 66.1 67.4 0.0 0.0 358.3 27.5 15.5 12.7 77.4 77.4 18.9 62.6 67.4 67.4 65.0 29.6 7 8 29.6 29.6 29.6 29.6 29.6 29.6 29.6 29.6 40.6 29.6 40.6 40.0 <td< td=""><td>Initial Q Delay(d3),s/veh</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td></td<>	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.2	%ile BackOfQ(50%),veh/ln	7.2	0.0	12.5	1.2	0.0	0.0	6.9	21.4	0.2	8	18.8	20.5
777 30 1550 1550 1550 62.6 E E E E E E E E E E E E E E E E E E E	LnGrp Delay(d),s/veh	52.3	0.0	L.99	6/.4	0.0	0.0	358.3	27.5	15.5	124.7	27.4	29.3
7.77 3.0 1550 6.2 6 6.7.4 65.0 1 2 3 4 5 6 7 8 9.4 880 381 11.0 86.4 14.6 6.0 6.0 *5 6.0 6.0 4.2 4.6 45.3 29.8 7.0 41.8 4.0 0.0 1.2 2.1 0.0 3.4 0.1	LNGrp LUS			ш				-	اد		-	اد	
62.6 67.4 65.0 F E E E E E E E E E E E E E E E E E E E	Approach Vol, veh/h		777			30			1550			1899	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 9.4 88.0 38.1 11.0 86.4 6.0 6.0 °5 6.0 6.0 4.0 46.8 °3 8 5.0 45.8 0.0 1.2 2.1 0.0 3.4 D 3.4	Approach Delay, sweh		62.6			67.4			65.0			29.6	
1 2 3 4 5 6 7 1 2 4 5 6 7 9,4 880 38.1 11.0 86.4 6,0 6,0 5 6,0 6,0 4,0 46.8 38 5,0 45.8 4,6 45.3 29.8 7,0 41.8 0.0 1.2 2.1 0.0 3.4 D	Approach LOS		ш			ш			ш			೦	
1 2 4 5 6 9.4 88.0 38.1 11.0 86.4 4.0 6.0 .5 6.0 6.0 4.0 46.8 38 5.0 45.8 4.6 45.3 29.8 7.0 41.8 0.0 1.2 2.1 0.0 3.4 D	Timer	_	2	33	4	2	9	7	00				
9.4 880 38.1 11.0 86.4 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Assigned Phs	1	2		4	2	9		8				
6.0 6.0 °5 6.0 6.0 4.0 46.8 °5 8.0 6.0 4.6 45.3 29.8 7.0 41.8 0.0 1.2 2.1 0.0 3.4 D	Phs Duration (G+Y+Rc), s	9.4	88.0		38.1	11.0	86.4		14.6				
40 468 *38 5.0 45.8 46 45.3 29.8 7.0 41.8 0.0 1.2 2.1 0.0 3.4 D	Change Period (Y+Rc), s	0.9	0.9		, 5	0.9	0.9		4.2				
(I), s 4.6 45.3 29.8 7.0 41.8 0.0 1.2 2.1 0.0 3.4 48.8 D	Max Green Setting (Gmax), s	4.0	46.8		* 38	2.0	45.8		40.0				
0.0 1.2 2.1 0.0 3.4 48.8 D	Max Q Clear Time (g_c+I1), s	4.6	45.3		29.8	7.0	41.8		4.6				
	Green Ext Time (p_c), s	0.0	1.2		2.1	0.0	3.4		0.1				
	Intersection Summary												
	HCM 2010 Ctrl Delay			48.8									
	HCM 2010 LOS			۵									
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N:\2772\Analysis\Intersections\Synchro\10. Ex +PAL1 C PM.syn

HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL1) PM 19: El Camino Real & Poinsettia Ln.

Charles Char		\	Ť	-	-	,	/		-	L	٠	→	*
10 10 10 290 30 120 1284 490 220 1893 10 10 10 10 290 30 120 20 1284 490 220 1893 10 10 10 10 10 10 10 1	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
10	Lane Configurations	K.	4₽		1	4₽		K.	444	K _	1	4413	
10 10 10 20 30 120 20 1884 490 220 1893 100 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Traffic Volume (veh/h)	10	10	10	290	30	120	70	1284	490	220	1893	20
1,0 0 0 0 0 0 0 0 0 0	Future Volume (veh/h)	9 1	6 .	9 ;	290	8	120	2 '	1284	490	220	1893	50
100 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	- 0	4 (4	v) (00 0	<u>∞</u> •	വ	7	71	_ «	0	9
1.00	Ded Bike Adira phT	0 6	0	0 0	0 6	0	0 00	0 0	0	000	0 0	0	0 00
1845 1845 1800 1845	Parking Bus Adi	8 8	8	100	3 6	8	0.70	8.6	8	1 00	8.6	00	100
1	Adi Sat Flow veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1900
2 2 2 0 2 3 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4 3 4	Adi Flow Rate, veh/h	12	1 2	11	312	33	129	22	1381	527	237	2035	22
0.93 0.94 0.93 0.94 0.93 0.94 0.93	Adj No. of Lanes	5	5	0	2	7	0	7		-	2	3	0
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
33 207 169 358 376 325 686 2837 879 282 2223 3408 1782 1487 3408 1752 1512 3408 5036 156 056 068 044 3408 1782 1472 3408 1752 1512 3408 5036 156 056 068 044 3408 1782 1472 3408 1752 1512 3408 5036 156 056 056 069 044 3408 1752 1512 3408 5036 156 056 056 069 044 3408 1752 1512 3408 5036 156 056 056 056 056 056 056 056 056 056 0	Percent Heavy Veh, %	က	33	33	က	33	co	33	co	33	က	3	co
1001 0.12 0.12 0.10 0.21 0.20 0.56 0.56 0.08 0.43 11	Cap, veh/h	33	207	169	358	376	325	989	2837	879	282	2223	24
3408 1182 1457 3408 1752 1512 3408 5036 1560 3408 5135 174 171 171 312 32 129 22 1348 5036 1560 3408 5135 174 175 147 172 1512 1704 1679 1560 1704 1679 1560 1704 1679 1560 1704 1679 1560 1704 1679 1560 1704 1679 1560 1704 1679 1560 1704 1679 1560 1704 1679 1560 1704 1679 1560 1704 1679 1560 1704 1679 1560 1704 1679 1706 1700 1700 1700 1700 1700 1700 1700	Arrive On Green	0.01	0.12	0.12	0.10	0.21	0.21	0.20	0.56	0.56	0.08	0.43	0.43
11	Sat Flow, veh/h	3408	1782	1457	3408	1752	1512	3408	5036	1560	3408	5135	22
1704 1752 1487 1704 1752 1512 1704 1679 1560 1704 1679 1 679	Grp Volume(v), veh/h	1	=	11	312	32	129	22	1381	527	237	1330	727
0.5 0.8 1.0 13.5 2.2 11.0 0.8 24.7 19.8 10.3 55.8 10.0 1.00 1.00 1.00 1.00 1.00 1.00 1.	Grp Sat Flow(s),veh/h/ln	1704	1752	1487	1704	1752	1512	1704	1679	1560	1704	1679	1833
0.5 0.8 1.0 13.5 2.2 11.0 0.8 4.7 19.8 10.3 55.8 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	O Serve(g_s), s	0.5	0.8	1.0	13.5	2.2	11.0	0.8	24.7	19.8	10.3	55.8	55.9
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Cycle Q Clear(g_c), s	0.5	0.8	1.0	13.5	2.2	11.0	0.8	24.7	19.8	10.3	22.8	55.9
0.33 0.05 0.06 0.87 0.09 0.40 0.03 0.49 0.60 0.84 0.92 0.90 0.33 0.05 0.06 0.87 0.09 0.40 0.03 0.49 0.60 0.84 0.92 0.90 0.33 0.05 0.06 0.87 0.09 0.00 0.00 1.00 1.00 1.00 1.00 1.00	I ane Grn Can(c) veh/h	33	204	173	358	376	325	989	2837	879	282	1453	70.0
1,00 1,00	V/C Ratio(X)	0.33	0.05	0.06	0.87	0.09	0.40	0.03	0.49	0.60	0.84	0.92	0.92
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	16	456	387	427	625	539	989	2837	879	357	1524	832
1.00 1.00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
h 738 590 590 66.1 47.1 50.6 48.1 19.7 7.6 67.8 40.0 21 00 0.1 13.9 0.0 0.3 0.0 0.0 0.0 0.0 0.0 10.5 h/ln 0.2 0.4 0.4 7.1 1.1 46 0.4 11.7 9.2 5.3 28.0 h/ln 0.2 0.4 0.4 7.1 1.1 46 0.4 11.7 9.2 5.3 28.0 E E F 70 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0.0 33 473 64.7 192 69.9 8.8 50.4 1 2 3 4 5 6 7 8 8 1 2 3 4 5 6 7 8 8 1 2 3 4 5 6 7 8 8 1 4 5 6 7 8 8 1 5 8 742 60 7 20 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 0 01 139 00 03 00 06 3.0 110 105 00 00 00 00 00 00 00 00 00 00 00 00 0	Uniform Delay (d), s/veh	73.8	29.0	26.0	1.99	47.1	9.09	48.1	19.7	9.7	8.79	40.0	40.0
hy 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Incr Delay (d2), s/veh	2.1	0.0	0.1	13.9	0.0	0.3	0.0	9.0	3.0	11.0	10.5	17.1
hill 0.2 0.4 0.4 7.1 1.1 4.6 0.4 11.7 9.2 5.3 28.0 759 950 95.1 80.1 4.2 50.9 482 20.3 10.6 78.8 50.4 8 3 473 0.0 0.0 0.0 0.7 8.8 5.5 4.8 8 473 0.2 294 18.0 0.1 0.0 7.0 0.0 0.7 1 2 3 4 5 6 7 8 8 9 5.5 16 6 90.5 20.7 22.1 36.2 70.9 5.7 37.2 8 473 0.2 24.7 0.2 0.1 0.0 7.0 0.0 0.7	Initial Q Delay(d3),s/veh	0.0	0.0	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
759 590 591 801 472 509 482 203 106 788 504 E E F F D D D C B E D 64.7 69.9 18.0 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 3 2 3 4 5 6 7 8 1 4 5 6 7 8 1 5 6 7 8 1 8 6 905 203 204 1 7 8 8 1 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	%ile BackOfQ(50%),veh/ln	0.2	0.4	0.4	7.1		4.6	0.4	11.7	9.5	5.3	28.0	32.0
E E F D D C B E	LnGrp Delay(d),s/veh	75.9	29.0	59.1	80.1	47.2	50.9	48.2	20.3	10.6	78.8	50.4	57.0
33 473 1930 5.5 64.7 69.9 18.0 64.7 69.9 18.0 64.7 8.9 7.5 16.6 90.5 20.7 22.1 36.2 70.9 5.7 37.2 7.5 74.2 60. 5 74.7 60. 6 7.4 37.2 7.5 74.2 60. 75 70.9 6.7 37.2 7.5 74.2 60.0 15.5 30 2.8 57.9 2.5 13.0 7.6 7.7 8 7.7 8 7.7 8 7.7 8 7.7 8 7.7 8 8 7.7 8 7.7 8 8 7.7 8	LnGrp LOS	ш	ш	ш	니				ပ	В	ш		۳
1	Approach Vol, veh/h		33			473			1930			2294	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 1,5 166 905 207 22.1 36.2 70.9 5.7 1,8 42 60 5 74.7 60 6 4.2 nax),s 16 57.4 19 739 5.0 68 74 5 0.2 24.7 0.2 0.1 0.0 7.0 0.0 41.7 D	Approach Delay, s/veh		64.7			6.69			18.0			22.5	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 3 4 5 6 7 1 5 42 600 5 201 22.1 36.2 709 5.7 1 8 42 600 5 74.7 60 6 4.2 1 9 79 50 6 74.2 1 10 10 7.0 0.0 1 10 10 10 10 10 10 10 10 10 10 10 10 10	Approach LOS		ш			ш			B			ш	
),s 166 905 207 22.1 36.2 70.9 5.7 7.1 36.2 70.9 5.7 7.1 36.2 70.9 5.7 7.1 36.2 70.9 5.7 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7	Timer	1	2	3	4	2	9	7	8				
), s 166 905 207 22.1 36.2 70.9 5.7 (5.2 42.6 0.1 5.4.7 6.0 .6 4.2 7.2 1.3 1.2 2.4.7 6.0 .8 4.2 5.1 1.5 3.0 2.8 5.7 9.2 5.1 0.2 24.7 0.2 0.1 0.0 7.0 0.0 7.0 0.0 7.1 0.0 7.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Assigned Phs	1	2	3	4	2	9	7	8				
, s . 42 60 ° 5 ° 47 60 ° 6 ° 4.2 nax), s ° 16 57,4 ° 19 ° 39 50 ° 68 ° 4 s ° 16 57,4 ° 19 ° 39 50 ° 68 ° 4 s ° 15,5 ° 15,5 ° 30 28 57,9 2.5 s ° 0.2 247 0.2 0.1 0.0 7.0 0.0 41.7 D	Phs Duration (G+Y+Rc), s	16.6	90.5	20.7	22.1	36.2	70.9	5.7	37.2				
nax), s '16 57.4 '19 '39 5.0 '88 '4 + + + + + + + + + + + + + + + + + +	Change Period (Y+Rc), s	* 4.2	0.9	* 5	* 4.7	0.9	9 *	* 4.2	* 5				
s 02 247 02 0.1 0.0 7.0 0.0 2.5 41.7 D.2 0.1 0.0 7.0 0.0 D.2 0.1 0.0 7.0 0.0 D.2 0.1 0.0 7.0 0.0 D.2 0.1 D.2 0.1 D.2 0.1 D.2 0.0 D.2 0.1 D.2 0	Max Green Setting (Gmax), s	* 16	57.4	* 19	* 39	2.0	89 *	* 4	* 54				
s 0.2 24.7 0.2 0.1 0.0 7.0 0.0 41.7 D	Max Q Clear Time (g_c+I1), s	12.3	26.7	15.5	3.0	2.8	67.6	2.5	13.0				
	Green Ext Time (p_c), s	0.2	24.7	0.2	0.1	0.0	7.0	0.0	0.7				
	Intersection Summary												
	HCM 2010 Ctrl Delay			41.7									
Notice	HCM 2010 LOS			٥									
	Notes												

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HCM 2010 Signalized Intersection Summary 1: Faraday Ave. & Canon Rd.

Ex + Cumulative + NT Project (PAL2) AM 08/24/2017

Ex + Cumulative + NT Project (PAL2) AM 08/24/2017

HCM 2010 Signalized Intersection Summary 2: College Blvd. & El Camino Real

Lane Curiguations	Movement	č											
the bright of t		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
heth) 10 190 561 70 790 10 170 10 20 10 10 10 10 10 10 10 10 10 10 10 10 10	Lane Configurations	r	₩.		F	4₽		je-	4			4	
teth (b) 10 190 561 70 790 10 170 10 10 10 10 10 10 10 10 10 10 10 10 10	Traffic Volume (veh/h)	10	190	261	70	790	10	170	10	20	10	10	10
bill bill bill bill bill bill bill bill	Future Volume (veh/h)	10	190	261	02	790	10	170	10	20	10	10	10
http://dx.com/dx	Number	2	2	12	-	9	16	3	∞	18	7	4	14
1,00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
1.00 1.00	Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.95	1.00		1.00	1.00		0.91
1845 1940 1845 1940 1845 1940 1845 1940 1845 1940 1845 1940 1845 1940 1845 1940 1845 1940 1845 1940 1940 1845 1940	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1	Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1900
1	Adj Flow Rate, veh/h	=	211	623	28	8/8	=	217	0	0	=	=	=
0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90	Adj No. of Lanes	-	2	0	-	2	0	2	_	0	0	-	0
3 3	Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
574 1002 877 99 1068 13 407 214 0 20 20 178 1657 1657 167 30 0.12 0.00 0.04 0.04 0.04 108 178 <td>Percent Heavy Veh, %</td> <td>က</td> <td>က</td> <td>co</td> <td>က</td> <td>co</td> <td>က</td> <td>က</td> <td>3</td> <td>က</td> <td>က</td> <td>က</td> <td>co</td>	Percent Heavy Veh, %	က	က	co	က	co	က	က	3	က	က	က	co
1757 1752 1535 1757 3454 4485 247 2485 247 2485 24	Cap, veh/h	574	1002	877	66	1068	13	407	214	0	20	20	20
1757 1752 1535 1757 3542 44 3514 1845 0 551 551 11	Arrive On Green	0.33	0.57	0.57	90:0	0.30	0.30	0.12	0.00	0.00	0.04	0.04	0.04
17	Sat Flow, veh/h	1757	1752	1535	1757	3542	44	3514	1845	0	221	221	551
1757 1752 1535 1757 1752 1834 1757 1845 0 1652 0 0 0 0 0 0 0 0 0	Grp Volume(v), veh/h	1	211	623	78	434	455	217	0	0	33	0	0
0.4 5.9 29.3 4.4 23.0 23.0 5.8 0.0 0.0 2.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0	Grp Sat Flow(s),veh/h/ln	1757	1752	1535	1757	1752	1834	1757	1845	0	1652	0	0
1.00	Q Serve(g_s), s	0.4	5.9	29.3	4.4	23.0	23.0	2.8	0.0	0.0	2.0	0.0	0.0
1,000	Cycle Q Clear(g_c), s	0.4	5.9	29.3	4.4	23.0	23.0	5.8	0.0	0.0	2.0	0.0	0.0
574 1002 877 99 528 553 407 214 0 59 0 500 0.21 0.71 0.78 0.82 0.82 0.63 0.00 0.05 0 <td>Prop In Lane</td> <td>1.00</td> <td></td> <td>1.00</td> <td>1.00</td> <td></td> <td>0.02</td> <td>1.00</td> <td></td> <td>0.00</td> <td>0.33</td> <td></td> <td>0.33</td>	Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.00	0.33		0.33
0.02 0.21 0.71 0.78 0.82 0.83 0.00 0.00 0.55 0.00 0.55 0.00 0.55 0.00 0.55 0.00 0.55 0.00 0.55 0.00 0.55 0.00 0.55 0.00 0.55 0.00 0.55 0.00 0.55 0.00 0.55 0.00 0	Lane Grp Cap(c), veh/h	574	1002	877	66	528	553	407	214	0	26	0	0
574 1002 877 141 613 642 1160 609 0 99 0 1.00	V/C Ratio(X)	0.02	0.21	0.71	0.78	0.82	0.82	0.53	0.00	0.00	0.55	0.00	0.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	574	1002	877	141	613	642	1160	609	0	66	0	0
1.00 1.00 1.00 1.00 1.00 1.00 1.00 0	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
228 104 154 466 324 324 417 000 00 474 0.0 00 05 48 107 135 130 08 00 00 0.0 02 29 135 24 131 136 29 00 00 0.0 02 29 135 24 131 136 29 00 00 0.0 03 845 0	Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
0.0 0.5 4.8 10.7 13.5 13.0 0.8 0.0 0.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	22.8	10.4	15.4	46.6	32.4	32.4	41.7	0.0	0.0	47.4	0.0	0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	0.0	0.5	4.8	10.7	13.5	13.0	0.8	0.0	0.0	3.0	0.0	0:0
02 2.9 13.5 2.4 13.1 13.6 2.9 0.0 0.0 0.9 0.0 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
228 109 203 573 460 454 425 00 0.0 504 0.0 C B C E D D D D 3 33 845 967 217 33 180 466 42.5 504 D D D D D D D D 1 2 3 4 5 6 7 8 11.7 62 86 80 30 80 5 80 310 60 40 350 330 5 64 313 40 24 250 78 0.0 0.0 0.0 0.0 5.1 0.5	%ile BackOfQ(50%),veh/ln	0.2	2.9	13.5	2.4	13.1	13.6	5.9	0.0	0.0	6.0	0.0	0.0
C B C E D D D D 845 967 217 846 42.5 B A 6 A 7 8 1 2 3 4 5 6 7 8 1 1 2 3 4 5 6 8 11 2 3 4 5 6 7 8 11 2 4 5 6 7 8 11 4 5 6 6 8 11 6 6 5 6 6 6 5 6 5 0 12 6 4 0 35 0 7 8 13 4 5 7 8 1 10.6 13 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7	LnGrp Delay(d),s/veh	22.8	10.9	20.3	57.3	46.0	42.4	42.5	0.0	0.0	50.4	0.0	0.0
845 967 217 180 466 42.5 180 466 42.5 11 2 3 4 5 6 7 8 11 2 3 4 5 6 7 8 11 2 3 4 5 6 7 8 11 2 3 4 5 6 7 8 60 60 60 60 60 5.0 8 80 31.3 6.0 6.0 5.0 8 64 31.3 4.0 2.4 25.0 7.8 134.5 34.5	LnGrp LOS	ပ		ပ	ш								
180 466 425 B 466 425 B 7 8	Approach Vol, veh/h		845			196			217			33	
1 2 3 4 5 6 7 8 1 1 2 3 4 5 6 7 8 1 1 2 3 4 5 6 7 8 1 1 2 1 3 4 5 6 7 8 1 1 1 2 1 3 1 3 1 1 1 2 1 3 1 3 1 1 1 1	Approach Delay, s/veh		18.0			46.6			42.5			50.4	
1 2 3 4 5 6 7 1 2 4 5 6 7 1 1 632 8.6 83.1 6.0 6.0 6.0 6.0 5. 80 31.0 6.0 4.0 35.0 5. 64 31.3 4.0 24 25.0 0.0 0.0 0.0 5.1 C	Approach LOS		В			D			Ω			D	
11 63 86 38.7 36.1 11.7 63.2 8.6 38.7 36.1 5.0 6.0 6.0 6.0 6.0 5.0 8.0 31.0 6.0 4.0 35.0 5.0 6.4 31.3 4.0 2.4 25.0 0.0 0.0 0.0 0.0 5.1 34.5	Timer	_	2	33	4	2	9	7	∞				
11.7 63.2 8.6 38.7 36.1 5 60 60 60 60 60 5 80 31.3 6.0 60 5 64 31.3 4.0 2.4 25.0 0.0 0.0 0.0 5.1 34.5	Assigned Phs	_	2		4	2	9		∞				
60 60 50 60 60 5 80 31.0 60 40 350 5 64 31.3 40 24 250 0.0 0.0 0.0 0.0 5.1 C	Phs Duration (G+Y+Rc), s	11.7	63.2		9.8	38.7	36.1		16.6				
s 80 31.0 6.0 4.0 35.0 s 64 31.3 4.0 2.4 25.0 0.0 0.0 0.0 5.1 C	Change Period (Y+Rc), s	0.9	0.9		2.0	0.9	0.9		2.0				
s 64 313 4.0 2.4 25.0 0.0 0.0 0.0 0.0 5.1 34.5	Max Green Setting (Gmax), s	8.0	31.0		0.9	4.0	35.0		33.0				
s 0.0 0.0 0.0 5.1 34.5 C	Max Q Clear Time (g_c+I1), s	6.4	31.3		4.0	2.4	25.0		7.8				
	Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	5.1		0.5				
	Intersection Summary												
	HCM 2010 Ctrl Delay			34.5									
odich odich	HCM 2010 LOS			S									
	Votes												

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Movement Part Par				•	•			_	-	~	k	•	,
bins	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
National Process National Pr	Lane Configurations	jr.	444	¥	r	444	*	F	₩		ř	₩	
(vehth) 40 2034 570 140 582 40 100 40 10 80 70 (vehth) 40 2034 570 140 6 16 3 8 18 7 4 th 0	Traffic Volume (veh/h)	40	2034	220	140	582	40	100	40	10	80	0/	8
h	Future Volume (veh/h)	40	2034	220	140	285	40	100	40	10	80	02	8
high to 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	2	2	12	_	9	16	3	∞	18	7	4	14
Heighn (1900) (1000) (1	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
1,00 1,00	Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.95	1.00		0.95
sethin 1845 1845 1845 1845 1845 1845 1845 1845	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
rethth 43 2711 0 152 633 43 110 43 11 87 76 s 1 1 1 1 1 1 1 87 76 or 0.92 <td>Adj Sat Flow, veh/h/ln</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1900</td> <td>1845</td> <td>1845</td> <td>1900</td>	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1900
s 1 1 3 1 1 1 2 2 0 0 2 0 2 0 2 0 0 2 0 0 0 0 0	Adj Flow Rate, veh/h	43	2211	0	152	633	43	109	43	=	87	76	87
or (4) (4) (4) (4) (4) (4) (4) (4) (4) (4)	Adj No. of Lanes	-	3	-	-	3	-	2	2	0	2	2	0
Veh, % 3 3 3 3 3 3 3 3 49 55 105 405 524 9 105 254 9 105 400 97 105 254 10 524 10 524 10 524 10 6 71 10 10 20 9 15 626 0.62 0.03 9 175 150 175 10 0.14 0.03 0.14 0.04 9 175 160 0.04 9 175 160 175 160 0.14 0.17 175 176 175 176 175 176 175 176 175 176	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
1757 645 408 3123 968 105 400 97 105 254 1757 5034 1658 1757 5036 1650 3408 2766 3408 2766 3408 2766 3408 2766 3408 2766 3408 2766 3408 2765 3408 3765 3408 3765 3408 3765 3408 3765 3408 3765 3408 3765 3408 3765 3408 3765 3408 3765 3408 3765 3408 3765 3408 3765 3408 3765 3408 3765 3408 3765 3408 3765 3408 3765 3408 3765 3408 3765	Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	က	3	3
1,003 0,041 0,003 0,042 0,042 0,043 0,144 0,144 0,145 0,14	Cap, veh/h	22	2072	645	408	3123	896	105	400	46	105	254	216
1757 5036 1568 1757 5036 1560 3408 2766 673 3408 1752 Nethth 43 2211 0 152 633 43 109 26 28 87 76 Nethth 43 2211 0 152 633 43 109 26 28 87 76 3.2 53.5 0.0 9.5 7.1 1.4 4.0 1.7 1.8 33 50 LC, S 3.2 53.5 0.0 9.5 7.1 1.4 4.0 1.7 1.8 33 50 Nethth 55 2072 645 408 3123 968 105 554 244 105 539 Nethth 55 2072 645 408 3123 968 105 559 519 105 539 Nethth 68 2072 645 408 3123 968 105 539 519 105 539 Nethth 6.5 383 0.0 0.00 1.00 1.00 1.00 1.00 1.00 Nowell 6.2 383 0.0 42.0 1.0 1.0 1.0 1.0 1.0 Nowell 6.2 383 0.0 4.2 0.1 0.1 0.1 0.1 0.1 0.1 Nethth 2.0 3.2 0.0 0.0 0.0 0.0 0.0 Nowell 6.2 383 0.0 4.2 0.1 0.1 0.1 0.1 0.1 Nowell 6.2 3.3 4.5 0.0 0.0 0.0 0.0 Nowell 2.2 3.3 4.5 0.0 4.5 0.0 Nowell 2.2 3.4 4.5 4.5 4.5 4.5 Nowell 2.0 3.2 5.0 4.5 3.3 0.5 3.3 Nowell 2.0 3.2 5.0 4.5 5.0 6.5 5.0 Nowell 2.0 3.2 5.0 4.5 5.0 6.5 5.0 Nowell 2.0 3.2 5.0 5.0 5.0 5.0 Nowell 3.0 3.0 3.0 3.0 3.0 Nowell 3.0 3.0 3.0 3.0 Nowell 3.0 3.0 3.0 3.0 Now	Arrive On Green	0.03	0.41	0.00	0.23	0.62	0.62	0.03	0.14	0.14	0.03	0.14	0.14
43 2211 0 152 633 43 109 26 28 87 76 175 1679 1568 175 1679 150 170 172 183 33 50 32 535 0.0 9.5 7.1 1.4 4.0 1.7 1.8 33 50 100 1.00 <td>Sat Flow, veh/h</td> <td>1757</td> <td>5036</td> <td>1568</td> <td>1757</td> <td>5036</td> <td>1560</td> <td>3408</td> <td>2766</td> <td>673</td> <td>3408</td> <td>1752</td> <td>1494</td>	Sat Flow, veh/h	1757	5036	1568	1757	5036	1560	3408	2766	673	3408	1752	1494
1757 1679 1568 1757 1679 1560 1704 1752 1687 1704 1752 1687 1704 1752 1887 1704 1752 1887 1704 1752 1887 1704 1752 1887 1704 1752 1887 1704 1752 1887 1704 1752 1887 1704 1705 100	Grp Volume(v), veh/h	43	2211	0	152	633	43	109	26	28	87	9/	87
32 53.5 0.0 9.5 7.1 1.4 4.0 1.7 1.8 3.3 5.0 32 53.5 0.0 9.5 7.1 1.4 4.0 1.7 1.8 3.3 5.0 100 55 0.0 1.00	Grp Sat Flow(s), veh/h/ln	1757	1679	1568	1757	1679	1560	1704	1752	1687	1704	1752	1494
32 53.5 0.0 9.5 7.1 1.4 4.0 1.7 1.8 3.3 5.0 100 1.00	2 Serve(g_s), s	3.2	53.5	0.0	9.5	7.1	1.4	4.0	1.7	1.8	3.3	2.0	6.9
100	Cycle Q Clear(g_c), s	3.2	53.5	0.0	9.5	7.1	1.4	4.0	1.7	1.8	3.3	2.0	6.9
55 2072 645 408 3123 968 105 554 244 105 254 68 2072 645 408 3123 968 104 010 011 083 039 1.00 1.0	Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.40	1.00		1.00
0.78 107 0.00 0.37 0.20 0.04 104 0.01 0.01 0.83 0.30 68 2072 645 408 3123 968 105 539 519 015 539 11.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	-ane Grp Cap(c), veh/h	22	2072	645	408	3123	896	105	254	244	105	254	216
100 100	V/C Ratio(X)	0.78	1.07	0.00	0.37	0.20	0.04	1.04	0.10	0.11	0.83	0.30	0.40
100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	4vail Cap(c_a), veh/h	89	2072	645	408	3123	896	105	539	519	105	539	460
100 100 0.00 100 100 100 100 100 100 100	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
6.25 38.3 0.0 42.0 10.7 9.6 63.0 48.3 48.3 49.7 49.7 49.7 49.7 49.7 49.9 0.1 0.1 0.0	Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
299 40.4 0.0 0.2 0.1 0.1 989 0.1 0.1 383 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	62.5	38.3	0.0	42.0	10.7	9.6	63.0	48.3	48.3	62.7	49.7	50.5
00 00 00 00 00 00 00 00 00 00 00 00 00	ncr Delay (d2), s/veh	29.9	40.4	0.0	0.2	0.1	0.1	6.86	0.1	0.1	38.3	0.2	0.4
20 32.5 0.0 4.6 3.3 0.6 3.3 0.8 0.9 2.1 2.5 5 7 7 8.6 0.0 4.2 10.9 9.7 1626 48.3 48.4 10.0 42.9 5 5 7 1626 48.3 48.4 10.0 42.9 5 5 7 1626 48.3 48.4 10.0 42.9 5 5 7 1626 48.3 48.4 10.0 42.9 5 5 7 1626 48.3 48.4 10.0 4.9 5 5 7 1626 48.3 48.4 10.0 4.9 5 5 7 1626 48.3 48.4 10.0 4.2 5 7 1626 48.3 48.4 10.0 4.2 5 7 1626 48.3 48.4 10.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0.0	0.0
924 786 0.0 422 10.9 9.7 1626 48.3 48.4 100.9 49.9 F F P D D F D D D F D D D F D D D F D D D F D D D F D	%ile BackOfQ(50%),veh/ln	2.0	32.5	0.0	4.6	3.3	9.0	3.3	0.8	0.9	2.1	2.5	2.9
1 2 3 4 5 6 7 8 8 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6	LnGrp Delay(d),s/veh	92.4	78.6	0.0	42.2	10.9	6.7	162.6	48.3	48.4	100.9	49.9	50.9
2254 828 163 789 166 124.7 F B B F F 1 2 3 4 5 6 7 8 362 59.5 9.0 25.3 9.1 866 9.0 25.3 6.0 6 5.0 65 5.0 65 1.5 115 55.5 6.0 8.9 5.0 9.1 5.3 88 0.0 0.0 0.0 0.5 0.0 25 0.0 0.2 65.5 65 65.5 66 65.5 66	LnGrp LOS	띡	니			В	A	니			ᅵ		
78.9 16.6 124.7 E	Approach Vol, veh/h		2254			828			163			250	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 3 6 5 0 6 0 6 0 6 0 6 0 6 0 6 0 6 0 6 0 6	Approach Delay, sheh		78.9			16.6			124.7			0.89	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 36.2 59.5 9.0 25.3 9.1 86.6 9.0 2 6.0 6 5.0 6.0 5.0 6.0 5.0 7,5 10.0 5.4 4.0 40.0 5.0 58.5 4.0 7,5 11.5 55.5 6.0 8.9 5.2 9.1 5.3 65.5 6.0 8.9 5.2 9.1 5.3 65.5 6.0 8.9 5.2 9.1 5.3 65.5 6.0 8.9 5.2 9.1 5.3	Approach LOS		ш			В			Œ.			ш	
1 2 3 4 5 6 7 36.2 59.5 90 25.3 91 86.6 90 2 6.0 *6 5.0 6.5 50 6.0 5.0 1.5 10.0 *5.4 4.0 40.0 5.0 58.5 4.0 1.5 11.5 55.5 6.0 8.9 5.2 9.1 5.3 65.5 66.5 66.6 8.9 5.2 9.1 5.3 65.5 66.5 66.5 66.6 67.5 67.5 67.5 67.5	Timer		2	က	4	2	9	7	00				
36.2 59.5 9.0 25.3 9.1 86.6 9.0 2 6.0 1.5 10.0 2.5 1.0 1.5 10.0 2.5 1.0 1.5 10.0 1.5	Assigned Phs	-	2	3	4	2	9	7	∞				
6.0 *6 5.0 6.5 5.0 6.0 5.0 6.0 5.0 7.5 10.0 *54 4.0 4.0 5.0 5.0 5.8 5.4 0 4.0 4.0 5.0 5.8 5.4 0 4.0 4.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Phs Duration (G+Y+Rc), s	36.2	59.5	0.6	25.3	9.1	9.98	0.6	25.3				
xy), s 10.0 *54 4.0 40.0 5.0 585 4.0 4.11), s 11.5 55.5 6.0 8.9 5.2 9.1 5.3 0.0 0.0 0.0 0.5 0.0 2.5 0.0 65.5 E	Change Period (Y+Rc), s	0.9	9 *	2.0	6.5	2.0	0.9	2.0	6.5				
11), s 11.5 55.5 6.0 8.9 5.2 9.1 5.3 0.0 0.0 0.0 0.5 0.0 2.5 0.0 65.5 E	Max Green Setting (Gmax), s		* 54	4.0	40.0	5.0	58.5	4.0	40.0				
0.0 0.0 0.0 0.5 0.0 2.5 0.0 65.5 E	=		55.5	0.9	8.9	5.2	9.1	5.3	3.8				
	Green Ext Time (p_c), s	0.0	0.0	0.0	0.5	0.0	2.5	0.0	0.2				
	Intersection Summary												
	HCM 2010 Ctrl Delay			45 F									
	HCM 2010 LOS			2.5									
	HOM 2010 EO.3			_									

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HCM 2010 Signalized Intersection Summary 3: College Blvd. & Faraday Ave.

Ex + Cumulative + NT Project (PAL2) AM 08/24/2017

Ex + Cumulative + NT Project (PAL2) AM 08/24/2017

HCM 2010 Signalized Intersection Summary 4: El Camino Real & Faraday Ave.

→			0 350 90		16 16	0	0.97	1845	380	2	2 0.92 0.92	3		0.29	7149	7 240 238	70/1	8 4 8 6.0	5	499	0.48	734	1.00	1.00	21.9	8 0.7 0.8	0.0	22.6	U	685	28.1	O									
✓ <	NBR SB		300 190		7.5		0.97 1.00		326 207		0.92 0.92			0.29 0.09		326 207		14.4 4.4						1.00 1.00			63 24														
←			200		7				217		0.92					217										9.0				171	30.4	O	∞			2.0		2.7			
1	WBR NBL		60 210		2 2		1.00	_	65 228							240 228		81 4.0						1.00 1.00			0.0 0.0	~					6 7			6.0 4.5		10.6 4.2 2.4 0.0			
ţ	WBT	4.	380	380	x				413		0.92					238		0.0								0.5	0.0			652	53.9	O	2	2		4.5		0:0			
\	R WBL		1 160						2 174		2 0.92					8 174		6.5						0 1.00			0.0						3 4					0 3.3			
†	EBT EBR		390 131		4 0		100 100 1		424 142		0.92 0.9					288 27		10.6 10.9								1.3				620	26.7	S	2	2		6.0 4.		16.4 8.5 2.7 0.0		, 10	
4	EBL	<u>, -</u>	20	20	_ <	0 6	9.6	18.45	54	-	0.92	3	8	0.05	1/2/	54	70/1	2.7	1.00	8	89.0	135	1.00	1.00	34.8	9.7	1.3	44.5	О				.	1	10.8			0.0			
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (veh/h)	Number 10,013	Initial U (Ub), ven	Ped-Bike Adj(A_pb1)	Adi Sat Elow yeh/h/ln	Adj Flow Rate, veh/h	Adj No. of Lanes	Peak Hour Factor	Percent Heavy Veh, %	Cap, veh/h	Arrive On Green	Sat Flow, ven/n	Grp Volume(v), veh/h	Grp Sat Flow(s), veryrin	Cycle O Clearin of s	Prop In Lane	Lane Grp Cap(c), veh/h	V/C Ratio(X)	Avail Cap(c_a), veh/h	HCM Platoon Ratio	Upstream Filter(I)	Uniform Delay (d), s/veh	Incr Delay (d2), s/veh	Wile BackOfO(50%) veh/ln	LnGro Delav(d).s/veh	LnGrp LOS	Approach Vol, veh/h	Approach Delay, s/veh	Approach LOS	Timer	Assigned Phs	Phs Duration (G+Y+Rc), s	Change Period (Y+Rc), s	Max Green Setting (Gmax), s	Max Q Clear Time (g_c+11), s Green Ext Time (p_c), s	Intersection Summary	10 M 2010 CHI DOLOG	The second of the second

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	F	‡	W_	-	¥	*	1	441		F	*
Traffic Volume (veh/h)	40	190	100	131	780	170	720	722	111	440	1564
Future Volume (veh/h)	40	190	100	131	780	170	720	722	1	440	1564
Number	7	4	14	co	∞	18	2	2	12	_	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845
Adj Flow Rate, veh/h	43	207	109	142	848	185	783	785	121	478	1700
Adj No. of Lanes	-	2		-	2		2	co	0	2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heaw Veh. %	က	3	3	က	3	3	3	3	3	3	
Cap, veh/h	205	1240	220	105	1021	443	2024	3456	528	414	1511
Arrive On Green	0.12	0.35	0.35	90.0	0.29	0.29	0.59	0.79	0.79	0.12	0.30
Sat Flow, veh/h	1757	3505	1555	1757	3505	1522	3408	4396	672	3408	5036
Grp Volume(v), veh/h	43	207	109	142	848	185	783	298	308	478	1700
Grp Sat Flow(s).veh/h/ln	1757	1752	1555	1757	1752	1522	1704	1679	1711	1704	1679
O Serve(a s). s	2.9	5.3	4.3	7.8	29.4	17.8	15.7	0.9	6.1	15.8	39.0
Cycle O Clear(a.c.) s	29	22	4.3	7.8	29.4	17.8	15.7	0.9	6.1	15.8	39.0
Prop In Lane	1.00	9	1.00	1.00		1.00	1.00	5	0.39	1.00	,
Lane Gro Can(c) veh/h	205	1240	550	105	1001	443	2024	2639	1345	414	1511
V/C Ratio(X)	0.21	0.17	0.20	1 35	0.83	0.42	0 30	0.23	0.23	1 1 1 2	1 13
Avail Cap(c, a), veh/h	202	1240	220	105	1286	228	2024	2639	1345	414	1511
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.79	0.79	0.79	1.00	1.00
Uniform Delay (d), s/veh	52.0	28.8	13.4	61.1	43.1	72.1	13.9	3.6	3.6	57.1	4
Incr Delay (d2), s/veh	2.3	0.3	0.8	206.4	3.1	0.2	0.0	0.2	0.3	93.4	929
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	5.6	2.0	8.6	14.7	7.5	7.4	2.8	2.9	12.8	27.2
LnGrp Delay(d),s/veh	54.3	29.1	14.2	267.5	46.2	72.3	14.0	3.8	3.9	150.5	111.1
LnGrp LOS	O	ပ	В	ш	O	ш	В	A	A	ш	
Approach Vol, veh/h		326			1175			1689			2417
Approach Delay, sheh		27.6			0.77			8.5			112.0
Approach LOS		S			ш			Α			
Timer		2	က	4	2	9	7	00			
Assigned Phs	-	2	m	4	2	9	7	∞			
Phs Duration (G+Y+Rc), s	20.0	110.0	12.0	51.0	85.0	45.0	20.1	42.9			
Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	* 5	0.9	9 *	* 5	* 5			
Max Green Setting (Gmax), s	* 16	41.0	* 7.8	* 46	17.8	* 39	* 6.1	* 48			
Max Q Clear Time (g_c+I1), s	17.8	8.1	8.6	7.3	17.7	41.0	4.9	31.4			
Green Ext Time (p_c), s	0.0	4.5	0.0	1.1	0.0	0.0	0.0	4.2			
Intersection Summary											
HCM 2010 Cirl Delay			48 4								
HCM 2010 LOS			- 4								
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Synchro 10 Report Page 5

HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL2) AM 5: I-5 South On-Ramp/I-5 SB Ramps & Palomar Airport Rd.

	4	†	>	\	Ļ	4	•	—	•	٠	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4413			*	*-				K.		¥.
Traffic Volume (veh/h)	0	540	80	0	089	313	0	0	0	1164	0	390
Future Volume (veh/h)	0	540	8	0	089	313	0	0	0	1164	0	390
Number	2	2	12	-	9	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1:00	1:00	1.00	1:00	1:00				1.00	1.00	1.00
Adj Sat Flow, veh/h/In	0	1845	1900	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	009	68	0	756	0				1293	0	433
Adj No. of Lanes	0	3	0	0	2	-				2	0	_
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1316	193	0	1039	465				1425	0	929
Arrive On Green	0.00	0.30	0.30	0.00	0.30	0.00				0.42	0.00	0.42
Sat Flow, veh/h	0	4004	620	0	354/	1268				3408	0	1268
Grp Volume(v), veh/h	0	452	237	0	756	0				1293	0	433
Grp Sat Flow(s),veh/h/ln	0	1679	1730	0	1752	1568				1704	0	1568
O Serve(g_s), s	0.0	4.0	4.1	0.0	7.1	0.0				13.1	0.0	8.2
Cycle O Clear(g_c), s	0.0	4.0	4.1	0.0	7.1	0.0				13.1	0.0	8.2
Prop In Lane	0.00		0.38	0.00		1:00				1.00		1.00
Lane Grp Cap(c), veh/h	0	995	513	0	1039	465				1425	0	655
V/C Ratio(X)	0.00	0.45	0.46	0.00	0.73	0.00				0.91	0.00	99.0
Avail Cap(c_a), veh/h	0	2200	1134	0	2297	1028				2354	0	1083
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1:00	1.00	0.00	1:00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	10.5	10.5	0.0	11.6	0.0				10.0	0.0	8.6
Incr Delay (d2), s/veh	0.0	0.1	0.2	0.0	0.4	0.0				2.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.8	1.9	0.0	3.4	0.0				6.5	0.0	3.6
LnGrp Delay(d),s/veh	0.0	10.6	10.8	0.0	12.0	0.0				12.1	0.0	0.6
LnGrp LOS		m	m		۵							۷
Approach Vol, veh/h		689			756						1726	
Approach Delay, s/veh		10.7			12.0						11.3	
Approach LOS		В			В						В	
Timer	_	2	က	4	2	9	7	∞				
Assigned Phs		2		4		9						
Phs Duration (G+Y+Rc), s		16.3		20.5		16.3						
Change Period (Y+Rc), s		5.4		5.1		5.4						
Max Green Setting (Gmax), s		24.1		25.4		24.1						
Max Q Clear Time (g_c+I1), s		6.1		15.1		9.1						
Green Ext Time (p_c), s		0.9		0.3		Ξ						
Intersection Summary												
HCM 2010 Ctrl Delay			11.3									
HCM 2010 LOS			В									

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Synchro 10 Report Page 8

HCM 2010 Signalized Intersection Summary 6: I-5 NB Ramps & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL2) AM 08/24/2017

Novement EBL EBT EBR WBL Workernent Lane Configurations 1634 0 0 8	WBT W 863 863 6 6 0 0 1.00 11 1845 11 1845 13 890 3	Z	NBT	NRP	į		
1			4	-	SBL	SBT	SBR
80 1634 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			,	R.R.			
80 1634 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0, -		0	1204	0	0	0
5 2 12 1 100 0 0 0 0 100 100 100 100 100 100 100 100 101 100 100 100 102 1085 0 0 0 103 233 0 0 0 104 2020 0 0 0 105 384 0 0 0 0 105 384 0 0 0 0 107 107 107 0 0 108 2520 0 0 0 109 2520 0 0 0 101 2520 0 0 0 102 2520 0 0 0 103 384 0 0 0 0 104 100 100 100 105 384 0 0 0 0 107 2520 0 0 0 108 2520 0 0 0 109 100 0 0 101 2020 0 0 101 2020 0 0 102 220 0 0 0 103 384 0 0 0 0 104 14 0 0 0 0 107 200 0 0 108 252 0 0 0 109 100 0 100 100 0 101 200 0 101 200 0 102 200 0 103 3 44 0 104 0 0 0 105 200 0 106 200 0 107 200 0 108 200 0 109 100 0 100 0		453 /0	0	1204	0	0	0
1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	· ·	16 3	∞	18			
100 100 100 100 100 100 100 100 100 100	, i		0	0			
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	· ·	0.96 1.00		0.98			
1845 1845 0 0 1 8 2 1685 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			1.00	1.00			
82 1685 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		1845 1900	1845	1845			
1 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			0	1241			
0.07 0.97 0.97 0.97 0.97 0.97 0.97 0.97			-	2			
3 3 3 0 0 0 0.06 0.46 0.00 0.00 0.06 0.46 0.00 0.00 1757 5202 0 0 0 0 182 1685 0 0 0 182 1685 0 0 0 155 384 0.0 0.0 100 2292 0 0 0 110 2292 0 0 0 110 2292 0 0 0 110 1.00 1.00 1.00 0.81 0.74 0.0 0.0 161 2292 0 0 0 161 2292 0 0 0 162 233 0	c	ö	0.97	0.97			
102 2992 0 0 1 1 1 1 1 2 2992 0 0 0 1 1 1 2 2992 0 0 0 1 1 1 2 2 1 685 0 0 0 0 1 1 1 2 2 1 6 2 2 2 2 2 0 0 0 1 1 1 2 2 2 2 2 2 0 0 0 1 1 1 2 2 2 2			3	3			
0.06 0.04 0.00 0.00 0.00 0.00 0.00 0.00			0	1267			
1757 5002 0 0 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		0.12 0.47	0.00	0.47			
177 1679 0 0 0 1 1 1 1 1 1 2 3 4 1 1 1 2 3 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5202	2640 1757	0	2696			
1757 1679 0 0 1 65 384 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	068		0	1241			
6.5 38.4 0.0 0.0 6.5 38.4 0.0 0.0 1.00 0.0 0.0 0.01 0.00 0.0 0.02 2292 0 0 0 1.00 1.00 1.00 0.0 0.43 0.63 0.00 0.0 eth 65.2 31.2 0.0 0.0 eth 0.0 0.0 0.0 0.0 0.0 0.0 0.0 eth 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	1679 1.	1320 1757	0	1348			
6.5 38.4 0.0 0.0 1.00 2.20 0 0.0 0.00 0.00 1.00 2.24 0 0 0.0 1.10 2.29 0 0 0 1.10 2.29 0 0 0 1.10 2.29 0 0 0 1.10 2.29 0 0 0 1.10 2.29 0 0 0 1.10 0.00 1.2 3.1.2 0.0 0.0 1.2 3.1.2 0.0 0.0 1.3 3.3 18.1 0.0 0.0 1.4 1.4 0.0 0.0 1.5 0.5 32.6 0.0 0.0 1.5 0.5 32.6 0.0 0.0 1.5 0.5 32.6 0.0 0.0 1.5 0.5 32.6 0.0 0.0 1.5 0.5 32.6 0.0 0.0 1.5 0.5 32.6 0.0 0.0 1.5 0.5 32.6 0.0 0.0 1.5 0.5 32.6 0.0 0.0 1.5 0.5 32.6 0.0 0.0 1.5 0.5 32.6 0.0 0.0 1.5 0.5 32.6 0.0 0.0 1.5 0.5 32.6 0.0 0.0 1.5 0.5 32.6 0.0 0.0 1.5 0.5 32.6 0.0 0.0 1.5 0.5 0.0 0.0 1.5 0.5 0.0 0.0 1.5 0.0 0.		23.1 3.2	0.0	63.3			
h 100 0.00 0.00 0.00 0.00 0.00 0.00 0.00	23.1 2		0.0	63.3			
hh 102 2292 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1.00 1.00		1.00			
100 0.00 0.00 0.00 0.00 0.00 0.00 0.00			0	1267			
161 2292 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		_	0.00	0.98			
1,00 1,00 1,00 1,00 65.2 3.043 0.05 0.00 0.00 0.00 0.00 0.00 0.00 0.0			0	1421			
0.63 0.63 0.00 0.00 65.2 31.2 0.0 0.00 0.00 0.00 0.00 0.00 0.00 0.		0.33 1.00	1.00	1.00			
65.2 31.2 0.0 0.0 4.4 1.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0			0.00	1.00			
44 1.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	4		0.0	36.4			
3.3 18.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0			0.0	17.8			
3.3 18.1 0.0 0.0 69.5 3.26 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.			0.0	0.0			
69.5 32.6 0.0 0.0 E C C 0.0 0.0 1767 1 34.3 C C 3 4 69.1 55.4 55.7 40.4 3.1			0.0	26.6			
1767 1 34.3 34.3 C C 69.1 5.4 40.4 3.1		50.8 20.5	0.0	54.2			
1767 34.3 C C 2 89.1 5.4 40.4 3.1	ما	ا د					
34.3 C C 2 69.1 55.7 40.4 3.1	1357		1313				
69.1 69.1 55.7 40.4 3.1	50.4		52.4				
1 2 3 4 69.1 69.1 5.4 60.4 90.4 3.1	n		n				
2 69.1 5.4 55.7 40.4 3.1	2	7 9	∞				
69.1 5.4 55.7 40.4 3.1	2	9	8				
5.4 55.7 40.4 3.1		56.3	70.9				
55.7 40.4 3.1		5.4	5.1				
3.1		38.2	73.8				
3.1	8.5	25.1	65.3				
	0.0	1.5	0.5				
HCM 2010 LOS D							
Malace							

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HCM 2010 Signalized Intersection Summary 7: Paseo Del Norte & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL2) AM 08/24/2017

HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL2) AM 8: Armada Dr. & Palomar Airport Rd.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	444		F	≣	¥C.	F	₩		F	₩	
Traffic Volume (veh/h)	130	2588	130	100	1086	200	130	40	100	06	40	80
Future Volume (veh/h)	130	2588	130	100	1086	200	130	40	100	06	40	8
Number (1975)	ഹ	2	12	- -	9 0	16	m	∞ α	ω σ	_	4 (14
Initial U (Ub), ven	0 5	0	0 0	0 5	0	0 8	0 6	0	0	0 6	0	0 10
Ped-Bike Adj(A_pb1)	9.1	5	0.98	1.00	5	0.99	1.00	5	0.95	1.00	7	0.95
Parking Bus, Adj	00.1	00.1	1.00	00.1	00.1	00.1	00.1	00.1	1.00	1.00	1.00	1.00
Adj sat Flow, verynin	120	1845	1300	107	1345	1845	130	1845	1900	1845	1845	1900
Adj No ef account	200	7123	82	9 6	66	213	200	43	90	9, 0	43	82
Auj No. 01 Laires	7 00	2 0	0 0	7 00	4 00	- 800	7 000	7 00	0 0	7 00	7 00	000
Peak Houl Factor Derrent Heavy Veh %	0.74	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Can veh/h	1438	3148	155	122	15.35	433	185	259	221	127	219	185
Arrive On Green	0.28	0.43	0.43	0.01	0.08	0.08	0.02	0.15	0.15	0.04	0.12	0.12
Sat Flow, veh/h	3408	4911	242	3408	6346	1549	3408	1752	1495	3408	1752	1485
Grp Volume(v), veh/h	138	1866	1025	106	1155	213	138	43	106	96	43	85
Grp Sat Flow(s),veh/h/ln	1704	1679	1796	1704	1586	1549	1704	1752	1495	1704	1752	1485
Q Serve(g_s), s	4.2	70.8	73.7	4.3	24.9	11.3	9.9	3.0	9.1	3.9	3.1	7.4
Cycle Q Clear(g_c), s	4.2	70.8	73.7	4.3	24.9	11.3	9.6	3.0	9.1	3.9	3.1	7.4
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1438	2152	1151	122	1535	433	185	259	221	127	219	185
V/C Ratio(X)	0.10	0.87	0.89	0.87	0.75	0.49	0.75	0.17	0.48	0.76	0.20	0.46
Avail Cap(c_a), veh/h	1438	2152	1151	122	3010	793	236	488	416	127	432	366
HCM Platoon Ratio	0.67	0.67	0.67	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.44	0.44	0.44	0.77	0.77	0.77	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.5	34.5	35.4	6.89	60.3	35.3	65.3	52.1	54.7	8.99	22.0	56.9
Incr Delay (d2), s/veh	0.0	2.3	2.0	36.2	2.7	3.1	6.4	0.1	9.0	20.8	0.5	0.7
Initial Q Delay(d3), sweh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfO(50%),veh/ln	2.0	33.5	38.2	2.7	11.3	5.2	2.8	7:5	3.8	2.2	1.5	3.1
LnGrp Delay(d),s/veh	30.5	36.8	40.4	105.1	63.0	38.4	71.6	52.2	55.3	9./8	55.1	5/.5
LhGrp LOS	اد			-	إ	اد	ш	ا د	ш	-	ш ;	Ш
Approach Vol, veh/h		3029			14/4			787			224	
Approach Delay, s/ven		37.8			67.5			7.79			69.9	
Approach LOS		O			ш			ш			ш	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	1	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	9.5	95.7	12.6	22.5	65.1	39.9	9.4	25.7				
Change Period (Y+Rc), s	* 4.2	0.9	2.0	* 5	0.9	9 *	* 4.2	2.0				
Max Green Setting (Gmax), s	, S	71.4	6.7	* 35	10.0	99 *	* 5.2	39.0				
Max Q Clear Time (g_c+I1), s	6.3	75.7	9.7	9.4	6.2	26.9	5.9	11.1				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.5	0.1	6.9	0.0	9.0				
Intersection Summary												
HCM 2010 Ctrl Delay			47.9									
HCM 2010 LOS			O									
Notes												

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Synchro 10 Report Page 11

Movement EBI EBI EBI WB WB WB WB WB WB WB									NRT	COIN	SBI	H	CDD
1,	Movement	EBL	EBT	EBR	WBL	WBI	WBK	NBL	1021	NDK	7	SBI	SDK
160 23.68 190 110 196 190 110 30 170 110 30 170 110 30 170 110 30 170 100	Lane Configurations	F	444	¥	r	444	*	F	¢\$	¥	F	*	¥.
160 2368 190 110 1086 190 110 30 170 110 30 170 110 30 170 110 30 170 110 30 170 1	Traffic Volume (veh/h)	160	2368	190	110	1086	190	110	30	170	110	30	20
5	Future Volume (veh/h)	160	2368	190	110	1086	190	110	30	170	110	30	20
1.00	Number 1-14-1-10 (OF)	ഹ	7	12	 -	9 0	16	m (∞ α	<u>@</u>	_	4 0	4 0
1.00	Initial C (Clb), Ven	0 0	0	0 0	0 0	0	0 0	0 0	0	0 0	0 6	0	0 0
1945 1945	Parking Bus Adi	1.00	1 00	1.00	1.00	1 00	1.00	00.1	1 00	1.00	00.1	1 00	1.00
170 2519 202 117 1155 202 117 0 202 117 32 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adi Sat Flow veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
2 3 1 1 1 3 1 1 2 0 0 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1	Adj Flow Rate, veh/h	170	2519	202	117	1155	202	117	0	202	117	32	74
0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94	Adj No. of Lanes	2	3	—	-	3	—	2	0	2	2		<u></u>
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
1403 3241 1067 118 1441 500 141 0 329 1122 198 082 102 100 0 002 009 004 000 0.11 0.04 0.11 083 5036 1561 1757 5036 1552 3514 0 2956 3408 1845 170 2519 202 117 1155 202 117 0 202 117 32 170 1519 202 117 1155 202 117 0 202 117 32 170 1519 1561 1757 1679 1552 1757 0 1478 1704 1845 170 100 0.0 9.3 31.5 12.0 4.6 0.0 78 48 22 170 100 100 100 100 100 100 100 100 100	Percent Heavy Veh, %	m	3	က	m	3	3	3	3	m	3	3	8
0.82	Cap, veh/h	1403	3241	1067	118	1441	200	141	0	329	122	198	158
3408 6336 1561 1757 5036 1552 3514 0 2956 3408 1845 1704 1579 222 117 1155 202 117 0 1478 1704 1845 1704 1579 1561 1757 1679 152 1757 0 1478 1704 1845 1704 1579 1561 1757 1679 1552 1757 0 1478 1704 1845 1704 1479 1562 1757 0 1478 1704 1845 1704 1479 1670 170 170 170 170 170 170 170 170 170 1	Arrive On Green	0.82	1.00	1.00	0.02	0.09	60.0	0.04	0.00	0.11	0.04	0.11	0.11
170 2519 200 117 1155 200 117 0 202 117 32 174 176 1845 174 1845 174 1845 174 1845 174 1845 174 1845 174 1845 174 1845 174 1845 174 1845 175 160 0 0 0 178 48 22 174 0 0 0 0 0 0 0 0 100 1	Sat Flow, veh/h	3408	5036	1561	1757	5036	1552	3514	0	2956	3408	1845	1475
1704 1479 1561 1757 1679 1552 1757 0 1478 1704 1845 1704 1845 1704 1845 1704 1845 1704 1845 1704 1845 1704 1845 1704 1845 1704 1845 1704 1845 170	Grp Volume(v), veh/h	170	2519	202	117	1155	202	117	0	202	117	32	74
14 0.0 0.0 9.3 315 12.0 4.6 0.0 7.8 4.8 2.2 14 0.0 0.0 9.3 31.5 12.0 4.6 0.0 7.8 4.8 2.2 1.00	Grp Sat Flow(s),veh/h/ln	1704	1679	1561	1757	1679	1552	1757	0	1478	1704	1845	1475
140 00 00 93 31.5 12.0 46 0.0 78 4.8 2.2 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Q Serve(g_s), s	1.4	0.0	0.0	9.3	31.5	12.0	4.6	0.0	7.8	4.8	2.2	3.0
1403 3241 1067 118 1441 550 141 0 329 122 198 1413 3241 1067 118 1441 550 141 0 329 122 198 1413 3241 1067 118 2266 754 141 0 857 122 527 20 0.88 0.49 0.89 0.40 0.83 0.30 0.61 0.96 0.16 100 1.00 1.00 1.00 1.00 1.00 1.00	Cycle Q Clear(g_c), s	1.4	0.0	0.0	9.3	31.5	12.0	4.6	0.0	7.8	4.8	2.2	3.0
1403 3241 1067 118 1441 500 141 0 329 122 198 0.11	Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
0,12 0,18 0,19 0,99 0,80 0,40 0,83 0,00 0,61 0,96 0,16 1,403 0,200 0,200 0,33 0,33 0,33 0,33 1,00 1,00 1,00 1,00 1,00 0,20 0,200 0	Lane Grp Cap(c), veh/h	1403	3241	1067	118	1441	200	141	0	329	122	198	128
1403 3241 1067 118 2266 754 141 0 857 122 527 1403 3241 1060 200 0.33 0.33 100 100 100 1.00 1.00 1.00	V/C Ratio(X)	0.12	0.78	0.19	0.99	0.80	0.40	0.83	0.00	0.61	96.0	0.16	0.47
2.00 2.00 2.00 0.33 0.33 1.00 1.00 1.00 1.00 1.00 1	Avail Cap(c_a), veh/h	1403	3241	1067	118	2266	754	141	0	827	122	527	421
0.26 0.26 0.26 0.89 0.89 0.89 1.00 0.00 1.00 1.00 1.00 1.00 0.0 0.0 0	HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1:00	1:00	1.00
14 0.0 0.0 0.0 084 9/5 483 067 0.0 43.2 088 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	0.26	0.26	0.26	0.80	0.80	0.80	1.00	0.00	1.00	1.00	1.00	1.00
0.0 0.0 0.1 0.1 1.1 3.8 1.9 1.2 0.0 0.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/ven	4.4	0.0	0.0	93.4	29.5	48.3	00.7	0.0	43.2	4.70	20.8	6.11
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), siven	0.0	0.5	- 0	71.3	χ, ς Σ, ο	6.9	31.2	0.0	0.7	8.8	_ o	8.0
10.0 0.2 0.0 0.9 13.5 0.9 29.7 0.0 3.2 3.4 1.1 1.1 1.2 3 4 5.6 1.1 1.3 2.0 6.3 6.6 1.1 1.3 2.0 6.5 6.5 0.3 3.4 1.3 2.0 0.3 1.3 2.3 6.2 0.0 0.0 0.3 1.3 2.3 1.3 2.0 6.5 0.3 1.3 2.0 0.3 2.0 0.3	Initial Q Delay(d3),S/ven	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A	%lle BackOlQ(50%), ven/in	0.0	7.0	0.0	7.001	7.01	9.6	6.70	0:0	3.2	3.4	- 1	10.7
2891 1474 319 D F F C C C C C C C C C C C C C C C C C	Lingip Delay(u),s/ven	4.7	0.0	- <	1.99.7	03.3	7.00	41.4	0.0	43.4	130.2	200.7	17.7
1 2 3 4 5 6 7 8 8 17 8 18 18 18 18 18 18 18 18 18 18 18 18 1	LITIGITO LOS	₹	A 1000	<	-	1 474			2,5			٦	
1 2 3 4 5 6 7 8 13.6 96.1 10.3 20.0 63.6 46.1 10.0 20.3 13.6 96.1 10.3 20.0 63.6 40.6 13.7 10.0 6.5 10.0 11.5 63 13.5 68 98 13.8 28.8	Approach Dolay skiph		1 607			4/4			517			020	
13.6 96.1 10.3 20.0 63.6 46.1 10.0 13.2 6.0 7.2 6.0 7.4 5.6 6.0 7.5 6.	Approach LOS		V. A			9. Ш			. Ш			D3.7	
1 2 3 4 5 6 7 7 13.6 %.1 10.3 20.0 63.6 46.1 10.0 4.7 5 6.0 7 6 7 5 8 11.3 2.0 66 50 3.4 33.5 68 68 0.0 22.7 0.0 0.2 0.2 6.6 0.0 C.2 0.2 6.6 0.0 C.2 0.2 6.6 0.0 C.2 0.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6		ľ		•		ľ	ı						ĺ
136 96.1 10.3 4 5 6 7 4.2 60 4.7 5 60 63 46.1 10.0 8.9,4 65.1 5.6 40 11.5 63 5 8.11.3 2.0 6.6 5.0 3.4 33.5 6.8 0.0 22.7 0.0 0.2 0.2 6.6 0.0 C	Timer	-	2	3	4	2	9	7	00				
13.0 %-1 10.3 &-0.0 &-0.5 46.1 10.0 13.0 4.0 10.0 13.0 10.0 13.0 13.0 13.0 13.0 13	Assigned Phs	- ;	2 5	m (4 0	5	9 ;	700	ω .				
8 '94 C 10 '56 '40 '115 '63 '5 '5 '5 '5 '5 '5 '5 '5 '5 '5 '5 '5 '5	Phs Duration (G+Y+Rc), s	13.6	76.7	10.3	20.0	63.6	46.1	10:0	20.3				
2 7.4 00.1 20.0 4.0 11.3 3.5 6.8 0.0 0.0 22.7 0.0 0.2 0.2 6.6 0.0 0.2 28.8 C.			0.0	4.7 * E 4	٠ ٩	11 5	0 *	۰ ۱	4.7				
0.0 22.7 0.0 0.2 0.2 6.6 0.0 28.8 C	Max O Clear Time (n. c+11), s		2.0	9.0	20 4	3.4	33.5	0 00	9.0				
28	Green Ext Time (p_c), s		22.7	0.0	0.2	0.2	9.9	0.0	0.5				
28	Intersection Summary												
	HCM 2010 Ctrl Dolay			800									
	HCM 2010 CIT DOLLS			20.0									
	I IOINI zoro EOO)									

N\2772\Analysis\Intersections\Synchro\11. Ex +PAL2+ C AM syn

HCM 2010 Signalized Intersection Summary 9: Hidden Valley Rd. & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL2) AM 08/24/2017

HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL2) AM 10: College Blvd. & Palomar Airport Rd.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	-	444	¥.	×	4413		F	æ		×	*	*
Traffic Volume (veh/h)	140	2448	100	0/	1296	140	70	70	100	09	10	70
Future Volume (veh/h)	140	2448	100	70	1296	140	70	20	100	09	10	70
Number	2	2	12	-	9	16	3	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	151	2632	108	75	1394	151	75	22	108	99	1	75
Adj No. of Lanes	_	m	_	_	m	0	_	-	0	_		_
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	172	2464	830	316	2658	288	79	32	155	82	238	192
Arrive On Green	0.20	0.98	0.98	0.36	1.00	1.00	0.02	0.12	0.12	0.02	0.13	0.13
Sat Flow, veh/h	1757	5036	1552	1757	4595	498	1757	260	1275	1757	1845	1488
Grp Volume(v), veh/h	151	2632	108	75	1018	527	75	0	130	99	11	75
Grp Sat Flow(s),veh/h/In	1757	1679	1552	1757	1679	1736	1757	0	1535	1757	1845	1488
O Serve(g_s), s	11.7	68.5	0.1	4.2	0.0	0.0	0.9	0.0	11.4	5.1	0.7	6.5
Cycle Q Clear(g_c), s	11.7	68.5	0.1	4.2	0.0	0.0	0.9	0.0	11.4	5.1	0.7	6.5
Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.83	1.00		1.00
Lane Grp Cap(c), veh/h	172	2464	830	316	1942	1004	79	0	187	82	238	192
V/C Ratio(X)	0.88	1.07	0.13	0.24	0.52	0.52	0.95	0.00	0.70	0.79	0.05	0.39
Avail Cap(c_a), veh/h	238	2464	830	316	1942	1004	79	0	400	113	514	414
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.41	0.41	0.41	0.77	0.77	0.77	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.4	1.5	0.2	38.1	0.0	0.0	1.99	0.0	29.0	0.99	53.4	55.9
Incr Delay (d2), s/veh	9.8	34.8	0.1	0.1	0.8	1.5	83.0	0.0	1.8	15.4	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	18.9	0.1	2.0	0.2	0.4	4.7	0.0	4.9	2.8	0.4	2.7
LnGrp Delay(d),s/veh	64.1	36.3	0.4	38.2	0.8	1.5	149.7	0.0	8.09	81.4	53.4	56.4
LnGrp LOS	삐	ᅵ	⋖		⋖	⋖	ᅵ		삐	ᅵ		۳
Approach Vol, veh/h		2891			1620			202			151	
Approach Delay, s/veh		36.5			2.7			93.3			6.99	
Approach LOS		٥			A			ш.			ш	
Timer	-	2	33	4	2	9	7	00				
Assigned Phs	7	2	3	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	31.2	74.5	10.5	23.8	18.7	87.0	11.6	22.7				
Change Period (Y+Rc), s	0.9	9 *	* 4.2	2.7	2.0	0.9	2.0	* 5.7				
Max Green Setting (Gmax), s	6.1	69 *	* 6.3	39.0	19.0	54.8	0.6	* 37				
Max Q Clear Time (g_c+I1), s	6.2	70.5	8.0	8.5	13.7	2.0	7.1	13.4				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.1	6.6	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			28.6									
HCM 2010 LOS			S									
Notes												

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10 Report	Page 15
Synchro	

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100 1678 150 151 1026 50 180 440 251 51 190 100 1678 150 151 1026 50 180 440 251 51 190 100 100 150 150 150 160 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 101 102 103 34 34 34 34 34 1144 2654 826 208 1195 347 252 790 349 70 330 1144 2654 826 208 1195 347 252 790 349 70 330 1144 2654 826 208 1195 347 252 790 349 70 330 1144 2654 826 208 1195 347 252 154 413 250 1144 2654 826 208 1195 347 252 154 413 250 1144 2654 826 208 1195 347 252 154 413 250 1144 2654 826 208 1195 347 252 154 413 250 1144 2654 826 209 201 201 200 200 200 100 100 100 100 100 100 100 100 100 1144 2654 826 208 1195 347 252 154 465 114 254 1148 2654 826 208 1195 347 252 154 485 164 1148 2654 826 208 1195 347 252 154 485 164 1148 2654 826 208 1195 347 252 154 485 143 1148 2654 826 208 1195 347 264 825 204 1148 2654 265 204 206 200 200 200 200 100 100 100 100 100 100 100 100 100 114 2654 826 208 134 205 203 203 203 203 203 114 2654 826 208 1195 347 348 203 348 203	Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
700 1678 150 151 1026 50 180 440 251 51 190 700 1678 150 151 1026 50 180 440 251 51 190 700 1678 150 151 1026 50 180 440 251 51 190 700 700 700 100 100 100 100 100 100 100 700 700 100 100 100 100 100 100 100 100 720 731 732 734 732 732 732 733 731 732 734 732 733 734 732 732 733 732 733 734 734 734 734 734 734 733 734 734 734 734 734 734 734 734 735 736 736 736 736 736 736 736 735 736 736 736 736 736 736 736 737 738 738 738 738 738 738 738 738 738 738 738 738 739 739 739 739 739 739 739 739 739 730 730 730 730 730 730 730 730 730 730 730 730 730 730 730 731 734 734 734 734 734 734 734 734 732 734 734 734 734 734 734 734 734 734 734 734 734 734 734 734 734 735 736 736 736 736 736 736 736 736 737 738 73	Lane Configurations	K.	444	¥	F	444	¥.	F	‡	*	<u>, </u>	*	¥
700 1678 150 151 1026 50 180 440 251 51 190 100 0	Traffic Volume (veh/h)	700	1678	150	151	1026	20	180	440	251	51	190	180
100	Future Volume (veh/h)	700	1678	150	151	1026	20	180	440	251	21	190	180
100 100 100 100 100 100 100 100 100 100	Number Number	ഗ	2	12	- -	9 0	91	m	∞ <	∞ 0	_	4 0	14
1.00 1.00	Ped-Bike Adi(A pbT)	1.00	>	1.00	1.00	>	66.0	1.00	>	0.99	1.00	>	0.98
1845 1845	Parking Bus, Adi	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
753 1804 161 162 1103 54 194 473 270 55 204 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93	Adj Flow Rate, veh/h	753	1804	161	162	1103	24	194	473	270	22	204	194
0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93	Adj No. of Lanes	2	က	<u></u>	2	co	_	2	2	_	_	_	_
6 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
1144 2654 826 208 1195 367 252 790 349 70 330 70 340 3408 5036 1195 364 204 0.01 0.06 0.024 0.07 0.03 0.023 0.04 0.18 0.18 0.05 0.05 0.04 0.18 0.18 0.05 0.05 0.04 0.18 0.18 0.05 0.05 0.05 0.04 0.18 0.18 0.05	Percent Heavy Veh, %	3	3	က	m	co	co	3	3	m	m	m	co
0.67 100 100 006 0.24 0.24 0.07 0.23 0.03 0.04 0.18 3408 5036 1558 3408 5036 1548 473 270 55 204 71757 1845 71845 182 0.0 0.0 6.6 29.9 3.3 78 16.9 229 4.3 14.3 182 0.0 0.0 6.6 29.9 3.3 78 16.9 229 4.3 14.3 182 0.0 0.0 6.6 29.9 3.3 78 16.9 229 4.3 14.3 1.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Cap, veh/h	1144	2654	826	208	1195	367	252	790	349	70	330	802
3408 5036 1568 3408 5036 1548 3408 3505 1547 1757 1845 7841 1842 1844 1679 1568 1704 1679 1548 1704 1752 1547 1757 1845 1842 100 0.0 6.6 29.9 3.3 7.8 16.9 22.9 4.3 14.3 182 0.0 0.0 6.6 29.9 3.3 7.8 16.9 22.9 4.3 14.3 1842 1842 0.0 0.0 6.6 29.9 3.3 7.8 16.9 22.9 4.3 14.3 1842 1842 0.0 0.0 6.6 29.9 3.3 7.8 16.9 22.9 4.3 14.3 1842 1842 0.0 0.0 6.6 29.9 3.3 7.8 16.9 22.9 4.3 14.3 14.3 14.4 2654 826 208 1195 20.0 100 1.00 1.00 1.00 1.00 1.00 1.00	Arrive On Green	0.67	1.00	1.00	90:0	0.24	0.24	0.07	0.23	0.23	0.04	0.18	0.18
753 1804 161 162 1103 54 194 473 270 55 204 182 0.0 0.0 6.6 29.9 33 78 16.9 22.9 4.3 14.3 182 0.0 0.0 6.6 29.9 33 78 16.9 22.9 4.3 14.3 183 0.0 0.0 6.6 29.9 33 78 16.9 22.9 4.3 14.3 194 2654 826 208 1195 367 252 790 349 70 330 100 100 100 100 100 100 100 100 1144 2654 826 214 1241 382 252 1054 465 114 540 1144 2654 826 214 1241 382 252 1054 465 114 540 1144 2654 826 214 1241 382 252 1054 465 114 540 1144 2654 826 214 1241 382 252 1054 465 114 540 1144 2654 826 214 1241 382 252 1054 465 114 540 1144 2654 826 214 1241 382 252 1054 465 114 540 1145 2664 826 214 1241 382 252 1054 465 114 114 2654 826 214 1241 382 252 1054 465 114 12 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 100 100 1.00 1.00 1.00 100 100 1.00 1.00 1.00 100 100 1.00 1.00 114 2654 826 23 33 34 115 2 3 4 5 6 7 8 115 801 162 310 533 354 117 8 6.0 6.0 6.0 6.0 110 0.0 0.0 0.0 0.0 110 0.0 0.0 0.0 0.0 110 0.0 0.0 0.0 0.0 110 0.0 0.0 0.0 0.0 110 0.0 0.0 0.0 0.0 110 0.0 0.0 0.0 110 0.0 0.0 0.0 110 0.0 0.0 0.0 111 0.0 0.0 0.0 0.0 112 0.0 0.0 0.0 113 0.0 0.0 0.0 114 0.0 0.0 0.0 115 0.0 0.0 0.0 117 0.0 0.0 0.0 118 0.0 0.0 0.0 119 0.0 0.0 110 0.0 0.0 0.0 110 0.0 0.0 0.0 111 0.0 0.0 0.0 111 0.0 0.0 0.0 111 0.0 0.0 0.0 111 0.0 0.0 0.0 111 0.0 0.0 0.0 111 0.0 0.0 0.0 111 0.0 0.0 0.0 111 0.0 0.0 0.0 111 0.0 0.0 0.0 111 0.0 0.0 0.0 0.0 111 0.0 0.0 0.0	Sat Flow, veh/h	3408	5036	1568	3408	5036	1548	3408	3505	1547	1757	1845	1542
1704 1679 1568 1704 1679 1568 1704 1679 1548 1704 1752 1547 1757 1845 187 169 182 1757 1845 185 169 22.9 4.3 143 182 100 100 66 29.9 3.3 7.8 16.9 22.9 4.3 14.3 100	Grp Volume(v), veh/h	753	1804	161	162	1103	54	194	473	270	22	204	194
182 0.0 0.0 6.6 29.9 3.3 7.8 16.9 22.9 4.3 14.3 182 0.0 0.0 6.6 29.9 3.3 7.8 16.9 22.9 4.3 14.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.04 2654 826 208 1195 367 252 790 349 70 330 1.04 2654 826 208 1195 367 252 790 349 70 330 1.04 2654 826 214 124 382 252 1054 465 114 540 2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.04 0.44 0.44 1.00 1.00 1.00 1.00 1.00 1.05 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.05 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.06 0.2 146 52.3 30.4 636 53.1 1.06 0.2 0.1 3.5 15.3 1.5 4.1 8.2 10.2 2.2 7.4 1.06 0.2 0.1 3.5 15.3 1.5 4.1 8.2 10.2 2.2 7.4 1.07 1.00 0.0 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0	Grp Sat Flow(s),veh/h/ln	1704	1679	1568	1704	1679	1548	1704	1752	1547	1757	1845	1542
182 0.0 0.0 6.6 29.9 3.3 7.8 16.9 22.9 4.3 14.3 11.00 1.00 1.00 1.00 1.00 1.00 1.00 1	Q Serve(g_s), s	18.2	0.0	0.0	9.9	29.9	3.3	7.8	16.9	22.9	4.3	14.3	0.0
1,00	Cycle Q Clear(g_c), s	18.2	0.0	0.0	9.9	29.9	3.3	7.8	16.9	22.9	4.3	14.3	0.0
1144 2654 826 208 1195 367 252 790 349 70 330 0.668 0.19 0.78 0.92 0.15 0.77 0.66 0.77 0.78 0.62 0.66 0.17 0.66 0.77 0.78 0.62 0.62 0.02 0.02 0.02 0.02 0.02 0.02	Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
0.66 0.68 0.19 0.78 0.92 0.15 0.77 0.60 0.77 0.78 0.62 0.14 2654 826 2.14 1241 382 252 1054 465 114 5.40 2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Grp Cap(c), veh/h	1144	2654	826	208	1195	367	252	790	349	70	330	802
1144 2654 826 214 1241 382 252 1054 465 114 540 2200 2.000 1.000 1.000 1.000 1.000 1.000 1.000 0.40 0.44 1.00 1.00 1.00 1.00 1.00 1.00	V/C Ratio(X)	99.0	89.0	0.19	0.78	0.92	0.15	0.77	09.0	0.77	0.78	0.62	0.24
200 200 100 100 100 100 100 100 100 100	Avail Cap(c_a), veh/h	1144	2654	826	214	1241	382	252	1054	465	114	540	876
044 044 044 1.00 1.00 1.00 1.00 1.00 1.0	HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
18.3 0.0 0.0 64.8 52.1 30.4 63.6 48.5 50.9 66.6 53.1 0.5 0.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	0.44	0.44	0.44	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
05 0.6 0.2 146 13.1 0.8 122 0.3 3.9 6.9 0.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	18.3	0.0	0.0	64.8	52.1	30.4	93.6	48.5	50.9	9.99	53.1	18.8
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	0.5	9.0	0.2	14.6	13.1	0.8	12.2	0.3	3.9	6.9	0.7	0.1
84 02 0.1 3.5 15.3 1.5 4.1 82 10.2 2.2 7.4 18.8 0.2 0.1 3.5 15.3 1.5 4.1 8.2 10.2 2.2 7.4 18.8 0.2 0.2 7.4 65.2 31.3 75.9 48.8 54.7 73.5 53.8 8.8 5.6 6.5 6.1 6.5 6.1 6.2 0.0 0.0 1.0 4.1 2.3 4 5 6 7 8 6 7 8 1.2 8.8 4.2 5.8 8.8 6.2 0.9 8 16.3 20.2 31.9 6.3 24.9 0.0 11.0 0.0 0.9 1.3 1.3 0.0 2.1 8.3 1.3 0.0 2.1 8.3 1.3 1.3 0.0 2.1 8.3 1.3 1.3 0.0 2.1 8.3 1.3 1.3 0.0 2.1 8.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
188 06 02 794 652 313 759 488 547 735 538 8 8 8 60 6 02 794 652 313 759 488 547 735 538 8 8 60 6 02 788 656 656 656 656 7 8 8 6 7 8 8 6 7 8 8 6 7 8 8 6 7 8 8 6 7 8 8 6 7 8 8 6 7 8 8 6 7 8 8 6 7 8 8 6 7 8 8 6 7 8 8 6 7 8 8 6 7 8 8 6 7 8 8 6 7 8 8 6 7 8 8 74 8 74	%ile BackOfQ(50%),veh/ln	8.4	0.2	0.1	3.5	15.3	1.5	4.1	8.2	10.2	2.2	7.4	4.1
B	LnGrp Delay(d),s/veh	18.8	9.0	0.2	79.4	65.2	31.3	75.9	48.8	54.7	73.5	53.8	18.9
2718 1319 937 5.6 65.6 56.1 1 2 3 4 5 6 7 8 11.2 8.0.1 16.2 31.0 53.3 39.5 9.8 37.4 4.2 6.3 7.8 6.3 6.3 4.2 5.8 8.6 2.0 9.8 16.3 20.2 31.9 6.3 24.9 0.0 11.0 0.0 0.9 1.3 1.3 0.0 2.1 0.0 1.3 1.3 1.3 0.0 2.1	LnGrp LOS	В	⋖	A	ш	ш	ပ	ш			ш		<u>ه</u>
5.6 65.6 56.1 1 2 3 4 5 6 7 8 1 3 6.1 16.2 31.0 53.3 39.5 9.8 37.4 1 4 2 6.3 5.8 6 6.3 7.4 1 8.6 2.0 9.8 16.3 20.2 31.9 6.3 24.9 1 1.0 0.0 0.9 1.3 1.3 0.0 2.1 2 31.9	Approach Vol, veh/h		2718			1319			937			453	
1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 128 80 1 162 3.10 53.3 39.5 9.8 37.4 *4.2 *6.3 *5.8 *6 *6.3 *6.3 *9.1 42.1 8.6 20 98 16.3 20.2 31.9 6.3 24.9 0.0 11.0 0.0 0.9 1.3 1.3 0.0 2.1 31.9	Approach Delay, s/veh		9.6			9.59			56.1			41.2	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 128 80.1 162 31,0 53.3 395 9,8 8.8 60 10 41 34 35 9,1 8.6 2.0 9,8 16,3 20,2 31,9 6,3 0.0 11,0 0.0 0.9 1,3 1,3 0.0 C	Approach LOS		V			ш			ш			D	
12.8 80.1 16.2 31.0 53.3 39.5 9.8 12.8 80.1 16.2 31.0 53.3 39.5 9.8 8.8 60 10 41 34 35 9.1 8.6 2.0 9.8 16.3 20.2 31.9 6.3 0.0 11.0 0.0 0.9 1.3 1.3 0.0 C	Timer	_	2	3	4	2	9	7	8				
12.8 80.1 16.2 31.0 53.3 39.5 9.8 4.2 4.2 8.8 6.0 10 4.41 34 35 9.1 8.6 2.0 9.8 16.3 20.2 31.9 6.3 0.0 11.0 0.0 0.9 1.3 1.3 0.0 31.9 6.3 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Assigned Phs	_	2	3	4	2	9	7	8				
742 '63 '58 '6 '63 '63 '42 88 '60 '10 '41 '34 '35 '91 '8 86 2.0 98 '163 20.2 31.9 '63 '00 '10 '00 '10 '00 '10 '10 '10 '00 '10 '1	Phs Duration (G+Y+Rc), s	12.8	80.1	16.2	31.0	53.3	39.5	8.6	37.4				
88 '60 '10 '41 '34 '35 '9.1 8.6 2.0 9.8 16.3 20.2 31.9 6.3 0.0 11.0 0.0 0.9 1.3 1.3 0.0 31.9	Change Period (Y+Rc), s	* 4.2	* 6.3	* 5.8	9 *	* 6.3	* 6.3	* 4.2	2.8				
8.6 2.0 9.8 16.3 20.2 31.9 6.3 0.0 0.0 11.0 0.0 0.9 1.3 1.3 0.0 2.3 1.9 C	Max Green Setting (Gmax), s	φ	09 _*	* 10	* 41	* 34	* 35	* 9.1	42.1				
1,5 0.0 11.0 0.0 0.9 1.3 1.3 0.0 31.9 C	Max U Clear Time (g_c+II), s	9.0	7.0	8.6	16.3	70.7	31.9	6.3	24.9				
	Green Ext Time (p_c), s	0.0	11.0	0.0	0.0	7.3	1.3	0.0	2.1				
	Intersection Summary												
2010 LOS	HCM 2010 Ctrl Delay			31.9									
No force	HCM 2010 LOS			S									
	Maten												

N\2772\Analysis\Intersections\Synchro\11. Ex +PAL2+ C AM syn

HCM 2010 Signalized Intersection Summary 11: Camino Vida Roble & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL2) AM 08/24/2017

Ex + Cumulative + NT Project (PAL2) AM	08/24/2017	
HCM 2010 Signalized Intersection Summary	12: Yarrow Dr./McClellan & Palomar Airport Rd.	

Novement	Ē			10/41	F				1			
	EBL	EBT	EBR	WBL	WBI	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	r	4413		×	4413		K.	æ,		×	*	*
raffic Volume (veh/h)	145	1495	370	190	1084	330	130	8	09	09	30	53
-uture Volume (veh/h)	145	1495	370	190	1084	330	130	06	09	09	30	53
Number	2	2	12	-	9	16	3	∞	18	7	4	14
nitial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		96:0	1.00		96.0	1.00		96.0	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
4dj Flow Kate, veh/h	158	1625	402	707	21/8	326	141	86	69	65	33	28
Adj No. of Lanes	- 8	က	0 0	- 0	ر ر	0	2	- 0	0	- 0	_ 0	_ 0
eak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	က	m	m	က	m !	က	က	m !	m !	က	3	co
Cap, veh/h	532	2148	524	228	1317	401	184	158	105	82	274	222
Arrive On Green	0.30	0.54	0.54	0.13	0.35	0.35	0.02	0.16	0.16	0.02	0.15	0.15
sat Flow, veh/h	1757	4009	677	1757	3783	1152	3408	1015	673	1757	1845	1495
3rp Volume(v), veh/h	158	1357	929	207	1045	492	141	0	163	99	33	28
3rp Sat Flow(s),veh/h/ln	1757	1679	1629	1757	1679	1578	1704	0	1689	1757	1845	1495
2 Serve(g_s), s	10.3	47.2	48.7	17.4	44.2	44.2	6.1	0.0	13.5	5.5	2.3	2.9
Sycle Q Clear(g_c), s	10.3	47.2	48.7	17.4	44.2	44.2	6.1	0.0	13.5	5.5	2.3	2.9
Prop In Lane	1.00		09.0	1.00		0.73	1.00		0.40	1.00		1.00
ane Grp Cap(c), veh/h	532	1799	873	228	1169	220	184	0	263	82	274	222
//C Ratio(X)	0.30	0.75	0.77	0.91	0.89	0.89	0.77	00.00	0.62	0.79	0.12	0.26
vail Cap(c_a), veh/h	532	1799	873	247	1419	299	186	0	430	94	467	379
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
pstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Jniform Delay (d), s/veh	40.1	27.1	27.4	64.4	46.3	46.3	70.0	0.0	59.2	70.8	55.4	17.5
ncr Delay (d2), s/veh	0.1	3.0	6.4	31.1	10.6	19.7	15.4	0.0	6.0	28.2	0.1	0.2
nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	22.6	23.3	10.4	22.2	22.3	3.3	0.0	6.4	3.3	1.2	1.2
.nGrp Delay(d),s/veh	40.2	30.1	33.9	95.4	56.9	62.9	85.4	0.0	60.1	0.66	55.5	17.7
nGrp LOS		U	ပ	4	ш	ᅵ	4		ᆈ	-	ᅵ	
Approach Vol, veh/h		2185			1744			304			156	
Approach Delay, s/veh		32.0			64.0			71.8			29.6	
Approach LOS		O			ш			ш			ш	
imer		2	က	4	2	9	7	∞				
Assigned Phs	-	2	က	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	23.7	8.98	12.3	27.2	51.8	9.89	11.2	28.3				
Change Period (Y+Rc), s	* 4.2	* 6.4	* 4.2	* 5	* 6.4	* 6.4	* 4.2	* 5				
Max Green Setting (Gmax), s	* 21	* 63	* 8.2	% *	* 21	* 63	∞ *	* 38				
Max Q Clear Time (g_c+I1), s	19.4	50.7	8.1	4.9	12.3	46.2	7.5	15.5				
Green Ext Time (p_c), s	0.0	6.9	0.0	0.2	0.1	0.9	0.0	9.0				
ntersection Summary												
HCM 2010 Ctrl Delay			48.5									
HCM 2010 LOS			Q									
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voies												

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Synchro 10 Report Page 19

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10 Report	Page 21
Synchro	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	4413		r	4413		F	*	¥		4	
Traffic Volume (veh/h)	75	1300	180	280	1420	134	20	12	09	49	Ξ	24
Future Volume (veh/h)	72	1300	180	280	1420	134	20	12	09	46	Ξ	24
Number	2	2	12	-	9	16	7	4	14	3	00	18
nitial O (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		96.0	1.00		0.98	0.98		0.95	0.98		0.95
Parking Bus, Adj	00.1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1000	1.00	1.00
Adj Sat Flow, vervn/in	042	1445	0061	1845	1504	151	1845	12	1845	0061	12	1900
Adj No of Lance	60 6	1401	202	515	0401	2	00	2 -	0 6	000	7 -	77
Auj No. Ol Lanes	- 0	200	0 0	- 0	200	0 0	- 00	- 00	- 00	0 0	- 0	
Peak Hour Facior	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Cap with	201	1504	2 0	007	3770	000	2 2	5 7 7 7	200	0 44	ر ا	, [
Arring On Cross	200	1004	617	000	070	200	0.14	707	200	4 5	0,00	0 1
Allive Oil Gleeli	1757	0.30	614	1757	0.70	0.70	1220	1045	1,402	757	2.40	40.14
Car How, veling	0	1100	100	215	11146	107	720	12	7/1	5	(17	5
GIP VOIDITIE(V), VEIVII	1757	1670	1702	1757	1670	1767	1220	1045	1402	1411	0 0	0 0
GIP SALFIOW(S), VEIMINII	727	47.0	47.2	10.01	22.2	22.2	070	0+0	1472	1411		
Z Schve(y_s), s	7.1	2.17 C TA	47.3	10.0	22.3	22.3	6.0	0.0	. 7	0.0	0.0	0.0
Oycic of circuity_cy, 3	100	7: /-	0.36	100	53.3	0.25	100	ò	100	0.59	000	0.50
ane Gro Cap(c), veh/h	103	1196	607	889	2353	1231	225	257	208	235	c	
V/C Ratio(X)	0.81	0.92	0.92	0.46	0.49	0.49	0.25	0.05	0.32	0.40	0.00	0.00
Avail Cap(c_a), veh/h	120	1276	647	889	2353	1231	386	481	389	403	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Jpstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Jniform Delay (d), s/veh	8.69	46.3	46.3	33.8	10.2	10.2	58.3	55.9	58.2	59.3	0.0	0.0
ıncr Delay (d2), s/veh	12.5	13.0	21.9	0.2	0.7	1.4	0.2	0.0	0.3	0.4	0.0	0.0
nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/In	3.8	24.1	25.9	6.7	10.9	11.7	2.1	0.5	2.5	3.6	0.0	0.0
nGrp Delay(d),s/veh	82.2	59.3	68.2	34.0	10.9	11.6	58.5	26.0	58.5	26.7	0.0	0.0
nGrp LOS	니	ш	ш	ပ	<u>ه</u>	В	ш	ш	ш	ш		
Approach Vol, veh/h		1747			2062			136			94	
Approach Delay, síveh		63.2			14.6			58.2			26.7	
Approach LOS		Ш			В			ш			ш	
Timer		2	3	4	2	9	7	8				
Assigned Phs	-	2		4	2	9		8				
Phs Duration (G+Y+Rc), s	64.7	59.4		25.8	13.0	111.1		25.8				
Change Period (Y+Rc), s	0.9	9 *		4.9	* 4.2	0.9		4.9				
Max Green Setting (Gmax), s	38.8	* 57		39.1	* 13	83.0		39.1				
Max Q Clear Time (g_c+I1), s	21.9	49.3		8.3	9.1	25.3		11.0				
Green Ext Time (p_c), s	0.4	4.1		0.2	0.0	8.7		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			38.2									
TOW ZUID LOS			٥									

HCM 2010 Signalized Intersection Summary 13: El Camino Real & Palomar Airport Rd. 13:

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Lane Configurations Traffic Volume (veh/h) Future Volume (veh/h)

Ex + Cumulative

HCM 2010 Signalized Intersection Summary	14: Innovation Way/Loker Ave. & Palomar Airport Rd.
re + NT Project (PAL2) AM	08/24/2017

Ex + Cumulative + NT Project (PAL2) AM

08/24/2017

505 3408 609 1704 22.2 22.2 22.2 22.2 22.2 1.00 505 505 505 1.00 0.09 63.9 94.1 17.1 56.9 63.9 63.9 63.9 64.1 65.9 66.9

636 0.16 696 696 135.0 35.0 35.0 1.00 636 636 636 636 636 636 636 636 637 7.00 98.8

454 0.09 33408 783 783 7704 700 100 454 454 454 456 0.09 0.09 0.09 30.0 30.0

Lane Grp Cap(c), veh/h V/C Ratio(X)

Avail Cap(c_a), veh/h HCM Platoon Ratio

Cycle Q Clear(g_c), s Prop In Lane

1939 0.59 1939 1.00 0.09 36.7 0.1 0.0

1544 0.46 1.00 1.00 1.00 42.0 1.0 0.0 8.2 8.2 43.0

1175 1.48 1175 0.67 0.09 63.3 217.9 0.0 40.0

1268 0.80 1343 1.00 1.00 3.0 3.0 0.0 13.5 55.6

Upstream Filter(I) Uniform Delay (d), s/veh Incr Delay (d2), s/veh

36.8 D 2125 66.6

1564

Approach Vol, veh/h Approach Delay, s/veh Approach LOS

%ile BackOfO(50%),veh/ln

LnGrp Delay(d),s/veh

Initial Q Delay(d3),s/veh

120 120 14 0 0.95 1.00 1845

0.99 1.00 1845 375 1 0.92

1.00 1845 717 3 0.92

0.92

0.92

0.92

Parking Bus, Adj Adj Sat Flow, vehhrlin Adj Flow Rate, vehrh Adj No. of Lanes Peak Hour Factor Percent Heavy Veh, % Cap, vehrh Arrive On Green Sat Flow, vehrh Grp Volume(y), vehrhlin Grp Sat Flow(s), vehrhlin Op Sat Flow(s), vehrhlin Op Serve(g_s), sehrhlin

3 0.92

0.39

0.16

1141

1544 0.31 717 1679 17.3

3 0 0 0 1,00

1743 1679 35.0 35.0

0.25 0.25 5036 1014 1679 28.3 28.3

1.00

0 1.00 1.00 845 609

440 440 11.00 11.00 11.00 2 2 2 0.92 3

640 640 16 0 0.99 1.00 1845 696

323 323 12 0 0.99 1.00 351

1.00

1.00 1.00 1.00 7.83 2 2 0.92

1.00

1.00 1.00 1845 199

Ped-Bike Adj(A_pbT) Number Initial Q (Qb), veh

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Synchro 10 Report Page 23

V:\2772\Analysis\Intersections\Synchro\11. Ex +PAL2+ C AM.syn

Synchro 10 Report Page 24

52.0 6.0 46.0 19.3 3.9

28.2 6.0 20.0 24.2 0.0

41.0 6.0 35.0 37.0 0.0

28.8 6.0 25.0 9.9 0.3

63.8 6.0 42.0 29.0 5.5

16.5 6.0 24.0 10.2 0.2

43.8 6.0 40.0 34.9 2.4

26.0 6.0 20.0 22.0 0.0

Assigned Phs
Phs Duration (G+Y+RC), s
Change Period (Y+RC), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_C+I1), s

Green Ext Time (p_c), s Intersection Summary HCM 2010 Ctrl Delay HCM 2010 LOS

139.9

82.6

Ctrl Delay HCM 2010 Ctrl De HCM 2010 LOS

HCM 2010 Signalized Intersection Summary 15: El Fuerte St. & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL2) AM 08/24/2017

Ex + Cumulative + NT Project (PAL2) AM 08/24/2017

HCM 2010 Signalized Intersection Summary 16: Melrose Dr. & Palomar Airport Rd.

Movement ane Configurations	EBL	H	בכב	IdW	TG/M	O Q/W	2	FCIZ	Odiv	ē		0
ane Configurations		EBI	EBK	WDL	MDI	WDR	NBL	NBI	NBK	SBL	SBI	SBR
	F	444	¥	F	441		F	₩		F	₩	
raffic Volume (veh/h)	110	1143	180	340	2914	180	140	110	140	09	20	40
-uture Volume (veh/h)	110	1143	180	340	2914	180	140	110	140	09	20	40
Number	2	2	12	-	9	16	3	∞	18	7	4	14
nitial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.95	1.00		0.98
Parking Bus, Adj	1:00	1:00	1.00	1.00	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
4dj Flow Rate, veh/h	120	1242	1%	370	3167	1%	152	120	152	92	24	43
Adj No. of Lanes	2	က	-	2	က	0	2	2	0	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	c	3	c	c	3	c	3	c	c	c	c	c
Cap, veh/h	347	2845	881	417	2780	168	132	269	230	102	281	199
Arrive On Green	0.20	1.00	1.00	0.24	1.00	1.00	0.04	0.15	0.15	0.03	0.14	0.14
sat Flow, veh/h	3408	5036	1560	3408	4849	293	3408	1752	1497	3408	1943	1377
3rp Volume(v), veh/h	120	1242	196	370	2170	1193	152	120	152	99	48	49
3rp Sat Flow(s),veh/h/ln	1704	1679	1560	1704	1679	1785	1704	1752	1497	1704	1752	1567
2 Serve(g_s), s	4.5	0.0	0.0	15.7	0.0	0.98	2.8	9.3	14.3	2.8	3.6	4.1
Sycle Q Clear(g_c), s	4.5	0.0	0.0	15.7	0.0	0.98	2.8	9.3	14.3	2.8	3.6	4.1
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		0.88
-ane Grp Cap(c), veh/h	347	2845	881	417	1925	1024	132	569	230	102	254	227
//C Ratio(X)	0.35	0.44	0.22	0.89	1.13	1.16	1.15	0.45	99.0	0.63	0.19	0.22
4vail Cap(c_a), veh/h	347	2845	881	1518	1925	1024	132	403	344	120	397	355
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
pstream Filter(I)	0.71	0.71	0.71	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00
Jniform Delay (d), s/veh	55.4	0.0	0.0	22.7	0.0	0.0	72.1	27.7	29.8	71.9	56.4	56.6
ncr Delay (d2), s/veh	0.2	0.3	0.4	0.2	58.2	75.3	125.5	0.4	1.2	4.5	0.1	0.2
nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.1	0.1	7.4	15.5	21.4	2.0	4.6	0.9	1.4	1.8	1.8
nGrp Delay(d),s/veh	92.9	0.3	0.4	55.9	58.2	75.3	197.6	58.1	61.0	76.5	299	56.8
nGrp LOS	ш	⋖	⋖	ш	띡	띡	ᅵ	ш	ш	ш	ш	Ш
Approach Vol, veh/h		1558			3733			424			162	
Approach Delay, s/veh		4.6			63.4			109.2			9.49	
Approach LOS		A			ш			Ŀ			ш	
imer	-	2	က	4	2	9	7	∞				
Assigned Phs	-	2	33	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	22.5	7.06	10.0	26.7	21.3	92.0	8.7	28.0				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	2.0	0.9	9 *	* 4.2	2.0				
Max Green Setting (Gmax), s	_* 67	24.0	* 5.8	34.0	4.8	98 _*	* 5.3	34.5				
Max Q Clear Time (g_c+I1), s	17.7	2.0	7.8	6.1	6.5	88.0	4.8	16.3				
Green Ext Time (p_c), s	9.0	9.6	0.0	0.3	0.0	0.0	0.0	6.0				
ntersection Summary												
HCM 2010 Ctrl Delay			51.2									
HCM 2010 LOS			О									
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Votes												

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Comparation		1	Ť	×	-	ļ	4	✓	—	4	۶	→	*
90 144 15 144 15 144 16 16 20 210 20 <th< th=""><th>Movement</th><th>EBF</th><th>EBT</th><th>EBR</th><th>WBL</th><th>WBT</th><th>WBR</th><th>NBL</th><th>NBT</th><th>NBR</th><th>SBL</th><th>SBT</th><th>SBR</th></th<>	Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
500 873 140 110 1692 60 621 620 210 80 720 50 873 140 110 1692 60 621 620 20 70 10 0 0 0 0 0 0 0 0 100	Lane Configurations	F	444	W _	1	444	X _	1	Ш	* _	1	44	N. N.
500 873 140 110 1692 60 621 620 210 80 720 100 0 <td>Traffic Volume (veh/h)</td> <td>200</td> <td>873</td> <td>140</td> <td>110</td> <td>1692</td> <td>09</td> <td>621</td> <td>620</td> <td>210</td> <td>80</td> <td>720</td> <td>1301</td>	Traffic Volume (veh/h)	200	873	140	110	1692	09	621	620	210	80	720	1301
100	Future Volume (veh/h)	200	873	140	110	1692	09	621	620	210	80	720	1301
1.00	Number Initial O (Oh) veh	ഹ	2	12	- -	9 0	9 0	m c	∞ ⊂	<u> </u>	<u> </u>	4 0	4 0
100 100	Ped-Bike Adi(A pbT)	1.00		0.99	1.00	>	0.99	1.00		0.99	1.00	>	0.99
1945 1945	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
515 900 144 113 1744 62 640 639 216 82 742 2 3 1 2 3 1 2 4 1 2 3	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
2 3 1 2 3 1 2 3 1 2 3 1 2 3	Adj Flow Rate, veh/h	515	006	144	113	1744	62	640	639	216	82	742	1341
0.97 0.94 0.04 0.94 <td< td=""><td>Adj No. of Lanes</td><td>2</td><td>m</td><td>_</td><td>2</td><td>m</td><td>_</td><td>2</td><td>4</td><td>_</td><td>2</td><td>2</td><td>2</td></td<>	Adj No. of Lanes	2	m	_	2	m	_	2	4	_	2	2	2
34 36 36 36 36 36 36 36 36 36 36 36 36 36 36 36 36<	Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
559 2200 680 156 1544 476 495 2187 608 126 1544 476 495 2187 609 128 327 333 087 087 068 031 031 031 031 031 034 034 024 515 900 144 113 1744 62 640 639 216 82 742 1104 1679 1553 3408 6346 1764 1762 340 639 216 82 742 218 5.3 2.2 4.9 46.0 3.7 218 110 110 176<	Percent Heavy Veh, %	3	m	m	3	3	m	3	3	3	3	m	3
0.33 0.87 0.87 0.06 0.31 0.31 0.15 0.34 0.04 0.024 3408 50.36 155.3 10.15 0.34 0.34 0.04 0.024 1704 16.79 155.7 1704 16.79 155.3 1704 16.79 155.3 1704 16.79 155.3 1704 16.79 155.3 1704 16.79 155.3 1704 16.79 155.3 1704 16.79 155.3 1704 1705 1702 1704 1705 1704 1705 1706 </td <td>Cap, veh/h</td> <td>226</td> <td>2200</td> <td>089</td> <td>156</td> <td>1544</td> <td>476</td> <td>495</td> <td>2187</td> <td>809</td> <td>125</td> <td>827</td> <td>1096</td>	Cap, veh/h	226	2200	089	156	1544	476	495	2187	809	125	827	1096
3408 5036 1557 3408 5036 1557 3408 5036 1554 3408 3505 176 900 144 113 1744 62 640 6839 216 82 742 178 53 2.2 4.9 460 3.7 21.8 1.00 1	Arrive On Green	0.33	0.87	0.87	0.05	0.31	0.31	0.15	0.34	0.34	0.04	0.24	0.24
174 62 640 639 216 82 742 7104 1659 1557 1704 1659 1557 1704 1659 1557 1704 1659 1557 1704 1659 1557 1704 1659 1557 1704 1659 1557 1704 1659 1557 1704 1659 1557 1704 1659 1557 1704 1659 1752 1705 17	Sat Flow, veh/h	3408	5036	1557	3408	5036	1553	3408	6346	1554	3408	3505	2725
1704 1679 1557 1704 1679 1553 1704 1586 1554 1704 1752 1718 153 1704 1679 1553 1704 1580 1584 1704 1752 1718 1	Grp Volume(v), veh/h	515	006	144	113	1744	62	640	639	216	82	742	1341
218 5.3 2.2 4.9 4.6 3.7 2.18 110 14.8 3.6 3.08 1.0 1.00 1.	Grp Sat Flow(s),veh/h/ln	1704	1679	1557	1704	1679	1553	1704	1586	1554	1704	1752	1362
18	Q Serve(g_s), s	21.8	5.3	2.2	4.9	46.0	3.7	21.8	11.0	14.8	3.6	30.8	27.3
100	Cycle Q Clear(g_c), s	21.8	5.3	2.2	4.9	46.0	3.7	21.8	11.0	14.8	3.6	30.8	27.3
559 2200 680 156 1544 476 495 2187 608 125 827 0.92 0.041 0.021 0.72 1.13 0.13 1.29 0.29 0.65 0.90 586 2200 200 2.00 1.00	Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
092 041 021 072 113 013 129 029 036 066 0.90 586 2200 680 218 1544 476 495 2187 608 164 848 200 2 00 2 00 1.00 1.00 1.00 1.00 1.00 1	Lane Grp Cap(c), veh/h	226	2200	089	156	1544	476	495	2187	809	125	827	1096
586 2200 680 218 1544 476 495 2187 608 164 848 200 200 200 100 <td>V/C Ratio(X)</td> <td>0.92</td> <td>0.41</td> <td>0.21</td> <td>0.72</td> <td>1.13</td> <td>0.13</td> <td>1.29</td> <td>0.29</td> <td>0.36</td> <td>0.65</td> <td>06.0</td> <td>1.22</td>	V/C Ratio(X)	0.92	0.41	0.21	0.72	1.13	0.13	1.29	0.29	0.36	0.65	06.0	1.22
200 200 200 100 100 100 100 100 100 100	Avail Cap(c_a), veh/h	286	2200	089	218	1544	476	495	2187	809	164	848	1112
0.90 0.90 0.90 1.00 1.00 1.00 1.00 1.00	HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
17.6 5.7 5.5 70.6 52.0 27.1 64.1 35.8 32.4 71.3 55.5 17.6 0.5 0.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 17.5 2.4 1.0 2.4 30.9 1.6 20.3 4.8 6.3 1.7 16.3 17.5 2.4 1.0 2.4 30.9 1.6 20.3 35.9 32.5 73.5 6.72 18.6 18.6 19.1 19.0 27.6 27.0 35.9 32.5 73.5 6.72 18.6 18.6 19.1 19.0 27.6 27.6 18.6 18.6 19.1 17.6 26.0 41.4 30.6 52.0 97.7 19.7 2.6 41.4 30.6 52.0 97.7 57.7 19.8 2.6 2.3 2.5 2.6 4.8 5.0 19.8 2.8 2.8 2.8 48.0 5.6 16.8 19.9 2.3 2.3 2.3 2.3 2.5 2.6 19.9 2.3 2.3 2.3 2.5 2.6 19.9 2.3 2.3 2.3 2.5 19.9 2.3 2.3 2.3 19.9 2.3 2.3 2.3 19.9 2.3 2.3 2.3 19.9 2.3 2.3 2.3 19.9 2.3 2.3 2.3 19.9 2.3 2.3 2.3 19.9 2.3 2.3 2.3 19.9 2.3 2.3 2.3 19.9 2.3 2.3 2.3 19.9 2.3 2.3 2.3 19.9 2.3 2.3 2.3 19.9 2.3 2.3 2.3 19.9 2.3 2.3 2.3 19.9 2.3 2.3 2.3 19.9 2.3 2.3 2.3 19.9 2.3 2.3 19.9 2.3 2.3 2.3 19.9 2.3 2.3 19.	Upstream Filter(I)	0.90	0.90	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
17.6 0.5 0.6 3.3 6.70 0.6 1459 0.0 0.1 2.2 11.7 11.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Uniform Delay (d), s/veh	49.5	2.7	5.5	9.07	52.0	27.1	64.1	35.8	32.4	71.3	55.5	23.0
00 00 00 00 00 00 00 00 00 00 00 00 00	Incr Delay (d2), s/veh	17.6	0.5	9.0	3.3	0.79	9.0	145.9	0.0	0.1	2.2	11.7	109.1
115 24 1.0 2.4 30.9 1.6 20.3 4.8 6.3 1.7 16.3 1.6 16.3 1.7 16.3 16.3 16.3 16.3 16.3 16.3 16.3 16.3	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F	%ile BackOfO(50%),veh/ln	11.5	2.4	0.1	2.4	30.9	1.6	20.3	4.8	6.3	1.7	16.3	26.7
1559	LnGrp Delay(d),s/veh	67.1	6.2	6.1	73.9	119.0	27.6	210.0	35.9	32.5	73.5	67.2	132.1
1559 1919 1495 26.3 113.4 109.9 C C F F F F 11 2 3 4 5 6 7 8 11.1 71.5 26.0 41.4 306 52.0 9.7 57.7 4.2 6.0 42 3.6 5.0 6.7 57.7 15. 99.6 7.3 23.8 32.8 48.0 5.6 16.8 0.5 6.9 7.3 23.8 32.8 23.8 48.0 5.6 16.8 19.9 91.9	LnGrp LOS	ᆈ	⋖	⋖	ш	ᅵ	ပ	ᅵ		ပ	ᆈ	삐	۲
26.3 113.4 109.9 C	Approach Vol, veh/h		1559			1919			1495			2165	
1 2 3 4 5 6 7 1 1 2 3 4 5 6 7 11.1 71.5 26.0 41.4 306 52.0 9.7 E 1.5 °9,6 36.0 °22 °36 25.8 °46 °7.2 E 0.0 3.9 0.0 2.3 0.3 0.0 0.0 0.0 91.9	Approach Delay, s/veh		26.3			113.4			109.9			107.6	
1 2 3 4 5 6 7 1 1 2 3 4 5 6 7 11.1 71.5 26.0 4.4 30.6 52.0 6.7 1 13.5 9.6 7.3 22.3 2.8 46 7.7 2 5 0.0 3.9 0.0 2.3 0.3 0.0 0.0 91.9	Approach LOS		O			ш			ш			ш	
11.1 71.5 26.0 41.4 30.6 52.0 9.7 F. 11.1 71.5 26.0 41.4 30.6 52.0 9.7 F. 2 6.0 7.4 2 6.0 6.0 6.0 6.0 7.2 5.0 9.7 E. 2 6.0 7.2 2.3 6.0 2.3 8.46 7.7.2 E. 2 6.0 7.3 23.8 32.8 23.8 48.0 5.6 11.0 9.0 3.9 0.0 2.3 0.3 0.0 0.0 9.9 F.	Timer	_	2	3	4	2	9	7	8				
11.1 71.5 26.0 41.4 30.6 52.0 97 18.42 6.0 74.2 6.6 6.0 6.42 7.5 56.9 7.3 23.8 32.8 23.8 48.0 5.6 15.0 0.0 3.9 0.0 2.3 0.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Assigned Phs	_	2	3	4	2	9	7	8				
74.2 6.0 "4.2 "6 6.0 "6 "4.2 s 9.6 8.0 "2.2 "3.6 25.8 "4.6 "7.2 E 5.6 9 "7.3 23.8 32.8 23.8 48.0 5.6 1 91.9 F	Phs Duration (G+Y+Rc), s	11.1	71.5	26.0	41.4	30.6	52.0	6.7	57.7				
s '96 360 '22 '36 258 '46 '72 s 69 7.3 23.8 22.8 480 5.6 0.0 3.9 0.0 2.3 0.3 0.0 0.0 91.9	Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	9 *	0.9	9 *	* 4.2	0.9				
s 6.9 7.3 23.8 32.8 23.8 48.0 5.6 0.0 0.0 3.9 0.0 2.3 0.3 0.0 0.0 0.0 91.9 F	Max Green Setting (Gmax), s	9.6 *	36.0	* 22	* 36	25.8	* 46	* 7.2	50.6				
0.0 3.9 0.0 2.3 0.3 0.0 0.0 2.9 7.9 91.9 F		6.9	5.7	23.8	32.8	23.8	48.0	5.6	16.8				
1.6	Green Ext Time (p_c), s	0.0	3.9	0.0		0.3	0.0	0.0	2.8				
91.	Intersection Summary												
HCM 2010 LOS F	HCM 2010 Ctrl Delay			91.9									
Neto	HCM 2010 LOS			ш									
	Nichol												

HCM 2010 Signalized Intersection Summary 17: El Camino Real & Town Garden Rd.

Ex + Cumulative + NT Project (PAL2) AM 08/24/2017

HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL2) AM 18: El Camino Real & Camino Vida Roble

EBL E 60 60 60 7 7 7 7 7 7 1.00 1.00 1.00 1.00 1.139 64 64 64 64 64 64 64 64 64 64 64 64 64		WBT 50 50 50 60 1.00 1.00 1845 53	WBR 70 70	NBL	NBT	NBR	SBL	SBT	SBR
60 20 60 20 7 4 4 7 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	50 50 50 60 100 1845 1100 1148 1148 1148 1168 1168 1178 1198 1198 1198 1198 1198 1198 119		07 07	j -	444	¥c.	×	444	J.
66 20 60 20 7 4 1.00 1.00 1.00 1.00 1.00 1.84 64 21 64 21 1.31 43 1.01 0.04 68 0.0 68 0.0 69 0.0 60 0.0	55 0 0 0 0 0 0 1 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1		8 8				-	1 100	-
60 20 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.44 0.94 3 3 3 1.31 43 0.04 0.04 0.34 0.09 6.8 0.0 6.8 0.0 6.9 0.0 6.0	50 14 0 0 0 0 0 1845 133 1485 1486 1486 1188 1198 11		2	160	1365	160	140	1423	90
7 4 4 0 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	0.94 0.94 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	_		160	1365	160	140	1433	8
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.04 1.04	0.09 1.00 1.00 1.00 1.00 1.00 1.00 1.00		<u>8</u>	2	2	12	- 0	9 0	16
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1845 1 1845 1 1845 1 143 0.10 1468 1 53 1468 1 53 1468 1 5.1 1.00	_	0 10	0 6	0	0 0	0 0	>	0 0
1900 1846 64 21 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94	185 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	-	100	9.6	9	1.00	00.1	00	1 00
64 21 0.94 0.94 0 3 3 3 131 43 3 131 43 3 131 43 1 132 0 0.10 0.75 0 1 174 0 0 0.75 0 0 170 0.00 0 64 0	53 0.94 0.10 1468 1168 1168 5.1 1.00 1.00		1900	1845	1845	1845	1845	1845	1845
0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94	0.94 (0.143 (0.143 (0.143 (0.144 (0.1	-	74	170	1452	170	149	1524	96
0.94 0.94 0.94 0.93 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0.94 0 143 0.10 0 148 1 53 1488 1 5.1 5.1 5.1 1.00 1.100	-	0	-	က	-	-	m	_
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	3 143 0.10 0.10 53 148 143 143 143	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
131 43 0.10 0.10 1339 0.10 6.8 00 6.8 00 0.75 0 1.70 0.00 1.00 1.00 1.00 1.00 1.00 0.00 6.41 0.00 6.42 0.00 6.43 0.00 6.44 0.00 6.45 0.00 6.46 0.00 6.46 0.00 6.47 0.00 6.48 0.00 6.46 0.00 6.46 0.00 6.47 0.00 6.48 0.00 6.49 0.00 6.40 0.00 6	143 0.10 0.10 1468 1168 1168 1.00 1.00 1.31		3	3	3	3	3	3	3
1339	53 1468 1468 5.1 5.1 1.00 1.00 1.30		123	150	1289	394	658	2819	873
1339 439 18 8 00 68 00 68 00 67 00 174 0 174 0 170 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 1.00 0.00 1.	53 1468 1468 5.1 5.1 1.00 143		0.13	0.09	0.26	0.26	0.37	0.56	0.56
1778 0 1 1 1 1 2 1 2 1 2 1 1 1 2 1 1 1 2 1	53 1468 1 5.1 1.00 143	ò	943	/9/1	2030	1537	/6/1	2030	1200
17/8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	5.1 5.1 1.00 1.43		12/	1/0	1452	1/0	149	1524	96
68 00 678 00 678 00 679 00 641 00 641 00 642 00 644 00 646 646 646 646 646 648 646 648 646 648 646 648 647 648 648 648 648 648 648 648 648 648 649 648 640 648 640 648 640 648 641 648 642 644 643 646 644 646 644 646 645 646 646 646 646 646 647 648 648 648 648 648 649 648 640 648 640 648 640 648 641 648 642 648 643 648 644 648 644 648 645 648 646 648 647 648 648 648 648 648 649 648 640	5.1 1.00 143	0 0	61.91	1/2/	6/91	1537	1/2/	6/91	0961
0.75 174 0.49 0.00 1.00 1.00 1.00 0	1.00	0.0	= ;	12.8	38.4	13.9	0.7	78.7	4.3
17.5 17.4 0.49 0.00 1.00 1.00 0.00	143	0.0	- 6	17.8	38.4	13.9	8.7	78.7	4.3
174 0 0.49 0.00 0.49 0.00 0.100 1.00 1.00 0.00 1.00 0.00 0.	143		0.58	00.1		1.00	1.00		1.00
0.49 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0 37		211	120	1289	394	658	2819	873
150 100 100 100 100 100 100 100 100 100	5.5	0.0	09:0	1.13	1.13	0.43	0.23	0.54	0.11
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	372		432	120	1289	394	929	2819	873
1,00 0,00 1 64,1 0,0 6 0,0 0,0 0,0 0,0 6 64,9 0,0 6 1,38 64,6 6 6,4 6 6 6,4 6 6 1,1 2 6 1,2 6 1,4 8 1,5 6,4 4 1,6 4 1,6 4 1,6 4 1,7 6 1,7 7 1,7 7	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
64.1 0.0 6 0.0 0.0 0.0 0.0 3.4 0.0 64.9 0.0 6 1.38 64.6 E E E E 6.2 6.4 4.8 1.15 3.8	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00
08 00 34 00 649 00 6 E 138 646 E E E 2 626 448 .64 .64 .15 .38	9		61.5	9.89	22.8	46.7	32.1	20.8	15.5
00 00 34 00 6 649 00 6 138 138 646 E E 646 646 646 715 764 715 738	9.0			114.0	67.3	3.4	0.1	0.7	0.3
34 000 649 000 646 646 626 448 626 448 644 107 404 107 404	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
64.9 0.0 e4.6 e E E E E E E E E E E E E E E E E E E	2.1		2.0	11.0	25.8	6.3	4.2	13.5	1.9
62.6 * 6.4 * 15	_	0.0	62.5	182.6	123.1	50.1	32.1	21.6	15.7
62.6 * 6.4 * 15	H		ш	-	-		U	ပ	
62.6 * 6.4 * 15		276			1792			1769	
1 62.6 * 6.4 * 15		62.8			121.9			22.2	
1 62.6 * 6.4 * 15 10.7		ш			ш.			ပ	
1 62.6 * 6.4 * 15 10.7	3 4	2	9	7	8				
62.6 * 6.4 * 15 10.7	4	2	9		8				
* 6.4 * 15 10.7			90.4		23.8				
* 15	*	•	* 6.4		4.2				
10.7	*		* 40		40.0				
,		_	30.7		14.1				
Green Ext IIme (p_c), s 0.1 0.0	0.3	0.0	5.5		0.7				
Intersection Summary									
HCM 2010 Ctrl Delay 71.4	71.4								
HCM 2010 LOS	Ш								
Notes									

N:2772/Analysislintersections/Synchrol11. Ex +PAL2+ C AM.syn

Synchro 10 Report Page 30

Maintenant		1	†	<i>></i>	\	ļ	4	•	←	4	۶	→	*
10 10 11 12 14 14 15 15 14 15 14 15 14 15 14 14	Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
66 10 91 10 10 422 1445 10 20 1383 10 60 10 91 10 10 422 1445 10 20 1383 10 10 0 0 0 0 0 0 0	Lane Configurations	F	4	¥L.		4		K.	ŧ	*	r	444	
60 10 91 10 10 422 1445 10 20 1383 100 0 0 0 0 0 0 0 0	Traffic Volume (veh/h)	09	10	91	10	10	10	422	1445	10	20	1383	260
100	Future Volume (veh/h)	09	10	91	10	10	10	422	1445	10	20	1383	260
100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	7	4	14	m I	∞ (18	2	2	12	-	9	16
100	Initial O (Ob), veh	0 5	0	0	0 0	0	0	0 0	0	0	0 6	0	0
1.00	Ped-Bike Adj(A_pb1)	1.00	7	0.93	1.00	6	0.92	1.00	7	0.98	1.00	5	0.98
1845 1845	Parking Bus, Adj	00.1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	00.1	1000
75 6 6 7 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Adj Sat Flow, ven/h/ln	1845	1845	130	1900	1845	1900	1845	1845	1845	1845	1845	1900
h, % 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Adj No et less	40	0	071	2 0	2 -	2 0	440	cncı	2 -	17	1441	1/7
h,% a 3,0 to 20,0 to 2	Adj No. ol Laries	- 2	> 2	7 700	0 2	- 2	> 2	7 20	7 20	- 2	- 2	2 5	2
165 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.70	0.70
165	Percent Heavy Ven, %	· ·	20	2			20	2	20			20	3
1757 0.099 0.009 0.007 0.017 0.017 0.018 0.043 1.045	Cap, veh/h	165	0	274	33	33	38	273	1094	481	674	2615	491
1757 0 2929 553 553 3408 3505 1543 1757 4245 1757 0 1445 1659 0 0 0 1704 1752 1543 1757 1759 1757 1759 1757 175	Arrive On Green	0.09	0.00	0.09	0.07	0.07	0.07	0.08	0.31	0.31	0.38	0.62	0.62
1757 120	Sat Flow, veh/h	1757	0	2929	553	553	553	3408	3505	1543	1757	4245	797
1757 0 1465 1669 0 1704 1752 1543 1757 1679 1869	Grp Volume(v), veh/h	45	0	120	30	0	0	440	1505	10	21	1139	573
36 0.0 5.8 2.6 0.0 0.0 12.0 46.8 0.7 1.1 29.6 1.00 1.00 2.3 1.00 0.33 1.00 1.00 1.00 1.00 1.00 1.	Grp Sat Flow(s),veh/h/ln	1757	0	1465	1659	0	0	1704	1752	1543	1757	1679	1685
3.6 0.0 5.8 2.6 0.0 0.0 12.0 46.8 0.7 1.1 29.6 1.00 1.00 0.33 1.00 1.20 46.8 0.7 1.1 29.6 1.00 1.00 1.00 0.33 1.00 1.00 1.00 1.00	Q Serve(g_s), s	3.6	0.0	2.8	5.6	0.0	0.0	12.0	46.8	0.7	Ξ:	29.6	29.7
1,00	Cycle Q Clear(g_c), s	3.6	0.0	5.8	5.6	0.0	0.0	12.0	46.8	0.7		29.6	29.7
165 0 274 115 0 0 273 1094 481 674 2066 027 000 044 4026 000 000 161 138 002 003 055 445 0 742 432 0 0 273 1094 481 674 2068 1100 100 100 100 100 100 100 100 100 1	Prop In Lane	1.00		1.00	0.33		0.33	1.00		1.00	1.00		0.47
0.27 0.00 0.44 0.26 0.00 0.00 1.61 1.38 0.02 0.03 0.55 445 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Grp Cap(c), veh/h	165	0	274	115	0	0	273	1094	481	674	2068	1038
145	V/C Ratio(X)	0.27	0.00	0.44	0.26	0.00	0.00	1.61	1.38	0.02	0.03	0.55	0.55
1,00	Avail Cap(c_a), veh/h	445	0	742	443	0	0	273	1094	481	674	2068	1038
1,00 0.00 1,00 1,00 0.00 0.00 1,100 1,00 1,	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
h 632 0.0 642 662 0.0 0.0 690 516 357 288 167 167 167 167 167 167 167 167 167 167	Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
09 0.0 1.1 1.2 0.0 0.0 22.6 175.2 0.1 0.0 1.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	63.2	0.0	64.2	66.2	0.0	0.0	0.69	21.6	35.7	28.8	16.7	16.8
hylin 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Incr Delay (d2), s/veh	6:0	0.0	[-	1.2	0.0	0:0	292.6	175.2	0.1	0.0	-	2.1
hill 18 0.0 2.4 1.2 0.0 0.0 16.7 492 0.3 0.5 13.9 (4.1 0.0 65.3 67.4 0.0 0.0 361.6 226.8 35.8 28.8 17.8 (5.0 0.0 65.3 67.4 0.0 0.0 361.6 226.8 35.8 28.8 17.8 (5.0 0.0 0.0 6.3 6.7 4 5 6 8 (7.2 4.2 5.2 6.1 1.2 2 4 5 6 8 (7.2 4.2 5.2 6.1 1.3 1.3 1.4 (7.2 4.2 5.2 6.1 1.3 1.3 1.4 (7.2 4.2 5.2 6.1 1.3 1.3 1.4 (7.2 4.2 5.2 6.1 1.3 1.3 1.4 (7.2 4.2 5.3 1.4 (7.2 4.2 5.2 6.1 1.3 1.4 (7.2 4.2 5.3 1.4 (7.2 4.2 5.3 1.4 (7.2 4.2 5.3 1.4 (7.2 4.2 5.3 1.4 (7.2 4.2 5.3 1.4 (7.2 4.2 5.3 1.4 (7.2 4.2 5.3 1.4 (7.2 4.2 5.3 1.4 (7.2 4.2 5.3 1.4 (7.2 4.2 5.3 1.4 (7.2 4.2 5.3 1.4 (7.2 4.3 1.4 (Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Color Colo	%ile BackOfQ(50%),veh/ln	. .	0.0	2.4	1.2	0.0	0.0	16.7	49.2	0.3	0.5	13.9	14.3
165 30 1955 50 1955 50 1955 50 1955 50 50 1955 50 1955 50 1955 50 1955 50 1955 50 10 10 10 10 10 10	LnGrp Delay(d),s/veh	64.1	0.0	65.3	67.4	0.0	0.0	361.6	226.8	35.8	28.8	8.7	18.9
165 30 1955 195	LnGrp LOS	ш	1	ш	ш			-	-		اد	20 1	2
65.0 67.4 256.1 E E F F F F F F F F F F F F F F F F F F	Approach Vol, veh/h		165			30			1955			1733	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 3 4 5 6 7 1 3 4 5 6 7 1 4 5 6 7	Approach Delay, s/veh		65.0			67.4			256.1			18.3	
1 2 3 4 5 6 7 (C+V+Rc), s 63 6 52 8 19.1 180 984 ((V+Rc), s 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Approach LOS		ш			ш			_			9	
G-Y-Rc), s 63,6 52,8 19,1 180 98,4 1 (Y-Rc), s 6.0 6,0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.	Timer	1	2	3	4	5	9	7	8				
63.6 52.8 19.1 18.0 98.4 6.0 6.0 6.0 6.0 4.0 46.8 *3.8 12.0 38.8 3.1 48.8 7.8 14.0 31.7 0.0 0.0 0.6 0.0 5.5 140.4	Assigned Phs	,	2		4	2	9		8				
6.0 6.0 *5 6.0 6.0 4.0 46.8 *38 12.0 38.8 3.1 48.8 7.8 14.0 31.7 0.0 0.0 0.6 0.0 5.5 140.4	Phs Duration (G+Y+Rc), s	63.6	52.8		19.1	18.0	98.4		14.6				
4.0 46.8 *38 12.0 38.8 3.1 48.8 7.8 14.0 31.7 0.0 0.0 0.6 0.0 5.5 140.4	Change Period (Y+Rc), s	0.9	0.9		* 5	0.9	0.9		4.2				
3.1 48.8 7.8 14.0 31.7 0.0 0.0 0.6 0.0 5.5 140.4	Max Green Setting (Gmax), s	4.0	46.8		* 38	12.0	38.8		40.0				
0.0 0.0 0.6 0.0 5.5 140.4 F	Max Q Clear Time (g_c+I1), s	3.1	48.8		7.8	14.0	31.7		4.6				
	Green Ext Time (p_c), s	0.0	0.0		9.0	0.0	5.5		0.1				
	Intersection Summary												
	HCM 2010 Ctrl Delay			140.4									
Antac	HCM 2010 LOS			ш									
	Notes												

N\2772\Analysis\Intersections\Synchro\11. Ex +PAL2+ C AM syn

HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL2) AM 19: El Camino Real & Poinsettia Ln.

Comparison Particle Particl		30 30	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
10 10 10 10 10 10 10 10		~ 3 30 7	₩₩		1	*		1	444	×	,	***	
30		2 3 30	0			-		Ē	444	_	-	441	
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68 268 121 460 411 355 85 1839 568 815 3017 602 0.02 0.12 0.13 0.23 0.23 0.23 0.23 0.24 0.59 3408 2303 1039 3408 1752 1515 3408 65036 1525 3408 5102 617 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.0	Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	co
002 0.12 0.13 0.13 0.23 0.02 0.37 0.37 0.37 0.39 0.39 0.39 0.39 0.39 0.39 0.39 0.39		89	268	121	460	411	355	82	1839	268	815	3017	49
348 233 1039 3408 1752 1515 3408 5636 1555 3408 5102 33 16 17 41 11 118 33 1463 289 122 888 114 12 14 172 114 178 07 153 114 390 21.7 4.2 22.0 110 1.00 1.00 1.00 1.00 1.00 1.00 1.		707	0.12	0.12	0.13	0.23	0.23	0.05	0.37	0.37	0.24	0.59	0.59
Min 1704 1752 1589 1704 1752 1515 1704 1679 1555 1704 1679 1704 1752 1518 1704 1679 1555 1704 1679 1704 1705 1705 1705 1705 1705 1705 1705 1705		408	2303	1039	3408	1752	1515	3408	5036	1555	3408	5102	83
1704 7752 1589 7704 7752 1515 7704 1679 1555 7704 1679 1570 1679 1570 1679 1570 1679 1570 1679 1570 1679 1679 1679 1679 1679 1679 1670 1700		33	16	17	411	1	178	33	1463	289	122	888	483
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14 12 14 178 07 153 14 390 21.7 42 220 100		1.4	1.2	1.4	17.8	0.7	15.3	1.4	39.0	21.7	4.2	22.0	22.0
1,00 0.665 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0		1.4	1.2	1.4	17.8	0.7	15.3	1.4	39.0	21.7	4.2	22.0	22.0
68 204 185 460 411 355 85 1839 568 815 1985 0.49 0.08 0.09 0.08 0.03 0.05 0.39 0.80 0.55 0.45 0.49 0.08 0.09 0.03 0.50 0.39 0.80 0.55 0.15 0.45 0.45 0.10 0.100 1.00 1.00 1.00 1.00 1.00 1.		8.		0.65	1.00		1.00	1.00		1.00	1.00		0.05
0.49 0.08 0.09 0.89 0.03 0.50 0.39 0.80 0.51 0.15 0.45 0.45 0.08 0.008 0.008 0.03 0.08 0.03 0.08 0.051 0.15 0.45 0.100 1.00 1.00 1.00 1.00 1.00 1.00 1.	p(c), veh/h	89	204	182	460	411	355	82	1839	268	812	1985	1081
100 100 100 100 100 100 100 100 100 100		.49	0.08	0.00	0.89	0.03	0.50	0.39	0.80	0.51	0.15	0.45	0.45
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	•	5 8	420	413	200	432	3/4	4 6	1917	297	812	1,985	1081
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0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		2.0	1.40	23.7	12.8	7.44	0.44	0.27	9.7	2.7	0.04	0.71	1.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		0.0	- 6	- 6	0.2	0.0	÷ 6	- 6	2.0	2.5	0.0		
747 948 948 74 94 952 841 653 948 750 1788 1788 1493 670 682 682 756 75 88 145 962 682 1459 670 682 756 75 88 1459 670 682 756 75 88 1459 670 682 756 75 88 1459 670 682 75 88 1459 670 680 75 88 1459 75 88 1459 670 680 75 88 1459 75		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11 4
1	Ì	7.7	0.0	0.0	7.7.	0.4	0.0	7.07	0.81	20.7	7.0	17.0	4.11
66 600 1785 670 682 45.9 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 41.9 608 25.2 22.1 72 40.2 60 .42 .5 60 .6 .5 .47 .42 60 .42 .5 60 .6 .5 .47 .42 60 .42 .5 60 .6 .5 .47 .42 60 .42 .5 60 .6 .5 .47 .42 60 .78 .5 61.9 .4 .37 1.5 62 410 198 34 34 240 34 17.3 2.5 62 410 198 34 34 240 34 17.3 2.6 7 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8	y(a),s/ven	7.7	27.6	59.3	0.0/	44.2	20.7	1.8/	40.3	40.4	42.1	Σ	18.4
666 600 1785 670 682 459 F E E D 1 2 3 4 5 6 7 8 41,9 60 55,2 22,1 7,9 947 72 40,2 60 6 5 4,7 742 60 42 5 60 6 5 739 5 61,9 4 37 3,5 62 410 198 34 34 240 34 173 0,1 138 0,4 0,1 0,0 7,8 0,0 0,7 39,9	LnGrp LUS	ш	ш :	4	4			ال				ם !	ام
67.0 68.2 49.9 68.1 49.9 6.1 41.9 60.8 25.2 22.1 79 94.7 72 40.2 6.0 .6 .5 .4.7 4.2 6.0 .4.2 .5 6.1 8 .5 6.2 1.3 8 .5 6.1 8 .5 6.2 1.3 8 .5 6.1 9 .4 .37 8 .5 6.2 41.0 19.8 3.4 3.4 24.0 3.4 17.3 9.9 9.9 9.9 9.9 9.9 9.9 9.9 9.9 9.9 9	Approach Vol, veh/h		99			009			1785			1493	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 41,9 608 252 221 79 947 72 4 60 .6 .5 .4,7 .4,2 60 .4,2),s 62 41,0 19,8 3,4 3,4 24,0 3,4 1 0,1 13,8 0,4 0,1 0,0 7,8 0,0 D	Approach Delay, s/veh		0.79			7.89			45.9			20.2	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 41.9 608 25.2 22.1 7.9 94.7 2 4 6.0 6 5 4.7 4.2 60 4.4.2 1.5 9.8 57 25 39 5 61.9 4 7 3.5 6.2 41.0 19.8 3.4 3.4 24.0 3.4 1 39.9 5 61.9 7.8 0.0	Approach LOS		ш			ш			Ω			ပ	
1	Timer	_	2	3	4	2	9	7	8				
41.9 608 25.2 22.1 7.9 94.7 72 4 6.0 6.0 6.0 6.0 7.8 4.7 4.2 6.0 4.2 7.2 8.3 9.5 7.2 8.3 9.5 8.2 8.3 1.3 8.3 1	Assigned Phs	_	2	3	4	2	9	7	8				
), s 6.0 *6 *5 *47 *42 60 *42 max), s 98 *57 *25 *39 *5 619 *4 * c+11), s 6.2 41.0 19.8 3.4 3.4 24.0 3.4 1 , s 0.1 13.8 0.4 0.1 0.0 7.8 0.0 D		1.9	8.09	25.2	22.1	7.9	94.7	7.2	40.2				
max), s 98 '57 '25 '39 '5 61.9 '4 c+l1), s 6.2 41.0 19.8 3.4 3.4 24.0 3.4 , s 0.1 13.8 0.4 0.1 0.0 7.8 0.0 39.9 D		0.9	9 *	* 5	* 4.7	* 4.2	0.9	* 4.2	* 5				
C+II), s 6.2 41.0 19.8 3.4 3.4 24.0 3.4 ,s 0.1 13.8 0.4 0.1 0.0 7.8 0.0 739.9 D		8.6	* 57	* 25	* 39	* 5	61.9	* 4	* 37				
, s 0.1 13.8 0.4 0.1 0.0 7.8 0.0 7.8 0.0 39.9 D		6.2	41.0	19.8	3.4	3.4	24.0	3.4	17.3				
		0.1	13.8	0.4	0.1	0.0	7.8	0.0	0.7				
	Intersection Summary												
	HCM 2010 Ctrl Delay			39.9									
	HCM 2010 LOS			٥									

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HCM 2010 Signalized Intersection Summary 1: Faraday Ave. & Canon Rd.

Ex + Cumulative + NT Project (PAL2) PM 08/24/2017

Ex + Cumulative + NT Project (PAL2) PM	08/24/2017
HCM 2010 Signalized Intersection Summary	2: College Blvd. & El Camino Real

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1	EBL	je.	100	90 '	o 0	1.00	1.00	1845	105	-	0.95	m :	50	1757	105	1757	4.0	4.0	1.00	0.0	74	1.00	1.00	63.0	484.2	0.0	9.2	547.2	-				_	-	42.9	0.9	2.0	3.7	0.0					
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (veh/h)	Number Initial O (Ob), veh	Ped-Bike Adj(A_pbT)	Parking Bus, Adj	Adj Sat Flow, veh/h/ln	Adj Flow Rate, veh/h	Adj No. of Lanes	Peak Hour Factor	Percent Heavy Veh, %	Arris On Cass	Sat Flow, veh/h	Grp Volume(v), veh/h	Grp Sat Flow(s),veh/h/ln	Q Serve(g_s), s	Cycle Q Clear(g_c), s	Prop In Lane	Lane GIP Cap(c), Verini	V/C rdllQ(A) Avail Can(c a) veh/h	HCM Platoon Ratio	Upstream Filter(I)	Uniform Delay (d), s/veh	Incr Delay (d2), s/veh	Initial Q Delay(d3),s/veh	%ile BackOfQ(50%),veh/ln	LnGrp Delay(d),s/veh	LnGrp LOS	Approach Vol. ven/h	Approach Delay, Swell Approach LOS		Timer	Assigned Phs	Phs Duration (G+Y+Rc), s	Change Period (Y+Rc), s	Max Green Setting (Gmax), s	Max Q Clear Time (g_c+l1), s	Green Ext Time (p_c), s	Intersection Summary	HCM 2010 Ctrl Delay	HCM 2010 LOS	Notes	
•	SBR		10	10	14	0.91	1.00	1900	11	0	0.93	m (20	551	0	0	0.0	0.0	0.33		0.00	1.00	0.00	0.0	0.0	0.0	0.0	0.0																
→	SBT	4	10	9 .	4 0		1.00	1845	=	-	0.93	_د د	02	551	0	0	0.0	0.0	c	0 0	00.0	1.00	0.00	0.0	0.0	0.0	0.0	0.0		33	†. C	٥												
٠	BE		10	10	- 0	00:	1.00		=	0		_د د		551		552	2.0	2.0	0.33				1.00	47.4	3.0	0.0	6.0	50.4																
	S		06	06	<u> </u>	1.00 1		16000	0			m		00.0			0.0			000				4		0.0	ľ																	
	r NBR							-			0																			st C	<u></u>		3	æ	3	0			_					
•	NB.	3	10	Ì			1.00				0.93			1845		_	0.0				00.0		ľ	0.0		0.0				754	. 60				30.3	2.0	33.0	22.4	1.7					
•	NBL	*	610	610	m 0	1.00	1.00	1845	754	2	0.93	e 6	989	3514	754	1757	20.4	20.4	1.00	889	1160	1.00	1.00	35.5	4.4	0.0	10.4	39.9					7											
4	WBR		10	9 ;	9 0	0.96	1.00	1900	=	0	0.93	m 6	200	5 5	237	1826	8.2	8.2	0.05	079	825	1.00	1.00	17.3	0.9	0.0	4.3	100					9	9	51.2	0.9	32.0	10.2	3.9					
ļ	WBT	₹	420	420	9 0		1.00	1845	452	2	0.93	2 2	0/01	3493	226	1752	8.1	8.1	702	76/	797	1.00	1.00	17.3	6.0	0.0	4.1	18.2	20 1	482	20.02 R	2	2	2	6.6	0.9	7.0	2.0	0.0					
\	WBL	r	70	2	- 0	1.00	1.00	1845	77	_	0.93	m ا	2 6	1757	22	1757	1.2	1.2	1.00	2,5	20.2	1.00	1.00	46.7	11.3	0.0	8.0	57.9	ш				4	4	9.8	2.0	0.9	4.0	0.0					
<i>></i>	EBR		221	221	2 0	0.98	1.00	006	238	0	0.93	c ا	7.42	658	619	1710	31.1	31.1	0.38	- / /	0.00	1.00	1.00	23.6	9.8	0.0	16.5	32.3	اد				3								32.8	ပ		
†	EBT	4	940	940	7 0		1.00		1011	2	0.93	رد ب	1200				30.8	8.0	9	26	790	00.	1.00	23.5	8.2	0.0	16.7	31.8	اد	1303	0.0)	2	2	51.1	0.9	2.0	33.1	1.5					
<u>'</u>	EBL	·	20.		o 0				54 1		0.93 0			1757		ľ			1.00				1.00			0.0			ا اد	- 0	7		_					3.2 3	0.0					
7	ш					-	Ψ.	18			0			7.		17	(.,	(-,	—		. c	· -	-	4			ľ	27							_		S		_					
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (veh/h)	Number Initial O (Ob), veh	Ped-Bike Adj(A_pbT)	Parking Bus, Adj	Adj Sat Flow, veh/h/ln	Adj Flow Rate, veh/h	Adj No. of Lanes	Peak Hour Factor	Percent Heavy Veh, %	Arrivo On Croon	Sat Flow, veh/h	Gro Volume(v), veh/h	Grp Sat Flow(s),veh/h/ln	Q Serve(g_s), s	Cycle Q Clear(g_c), s	Prop In Lane	Lane Gip Cap(C), verin	V/C Katio(A) Avail Cap(c, a), veh/h	HCM Platoon Ratio	Upstream Filter(I)	Uniform Delay (d), s/veh	Incr Delay (d2), s/veh	Initial Q Delay(d3), sweh	%ile BackOfQ(50%),veh/ln	LnGrp Delay(d),s/veh	LnGrp LOS	Approach Vol. ven/h	Approach LOS		Timer	Assigned Phs	Phs Duration (G+Y+Rc), s	Change Period (Y+Rc), s	Max Green Setting (Gmax),	Max O Clear Time (g_c+I1), s	Green Ext Time (p_c), s	Intersection Summary	HCM 2010 Ctrl Delay	HCM 2010 LOS	Notes	

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lovement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	<i>y-</i>	₩	*-	<u>, </u>	₩₩	*-	£	₩.		E	4	
raffic Volume (veh/h)	100	1054	130	30	2054	70	280	80	30	20	30	06
uture Volume (veh/h)	9 '	1054	130	30	2054	02 ;	280	80	30	20	∞.	8 ;
umber	۰ ک	7	7.5	c	9 0	91	m (∞ α	<u> </u>	- 0	4 (4
inial Q (Qb), ven	0 0	0	0 6	0 0	0	0	0 6	0	0 10	0 6	0	0 0
eu-bike Auj(A_pur)	8.6	1	00.1	00.1	100	1.00	00.1	00	1.00	9.1	8	1 00
di Sat Flow veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1900
di Flow Rate, veh/h	105	1109	0	32	2162	74	611	84	32	53	32	92
dj No. of Lanes	-	33	-	-	33	-	2	2	0	2	2	0
eak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
ercent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
ap, veh/h	24	1295	403	498	2607	807	446	313	112	481	259	221
rrive On Green	0.03	0.26	0.00	0.28	0.52	0.52	0.13	0.13	0.13	0.14	0.15	0.15
at Flow, veh/h	1757	5036	1568	1757	5036	1559	3408	2493	886	3408	1752	1495
irp Volume(v), veh/h	105	1109	0	32	2162	74	611	22	26	53	32	95
irp Sat Flow(s),veh/h/ln	1757	1679	1568	1757	1679	1559	1704	1752	1630	1704	1752	1495
Serve(g_s), s	4.0	27.3	0.0	1.7	47.2	1.6	17.0	3.8	4.2	1.8	2.1	7.5
ycle Q Clear(g_c), s	4.0	27.3	0.0	1.7	47.2	1.6	17.0	3.8	4.2	1.8	2.1	7.5
rop In Lane	1.00		1.00	1.00		1.00	1.00		0.55	1.00		1.00
ane Grp Cap(c), veh/h	24	1295	403	498	2607	807	446	220	202	481	259	221
/C Ratio(X)	1.94	98.0	0.00	90:0	0.83	60.0	1.37	0.26	0.29	0.11	0.12	0.43
.vail Cap(c_a), veh/h	24	1763	549	498	2607	807	446	209	264	481	539	460
ICM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
pstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
eh	63.0	46.0	0.0	34.0	26.5	4.1	299	51.4	51.6	48.7	48.1	50.4
	484.2	7.4	0.0	0.0	3.2	0.2	180.7	0.2	0.3	0.0	0.1	0.5
iitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
eh/ln	9.2	13.5	0.0	8.0	22.6	0.7	19.2	1.9	1.9	8.0	1.0	3.1
y(d),s/veh	547.2	53.4	0.0	34.0	29.7	4.3	237.2	51.6	21.8	48.7	48.2	50.9
nGrp LOS	니			ပ	O	⋖	ᅵ					۵
pproach Vol, veh/h		1214			2268			727			180	
pproach Delay, s/veh		96.1			28.9			207.6			49.8	
pproach LOS		_			د			_			D	
imer	1	2	3	4	2	9	7	8				
ssigned Phs	_	2	3	4	2	9	7	8				
hs Duration (G+Y+Rc), s	42.9	39.4	22.0	25.7	0.6	73.3	24.9	22.8				
hange Period (Y+Rc), s	0.9	9 *	2.0	6.5	2.0	0.9	6.5	* 6.5				
	2.0	* 46	17.0	40.0	4.0	46.5	12.0	* 45				
lax Q Clear Time (g_c+l1), s	3.7	29.3	19.0	9.5	0.9	49.2	3.8	6.2				
ireen Ext Time (p_c), s	0.0	4.2	0.0	0.4	0.0	0.0	0.0	0.4				
itersection Summary												
ICM 2010 Ctrl Delay			78.0									
ICM 2010 LOS			ш									
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HCM 2010 Signalized Intersection Summary 3: College Blvd. & Faraday Ave.

Ex + Cumulative + NT Project (PAL2) PM 08/24/2017

Ex + Cumulative + NT Project (PAL2) PM 08/24/2017 HCM 2010 Signalized Intersection Summary 4: El Camino Real & Faraday Ave.

Movement EBI EBI EBI WBI		4	†	<u> </u>	>	ļ	1	•	—	4	۶	→	•
1.5 1.5	Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
6 490 241 260 460 170 151 7 4 14 3 8 18 18 7 4 14 3 8 8 18 7 6 4 0 0 241 260 460 170 151 7 0 0 0 0 0 0 0 0 0 1.00 1.00 1.00 1.00 1	Lane Configurations	r	₩.		r	₩		ř.	₩		F	₩.	
60 490 241 260 460 170 151 7 4 14 3 8 18 5 0 0 0 0 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.01 1.02 1.00 1.00 1.00 1.02 1.03 1.05 1.05 1.03 1.04 1.05 1.00 1.04 1.05 1.00 1.00 1.00 1.05 1.05 1.05 1.00 1.05 1.05 1.05 1.05 1.06 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.08 1.08 1.09 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.01 1.01 1.01 1.02 1.03 1.03 1.03 1.04 1.05 1.04 1.05 1.00 1.05 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	Traffic Volume (veh/h)	99	490	241	260	460	170	151	330	120	20	210	09
1,00	Future Volume (veh/h)	09	490	241	260	460	170	151	330	120	20	210	09
0	Number	7	4	14	3	∞	18	2	2	12		9	16
1,00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
1.00	Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		96.0
1845 1845	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
75 612 301 325 575 212 189 75 612 301 325 575 212 189 3<	Adj Sat Flow, veh/h/In	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
1	Adj Flow Rate, veh/h	72	612	301	325	575	212	189	412	120	22	262	75
0.00 0.80 0.80 0.80 0.80 0.80 0.80 0.80	Adj No. of Lanes	-	2	0	-	2	0	2	2	0	2	2	0
3 3	Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
96 750 369 341 1175 422 220 1757 2256 1109 1757 2493 917 3408 175 2256 1109 1757 2493 917 3408 175 2493 917 3408 175 2493 917 255 1109 1757 2493 917 3408 175 2493 917 249 249 175 2493 917 255 249 249 249 249 249 249 249 249 249 249	Percent Heavy Veh, %	3	3	3	က	co	3	က	co	co	3	3	က
1757 25.6 10.9 1757 2493 917 3406 7157 2493 917 3406 7157 2493 917 3406 7157 7152 1618 7175 7152 1618 7175 7152 1618 7175 7152 1618 7176 7152 715	Cap, veh/h	96	750	369	341	1175	432	220	266	203	71	488	136
1757 2256 1109 1757 2493 917 3408 75 1757 1752 161 139 140 48 355 404 189 1704 717 1757 1757 1752 168 1704 48 37 21.9 16.1 13.9 14.0 48 1704 48 <	Arrive On Green	0.02	0.33	0.33	0.19	0.47	0.47	90.0	0.23	0.23	0.05	0.18	0.18
75 475 438 325 404 383 189 175 175 175 175 175 175 175 175 3.7 219 219 16.1 139 140 48 1.00 2.06 1.00 0.55 1.00 0.8 28 28 341 825 1.00 0.8 28 28 341 825 220 1.00 1.00 1.00 1.00 1.00 1.01 1.00 1.00 1.00 1.00 1.00 1.02 1.00 1.00 1.00 1.00 1.00 4.1.1 27.10 27.10 35.1 16.0 16.0 40.8 12.5 6.1 6.6 36.6 0.4 0.5 26.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Sat Flow, veh/h	1757	2256	1109	1757	2493	917	3408	2502	668	3408	2681	748
1757 1752 1612 1757 1752 1658 1704 3.7 219 219 1611 139 140 48 1.00	Grp Volume(v), veh/h	75	475	438	325	404	383	189	287	275	25	169	168
3.7 21.9 21.9 16.1 13.9 14.0 4.8 1.00 0.69 10.1 0.55 14.0 4.8 1.00 0.69 10.0 0.55 1.0 4.8 1.00 0.78 0.82 0.95 0.49 0.86 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Grp Sat Flow(s),veh/h/ln	1757	1752	1612	1757	1752	1658	1704	1752	1648	1704	1752	1676
3.7 21.9 21.9 16.1 13.9 14.0 4.8 1.00 6.82 5.8 3.4 1.00 6.85 1.100 6.8 1.00 6.8 1.00 6.8 1.00 6.8 1.00 6.8 1.00 6.8 1.00 6.8 1.00 6.8 1.00 6.8 1.00 6.8 1.00 6.8 1.00 6.8 1.00 6.9 1.00 6.00 6.00 6.00 6.00 6.00 6.00 6.00	2 Serve(g_s), s	3.7	21.9	21.9	16.1	13.9	14.0	4.8	13.4	13.7	9.0	7.7	8.0
100 0.69 100 0.65 100 0.55 100 0.78 0.82 536 341 825 781 220 0.78 0.82 0.95 0.49 0.49 0.86 189 716 658 341 867 820 220 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Cycle Q Clear(g_c), s	3.7	21.9	21.9	16.1	13.9	14.0	4.8	13.4	13.7	9.0	7.7	8.0
96 562 558 341 826 781 220 108 082 082 095 049 049 086 1189 716 658 341 87 820 220 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.01 1.01	Prop In Lane	1.00		69.0	1.00		0.55	1.00		0.55	1.00		0.45
0.78 0.82 0.82 0.95 0.49 0.49 0.86 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Grp Cap(c), veh/h	96	582	536	341	826	781	220	396	373	71	319	302
189 716 658 341 867 820 220 1.00 1.00 1.00 1.00 1.00 1.00 1.00 41.1 27.0 27.0 35.1 16.0 16.0 408 12.5 6.1 6.6 36.6 0.4 0.5 26.9 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.1 11.5 10.7 11.3 68 6.5 3.1 53.7 33.0 33.5 71.8 16.5 16.5 67.8 D C C E E B B E E 988 1112 C C 1 2 3 4 5 6 7 6 7 6 3 25.9 21.6 34.3 10.2 22.1 9.3 4.5 6.0 4.5 5.0 4.5 6.0 4.5 5 2.6 15.7 18.1 23.9 6.8 10.0 5.7 0.0 2.8 0.0 4.5 0.0 1.6 0.0 D D	//C Ratio(X)	0.78	0.82	0.82	0.95	0.49	0.49	98.0	0.72	0.74	0.35	0.53	0.55
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	4vail Cap(c_a), veh/h	189	716	929	341	867	820	220	654	615	155	620	593
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
41.1 27.0 35.1 16.0 16.0 40.8 1.0 1.0 16.0 16.0 16.0 10.0 10.0 10.0 1	Upstream Filter(I)	1.00	1.00	1:00	1:00	1.00	1.00	1.00	1:00	1.00	1.00	1.00	1.00
125 6.1 6.6 36.6 0.4 0.5 26.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.1 11.5 10.7 11.3 6.8 6.5 3.1 53.7 33.0 33.5 71.8 16.5 16.5 67.8 D C C E B B E 988 1112 7.6 2.7 1.8 1.6 2.2 1.8 6.7 1 2 3 4 5 6 7 6.3 25.9 21.1 3.4 5 6 7 6.3 25.9 17.1 36.0 5.7 31.2 9.5 5 26 15.7 18.1 23.9 6.8 10.0 5.7 0.0 2.8 0.0 4.5 0.0 1.6 0.0 D	Uniform Delay (d), s/veh	41.1	27.0	27.0	35.1	16.0	16.0	40.8	31.6	31.7	45.6	32.6	32.8
00 00 00 00 00 00 00 00 00 00 00 00 00	Incr Delay (d2), s/veh	12.5	6.1	9.9	36.6	0.4	0.5	26.9	2.5	5.9	3.0	1.4	1.5
2.1 11.5 10.7 11.3 6.8 6.5 3.1 5.3.7 33.0 33.5 71.8 16.5 16.5 6.78 0	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53.7 33.0 33.5 71.8 16.5 16.5 67.8 0	%ile BackOfQ(50%),veh/ln	2.1	11.5	10.7	11.3	8.9	6.5	3.1	6.7	6.5	0.3	3.8	3.9
D C C E B B E E 988 1112 348 348 326 C C C C C C C C C C C C C C C C C C C	LnGrp Delay(d),s/veh	53.7	33.0	33.5	71.8	16.5	16.5	8.79	34.1	34.6	45.6	34.0	34.3
988 1112 34.6 32.6 C C C C C C C C C C C C C C C C C C C	LnGrp LOS		ပ	ပ	ш	В	8	ш	ပ	ပ		ပ	ပ
348 32.6 C C C C C C C C C C C C C C C C C C C	Approach Vol, veh/h		886			1112			751			362	
C C C C C C C C C C C C C C C C C C C	Approach Delay, s/veh		34.8			32.6			42.7			34.9	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 6.3 25.9 21.9 3.4 15 6 7 6.3 25.9 17.1 36.0 5.7 31.2 9.5 8 4.0 32.9 17.1 36.0 5.7 312 9.5 8 26 15.7 18.1 23.9 6.8 10.0 5.7 0.0 2.8 0.0 4.5 0.0 1.6 0.0 D	Approach LOS		O			ပ			D			S	
1 2 3 4 5 6 7 7 6 4 5 6 7 7 6 5 6 7 7 6 5 6 7 7 6 5 6 7 7 6 7 7 6 7 7 6 7 7 7 7	Timer	-	2	3	4	2	9	7	∞				
63 25.9 21.6 34.3 10.2 22.1 9.3 5.4 5.6 0.4 5.5 6.0 4.5 6.0 4.5 5.0 4.5 6.0 4.5 5.0 0.2 5.2 5.2 5.2 5.2 5.2 5.2 5.2 5.2 5.2 5	Assigned Phs	-	2	æ	4	2	9	7	∞				
4.5 6.0 4.5 5.0 4.5 6.0 4.5 5.4 4.5 6.0 4.5 5.4 4.0 32.9 17.1 36.0 5.7 31.2 9.5 6.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5	Phs Duration (G+Y+Rc), s	6.3	25.9	21.6	34.3	10.2	22.1	9.3	46.6				
s 4.0 32.9 17.1 36.0 5.7 31.2 9.5 s 2.6 15.7 18.1 23.9 6.8 10.0 5.7 0.0 2.8 0.0 4.5 0.0 1.6 0.0 35.9 D	Change Period (Y+Rc), s	4.5	0.9	4.5	2.0	4.5	0.9	4.5	2.0				
S 2.0 15.7 18.1 23.9 68 10.0 5.7 0.0 28 0.0 4.5 0.0 1.6 0.0 D.D.D.D.D.D.D.D.D.D.D.D.D.D.D.D.D.D	Max Green Setting (Gmax), s	4.0	32.9	17.1	36.0	5.7	31.2	9.5	43.6				
35.9 D	Max Q Clear Time (g_c+II), s Green Ext Time (n_c)_s	0.0	7.8	- 0 0 0	4 5	0.0	1 6	0.0	5.1				
	5 15 - N - IIII	2	9	9	?	2	2	2	5				
	Intersection Summary												
	HCM 2010 Ctrl Delay			35.9									
	HCM 2010 LOS			٥									

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Report	Page 5
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Synchro	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	r	*	*	r	‡	¥.	K.	4413		K.	444	¥.
Traffic Volume (veh/h)	250	720	870	211	270	370	190	1454	121	230	994	20
Future Volume (veh/h)	250	720	870	211	270	370	190	1454	121	230	994	20
Number Initial O (Oh) veh	~ 0	4 0	4 0	m C	∞ ⊂	∞ ⊂	ഹ വ	2 0	12	- -	90	91
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.98	1.00	>	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	569	774	935	227	290	398	204	1563	130	247	1069	22
Adj No. of Lanes		2	-	-	2	-	2	co	0	2	က	_
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	208	1240	220	186	1219	531	829	2049	170	249	1256	386
Arrive On Green	0.12	0.35	0.35	0.11	0.35	0.35	0.24	0.43	0.43	0.07	0.25	0.25
Sat Flow, veh/h	1757	3505	1555	1757	3505	1526	3408	4728	393	3408	5036	1549
Grp Volume(v), veh/h	569	774	935	227	290	398	204	1109	584	247	1069	22
Grp Sat Flow(s),veh/h/ln	1757	1752	1555	1757	1752	1526	1704	1679	1764	1704	1679	1549
Q Serve(g_s), s	15.4	23.8	46.0	13.8	7.6	29.9	6.3	36.4	36.4	9.4	26.3	1.3
Cycle Q Clear(g_c), s	15.4	23.8	46.0	13.8	7.6	29.9	6.3	36.4	36.4	9.4	26.3	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	208	1240	220	186	1219	531	829	1455	765	249	1256	386
V/C Ratio(X)	1.29	0.62	1.70	1.22	0.24	0.75	0.25	97.0	97.0	0.99	0.85	90.0
Avail Cap(c_a), veh/h	208	1240	220	186	1219	531	829	1455	765	249	1519	467
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.55	0.55	0.55	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	34.8	42.0	28.1	30.2	37.4	39.6	31.2	31.2	60.2	46.5	30.1
Incr Delay (d2), s/veh	162.6	0.7	322.6	136.5	0.0	5.3	0.0	2.2	4.0	54.5	7.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.9	11.6	0.69	13.8	3.7	13.4	3.0	17.2	18.5	6.3	13.0	9.0
LnGrp Delay(d),s/veh	219.9	32.6	364.6	194.6	30.2	42.7	39.6	33.3	35.2	114.7	53.8	30.4
LnGrp LOS	ᅵ		니	니	ပ			ပ		니		ပ
Approach Vol, veh/h		1978			915			1897			1338	
Approach Delay, s/veh		216.2			76.4			34.6			64.7	
Approach LOS		ш.			ш			ပ			ш	
Timer	1	2	3	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	13.7	62.4	18.8	51.0	37.6	38.4	19.6	50.2				
Change Period (Y+Rc), s		0.9	* 5	* 5	0.9	9 *	* 4.2	* 52				
Max Green Setting (Gmax), s		41.3	* 14	* 46	11.6	* 39	* 15	* 44				
Max Q Clear Time (g_c+f1), s		38.4	8.61	48.0	8.3	28.3	17.4	31.9				
Green Ext Time (p_c), s	0.0	2.1	0.0	0.0	0.1	4.1	0.0	. 00				
Intersection Summary												
HCM 2010 Ctrl Delay			106.0									
HCM 2010 LOS			ı									
Notes												
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HCM 2010 Signalized Intersection Summary 5: I-5 SB Ramps & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL2) PM 08/24/2017

HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL2) PM 6: I-5 NB Ramps & Palomar Airport Rd.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		441			++	¥C_				1		¥c_
Traffic Volume (veh/h)	0	890	260	0	790	1074	0	0	0	584	0	170
Future Volume (veh/h)	0	890	260	0	790	1074	0	0	0	584	0	170
Number	2	2	12	-	9	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	937	274	0	832	0				615	0	179
Adj No. of Lanes	0	3	0	0	2	_				2	0	_
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	7470	33	0 0	33	2 3				33	0 0	20 3
Arrive On Green	000	0.37	0.37	000	0.37	000				0.24	000	0.24
Sat Flow, veh/h	0	4039	1130	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	812	399	0	832	0				615	0	179
Grp Sat Flow(s),veh/h/ln	0	1679	1645	0	1752	1568				1704	0	1568
Q Serve(g_s), s	0.0	5.5	5.5	0.0	5.3	0.0				4.5	0.0	2.6
Cycle Q Clear(g_c), s	0.0	5.5	5.5	0.0	5.3	0.0				4.5	0.0	2.6
Prop In Lane	0.00		69.0	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1238	607	0	1292	278				832	0	383
V/C Ratio(X)	0.00	99.0	99.0	0.00	0.64	0.00				0.74	00:00	0.47
Avail Cap(c_a), veh/h	0	3714	1820	0	3878	1735				1822	0	838
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.1	1:00	0.00	1:00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	7.1	7.1	0.0	7.1	0.0				9.5	0.0	8.7
Incr Delay (d2), s/veh	0.0	0.2	0.5	0.0	0.2	0.0				0.5	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfO(50%),veh/ln	0.0	2.5	2.5	0.0	2.6	0.0				2.1	0.0	1.2
LnGrp Delay(d),s/veh	0.0	7.3	7.6	0.0	7.3	0.0				9.6	0.0	9.1
Lucrp LUS		∢ ;	∢		∢ .					∢	1	∢
Approach Vol, veh/h		1211			832						794	
Approach Delay, siven		4.4			. J						7.6	
Approach LOS		¥			¥						∢	
Timer	1	2	3	4	2	9	7	8				
Assigned Phs		2		4		9						
Phs Duration (G+Y+Rc), s		15.4		11.7		15.4						
Change Period (Y+Rc), s		5.4		5.1		5.4						
Max Green Setting (Gmax), s		30.0		14.5		30.0						
Max Q Clear Time (g_c+I1), s		7.5		6.5		7.3						
Green Ext Time (p_c), s		-0.8		0.1		7.3						
Intersection Summary												
HCM 2010 Ctrl Delay			8.0									
HCM 2010 LOS			⋖									

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Report	Page 8
10	
Synchro	

Movement EB EB WB WB WB NB NB NB SB SB SB SB S		,	Ť	>	*	,	/	•	_	L	•	+	*
No. 1,	Movement	EBE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
220 1254 0 0 1774 1004 90 0 544 0 5 2 12 1 0 0 0 0 0 6 16 0 0 644 0 1.00 1.00 1.00 1.00 1.00 1.00 0	Lane Configurations	jr.	444			444	K.		₩	R.			
220 1254 0 0 1774 1004 90 0 544 0 0 1.00 0 0 0 0 0 0 0 0 0	Traffic Volume (veh/h)	220	1254	0	0	1774	1004	06	0	544	0	0	0
100	Future Volume (veh/h)	220	1254	0	0	1774	1004	06	0	544	0	0	0
1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	2	2	12	-	9	16	3	00	18			
1,00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
100 100 100 100 100 100 100 100 100 100	Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		96:0	1.00		96:0			
1845 1845 0 0 1845 1845 1940 1845 1845 1845 1846 0 0 1810 1024 0 0 1810 1024 0 0 1810 1024 0 0 0 1810 1024 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
224 1280 0 0 1810 1024 92 0 1 1 3 0 0 98 098 098 098 098 098 098 098 098	Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
1	Adj Flow Rate, veh/h	224	1280	0	0	1810	1024	92	0	222			
0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98	Adj No. of Lanes		m	0	0	m	2	0		2			
3 3 3 3 9 0 0 2 31 1489 351 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
245 3676 0 0 2817 1489 351 0 0 1757 200 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Percent Heavy Veh, %	co	3	0	0	3	3	33	33	co			
1757 5202 0.00 0.37 0.20 0.00 0.00 1775 5202 0.00 0.00 0.37 0.22 662 1757 0.0 1.00 1.00 0.00 0.00 1.00 0.00 0.00	Cap, veh/h	245	3676	0	0	2817	1489	351	0	531			
1757 5202 0 0 5202 2662 1757 0 2 224 1280 0 0 1810 1024 92 0 1757 1679 0 0 1679 1331 1757 0 0 189 13.8 0.0 0.0 44.4 48.6 6.6 0.0 245 3676 0 0 0 2817 1489 351 0 0.91 0.35 0.00 0.00 0.64 0.69 0.26 0.00 280 0.80 0.00 0.00 0.67 1.00 1.00 0.80 0.80 0.00 0.00 0.67 1.00 1.00 0.80 0.80 0.00 0.00 0.67 1.00 1.00 0.80 0.80 0.00 0.00 0.67 1.00 1.00 0.80 0.80 0.00 0.00 0.67 1.00 1.00 0.80 0.80 0.00 0.00 0.07 1.00 1.00 0.80 0.80 0.00 0.00 0.07 1.00 1.00 15.1 0.2 0.0 0.0 0.0 0.0 0.0 0.0 15.1 0.2 0.0 0.0 0.0 0.0 0.0 16.2 0.0 0.0 0.0 0.0 0.0 0.0 17.3 0.0 0.0 0.0 0.0 0.0 0.0 18.4 3 3.2 0.0 19.5 0.0 0.0 0.0 0.0 0.0 19.6 1.81 3.32 0.0 19.7 149 351 1.00 1.00 10.8 0.0 0.0 0.0 0.0 0.0 0.0 10.9 0.0 0.0 0.0 0.0 0.0 0.0 11.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 11.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 11.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 11.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 11.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 11.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 11.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 11.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 11.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 11.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Arrive On Green	0.14	0.73	0.00	0.00	0.37	0.37	0.20	00.0	0.20			
1224 1280	Sat Flow, veh/h	1757	5202	0	0	5202	2662	1757	0	2656			
1757 1679 0 1679 1331 1757 0 1 189 138 0.00 0.0 44.4 486 66 0.00 189 138 0.0 0.0 44.4 486 66 0.00 1.00 0.00 0.00 44.4 486 66 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Grp Volume(v), veh/h	224	1280	0	0	1810	1024	92	0	222			
C), s 18 9 13 8 0.0 0.44 486 66 0.0 C), s 138 138 0.0 0.0 444 486 66 0.0 C), veh'n 245 3676 0 0 2817 1489 351 0 C) 0.91 0.35 0.00 0.06 0.64 0.69 0.26 0.00 C) 0.92 0.35 0.00 0.06 0.67 1.00 1.00 C) 0.80 0.80 0.00 0.06 0.68 1.00 0.00 C) 0.80 0.80 0.00 0.00 0.68 1.00 0.00 C) 0.94 0.00 0.00 0.00 0.00 0.00 C) 0.95 0.94 0.00 0.00 0.00 C) 0.96 0.96 0.96 0.96 C) 0.97 0.97 0.97 0.00 C) 0.98 0.98 0.99 C) 0.98 0.99 0.90 C) 0.90 0.00 0.00 C) 0.90 0.00 0.00 C) 0.90 0.90 C) 0.90 0.9	Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1331	1757	0	1328			
189 138 0.0 0.0 44.4 48.6 6.6 0.0 1.00 0.00 0.00 1.00 1.00 0.00 245 357.6 0.0 0.00 0.64 0.69 0.26 0.00 0.09 0.64 0.69 0.26 0.00 0.00 0.00 0.06 0.06 0.00	Q Serve(g_s), s	18.9	13.8	0.0	0.0	44.4	48.6	9.9	0.0	30.0			
100 100 100 100 100 100 100 101 100 101 100 101 100 10	Cycle Q Clear(g_c), s	18.9	13.8	0.0	0.0	44.4	48.6	9.9	0.0	30.0			
245 3676 0 2817 1489 351 0 091 035 0.00 0.00 0.64 0.69 0.26 0.00 351 3676 0 0.00 0.64 0.69 0.26 0.00 1.00 1.00 1.00 1.00 0.67 0.67 1.00 1.00 0.80 0.80 0.0	Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
091 0.35 0.00 0.064 0.69 0.26 0.00 1.00 1.00 1.00 1.00 0.00 0.64 0.69 0.26 0.00 0.85 1.35 1 0.0 0.80 0.80 0.80 0.80 0.80 0.80 0.00 0.67 1.00 1.00 0.80 0.80 0.80 0.00 0.00 0.68 0.68 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	Lane Grp Cap(c), veh/h	245	3676	0	0	2817	1489	351	0	531			
1,00 1,00 1,00 1,00 0.08 0.08 0.08 0.08 0.08 0.08 0.08 0.08 0.08 0.08 0.08 0.08 0.08 0.08 0.08 0.08 0.08 0.09 0.00	V/C Ratio(X)	0.91	0.35	0.00	0.00	0.64	69.0	0.26	0.00	1.04			
100 1.00 1.00 1.00 0.67 0.67 1.00 1.00 0.80 0.80 0.80 0.80 0.80 0.80	Avail Cap(c_a), veh/h	351	3676	0	0	2817	1489	351	0	531			
0.80 0.80 0.00 0.06 0.68 0.68 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	HCM Platoon Ratio	1.00	1.00	1.00	1.00	19.0	19.0	1.00	1.00	1.00			
63.7 7.3 0.0 0.0 345 359 50.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	0.80	0.80	0.00	0.00	0.68	89.0	1:00	0.00	1.00			
15.1 0.2 0.0 0.0 0.8 1.8 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	63.7	7.3	0.0	0.0	34.5	35.9	20.7	0.0	0.09			
00 00 00 00 00 00 00 00 00 00 00 00 00	Incr Delay (d2), s/veh	15.1	0.2	0.0	0.0	0.8	.	0.1	0.0	51.2			
102 65 00 00 209 183 32 00 788 7.5 0.0 0.0 23.3 37.6 50.8 0.0 1 104 2834 D D D 105 4 5 6 7 8 11 2 3 4 5 6 7 8 11 2 3 4 5 6 7 8 11 2 3 4 5 6 7 8 11 2 3 4 5 6 7 8 11 2 3 4 5 6 7 8 11 2 3 4 5 6 7 8 11 2 3 4 5 6 7 8 11 2 3 4 5 6 7 8 11 3 5 6 89.3 35.1 10 9.5 30 748 39.4	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
788 7,5 0.0 0.0 35,3 37,6 508 0.0 F A D D D D D D D 1504 2834 647 18.1 36.2 102.6 1 2 3 4 5 6 7 8 114.9 25,6 89,3 35,1 5,5 109,5 7,3 74,8 30,0 2,3 74,8 30,0 39,4	%ile BackOfQ(50%),veh/ln	10.2	6.5	0.0	0.0	20.9	18.3	3.2	0.0	14.8			
1504 2834 1814 362 1834 181 362 834 181 362 893 184 8 6 7 8 8 8 9 3 8 8 8 9 8 8 8 8 8 8 8 8 8 8 8	LnGrp Delay(d),s/veh	78.8	7.5	0.0	0.0	35.3	37.6	20.8	0.0	111.2			
11504 2834 18.1 36.2 18.1 36.2 19.2 3 4 5 6 7 25.6 89.3 5.4 *4.7 5.4 1.5 109.5 *30 74.8 1.5 15.8 20.9 50.6 2.3 0.0 3.9	LnGrp LOS	ш	A							니			
18.1 36.2 B D D 7 2 3 4 5 6 7 2 5 6 89.3 114.9 25.6 89.3 5.4 109.5 30 74.8 5.5 109.5 30 74.8 5.5 15.8 20.9 50.6 7.3 74.8 7.3 74.8 7.3 74.8 7.4 5.4 7.5 15.8 7.6 5.4 7.7 5.4 7.7 5.4 7.8 5.4 7.9 50.6 7.9 7.9 7.9 50.6 7.9 7.9 7.9 7.9 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Approach Vol, veh/h		1504			2834			647				
1 2 3 4 5 6 7 2 4 14.9 25.6 89.3 14.9 25.4 3.0 74.8 2.3 0.0 3.9 5.4 3.9 5.4 3.9 5.4 3.9 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	Approach Delay, síveh		18.1			36.2			102.6				
1 2 3 4 5 6 7 2 5 6 7 114.9 25 89.3 5.4 .47 5.4 1.5 109.5 .30 748 0.0 3.9 D. 39.4	Approach LOS		В			D			ш				
2 5 6 6 7 114.9 25.6 89.3 25.6 89.3 4 114.9 25.6 89.3 25.4 4.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	Timer		2	~	4	2	9	7	00				
114.9 25.6 89.3 5.4 *47 5.4 1.5 109.5 *30 74.8 5.5 2.3 0.0 3.9 7.3 39.4 9.4	Assigned Phs		2			22	9		α				
5.4 .4.7 5.4 1.5 109.5 .30 74.8 2.3 20.9 50.6 2.3 0.0 3.9 39.4	Phs Duration (G+Y+Rc), s		114.9			25.6	89.3		35.1				
0, s 109.5 *30 74.8 1), s 15.8 20.9 50.6 2.3 0.0 3.9 39.4	Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
.17), s 15.8 20.9 50.6 2.3 0.0 3.9 39.4 D	Max Green Setting (Gmax), s		109.5			* 30	74.8		30.0				
2.3 0.0 3.9 39.4 D	Max Q Clear Time (g_c+I1), s		15.8			20.9	9.09		32.0				
	Green Ext Time (p_c), s		2.3			0.0	3.9		0.0				
	Intersection Summary												
	HCM 2010 Ctrl Delay			39.4									
	HCM 2010 CILL CILLS			; c									
				1									

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HCM 2010 Signalized Intersection Summary 7: Paseo Del Norte & Palomar Airport Rd.

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Lane Configurations Traffic Volume (veh/h)

Future Volume (veh/h)

Number Initial Q (Qb), veh

Ex + Cumulative + NT Project (PAL2) PM 0824/2017

Ex + Cumulative + NT Project (PAL2) PM 08/24/2017

HCM 2010 Signalized Intersection Summary 8: Armada Dr. & Palomar Airport Rd.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	444	¥	r	444	*	F	¢\$	¥.	F	*	_
Traffic Volume (veh/h)	190	1378	160	310	2218	150	360	09	260	220	0/	220
Future Volume (veh/h)	190	1378	160	310	2218	150	360	09	260	220	70	220
Number	2	2	12	-	9	16	3	8	18	7	4	~
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.95	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00	1:00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	198	1435	167	323	2310	156	375	0	312	229	73	229
Adj No. of Lanes	2	က	-	-	3	-	2	0	2	2	-	
Peak Hour Factor	96.0	96.0	96.0	96.0	96.0	96:0	96:0	96:0	96:0	96:0	96:0	0.96
Percent Heavy Veh, %	က	3	3	3	3	3	3	3	3	3	3	
Cap, veh/h	228	2131	829	319	2159	882	382	0	374	467	284	231
Arrive On Green	0.33	0.85	0.85	0.36	98.0	98.0	0.11	0.00	0.13	0.14	0.15	0.15
Sat Flow, veh/h	3408	5036	1557	1757	5036	1557	3514	0	2972	3408	1845	1497
Grp Volume(v), veh/h	198	1435	167	323	2310	156	375	0	312	229	73	229
Grp Sat Flow(s),veh/h/ln	1704	1679	1557	1757	1679	1557	1757	0	1486	1704	1845	1497
Q Serve(g_s), s	9.9	15.3	5.6	27.2	64.3	0.0	16.0	0.0	11.1	9.3	5.2	16.5
Cycle Q Clear(g_c), s	9.9	15.3	5.6	27.2	64.3	0.0	16.0	0.0	11.1	9.3	5.2	16.
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	2131	829	319	2159	882	382	0	374	467	284	231
V/C Ratio(X)	0.35	0.67	0.20	1.01	1.07	0.18	0.98	0.00	0.83	0.49	0.26	0.99
Avail Cap(c_a), veh/h	228	2131	829	319	2159	882	382	0	818	467	492	399
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.71	0.71	0.71	0.09	0.09	0.09	1.00	0.00	1.00	1.00	1.00	1.0
Uniform Delay (d), s/veh	44.4	7.8	4.5	47.8	10.7	3.6	2.99	0.0	33.6	59.9	55.9	32.8
Incr Delay (d2), s/veh	0.1	1.2	0.4	18.7	32.6	0.0	41.1	0.0	1.9	0.3	0.2	22.
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/lin	3.1	6.9	<u>.</u>	14.7	33.7	0.7	6.6	0.0	4.7	4.4	2.7	.5
LnGrp Delay(d),s/veh	44.5	0.6	4.9	9.99	43.3	3.7	107.8	0.0	35.5	60.2	26.0	58.4
LnGrp LOS		⋖	⋖	-	4	⋖	-			ш	ш	
Approach Vol, veh/h		1800			2789			289			531	
Approach Delay, sweh		12.6			43.8			75.0			28.8	
Approach LOS		В			٥			ш			ш	
Timer	-	2	3	4	2	9	7	∞				
Assigned Phs	—	2	33	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	31.4	69.5	21.0	28.1	30.6	70.3	25.6	23.6				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.7	* 2	0.9	9 *	* 2	4.7				
Max Green Setting (Gmax), s		46.6	* 16	* 40	9.5	* 64	* 15	41.3				
Max Q Clear Time (g_c+I1), s		17.3	18.0	18.5	9.8	66.3	11.3	13.1				
Green Ext Time (p_c), s	0.0	7.1	0.0	0.7	0.0	0.0	0.2	0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			39.7									
HCM 2010 LOS												

0.2 0.0 4.8 50.4 D

332 0.38 456 1.00 1.00 1.00 6.3 0.3 0.0 4.5 53.4 D D

3052 0.73 3052 2.00 0.41 1.6 0.7 0.0 2.3 2.3

0.90 0.90 1.00 0.85 47.8 9.7 0.0 21.1 57.5

> Upstream Filter(I) Uniform Delay (d), s/veh Incr Delay (d2), s/veh

%ile BackOfO(50%),veh/ln

LnGrp Delay(d),s/veh

Initial Q Delay(d3),s/veh

698 70.2 E

63.3

LnGrp LOS Approach Vol, veh/h Approach Delay, s/veh Approach LOS 33.4 *5 *39 21.5 1.3

20.0 5.0 16.8 13.7 0.2

78.1 6.0 59.0 8.7 21.5

74.2 *16 14.2 0.1

37.1 5.0 40.5 30.2 1.4

*4.2 *15 *15 11.9 0.1

> * 57 44.2 5.4

6.0 17.8 8.9 0.3

Green Ext Time (p_c), s

Assigned Phs
Phs Duration (G+Y+RC), s
Change Period (Y+RC), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_C+I1), s

36.3 D

HCM 2010 Ctrl Delay HCM 2010 LOS

375 0.36 473 1.00 1.00 50.2

271 704 11.7 11.0 0.80 332 1.00 1.00 66.0 66.0 66.0 67 67 67 68.8

Lane Grp Cap(c), veh/h V/C Ratio(X)

Avail Cap(c_a), veh/h HCM Platoon Ratio

Cycle Q Clear(g_c), s Prop In Lane

375 0.21 1752 135 1752 9.8 9.8

3052 0.96 0.96 5346 2227 2227 1586 6.7

1463 0.33 4432 992 1679 42.2

Percent Heavy Veh, %
Cap, veh/h
Arrive On Green
Sat Flow, veh/h
Grp Volume(i), veh/h
Grp Sat Flow(s), veh/h
O Sar Flow(s), s

341 0.10 3408

1.00 1845 125 2 0.96 3 332 0.19 1752 1752 1752 9.3

96.0

3 0.96

0.96

1310

Parking Bus, Adj Adj Sat Flow, veh/h/In Adj Flow Rate, veh/h Adj No. of Lanes Peak Hour Factor

5 0 1.00 1.00 1845 281

Ped-Bike Adj(A_pbT)

1.00 1845 135

0 1.00 1.00 271

200 200 18 0.96 1.00 1900 0.96 3

310 16 0 0.99 1.00 1845 323

1.00

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Synchro 10 Report Page 11

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HCM 2010 Signalized Intersection Summary 9: Hidden Valley Rd. & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL2) PM 08/24/2017

HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL2) PM 08/24/2017

More near		4	†	<u> </u>	/	Ļ	4	€	—	•	۶	→	*
Mart	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
80 1998 130 110 2578 80 166 40 90 200 50 10 100 1998 130 110 2578 80 166 40 90 200 50 10 100 1998 130 110 2578 80 160 40 90 200 50 10 100 100 100 100 100 100 100 100	ane Configurations	<u>,-</u>	444	¥	je-	441		F	æ,		, -	*	*
86 1998 130 110 2578 80 160 40 90 200 560 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ic Volume (veh/h)	80	1998	130	110	2578	8	160	40	06	200	20	210
5	re Volume (veh/h)	8	1998	130	110	2578	8	160	40	06	200	20	210
1,00	iber	2	2	12	-	9	16	3	∞	18	7	4	14
1,00	II O (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
1.00	<pre>-Bike Adj(A_pbT)</pre>	1.00		0.99	1.00		96:0	1.00		0.95	1.00		96.0
1845 1845 1845 1845 1845 1940 1845 1845 1846 1845	ing Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
85 2126 138 117 2743 85 170 43 96 213 53 1 3 1 1 3 1 1 3 1 1 1 1 1 1 0.04 0.94	Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1845
1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Flow Rate, veh/h	82	2126	138	117	2743	82	170	43	96	213	53	223
0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94	No. of Lanes		m	_	_	m	0	_	_	0	_		-
3 3 3 3 3 3 3 3 3 3	K Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
47 256 828 249 2858 88 150 68 152 211 330 0.01 0.01 0.01 1.00 0.09 0.14 0.11 0.18 13 14 10 13 13 13 14 10 13 13 13 14 10 13 <td< td=""><td>ent Heavy Veh, %</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td></td<>	ent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
1757 679 615 615 618 618 619 614 614 615 618	. veh/h	47	2256	828	249	2858	88	150	89	152	211	330	269
1757 5036 1550 1757 5015 154 1757 490 1095 1757 1845 1845 1757 1757 17	e On Green	0.01	0.15	0.15	0.28	1.00	1.00	60:0	0.14	0.14	0.12	0.18	0.18
125 126 138 117 1827 1001 170 0 139 213 53 40 627 46 83 00 00 128 00 124 180 36 40 627 46 83 00 00 128 00 124 180 36 40 627 46 83 00 00 128 00 124 180 36 41 226 828 249 1913 1032 150 0 220 211 330 41 226 833 249 1913 1032 150 0 063 101 41 2270 833 249 1913 1032 150 0 359 211 480 63 33 33 249 1913 1032 150 0 359 211 480 64 2270 833 249 1913 1032 150 0 060 100 100 743 620 106 490 019 019 100 100 100 100 743 620 106 490 019 019 00 00 010 100 744 307 20 40 32 70 1140 00 52 125 745 620 108 491 32 70 1140 00 52 125 748 808 63 491 32 70 1826 00 621 1307 52 749 740 740 740 740 740 740 740 740 741 740 740 740 740 740 740 740 741 742 742 744 740 740 740 740 740 742 743 744 740 740 740 740 740 740 740 743 744 740 740 740 740 740 740 740 740 744 745 740 740 740 740 740 740 740 740 740 745 745 740	Flow, veh/h	1757	2036	1550	1757	5015	154	1757	490	1095	1757	1845	1504
1757 1679 1550 1757 1679 1811 1757 0 1386 1757 1845 1440 62.7 446 83 0.0 0.0 12.8 0.0 12.4 180 3.6 3.6 1.00	Volume(v), veh/h	82	2126	138	117	1827	1001	170	0	139	213	53	223
40 62.7 46 83 0.0 0.0 12.8 0.0 12.4 18.0 3.6 40 62.7 46 83 0.0 0.0 12.8 0.0 12.4 18.0 3.6 1.00 47 2256 828 249 1913 1032 150 0 220 211 330 1.81 0.94 0.17 0.95 0.97 1.13 0.00 0.63 101 0.16 0 101 0 0 0 220 211 330 101 0.16 0	Sat Flow(s),veh/h/ln	1757	1679	1550	1757	1679	1811	1757	0	1586	1757	1845	1504
4.0 62.7 4.6 8.3 0.0 0.0 12.8 0.0 12.4 18.0 3.6 1.00 1.00 3.6 1.00 4.7 2.55 8.8 2.4 19.13 10.2 1.00 0.08 1.00 0.08 1.00 0.08 1.00 0.08 1.00 0.09 1.00 0.00 1.00 0.00	erve(g_s), s	4.0	62.7	4.6	8.3	0.0	0.0	12.8	0.0	12.4	18.0	3.6	21.4
1,00		4.0	62.7	4.6	8.3	0.0	0.0	12.8	0.0	12.4	18.0	3.6	21.4
47 2256 828 249 1913 1032 150 0 220 211 330 1.81 2094 0.17 0.47 0.95 0.97 1.13 0.00 0.63 1.01 0.16 4.7 2270 200 200 1.00 <	In Lane	1.00		1.00	1.00		0.08	1.00		69.0	1.00		1.00
181 094 017 047 095 097 113 000 063 1001 016 47 2270 833 249 1913 1032 193 00 359 211 480 0.33 0.33 0.200 2.000 2.00 1.00 1.00 1.00 0.67 0.67 0.67 0.19 0.19 0.19 1.00 0.00 1.00 1.00 1.43 620 10.6 49.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0 1.00 1.44 8.6 9 0.3 0.1 3.2 7.0 1440 0.0 0.0 0.1 0.0 1.00 1.4 30.7 2.0 4.0 0.9 2.0 110 0.0 0.0 0.1 0.0 1.0 1.4 30.7 2.0 4.0 0.9 2.0 110 0.0 5.5 12.5 1.9 491.1 88 9 10.9 49.1 3.2 7.0 1826 0.0 62.1 130.7 52.2 1.2 3 4 5 6 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Grp Cap(c), veh/h	47	2256	828	249	1913	1032	150	0	220	211	330	569
47 2270 833 249 1913 1032 150 356 271 480 0.33 0.33 2.00 2.00 1.00	Ratio(X)	1.81	0.94	0.17	0.47	0.95	0.97	1.13	0.00	0.63	1.01	0.16	0.83
0.33 0.33 0.33 2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.00	I Cap(c_a), veh/h	47	2270	833	249	1913	1032	150	0	326	211	480	391
0.67 0.67 0.67 0.19 0.19 0.19 0.10 0.00 1.00 1.00 1.00	1 Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
74.3 62.0 10.6 49.0 0.0 68.6 0.0 61.0 66.0 52.1 416.8 6.9 0.3 0.0 <td< td=""><td>ream Filter(I)</td><td>0.67</td><td>19:0</td><td>0.67</td><td>0.19</td><td>0.19</td><td>0.19</td><td>1.00</td><td>0.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td></td<>	ream Filter(I)	0.67	19:0	0.67	0.19	0.19	0.19	1.00	0.00	1.00	1.00	1.00	1.00
4168 69 03 0.1 3.2 7.0 114.0 0.0 1.1 64.7 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	orm Delay (d), s/veh	74.3	62.0	10.6	49.0	0.0	0.0	9.89	0.0	61.0	0.99	52.1	59.4
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Delay (d2), s/veh	416.8	6.9	0.3	0.1	3.2	7.0	114.0	0.0	1.1	64.7	0.1	6.3
7.4 30.7 2.0 4.0 0.9 2.0 11.0 0.0 5.5 12.5 1.9 491.1 689 10.9 49.1 3.2 7.0 1826 0.0 62.1 130.7 52.2 (4 1 2 2 3 4 5 6 7 8 8 7 8 8 7 8 1 8 9 1 9 1	II Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Here to the state of the state	BackOfQ(50%),veh/ln	7.4	30.7	2.0	4.0	6.0	2.0	11.0	0.0	5.5	12.5	1.9	9.4
F E B D A A F E F F	p Delay(d),s/veh	491.1	68.9	10.9	49.1	3.2	7.0	182.6	0.0	62.1	130.7	52.2	65.7
2349 2945 309 80.8 6.3 128.4 F F A 5 6 7 8 7.3 732 17.0 32.5 9.0 91.5 23.0 26.5 6.0 6. 42 5.7 5.0 6.0 5.0 5.7 10.3 64.7 14.8 23.4 6.0 2.0 20.0 14.4 0.0 2.5 0.0 0.5 0.0 18.2 0.0 0.4 D 48.1	b LOS	니	ш	В		⋖	⋖	ᅵ		ᆈ	니		ا۳
808 63 1284 F A A 5 6 7 8 1 2 3 4 5 6 7 8 27.3 73.2 17.0 32.5 9.0 91.5 23.0 26.5 6.0 6 142 5,7 5.0 6.0 5.0 5.7 6.0 8 13 39.0 40 26.0 18.0 34 10.3 64.7 14.8 23.4 6.0 2.0 20.0 14.4 0.0 2.5 0.0 0.5 0.0 182 0.0 0.4 D	oach Vol, veh/h		2349			2945			309			489	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 27.3 73.2 17.0 32.5 9.0 915 23.0 6.0 6 7 5.0 6.0 5.0 10.5 68 13 39.0 40 26.0 18.0 10.3 64.7 14.8 23.4 6.0 2.0 20.0 0.0 2.5 0.0 0.5 0.0 18.2 0.0	oach Delay, s/veh		80.8			6.3			128.4			97.6	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 27.3 73.2 17.0 32.5 9.0 915 23.0 10.5 68 71 39.0 4.0 26.0 18.0 10.3 64.7 14.8 23.4 6.0 2.0 20.0 0.0 2.5 0.0 0.5 0.0 18.2 0.0 10.3 64.7 14.8 23.4 6.0 2.0 20.0 10.4 64.7 14.8 23.4 6.0 2.0 20.0 10.5 68 71 23.4 6.0 2.0 20.0 10.6 2.5 0.0 0.5 0.0 18.2 0.0	oach LOS		ш			A			ш			ட	
1 2 3 4 5 6 7 7 2 1 3 2 1 1 1 2 2 1 1 1 2 2 1 1 1 2 2 1 1 1 2 2 1 1 1 2 2 1 1 1 2 2 1 1 2 1 2 1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 1 2 1	*	_	2	က	4	2	9	7	∞				
27.3 73.2 17.0 32.5 9.0 91.5 23.0 6.0 6.0 5.0 6.0 5.0 10.3 64.7 14.8 23.4 6.0 2.0 20.0 0.0 2.5 0.0 0.5 0.0 18.2 0.0 48.1	gned Phs	_	2	3	4	2	9	7	8				
60 '6 '42 57 50 60 5.0 ' 105 '68 '13 39.0 40 26.0 18.0 10.3 647 14.8 23.4 6.0 2.0 2.0 0.0 0.5 0.0 18.2 0.0 48.1 D	Duration (G+Y+Rc), s	27.3	73.2	17.0	32.5	0.6	91.5	23.0	26.5				
10.5 *68 *13 39.0 4.0 26.0 18.0 10.3 64.7 14.8 23.4 6.0 2.0 20.0 0.0 2.5 0.0 0.5 0.0 18.2 0.0 48.1	nge Period (Y+Rc), s	0.9	9 *	* 4.2	5.7	2.0	0.9	2.0	* 5.7				
C+II), s 10.3 64.7 14.8 23.4 6.0 2.0 20.0 s 0.0 2.5 0.0 0.5 0.0 18.2 0.0 48.1	Green Setting (Gmax), s	10.5	89 *	* 13	39.0	4.0	26.0	18.0	* 34				
s 0.0 2.5 0.0 0.5 0.0 18.2 0.0 48.1 D	O Clear Time (g_c+I1), s	10.3	64.7	14.8	23.4	0.9	2.0	20.0	14.4				
	n Ext Time (p_c), s	0.0	2.5	0.0	0.5	0.0	18.2	0.0	0.4				
	section Summary												
	A 2010 Ctrl Delay			48.1									
	1 2010 LOS												
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10 Report	Page 15
Synchro	

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Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ř.	444	¥	F	444	¥	F	*	¥	<u>, </u>	*	*
Traffic Volume (veh/h)	180	1328	280	27.1	1678	101	190	240	161	41	420	570
Future Volume (veh/h)	180	1328	280	271	1678	101	190	240	161	41	420	570
Number	ഹ	~ 0	12	- -	9 0	9 0	m c	∞ <	∞ ⊂	~ 0	4 0	4 0
Ped-Bike Adi(A pbT)	1.00	>	1.00	1.00	>	0.99	1.00		0.99	1.00	>	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	202	1492	315	304	1885	113	213	270	181	46	472	640
Adj No. of Lanes	2	m	-	2	m	-	2	2	-	_	_	-
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	က	m	က	m	m	3	3	m	m	3
Cap, veh/h	411	2056	640	326	1904	588	223	1109	492	09	504	613
Arrive On Green	0.24	0.82	0.82	0.10	0.38	0.38	0.07	0.32	0.32	0.03	0.27	0.27
Sat Flow, veh/h	3408	5036	1568	3408	5036	1556	3408	3505	1553	1757	1845	1551
Grp Volume(v), veh/h	202	1492	315	304	1885	113	213	270	181	46	472	640
Grp Sat Flow(s),veh/h/ln	1704	1679	1568	1704	1679	1556	1704	1752	1553	1757	1845	1551
Q Serve(g_s), s	7.7	20.0	7.0	13.2	22.8	6.1	9.3	9.8	13.5	3.9	37.5	41.0
Cycle Q Clear(g_c), s	7.7	20.0	7.0	13.2	55.8	6.1	9.3	9.6	13.5	3.9	37.5	41.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	411	2056	640	326	1904	288	223	1109	492	09	204	613
V/C Ratio(X)	0.49	0.73	0.49	0.85	0.99	0.19	96:0	0.24	0.37	0.77	0.94	1.04
Avail Cap(c_a), veh/h	489	2056	640	920	1904	288	223	1109	492	82	204	613
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.44	0.44	0.44	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1:00	1.00
Uniform Delay (d), s/veh	52.9	10.0	5.1	1,99	46.4	21.7	6.69	38.0	39.7	71.9	53.2	45.4
Incr Delay (d2), s/veh	0.2	1.0	1.2	2.3	18.4	0.7	47.6	0.0	0.2	13.2	24.8	48.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfO(50%),veh/ln	3.6	0.6	3.1	6.3	29.1	2.7	2.9	4.2	2.0	2.1	22.6	25.7
LnGrp Delay(d),s/veh	53.1	11.0	6.3	68.4	64.8	22.4	117.5	38.0	39.8	85.1	78.0	93.7
LnGrp LOS			⋖	ш	ш	ပ	ᅵ			ᅵ	ᆈ	۱"
Approach Vol, veh/h		2009			2302			999			1158	
Approach Delay, sheh		14.5			63.2			64.0			87.0	
Approach LOS		В			ш			ш			ш	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	19.9	67.5	15.6	47.0	24.4	63.0	9.3	53.3				
	* 4.2	. 6.3	2.8	9 ;	. 6.3	. 6.3	* 4.2	2.8				
Max Green Setting (Gmax), s	16.7	38	9.6	47	27.	, 2/	7.3	43.7				
Groop Ext Timo (p. c).	7.0	0.22	2 0	45.0	7.7	0.70	6.0	1.0				
green Extrime (p_c), s	0.0	0.0	0.0	0.0	7:0	0.0	0.0	7.1				
Intersection Summary												
HCM 2010 Ctrl Delay			21.8									
HCM 2010 LOS			D									
Notes												

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HCM 2010 Signalized Intersection Summary 11: Camino Vida Roble & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL2) PM 08/24/2017

Ex + Cumulative + NT Project (PAL2) PM	08/24/2017
HCM 2010 Signalized Intersection Summary	12: Yarrow Dr./McClellan & Palomar Airport Rd.

Movement Lane Configurations Traffic Volume (veh/h) Vumber	FBI											
ane Configurations raffic Volume (veh/h) uture Volume (veh/h)	יהר	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
raffic Volume (veh/h) uture Volume (veh/h) Iumber	je-	4413		r	4413		K.	Ŷ,		F	*	W.
uture Volume (veh/h) Iumber	45	1645	260	20	1445	20	380	40	180	390	130	205
lumber	42	1645	260	20	1445	20	380	40	180	330	130	205
	2	2	12		9	16	m	∞	18	7	4	14
	0	0	0	0	0	0	0	0	0	0	0	0
obT)	1.00		96.0	1.00		96:0	1.00		96.0	1.00		0.97
	9.	1.00	1.00	1:00	1:00	1:00	1.00	1.00	1.00	1.00	1.00	1.00
_	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	49	1788	283	24	1571	24	413	43	196	424	141	223
Adj No. of Lanes		က	0	-	က	0	2		0	_		_
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	co	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	170	1834	287	19	1713	26	461	24	247	377	512	422
reen	0.10	0.42	0.42	0.03	0.34	0.34	0.14	0.19	0.19	0.21	0.28	0.28
Ì	1757	4365	683	1757	4991	172	3408	280	1278	1757	1845	1520
Grp Volume(v), veh/h	46	1371	700	24	1057	268	413	0	239	424	141	223
-ly	1757	1679	1690	1757	1679	1805	1704	0	1559	1757	1845	1520
2 Serve(g_s), s	3.9	0.09	61.5	4.6	45.3	45.3	17.9	0.0	21.9	32.2	0.6	14.2
Cycle Q Clear(g_c), s	3.9	0.09	61.5	4.6	45.3	45.3	17.9	0.0	21.9	32.2	0.6	14.2
Prop In Lane	1.00		0.40	1.00		0.10	1.00		0.82	1.00		1.00
p(c), veh/h	170	1411	710	19	1152	619	461	0	301	377	512	422
	0.29	0.97	0.99	0.89	0.92	0.92	0.90	0.00	0.79	1.12	0.28	0.53
4vail Cap(c_a), veh/h	170	1411	710	19	1247	0.79	263	0	382	377	246	450
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	9.	1.00	1.00	1:00	1:00	1:00	1.00	0.00	1.00	1.00	1.00	1.00
eh eh	65.9	42.6	43.1	72.1	47.2	47.2	63.8	0.0	27.7	58.9	42.4	26.5
ncr Delay (d2), s/veh	0.3	18.1	30.6	74.4	12.9	20.7	13.2	0.0	6.5	84.5	0.1	0.4
nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
.eh/ln	1.9	31.3	34.6	3.5	23.0	26.1	9.3	0.0	10.0	24.5	4.6	0.9
y(d),s/veh	63.3	60.7	73.6	146.5	60.1	67.9	77.0	0.0	64.2	143.4	42.5	26.9
	ш	ᆈ	ᆈ	ᅵ	ш	ш	삐		삐	ᅵ		ပ
Approach Vol, veh/h		2120			1679			652			788	
Approach Delay, s/veh		0.59			65.5			72.3			92.4	
Approach LOS		ш			ш			ш			ш	
imer		2	က	4	2	9	7	8				
Assigned Phs	-	2	m	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	9.4	69.4	24.5	46.7	20.9	57.9	37.2	34.0				
Change Period (Y+Rc), s '	* 4.2	* 6.4	* 4.2	* 5	* 6.4	* 6.4	* 5	* 5				
Max Green Setting (Gmax), s	* 5.2	* 56	* 25	* 44	* 5.3	* 56	* 32	* 37				
Max Q Clear Time (g_c+I1), s	9.9	63.5	19.9	16.2	5.9	47.3	34.2	23.9				
Green Ext Time (p_c), s	0.0	0.0	0.4	0.8	0.0	4.2	0.0	0.8				
ntersection Summary												
HCM 2010 Ctrl Delay			70.2									
HCM 2010 LOS			ш									
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Synchro	

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Movement EBL A Lane Configurations Traffic Volume (veh/h) 45 1 Traffic Volume (veh/h) 45 1 Hurture Volume (veh/h) 5 1 Mumber 100 Parking Bus. Adj 100 Parking Bus. Adj 100 100 Adj 100		EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
45 45 45 45 5 5 1.00 1.00 1.00 1.00 5 6 6 6 6 1.757	↑↑ 1820 1820		<u>r</u>	***			4	١		•	
45 45 6 0 1.00 1.00 1.00 1.00 1.00 0.90 0.90 0.	.820 1820			1		F	←	K		\$	
45 0 1.00 1.00 1.00 1.00 1.00 0.00 0.00 1.00 1.00 0.00	820	70	70	1370	134	150	22	300	123	22	75
5 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	•	70	70	1370	134	150	22	300	123	22	72
11.00 11.00 11.00 1845 50 50 64 1757	7	12	-	9	16	7	4	14	က	ω (18
1.00 1.00 1.00 1.00 5.0 6.4 0.04 1.757	0	0 0	0 0	0	0	0	0	0 5	0 8	0	0 0
1845 1845 50 1 0.90 0.64 0.04 1757 1757	00	1.00	00.1	100	1.00	1.00	100	100	1.00	5	100
0.90 0.90 0.90 0.04 1757 1757		1900	1845	1845	1900	1845	1845	1845	1900	1845	1000
S 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		78	78	1522	149	167	24	333	137	24	83
or 0.90 Veh, % 3 64 10 1757 veh/h 50 veh/h 1757	3	0	_	m	0	-	-	<u></u>	0	_	0
7eh, % 3 64 64 1004 1757 7757 86 86 86 86 86 86 86 86 86 86 86 86 86	06.0	06.0	06:0	06:0	06:0	06:0	06:0	06:0	06:0	06:0	0.90
64 0.04 1757 Veh/h 50 veh/h/h 1757	3	3	3	co	m	3	3	3	3	co	3
0.04 1757 4 veh/h 50 7 veh/h/ln 1757 7	2245	98	346	2906	284	303	440	361	191	32	%
1757 veh/h/h 50	0.45	0.45	0.20	0.62	0.62	0.24	0.24	0.24	0.24	0.24	0.24
1757	4968	191	1757	4655	455	1261	1845	1516	642	136	401
1757		736	78	1097	574	167	24	333	244	0	0
NOTE IN THE PERSON		1802	1757	1679	1753	1261	1845	1516	1179	0	0
4.2		26.7	9.6	27.4	27.4	0.0	1.5	32.2	28.4	0.0	0.0
r(g_c), s 4.2	56.3	26.7	9.6	27.4	27.4	22.1	1.5	32.2	29.9	0.0	0.0
1.00		0.11	1.00		0.26	1.00		1.00	0.56		0.34
p(c), veh/h 64	1517	814	346	2096	1094	303	440	361	318	0	0
0.78	0.90	0.90	0.23	0.52	0.52	0.55	0.05	0.92	77.0	0.00	0.00
	1 00	100	240	1 00	1004	100	020	450	7 6	5	5
1.00	100	100	100	1 00	100	1.00	1.00	1.00	00.1	000	000
s/veh 71.6	38.0	38.1	50.6	15.7	15.7	519	44.1	55.8	55.1	0.0	0.0
7.2	8.9	15.3	0.1	0.9	1.8	9.0	0.0	20.9	6.2	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
veh/ln 2.2	27.8	31.7	2.7	12.9	13.8	6.4	0.8	15.5	10.3	0.0	0.0
y(d),s/veh 78.9	46.9	53.4	20.7	16.7	17.5	52.5	44.1	9.9/	61.2	0.0	0.0
Ш	۵	۵		В	В		۵	ш	ш		
	2150			1749			524			244	
y, s/veh	49.8			18.5			67.4			61.2	
Approach LOS	D			В			ш			ш	
imer 1	2	3	4	2	9	7	00				
1	2		4	2	9		8				
35.6	73.8		40.7	6.7	9.66		40.7				
0.9	9 *		4.9	* 4.2	0.9		4.9				
13.8	* 78		43.1	, 6 1	31.0		43.1				
-I1), s 7.6	58.7		34.2	6.2	29.4		31.9				
Green Ext Time (p_c), s 0.0	0.6		0.8	0.1			0.0				
ntersection Summary											
HCM 2010 Ctrl Delay		40.7									
4CM 2010 LOS		Ω									

HCM 2010 Signalized Intersection Summary 13: El Camino Real & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL2) PM 08/24/2017

			٠				-	-	-		•	
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	K.	444	*	K.	444	N.W.	K.	444	N.W.	F	444	Mr.
raffic Volume (veh/h)	382	1614	174	220	1044	510	385	1020	260	770	070	185
uture Volume (veh/h)	382	1614	174	220	1044	510	382	1020	260	770	026	185
Number	2	2	12	-	9	16	m	∞	18	7	4	14
nitial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	410	1717	185	282	1111	543	410	1085	628	819	1032	197
Adj No. of Lanes	2	m	_	2	m	2	2	m	2	2	က	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	က	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	459	1343	413	386	1236	699	409	1277	1013	704	1712	739
Arrive On Green	0.13	0.27	0.27	0.04	0.08	0.08	0.12	0.25	0.25	0.21	0.34	0.34
Sat Flow, veh/h	3408	5036	1550	3408	5036	2726	3408	5036	2760	3408	5036	1554
3rp Volume(v), veh/h	410	1717	185	282	1111	543	410	1085	628	819	1032	197
3rp Sat Flow(s),veh/h/ln	1704	1679	1550	1704	1679	1363	1704	1679	1380	1704	1679	1554
2 Serve(g_s), s	17.8	40.0	10.8	17.0	32.8	18.2	18.0	30.7	11.0	31.0	25.5	11.4
Cycle Q Clear(g_c), s	17.8	40.0	10.8	17.0	32.8	18.2	18.0	30.7	11.0	31.0	25.5	11.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
ane Grp Cap(c), veh/h	426	1343	413	386	1236	699	409	1277	1013	704	1712	739
//C Ratio(X)	0.89	1.28	0.45	1.51	0.00	0.81	1.00	0.85	0.62	1.16	09:0	0.27
4vail Cap(c_a), veh/h	591	1343	413	386	1236	699	409	1578	1177	704	1712	739
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
pstream Filter(I)	1.00	1.00	1.00	0.61	0.61	0.61	1.00	1.00	1.00	0.00	0.09	0.09
niform Delay (d), s/veh	63.8	55.0	24.2	72.2	67.1	25.2	0.99	53.3	38.9	59.5	41.1	23.7
ncr Delay (d2), s/veh	11.6	131.2	0.3	239.6	2.7	4.4	45.1	7.2	2.9	75.4	0.1	0.1
nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	34.8	4.7	20.9	15.9	7.3	11.0	15.1	4.5	21.9	11.9	4.9
nGrp Delay(d),s/veh	75.5	186.2	24.5	311.8	72.8	29.6	111.1	60.5	41.8	135.0	41.2	23.8
nGrp LOS	ш	띡	ပ	띡	ш	ပ	띡	ш		띡		
Approach Vol, veh/h		2312			2239			2123			2048	
Approach Delay, s/veh		153.6			124.7			64.7			77.0	
Approach LOS		ш.			ш.			ш			ш	
imer		2	က	4	2	9	7	∞				
ssigned Phs	1	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	23.0	46.0	24.0	57.0	26.2	42.8	37.0	44.0				
Change Period (Y+Rc), s	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9				
Max Green Setting (Gmax), s	17.0	40.0	18.0	21.0	26.0	31.0	22.0	47.0				
Max Q Clear Time (g_c+I1), s	19.0	42.0	20.0	27.5	19.8	34.8	33.0	32.7				
Green Ext Time (n.c.) s	0.0	0.0	0.0	20.00	0.4	0.0	0.0	5.3				

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Intersection Summary HCM 2010 Ctrl Delay HCM 2010 LOS

Synchro 10 Report Page 23

Ex + Cumulative + NT Project (PAL2) PM 08/24/2017 HCM 2010 Signalized Intersection Summary 14: Innovation Way/Loker Ave. & Palomar Airport Rd.

Movement												
-	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	444	¥.	F	443		F	*	¥.	F	*	æ
Traffic Volume (veh/h)	120	2554	320	70	1604	09	200	40	170	110	99	330
Future Volume (veh/h)	120	2554	320	70	1604	09	200	40	170	110	09	330
Number	2	2	12	-	9	16	3	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		96.0	1.00		0.99	1.00		0.97	1.00		0.97
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
_	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	125	2660	333	73	1671	62	208	42	177	115	62	344
Adj No. of Lanes	-	က	-	_	3	0	_	-	_	_	-	
Peak Hour Factor	96.0	96.0	96.0	96.0	96.0	96.0	96:0	96.0	96.0	96:0	96:0	0.96
Percent Heavy Veh, %	33	3	3	3	က	33	co	3	က	က	33	3
Cap, veh/h	149	2595	881	71	2408	86	115	419	344	136	442	363
Arrive On Green	0.03	0.17	0.17	0.08	0.97	0.97	0.07	0.23	0.23	0.08	0.24	0.24
Sat Flow, veh/h	1757	5036	1511	1757	4982	185	1757	1845	1514	1757	1845	1516
Grp Volume(v), veh/h	125	2660	333	73	1126	209	208	42	177	115	62	344
Grp Sat Flow(s),veh/h/ln	1757	1679	1511	1757	1679	1810	1757	1845	1514	1757	1845	1516
Q Serve(g_s), s	9.01	77.3	16.5	6.1	5.1	5.1	8.6	2.7	13.1	6.7	4.0	33.5
Cycle Q Clear(g_c), s	10.6	77.3	16.5	6.1	5.1	5.1	8.6	2.7	13.1	6.7	4.0	33.5
Prop In Lane	1.00		1.00	1.00		0.10	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	149	2595	881	71	1622	875	115	419	344	136	442	363
V/C Ratio(X)	0.84	1.02	0.38	1.02	69.0	69.0	1.81	0.10	0.51	0.85	0.14	0.95
Avail Cap(c_a), veh/h	704	2595	881	71	1622	875	115	453	371	141	480	394
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.72	0.72	0.72	1.00	1.00	1.00	1.00	1:00	1.8
Uniform Delay (d), s/veh	71.9	62.2	14.6	6.89	1.4	1.4	70.1	45.8	37.1	68.3	44.9	56.1
Incr Delay (d2), s/veh	0.5	13.4	0.1	7.96	<u>~</u> ∞	3.3	397.6	0.0	0.4	32.9	0.1	30.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	39.2	6.9	4.8	1.9	2.5	17.4	1.4	2.5	0.9	2.0	17.1
LnGrp Delay(d),s/veh	72.4	75.6	14.7	165.9	3.2	4.7	467.7	45.9	37.5	101.2	45.0	86.4
LnGrp LOS	ш	ᅵ	8	니	A	⋖	ᅵ			니		"
Approach Vol, veh/h		3118			1806			427			521	
Approach Delay, s/veh		0.69			10.2			247.9			84.7	
Approach LOS		ш			В			ш			ш	
Timer		2	3	4	2	9	7	8				
Assigned Phs	-	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	12.1	83.3	14.0	40.6	16.9	78.5	15.8	38.8				
Change Period (Y+Rc), s	0.9	9 *	* 4.2	* 4.7	* 4.2	0.9	* 4.2	* 4.7				
Max Green Setting (Gmax), s	4.8	LL *	* 9.8	* 39	09 *	22.0	* 12	* 37				
Max Q Clear Time (g_c+I1), s	8.1	79.3	11.8	35.5	12.6	7.1	11.7	15.1				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.4	0.1	6.2	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			65.3									
HCM 2010 LOS			ш									

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HCM 2010 Signalized Intersection Summary 15: El Fuerte St. & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL2) PM 08/24/2017

HCM 2010 Signalized Intersection Summary 16: Melrose Dr. & Palomar Airport Rd.

Ex + Cumulative + NT Project (PAL2) PM 08/24/2017

Compared Compared		1	†	<u> </u>	/	Ļ	4	•	—	•	۶	→	*
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
70 2524 290 550 1464 40 180 90 370 280 150 70 2524 290 550 1464 40 180 90 370 280 150 70 2524 290 550 1464 40 180 90 370 280 150 70 20 0	Lane Configurations	K.	444	¥C	K.	441		<u> </u>	4₽		K. K.	4₽	
70	Traffic Volume (veh/h)	0/	2524	290	220	1464	40	180	06	370	280	150	09
100	Future Volume (veh/h)	70	2524	290	220	1464	40	180	8	370	280	150	09
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Number	വ	7	15	- (9	92	m	∞ α	9	_	4 (14
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Dod Bike Adira phT	0 6	0	000	0 6	0	0 07	0 0	0	0 07	0 0	0	000
1845 1845 1845 1845 1845 1946 1945 1945 1946 1845	Parking Bus. Adi	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
72 2602 299 567 1509 41 186 93 381 289 155 2	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
6 556 1871 578 631 1774 48 229 397 343 279 610 6 128 0.74 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97	Adj Flow Rate, veh/h	72	2602	299	292	1509	41	186	93	381	289	155	62
6 656 1871 578 631 774 48 229 397 343 279 610 656 1871 578 631 774 48 229 397 343 279 610 610 638 0.74 0.74 0.06 0.12 0.12 0.07 0.23 0.23 0.08 0.25 0.08 0.25 0.08 0.25 0.08 0.25 0.08 0.25 0.08 0.25 0.08 0.25 0.08 0.25 0.08 0.25 0.08 0.25 0.09 0.25 0.09 0.20 0.20 0.248 44.1 44.1 8.1 6.5 34.0 12.3 7.4 10.0 1.00 1.00 1.00 1.00 1.00 1.00 1.	Adj No. of Lanes	2	က	_	2	m	0	2	2	0	2	2	0
6 656 1871 578 631 177 448 229 347 343 279 610 610 610 610 610 610 610 610 610 610	Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
656 1871 578 631 1774 48 229 397 343 279 610 0.38 0.74 0.74 0.06 0.12 0.07 0.23 0.03 0.02 0.05 3408 50.54 0.74 0.06 0.12 0.07 0.23 0.03 0.03 0.02 0.05 172 2602 299 567 1006 544 186 93 381 289 108 170 4 16.79 1555 1704 16.79 1816 1704 1752 1514 1704 1752 174 2.0 55.7 12.0 248 44.1 44.1 81 6.5 34.0 12.3 7.4 1.00 1.00 1.00 0.08 0.85 0.85 0.85 0.81 171 1.03 0.25 656 1871 578 1370 1775 960 223 397 343 279 433 656 1871 578 1370 1775 960 232 397 343 279 433 657 187 578 1370 1775 960 232 397 343 279 433 658 1871 578 1370 1775 960 0.23 1.11 1.00 1.00 648 10 0.0 1775 1.6 1.0 4.0 72 17.9 0.1 81.7 62.9 0.1 649 17 571 18 21.2 23.5 44 580 688 45.3 6 650 1775 1.6 1.0 4.0 72 17.9 0.1 81.7 62.9 0.1 640 1775 1.6 1.0 4.0 72 17.9 0.1 81.7 62.9 0.1 651 187 58 13.0 188 22.2 20 8.8 84.5 3.6 652 187 58 13.0 18.2 3.6 8.8 4.1 3.8 1.0 653 18 1 2 3 4 5 6 7 8 8 654 17 58 18 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 657 18 18 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	n
0.38 0.74 0.74 0.76 0.12 0.12 0.07 0.23 0.23 0.08 0.25 3408 50.36 1555 3408 50.37 137 3408 1752 1514 3408 2470 1752 1514 3408 2470 1752 1514 3408 2470 1752 1514 1704 1752 174 341 1679 1816 1704 1752 174 341 181 6.5 34.0 12.3 7.4 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	Cap, veh/h	929	1871	278	631	1774	48	229	397	343	279	610	234
3408 5036 1555 3408 5037 137 3408 1752 1514 3408 2470 77 2622 299 567 1006 544 186 99 381 289 108 20 557 120 248 44.1 44.1 8.1 65 34.0 12.3 7.4 20 557 120 248 44.1 44.1 8.1 65 34.0 12.3 7.4 1.00 11 139 0.52 0.90 0.85 0.88 0.89 0.81 0.32 11.1 103 0.25 2.00 2.00 2.00 0.33 0.33 0.33 0.100 1.00 1.00 1.00 6.47 0.47 0.47 0.47 0.49 0.49 0.49 0.40 1.00 1.00 1.00 6.40 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Arrive On Green	0.38	0.74	0.74	90:0	0.12	0.12	0.07	0.23	0.23	0.08	0.25	0.25
172 2602 299 567 1006 544 186 93 381 289 108 1704 1679 1555 1704 1679 1816 1704 1752 1514 1704 1752 1 1	Sat Flow, veh/h	3408	5036	1555	3408	5037	137	3408	1752	1514	3408	2470	946
vehirlin 1704 1679 1555 1704 1679 1816 1704 1752 1514 1704 1752 1 -0, s 2 0 557 120 248 44.1 44.1 81 65 34.0 12.3 7.4 -0, s 5.7 120 248 44.1 44.1 81 65 34.0 12.3 7.4 -0, s 5.7 120 248 44.1 44.1 81 65 34.0 12.3 7.4 -1, c 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	Grp Volume(v), veh/h	72	2602	299	299	1006	544	186	93	381	289	108	109
Co.), S. 2.0 55.7 12.0 24.8 44.1 44.1 8.1 65 34.0 12.3 7.4 1.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Grp Sat Flow(s),veh/h/ln	1704	1679	1555	1704	1679	1816	1704	1752	1514	1704	1752	1664
2.0 55.7 12.0 24.8 44.1 44.1 81 65 34.0 12.3 7.4 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	Q Serve(g_s), s	2.0	22.7	12.0	24.8	44.1	44.1	8.1	6.5	34.0	12.3	7.4	7.9
1,00	Cycle Q Clear(g_c), s	2.0	22.7	12.0	24.8	44.1	44.1	8.1	6.5	34.0	12.3	7.4	7.9
656 1871 578 6431 1183 640 229 397 343 279 433 656 1871 578 653 1183 640 229 397 343 279 433 656 1871 578 1370 1775 960 232 033 033 1.11 103 025 656 1871 578 1370 1775 960 232 397 343 279 433 220 200 200 200 033 033 033 1.00 1.00 1.00 1.00 1.00	Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	1.00		0.57
0.11 1.39	Lane Grp Cap(c), veh/h	929	1871	218	631	1183	640	229	397	343	279	433	411
656 1871 578 1370 1775 960 232 397 343 279 433 2.00 2.00 2.00 2.00 3.3 0.33 0.33 0.3	V/C Ratio(X)	0.11	1.39	0.52	0.00	0.85	0.85	0.81	0.23	1.11	1.03	0.25	0.27
2.00 2.00 0.33 0.33 0.33 1.00 1.00 1.00 1.00 1	Avail Cap(c_a), veh/h	929	1871	278	1370	1775	096	232	397	343	279	433	411
0.47 0.47 0.49 0.49 0.49 1.00 1.00 1.00 1.00 37.9 1.91 1.32 1.37 0.49 0.49 0.49 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.75 1.6 1.0 4.0 7.2 17.9 0.1 81.7 62.9 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
3.79 19.3 13.7 69.0 62.4 62.4 69.0 47.4 58.0 68.8 45.3 60.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Upstream Filter(I)	0.47	0.47	0.47	0.49	0.49	0.49	1.00	1:00	1.00	1.00	1.00	1.00
00 1775 16 10 40 72 1779 01 817 629 01 00 00 00 00 00 00 00 00 00 00 00 00	Uniform Delay (d), s/veh	37.9	19.3	13.7	0.69	62.4	62.4	0.69	47.4	28.0	8.89	45.3	45.5
10 557 5.3 118 2.35 4.4 32 22.0 8.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Incr Delay (d2), s/veh	0.0	177.5	1.6	1.0	4.0	7.2	17.9	0.1	81.7	65.9	0.1	0.1
1.0 55.7 5.3 11.8 21.2 23.5 4.4 3.2 22.0 8.2 3.6 5.7 5.3 11.8 21.2 23.5 4.4 3.2 22.0 8.2 3.6 5.7 5.3 11.8 21.2 23.5 4.4 3.2 22.0 8.2 3.6 5.2 29.3 11.8 2.3 2.1 2.2 2.2 3.6 2.5 2.2 3.6 2.2 3.6 2.2 3.6 2.2 3.6 2.2 3.6 2.2 3.6 2.2 3.6 2.2 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3.9 1968 15.2 70.0 66.5 69.6 86.9 47.5 139.7 1318 45.5	%ile BackOfQ(50%),veh/ln	1.0	22.7	5.3	11.8	21.2	23.5	4.4	3.2	22.0	8.2	3.6	3.6
D F B E E F D F F	LnGrp Delay(d),s/veh	37.9	196.8	15.2	70.0	999	9.69	86.9	47.5	139.7	131.8	45.5	45.7
2973 2117 660 174.7 68.2 111.9 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 32.0 61.7 14.3 42.0 34.9 58.8 17.3 39.0 4.2 5.0 6 7.6 5.0 5 5.0 24.0 10 36.1 5.0 79 1.0 0.0 0.7 0.0 6.8 0.0 0.0 1.0 0.0 0.7 0.0 6.8 0.0 0.0 1.25.6 7 1.25.6 7 1.25.6 7 1.25.6	LnGrp LOS		니	<u>ه</u>	ш	ш	ш	띡		니	니		۵
1747 682 111.9 1 2 3 4 5 6 7 8 32.0 61.7 14.3 42.0 34.9 58.8 17.3 39.0 4.2 60 74 2 50 60 6 50 5 22.8 57.7 10.1 9.9 40 46.1 14.3 36.0 1.0 0.0 0.0 0.7 0.0 6.8 0.0 0.0	Approach Vol, veh/h		2973			2117			099			206	
1 2 3 4 5 6 7 320 61.7 14.3 42.0 34.9 58.8 17.3 4.2 60 42 5.0 6.0 6 5.0 *60 24.0 *10 36.1 5.0 *79 12.3 26.8 57.7 10.1 9.9 4.0 46.1 14.3 1.0 0.0 0.0 0.7 0.0 6.8 0.0	Approach Delay, s/veh		174.7			68.2			111.9			94.8	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 320 617 143 420 349 588 17.3 *42 60 *42 50 60 *6 50 *60 240 *10 36.1 50 *79 12.3 268 577 10.1 99 4.0 46.1 14.3 1.0 0.0 0.0 0.7 0.0 6.8 0.0	Approach LOS		ш.			ш			ш.			ш.	
1 2 3 4 5 6 7 320 61.7 14.3 42.0 34.9 58.8 17.3 42 6.0 74.2 50.6.0 6 5.0 60 24.0 10 36.1 5.0 79 12.3 26.8 57.7 10.1 9.9 4.0 46.1 14.3 1.0 0.0 0.0 0.7 0.0 6.8 0.0 125.6	Timer	_	2	3	4	2	9	7	∞				
32.0 61.7 14.3 42.0 34.9 58.8 17.3 14.2 56.0 14.2 56.0 6.0 16.5 5.0 5.0 16.0 16.2 5.0 5.0 16.0 16.0 16.0 16.0 16.0 16.0 16.0 16	Assigned Phs	-	2	3	4	2	9	7	∞				
74.2 6.0 74.2 5.0 6.0 6.5 5.0 6.0 76 5.0 6.0 76 5.0 6.0 7.0 1.3 26.8 57.7 10.1 9.9 4.0 46.1 14.3 1.0 0.0 0.0 0.7 0.0 6.8 0.0 125.6 F.	Phs Duration (G+Y+Rc), s	32.0	61.7	14.3	45.0	34.9	28.8	17.3	39.0				
760 240 10 36.1 5.0 79 12.3 26.8 57.7 10.1 9.9 4.0 46.1 14.3 1.0 0.0 0.0 0.7 0.0 6.8 0.0 125.6	Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	2.0	0.9	9 *	2.0	* 5				
268 577 10.1 9.9 4.0 46.1 14.3 1.0 0.0 0.0 0.7 0.0 6.8 0.0 125.6	Max Green Setting (Gmax), s	09 *	24.0	* 10	36.1	2.0	¢ 79	12.3	* 34				
1.0 0.0 0.0 0.7 0.0 6.8 0.0 125.6	Max Q Clear Time (g_c+I1), s	26.8	57.7	10.1	6.6	4.0	46.1	14.3	36.0				
	Green Ext Time (p_c), s	1.0	0.0	0.0	0.7	0.0	8.9	0.0	0.0				
	Intersection Summary												
HCM 2010 LOS F	HCM 2010 Ctrl Delay			125.6									
Notice	HCM 2010 LOS			ш									
	Noton												

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Synchro 10 Report Page 26

Movement		4	Ť	<u> </u>	-	Ļ	4	•	←	4	۶	→	*
1	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1071 1952 571 270 1022 80 301 700 260	Lane Configurations	F	444	¥C.	F	444	¥	F	≣	¥C	F	+	£
1071 1952 571 270 1022 80 301 700 260	Traffic Volume (veh/h)	1071	1952	571	270	1022	80	301	700	260	190	610	821
10	Future Volume (veh/h)	1071	1952	571	270	1022	80	301	700	260	190	610	821
100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	2	2	12	-	9	16	က	00	18	7	4	14
1.00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
100 100 100 100 100 100 100 100 100 100	Ped-Bike Adj(A_pbT)	1.00	9	0.99	1.00		66:0	1.00		66:0	1.00	1	0.99
1192 2077 649 1845 1845 1845 1845 1845 1845 1845 1845	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00 104	1.00	1.00	1.00	1.00
6 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Adj Sat Flow, vervn/in	1120	2077	1845	202	1007	1845	220	745	1845	202	1845	072
6 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Adj No of Lanes	611	2011	9	6	700	60	320	2	717	202	2	0,0
6 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.94	0.04	0.94	0.94	0.94	0.94	0.94	0.04	0.04	0.94	70 0	0 94
1100 2444 756 314 1222 376 186 1430 493 6032 0.32 0.49 0.49 0.09 0.24 0.24 0.05 0.23 0.23 0.23 0.49 0.49 0.49 0.09 0.24 0.24 0.05 0.23 0.23 0.23 0.23 0.23 0.23 0.23 0.23	Percent Heavy Veh. %	, c	, c	5	, c	, c							5
3408 6036 1558 3408 6036 6036 6036 6036 6036 6036 1139 2077 87 1087 8036 1139 2077 87 1087 8036 1139 2077 87 1087 8036 1139 2077 87 1087 8036 1139 2077 87 1087 8036 1139 2077 87 1087 8036 1139 2077 87 1087 8036 1139 2077 87 1087 8036 1139 8036 1139 8036 1100 2444 756 314 1222 376 186 1430 493 1100 2444 756 314 1222 376 186 1430 493 1100 2444 756 314 1222 376 186 1430 493 1100 2444 756 314 1222 376 186 1430 493 1100 2444 756 314 1222 376 186 1430 493 1100 2444 756 314 1222 376 186 1430 493 1100 100 100 100 100 100 100 100 100 1	Cap, veh/h	1100	2444	756	314	1222	376	186	1430	493	209	778	1495
3408 5036 1558 3408 5036 1549 3408 6346 1547 3 1139 2077 607 287 1087 85 320 745 277 48.4 54.2 36.4 12.5 31.3 5.5 8.2 15.5 22.3 48.4 54.2 36.4 12.5 31.3 5.5 8.2 15.5 22.3 48.4 54.2 36.4 12.5 31.3 5.5 8.2 15.5 22.3 48.4 54.2 36.4 12.5 31.3 5.5 8.2 15.5 22.3 48.4 54.2 36.4 12.5 31.3 5.5 8.2 15.5 22.3 48.4 54.2 36.4 12.5 31.3 5.5 8.2 15.5 22.3 48.4 54.2 36.4 12.5 31.3 5.5 8.2 15.5 22.3 48.4 54.2 36.4 12.5 31.3 5.5 8.2 15.5 22.3 48.4 54.2 36.4 12.5 31.3 5.5 8.2 15.5 22.3 48.4 54.2 36.4 12.5 31.3 5.5 8.2 15.5 22.3 48.4 54.2 36.4 12.5 31.3 5.5 8.2 15.5 22.3 49.5 0.0 0.0 0.0 0.0 0.0 100 100 100 100 100	Arrive On Green	0.32	0.49	0.49	60.0	0.24	0.24	0.05	0.23	0.23	90.0	0.22	0.22
1139 2077 607 287 1087 85 320 745 277 1704 1679 1584 1747 1679 1584 1747 1679 1584 1747 1704 1679 1584 1747 1704 1679 1584 1747 1747 1747 1747 1747 1747 1747 17	Sat Flow, veh/h	3408	5036	1558	3408	5036	1549	3408	6346	1547	3408	3505	2722
Mn 1704 1679 1558 1704 1679 174 1764 1764 1764 186 1447 1 484 54.2 8.4 12.5 31.3 5.5 8.2 15.5 22.3 48.4 54.2 8.4 12.5 31.3 5.5 8.2 15.5 22.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	Grp Volume(v), veh/h	1139	2077	209	287	1087	82	320	745	277	202	649	873
Hard S42 36.4 12.5 31.3 5.5 82 15.5 22.3 10.0 100 244 75.6 31.4 122.2 376 18.6 13.0 493 11.0 2444 75.6 31.4 122.2 376 18.6 13.0 493 11.0 2444 75.6 31.4 122.2 376 18.6 12.2 51.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Grp Sat Flow(s),veh/h/ln	1704	1679	1558	1704	1679	1549	1704	1586	1547	1704	1752	1361
100 244 756 31.3 5.5 8.2 15.5 2.3 100 100 100 1.00 1.00 1.00 1.00 1.00		48.4	54.2	36.4	12.5	31.3	5.5	8.2	15.5	22.3	8.9	26.5	0.0
hh 1100 2444 756 314 1222 376 186 1430 493 110 2444 756 314 1222 376 186 1430 493 1110 2444 756 314 1222 376 186 1430 493 1110 2444 756 314 1222 376 186 150 50 50 60 00 00 00 00 00 00 00 00 00 00 00 00		100	24.7	36.4	100	31.3	2.5	100	15.5	100	8.9	70.5	0.0
1.04 0.86 0.80 0.92 0.89 0.23 1.72 0.52 0.56 1.100 2444 756 314 1222 376 186 1523 516 100 0.09 0.09 0.09 0.09 1.00 1.00 1.00	Lane Gro Cap(c), veh/h	1100	2444	756	314	1222	376	186	1430	493	200	778	1495
1100 2444 756 314 1222 376 186 1523 516 100 100 100 100 100 100 100 100 100 1	V/C Ratio(X)	1.04	0.85	0.80	0.92	0.89	0.23	1.72	0.52	0.56	0.97	0.83	0.58
the color of the c	Avail Cap(c_a), veh/h	1100	2444	756	314	1222	376	186	1523	516	209	872	1567
eth 50.8 33.8 17.7 67.5 54.9 31.3 70.9 51.0 1.00 eth 50.8 33.8 17.7 67.5 54.9 31.3 70.9 51.0 42.6 eth 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
eh 508 338 17.7 67.5 54.9 31.3 70.9 51.0 426 eth 19.6 0.4 0.9 29.5 81 0.1 3445 0.1 0.7 eth 25.7 25.1 15.7 7.2 15.4 2.4 12.8 6.8 9.7 70.4 34.2 18.6 97.0 6.0 0.0 0.0 0.0 0.0 0.0 0.0 70.4 34.2 18.6 97.0 6.8 3.0 31.4 415.4 51.1 43.3 1 70.4 34.2 18.6 97.0 6.8 0.7 136.4 F C B F C F D D D 70.8 38.2 4 5 6 7 8 136.4 1.2 3 4 5 6 7 8 136.5 18.0 78.8 14.2 39.0 54.4 42.4 13.4 39.8 15.5 4.2 6.0 6.0 5.7 6.0 6.7 6.0 3.3 10.0 2.8 15.5 0.0 9.3 0.0 3.3 0.0 1.4 0.0 2.8 E C F D D S C C C C C C C C C C C C C C C C C	Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
eh 196 0.4 0.9 29.5 8.1 0.1 344.5 0.1 0.7 eh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Uniform Delay (d), s/veh	20.8	33.8	17.7	67.2	54.9	31.3	70.9	51.0	42.6	70.2	22.7	22.7
eth 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Incr Delay (d2), s/veh	19.6	0.4	0.9	29.5		0.1	344.5	0.1	0.7	52.2	2.7	0.3
Here the control of t	Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	12.8	0.0	0.0	0.0	12.5	0.0
F C B F E C F D D 3823 1459 1342 h 42.5 6/78 136.4 1 2 3 4 5 6 7 8 10,5 180 788 142 39.0 54.4 42.4 134 39.8 (c),5 145 56.2 102 28.5 50.4 33.3 10.9 24.3 cell),5 145 56.2 10.2 28.5 50.4 33.3 10.9 24.3 (c) 9,3 0,0 3,3 0,0 1.4 0,0 2.8	LnGrp Delay(d),s/veh	70.4	34.2	18.6	97.0	63.0	31.4	415.4	51.1	43.3	122.4	61.4	23.1
h 42.5 1459 h 42.5 67.8 1 2 3 4 5 6 7 1 2 3 4 5 6 7 2),s 180 788 142 39.0 544 424 134 3),s "42 6.0 6.0 "5,7 6.0 "6 "4,2 1,s 145 562 102 28.5 50.4 33.3 10.9 3 0.0 9.3 0.0 3.3 0.0 1.4 0.0	LnGrp LOS	ш	O	В	ш	Ш	O	ш	D	D	ш	ш	0
h 42.5 67.8 D 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 3 4 5 6 7 1 3 4 5 6 7 1 3 4 5 6 7 1 3 4 5 6 7 1 3 4 5 6 7 1 4 2 8.2 37 48.4 3.3 10.9 1 5 0.0 9.3 0.0 3.3 0.0 1.4 0.0 63.4	Approach Vol, veh/h		3823			1459			1342			1724	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 3 4 5 6 7 1 3 4 5 6 7 1 3 4 5 6 7 1 4 34,0 5 8.2 3.7 48.4 3.6 9.2 1 4 70.6 8.2 3.7 48.4 3.6 9.2 1 5 0.0 9.3 0.0 3.3 0.0 1.4 0.0 1 63.4	Approach Delay, s/veh		42.5			8.79			136.4			49.1	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 3 30 544 42 413,4 2),5 18.0 78.8 142 39,0 544 42 412,4 2,5 10,0 82 37 48.4 36 9,2 2,611),5 14.5 56.2 10.2 28.5 50.4 33.3 10.9 3.3 0.0 1.4 0.0 6.3 6.3 4	Approach LOS		Ω			ш			ш			D	
(c), s 18.0 78.8 14.2 39.0 54.4 42.4 13.4 5), s 18.0 78.8 14.2 39.0 54.4 42.4 13.4 5), s 14.7 70.6 82 '3.7 48.4 '36 '9.2 (c.H1), s 14.5 56.2 10.2 28.5 50.4 33.3 10.9 (c.H1), s 14.5 56.2 30.0 3.3 0.0 1.4 0.0 (c.H1), s 14.5 56.2 50.4 33.3 10.9 (c.H1), s 14.5 56.2 10.2 28.5 50.2 28.5 50.2 28.5	Timer	1	2	3	4	2	9	7	8				
(c), s 18.0 78.8 14.2 39.0 54.4 42.4 13.4 13.4 13.5 4.2 6.0 60 .5.7 60 .6 4.2 9.2 (c), s 14.5 56.2 10.2 28.5 50.4 33.3 10.9 c.11), s 14.5 56.2 10.2 28.5 50.4 33.3 10.9 c.11 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3	Assigned Phs	7	2	3	4	2	9	7	8				
), s *42 60 60 '57 60 '6 '42 may), s '44 70.6 8.2 '37 48.4 '36 '9.2 37 48.4 '36 '9.2 37 60.0 9.3 0.0 3.3 0.0 1.4 0.0 63.4 E	Phs Duration (G+Y+Rc), s	18.0	78.8	14.2	39.0	54.4	42.4	13.4	39.8				
imay, s '14 706 8.2 '37 48.4 '36 '9.2 c+th), s 14.5 56.2 10.2 28.5 50.4 33.3 10.9 c+th), s 0.0 9.3 0.0 3.3 0.0 1.4 0.0 c+th). S 63.4	Change Period (Y+Rc), s	* 4.2	0.9	0.9	* 5.7	0.9	9 *	* 4.2	0.9				
C+fl), s 14.5 56.2 10.2 28.5 50.4 33.3 10.9 , s 0.0 9.3 0.0 3.3 0.0 1.4 0.0 63.4 E	Max Green Setting (Gmax), s		9.02	8.2	* 37	48.4	* 36	* 9.2	36.0				
65 0.0 7.3 0.0 5.3 0.0 1.4 0.0 63.4 E	Max Q Clear Time (g_c+I1), s		56.2	10.2	28.5	50.4	33.3	10.9	24.3				
	Green Ext IIMe (p_c), s	0.0	4.3	0.0	5.5	0.0	4.	0.0	7.8				
	Intersection Summary												
HCM 2010 LOS E	HCM 2010 Ctrl Delay			63.4									
	HCM 2010 LOS			ш									
Motoc	Notes												

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HCM 2010 Signalized Intersection Summary 17: El Camino Real & Town Garden Rd.

Ex + Cumulative + NT Project (PAL2) PM 08/24/2017

HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL2) PM 18: El Camino Real & Camino Vida Roble 0824/2017

	1	1	~	>	ţ	4	•	-	4	٨	-	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		₩	¥C	<u>r</u>	æ		F	444	¥	, -	444	*
Traffic Volume (veh/h)	170	20	120	230	9	190	2 2	1305	200	250	1634	20
Future Volume (ven/n)	0 -	8	14	730	€ «	<u> </u>	5 ~	1305	7 200	720	1034	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	1 0	0	- 0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		96:0	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	172	7	124	237	t4 t	196	72	1345	206	258	1685	52
Auj Ivo. Ul Lalles Peak Hour Factor	0 07	0 07	0 07	0.07	0 07	0 07	0.07	0.07	0.07	0.07	0.07	0.07
Percent Heavy Veh, %	33	33		33		33	33.00	33.	33	33	33	33
Cap, veh/h	236	28	224	328	20	240	70	1182	360	206	2503	775
Arrive On Green	0.15	0.15	0.15	0.19	0.19	0.19	0.04	0.23	0.23	0.29	0.50	0.50
Sat Flow, veh/h	1577	189	1496	1757	269	1287	1757	5036	1535	1757	5036	1558
Grp Volume(v), veh/h	196	0	124	237	0	237	72	1345	206	258	1685	52
Grp Sat Flow(s),veh/h/ln	1766	0	1496	1757	0	1556	1757	1679	1535	1757	1679	1558
Q Serve(g_s), s	15.9	0.0	11.5	19.0	0.0	21.9	0.9	35.2	17.8	18.4	37.9	2.6
Cycle Q Clear(g_c), s	15.9	0.0	11.5	19.0	0:0	21.9	0.9	35.2	17.8	18.4	37.9	2.6
Prop In Lane	0.89	d	1.00	1.00	d	0.83	1.00	7	1.00	1.00	0	1.00
Lane Grp Cap(c), ven/n V/C Ratin(X)	264	000	0.55	328		290	100	114	360	206	2503	007
Avail Cap(c_a). veh/h	447	0	379	468	0	415	70	1182	360	206	2503	775
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.0	0.0	59.1	57.4	0.0	58.5	72.0	57.4	20.7	44.6	28.5	19.6
Incr Delay (d2), s/veh	1.6	0.0	0.8	1.3	0.0	5.5	114.3	72.9	6.5	0.4	1.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
%ile BackUrU(50%),venin	6.7	0.0	70 0	9.3	0:0	6.6	1.6	130.3	8.2	0.6 AF 0	30.0	10.8
LnGrp LOS	0.2.0 E	9	37.7 E	9.00	9	5. П	- L	- H	2.75 E. H	0.24	S C)	B
Approach Vol, veh/h		320			474			1623			1995	
Approach Delay, s/veh		61.5			61.3			123.5			31.6	
Approach LOS		ш			ш			ш.			S	
Timer	1	2	3	4	2	9	7	8				
Assigned Phs	τ-	2		4	2	9		8				
Phs Duration (G+Y+Rc), s	49.6	41.6		26.6	10.2	81.0		32.2				
Change Period (Y+Rc), s	* 6.4	* 6.4		* 4.2	* 4.2	* 6.4		4.2				
Max O Clear Time (n. c+11) s	20.4	37.7		17.0	9 0	39.0		40.0				
Green Ext Time (p_c), s	0.0	0.0		0.8	0.0	4.7		1.2				
Intersection Summary												
HCM 2010 Ctrl Delay			70.8									
HCM 2010 LOS			ш									
Notes												

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Synchro	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	jr-	4	¥C.		4		F	‡	¥C	<u>,-</u>	444	
Traffic Volume (veh/h)	280	10	462	10	10	10	172	1325	10	30	1714	100
Future Volume (veh/h)	280	10	462	10	10	10	172	1325	10	30	1714	100
Number	7	4	14	3	∞	18	2	2	12	_	9	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		96.0	1.00		0.92	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1900	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	196	0	285	10	10	10	17.1	1366	10	31	1767	103
Adj No. of Lanes	-	0	2	0	-	0	2	2	-	—	က	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	က	co	33	3	co	က	က	co	co	co	က	3
Cap, veh/h	388	0	899	38	38	38	114	1915	846	39	2604	152
Arrive On Green	0.22	0.00	0.22	0.07	0.07	0.07	0.03	0.55	0.55	0.02	0.54	0.54
Sat Flow, veh/h	1757	0	3026	553	553	553	3408	3505	1554	1757	4862	283
Grp Volume(v), veh/h	196	0	582	30	0	0	177	1366	10	31	1219	651
Grp Sat Flow(s),veh/h/ln	1757	0	1513	1659	0	0	1704	1752	1554	1757	1679	1787
Q Serve(g_s), s	14.7	0.0	27.8	5.6	0.0	0.0	2.0	43.4	0.4	5.6	39.7	39.9
Cycle Q Clear(g_c), s	14.7	0.0	27.8	5.6	0.0	0.0	2.0	43.4	0.4	5.6	39.7	39.9
Prop In Lane	1.00		1.00	0.33		0.33	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	388	0	899	112	0	0	114	1915	846	36	1798	957
V/C Ratio(X)	0.51	0.00	0.87	0.26	0.00	00:0	1.56	0.71	0.01	0.79	89.0	0.68
Avail Cap(c_a), veh/h	445	0	992	443	0	0	114	1915	846	47	1798	957
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	00.1	0.00	00.1	00.1	0.00	0.00	1.00	00.1	00.1	00.T	00.1	00.1
Uniform Delay (d), s/veh	51.3	0.0	56.4	66.2	0.0	0.0	72.5	25.3	15.5	73.0	25.4	25.4
Incr Delay (d2), siven	0.0	0.0	8.6	1.2	0.0	0.0	289.5	2.3	0.0	51.7	2.1	3.9
Initial Q Delay(d3),s/ven	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOrU(50%),veh/in	7.7	0.0	12.5	7.7	0.0	0.0	6.9	27.5	0.7		8.8	20.7
LnGrp Delay(d),s/veh	52.3	0:0	7.99	67.4	0:0	0.0	362.0	27.6	15.5	124.7	27.5	29.3
LnGrp LOS			Ш	ш			-	ပ		-	ပ	٥
Approach Vol, veh/h		778			30			1553			1901	
Approach Delay, s/veh		62.7			67.4			9:29			29.7	
Approach LOS		ш			ш			ш			O	
Timer	-	2	3	4	2	9	7	8				
Assigned Phs	_	2		4	2	9		∞				
Phs Duration (G+Y+Rc), s	9.4	88.0		38.1	11.0	86.3		14.6				
Change Period (Y+Rc), s	0.9	0.9		* 5	0.9	0.9		4.2				
Max Green Setting (Gmax), s	4.0	46.8		* 38	2.0	45.8		40.0				
Max Q Clear Time (g_c+I1), s	4.6	45.4		29.8	7.0	41.9		4.6				
Green Ext Time (p_c), s	0.0	- :		2.1	0.0	3.4		0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			49.1									
HCM 2010 LOS			D									

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HCM 2010 Signalized Intersection Summary Ex + Cumulative + NT Project (PAL2) PM 19: El Camino Real & Poinsettia Ln.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	₹		F	₹		F	444	¥	F	4413	
Traffic Volume (veh/h)	10	10	10	290	30	120	20	1287	490	220	1896	20
Future Volume (veh/h)	10	10	10	290	30	120	20	1287	490	220	1896	20
Number	۲ 0	4 0	4 0	m c	∞ <	8 0	വ	7	17	- c	90	16
Ped-Bike Adi(A pbT)	1.00	>	0.94	1:00	>	0.96	1.00	0	0.99	1.00	0	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	11	11	11	312	32	129	22	1384	527	237	2039	22
Adj No. of Lanes	2	2	0	2	2	0	2	3	-	2	3	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	33	207	169	358	376	325	989	2837	879	282	2225	24
Arrive On Green	0.01	0.12	0.12	0.10	0.21	0.21	0.20	0.56	0.56	0.08	0.43	0.43
Sat Flow, veh/h	3408	1782	1457	3408	1752	1512	3408	5036	1560	3408	5135	22
Grp Volume(v), veh/h	11	=	=	312	32	129	22	1384	527	237	1333	728
Grp Sat Flow(s),veh/h/ln	1704	1752	1487	1704	1752	1512	1704	1679	1560	1704	1679	1833
Q Serve(g_s), s	0.5	8.0	1.0	13.5	2.2	11.0	8.0	24.8	19.8	10.3	55.9	26.0
Cycle Q Clear(g_c), s	0.5	8.0	1.0	13.5	2.2	11.0	0.8	24.8	19.8	10.3	55.9	26.0
Prop In Lane	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	33	204	173	358	376	325	982	2837	879	282	1455	794
V/C Ratio(X)	0.33	0.02	90:0	0.87	0.09	0.40	0.03	0.49	09.0	0.84	0.92	0.92
Avail Cap(c_a), veh/h	91	456	387	427	625	539	982	2837	879	357	1524	832
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	73.8	29.0	29.0	1.99	47.1	9.09	48.2	19.7	7.6	8.79	39.9	40.0
Incr Delay (d2), s/veh	2.1	0.0	0.1	13.9	0.0	0.3	0.0	9.0	3.0	11.0	10.5	17.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.4	0.4	7.1	7:	4.6	0.4	11.7	9.2	5.3	28.0	32.1
LnGrp Delay(d),s/veh	75.9	29.0	59.1	80.1	47.2	20.9	48.2	20.3	10.6	78.8	50.5	57.1
LnGrp LOS	ᆈ	ᆈ	ᆈ	니				ပ		ᆈ		۳
Approach Vol, veh/h		33			473			1933			2298	
Approach Delay, s/veh		64.7			6.69			18.0			22.5	
Approach LOS		ш			ш			В			ш	
Timer		2	3	4	2	9	7	8				
Assigned Phs	1	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	16.6	90.5	20.7	22.1	36.1	71.0	2.7	37.2				
Change Period (Y+Rc), s	* 4.2	0.9	, 5	* 4.7	0.9	9 *	* 4.2	, 5 *				
Max Green Setting (Gmax), s	* 16	57.4	* 19	* 39	2.0	89 *	*	* 54				
Max Q Clear Time (g_c+I1), s	12.3	26.8	15.5	3.0	2.8	28.0	2.5	13.0				
Green Ext Time (p_c), s	0.2	24.7	0.5	0.1	0.0	7.0	0.0	0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			41.7									
HCM 2010 LOS			Q									
Notes												
COLON												

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	APPENDIX F
	HORIZON YEAR INTERSECTION ANALYSIS CALCULATION WORKSHEETS
LINSCOTT, LAW & GREENSPAN, engineers	LLG Ref. 3-17-2772 McClellen Palemer Airport Master Plan Undete

HCM 2010 Signalized Intersection Summary 1: Faraday Ave. & Canon Rd.

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Movement	EBE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	je-	₹		<u>, </u>	₹		<i>y</i> -	4			4	
Traffic Volume (veh/h)	20	250	620	8	1010	20	190	20	30	20	20	20
Future Volume (veh/h)	70	250	620	8	1010	70	190	70	30	20	20	70
Number	2	2	12	-	9	16	က	∞ (18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	9. 5	5	0.98	9. 5	5	0.06	1.00	5	0.95	1.00	00	0.91
Palking bus, Auj	18.4E	18.4F	1000	18.45	18.4F	1000	1845	1845	1000	1000	1845	1000
Adj Flow Rate, veh/h	22	278	689	68	1122	200	133	131	33	22	22	22
Adi No. of Lanes	-	2	0	; -	2	0	-	-	0	0	-	0
Peak Hour Factor	0.90	06:0	06:0	06.0	0.90	0.90	06:0	06:0	06.0	06:0	06:0	06:0
Percent Heavy Veh, %	3	c	3	c	c	c	3	c	c	c	c	3
Cap, veh/h	421	912	798	113	1211	24	255	204	21	28	28	28
Arrive On Green	0.24	0.52	0.52	90.0	0.34	0.34	0.15	0.15	0.15	0.05	0.02	0.05
Sat Flow, veh/h	1757	1752	1534	1757	3512	69	1757	1407	354	551	551	551
Grp Volume(v), veh/h	22	278	689	68	290	584	133	0	164	99	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1534	1757	1752	1829	1757	0	1762	1652	0	0
Q Serve(g_s), s	1.0	0.6	39.1	2.0	30.8	30.8	7.0	0.0	8.8	4.0	0.0	0.0
Cycle Q Clear(g_c), s	1.0	0.6	39.1	2.0	30.8	30.8	7.0	0.0	89.	4.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.20	0.33		0.33
Lane Grp Cap(c), veh/h	421	912	798	113	604	630	255	0	255	83	0	0
V/C Ratio(X)	0.02	0.30	0.86	0.79	0.93	0.93	0.52	0.00	0.64	0.79	0.00	0.00
Avail Cap(c_a), veh/h	421	912	798	141	613	940	280	0	281	66	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1:00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.3	13.7	20.9	46.1	31.5	31.5	39.5	0.0	40.3	47.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.9	11.9	9.91	22.4	21.8	1.2	0.0	2.0	25.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	4.5	19.1	2.9	18.5	19.2	3.5	0.0	4.4	2.4	0.0	0.0
LnGrp Delay(d), s/ven	29.3	14.5	37.8	8.29	53.9	53.3	40.8	0.0	47.3	0.7/	0.0	0.0
LnGrp LOS	اد	a 8	اد	ш	D 2007			100		ш	:	
Approach Vol. venyn		484			1233			167			90 02	
Approach LOS		0.12 C			24.5 C			0.14 D			0.27 E	
	ľ		•	ŀ			ľ	•				ı
Limer	_	. 7	3	4	2	9	/	∞				
Assigned Phs		2		4 0	2 2	9 !		00 1				
Phs Duration (G+Y+Rc), s	12.4	28.0		0.0	30.0	40.5		19.5				
	0.9	0.9		2.0	0.9	0.9		2.0				
Max Green Setting (Gmax), s	0.0	31.0		0.9	4.0	35.0		33.0				
Max U Clear Time (g_c+IT), s	0.7	41.1		0.9	3.0	32.8		8.01				
Green Ext IIMe (p_c), s	0.0	0.0		0.0	0.0			6:0				
Intersection Summary												
HCM 2010 Ctrl Delay			43.1									
HCM 2010 LOS			O									
Notes												

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HCM 2010 Signalized Intersection Summary 2: College Blvd. & El Camino Real

Long-Term AM 08/24/2017

Long-Term AM 08/24/2017

FBT FBR WBL WBT WBR NBR NBL WBT NBT NR 220 220 8 8 0.1 1.00 1.1845 19 239	SBL	SBR	
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210 2240 700 200 640 210 5 2 1 1 6 16 100 10 0 0 0 0 1100 100 100 100 100 120 100 100 100 100 1345 1345 1345 1345 1345 228 2435 0 2 228 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 48 2072 645 470 3265 1012 228 2072 645 470 3265 1012 230 0.41 0.00 0.2 0.8 0.8 102 248 2072 645 470 3265 1012 101 50 53.5 0.0 134 7.3 7.8 101	220 8 0 0 1.00 1.	20 420 390	410
5 2 12 1 6 16 100 0 0 0 0 0 1100 100 100 100 100 120 100 100 100 100 120 100 100 100 100 128 243 0 217 696 228 13 1 1 3 1 3	8 0 0.1.100 1.845 239	420	410
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100	1.00 1845 .	1.00	
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1 3 1 1 3 1 092 092 092 092 092 092 3 3 3 3 3 3 3 68 2072 645 470 3265 1012 093 093		22 457 424	446
0.92 0.92 0.92 0.92 0.92 0.92 0.93 0.93 3 3 3 3 8 8 8 20.72 0.45 470 3265 0.05 0.04 0.04 0.04 0.04 0.07 0.05 0.05 0.05 0.05 0.05 0.05 0.05	2	2	
3 4 3 4 6 2 2 6 6 2 8 6 2 2 4 3 3 1 1 0 1 1 1 1 3 4 3 4	0.92 0.92	2 0.92 0.92	0.92
68 2072 645 470 3265 1012 1757 6304 041 020 027 0.65 0.65 0.65 0.65 0.65 0.65 0.65 0.65	က	က	
0.04 0.04 0.04 0.05 <td< td=""><td>991</td><td>105</td><td></td></td<>	991	105	
1,27 2,28 2,435 0 2,17 6,96 2,28 1,757 1,679 1,568 1,757 1,679 1,568 1,757 1,679 1,568 1,757 1,679 1,568 1,757 1,679 1,568 1,757 1,679 1,568 1,757 1,00	0.31 0.31	1 0.03 0.31	
7.27 16.79 1.56 1.57 16.79 1.58 5.0 53.5 0.0 13.4 7.3 7.8 1.00 5.0 53.5 0.0 13.4 7.3 7.8 1.00	3239	3400	
155 1679 1686 1757 1679 1681 1757 1679 1681 1755 1	128	45/	
5.0 53.5 0.0 13.4 7.3 7.6 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	1/52 1/82	2 1/04 1/52	27.4
1.00	7.1	4.0 V	
68 2072 645 470 3265 1012 68 2072 645 470 3265 1012 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0	1.00	
337 1.17 0.00 0.46 0.21 0.23 68 2072 645 470 3265 1012 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	536		
68 2072 645 470 3265 1012 1.00 1.00 1.00 1.00 1.00 1.00 62.5 38.3 0.0 39.8 9.3 9.4 1105.0 84.2 0.0 0.0 0.0 0.0 23.2 40.9 0.0 6.5 3.4 3.5 1167.5 122.4 0.0 40.0 9.5 9.9 5 F F F D A A B 11 2 3 4 5 6 11 2 3 4 5 6 11 2 3 4 5 6 11 2 3 4 5 6 11 2 3 4 5 6 11 2 3 4 5 6 11 2 3 6 11 2 3 6 11 3 6 11 4 6 11 5 5 12 4 6 10 7 5 11 4 7 6 10 7 5 11 7 7 8 11 7 8 11 8 11 8 11 8 11 8 11	0.24 (4.36	Ů
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	539	105	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00		
62.5 38.3 0.0 39.8 9.3 9.4 105.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1.00	1.00	
1105 0 84.2 0.0 0.3 0.1 0.5 3 0.1 0.5 3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	33.8	63.0 4	
232 40.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.1	1533.0	,
23.2 40.9 0.0 6.5 5.4 5.5 7.7 1167.5 122.4 0.0 40.0 9.5 9.9 9.5 9.9 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6	0.0	0.0	
10 10 10 10 10 10 10 10	3.5	3.6 24.2 15.0	19.7
2663 1141 15.4 E B 15.4 E B 15.4 E B B 15.4 E B B 15.4 E B B 1 1 1 2 3 4 5 6 6 1 1 1 2 3 4 5 6 6 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1	. C	1370.0 F	
211.9		132	
F B B C C C C C C C C C C C C C C C C C	116.2	590.3	
1 2 3 4 5 6 1 2 3 4 5 6 41:5 59:5 9 46:3 10.0 91:0 60 * 6 5 5 6 6 100 * 4 4 40.0 50 58:5 15:4 55:5 6 39:4 7.0 9:8	ıŁ	L	
1 2 3 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	00		
415 59.5 9.0 46.3 10.0 91.0 60 *6 5.0 6.5 5.0 6.0 10.0 *54 4.0 6.0 5.0 5.8 5 15.4 55.5 6.0 39.4 7.0 9.8			
0.0 ° 6 5.0 ° 6.5 5.0 ° 0.0 10.0 10.0 10.0 10.0 10.0 10.0 1	4		
10.0 54 4.0 40.0 5.0 58.5 15.4 55.5 6.0 39.4 7.0 9.8			
0.7 5.7 5.0	40.0		
Green Ext Time (b c), s 0.0 0.0 0.0 0.3 0.0 3.1 0.0			
HCM 2010 Ctrl Delay 255.2			

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HCM 2010 Signalized Intersection Summary 3: College Blvd. & Faraday Ave.

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Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	₩.		۴	₩.		K.	₩.		K.	₩	
Traffic Volume (veh/h)	70	430	170	210	420	06	270	310	390	260	540	130
Future Volume (veh/h)	70	430	170	210	420	8	270	310	330	260	540	130
Number	7	4	14	co	∞	18	2	2	12	-	9	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1:00	1.00	1.00	1:00	1:00	1:00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	9/	467	182	228	457	86	293	337	424	283	287	141
Adj No. of Lanes	-	2	0	—	2	0	2	2	0	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	c	c	c	3	3	3	3	c	c	3	m
Cap, veh/h	4	684	269	136	998	184	264	571	497	264	606	218
Arrive On Green	0.06	0.28	0.28	0.08	0.30	0.30	0.08	0.33	0.33	0.08	0.33	0.33
Sat Flow, veli/II	/6/1	24.30	104	1071	7007	000	2400	76/1	+201	2400	4017	000
Grp Volume(v), ven/h	1757	335	31/	1757	1750	2/6	293	33/	424	770.4	368	360
O Serve(a s) s	2.6	1/32	14 1	1/3/ 4/2/	11.1	11.2	4 A	12 F	21 8	+ VO 4	15.0	15.1
Cycle O Clear(a c) s	3.6	14.3	74.5	, v		11.2	, y	12.5	0.12 0.12	6.5	15.0	15.1
Prop In Lane	1.00	ř	0.58	1.00	-	0.35	1.00	5	1.00	1.00	2	0.39
Lane Gro Cap(c), veh/h	4	492	461	136	531	520	264	571	497	264	571	556
V/C Ratio(X)	0.78	89.0	69.0	1.68	0.52	0.53	1.11	0.59	0.85	1.07	0.64	0.65
Avail Cap(c_a), veh/h	119	752	704	136	697	753	264	648	263	264	648	630
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.1	26.8	26.9	38.7	24.2	24.3	38.7	23.6	26.4	38.7	24.1	24.2
Incr Delay (d2), s/veh	23.3	1.7	1.8	333.7	0.8	0.8	0.88	=======================================	11.0	75.7	-0.	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	7.1	9.9	15.7	2.5	5.4	6.2	9.9	10.7	2.8	7.6	7.4
LnGrp Delay(d),s/veh	62.4	28.5	28.8	372.4	25.0	25.1	126.7	24.7	37.4	114.4	26.0	26.1
LnGrp LOS	ш	ပ	ی	-	U	U	-	U		-	اد	ا
Approach Vol, veh/h		728			783			1054			1011	
Approach Delay, s/veh		32.1			126.2			28.5			20.8	
Approach LOS		ပ			ш			ш			O	
Timer	1	2	3	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	11.0	33.4	11.0	28.5	11.0	33.4	9.1	30.4				
Change Period (Y+Rc), s	4.5	0.9	4.5	2.0	4.5	0.9	4.5	2.0				
Max Green Setting (Gmax), s	6.5	31.0	6.5	36.0	6.5	31.0	5.7	36.8				
Max Q Clear Time (g_c+I1), s	8.5	23.8	8.5	16.5	8.5	17.1	5.6	13.2				
Green Ext Time (p_c), s	0.0	2.6	0.0	3.7	0.0	3.4	0.0	3.2				
Intersection Summary												
HCM 2010 Ctrl Delay			65.7									
HCM 2010 LOS			ш									

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HCM 2010 Signalized Intersection Summary 4: El Camino Real & Faraday Ave.

Long-Term AM 08/24/2017

Long-Term AM 08/24/2017

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	‡	¥.	k	*	K.	K.	4413		E.	+++	*
Traffic Volume (veh/h)	09	320	190	220	860	200	800	710	150	200	1770	250
Future Volume (veh/h)	09	320	190	220	098	200	800	710	150	200	1770	250
Number	7	4	14	33	∞	18	2	2	12	-	9	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	92	380	207	239	935	217	870	772	163	543	1924	272
Adj No. of Lanes	-	2	-	-	2	-	2	က	0	2	က	_
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	c	3	c	c	3	3	c	c	3	3	c	m
Cap, veh/h	173	1240	220	105	1084	471	2024	3270	684	414	1511	466
Arrive On Green	0.10	0.35	0.35	90:0	0.31	0.31	0.59	0.79	0.79	0.12	0.30	0.30
Sat Flow, veh/h	1757	3505	1555	1757	3505	1523	3408	4159	870	3408	5036	1552
Grp Volume(v), veh/h	99	380	207	239	935	217	870	622	313	543	1924	272
Grp Sat Flow(s), veh/h/ln	1757	1752	1555	1757	1752	1523	1704	1679	1672	1704	1679	1552
Q Serve(g_s), s	4.5	10.2	8.8	7.8	32.7	20.9	18.1	6.3	6.4	15.8	39.0	19.3
Cycle Q Clear(g_c), s	4.5	10.2	8.8	7.8	32.7	20.9	18.1	6.3	6.4	15.8	39.0	19.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.52	1.00		1.00
Lane Grp Cap(c), veh/h	173	1240	220	105	1084	471	2024	2639	1314	414	1511	466
V/C Ratio(X)	0.38	0.31	0.38	2.27	0.86	0.46	0.43	0.24	0.24	1.31	1.27	0.58
Avail Cap(c_a), veh/h	173	1240	220	105	1286	226	2024	2639	1314	414	1511	466
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.71	0.71	0.71	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.9	30.4	14.4	61.1	42.3	71.2	14.4	3.6	3.7	57.1	45.5	38.6
Incr Delay (d2), s/veh	6.1	9.0	2.0	599.4	4.8	0.3	0.0	0.1	0.3	156.3	128.4	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfO(50%),veh/ln	2.5	5.1	4.0	21.3	16.6	∞ ; ∞ ;	8.5	2.9	3.0	16.4	36.0	0.6
LnGrp Delay(d),s/veh	61.0	31.1	16.4	9.099	47.1	71.5	14.4	33	4.0	213.4	173.9	43.9
LnGrp LOS	ш	U	m	-		ш	m	⋖	⋖	۰	-	
Approach Vol, veh/h		652			1391			1805			2739	
Approach Delay, sweh		29.4			156.3			9.0			168.8	
Approach LOS		೦			_			¥			_	
Timer	1	2	3	4	2	9	7	8				
Assigned Phs	1	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	20.0	110.0	12.0	51.0	82.0	45.0	17.8	45.2				
Change Pellod (Y+RC), S	4.7	0.0	4.7	Ω ×	0.0	0 0	Ω ·	o 0				
Max Green Setting (Gmax), s	17.8	41.0	Ω. α -	12.2	8.7.	39	- 0. - 4	24.7				
Green Ext Time (p_c), s		4.7	0.0	2.1	0.0	0.0	0.0	4.3				
Intersection Summary												
HCM 2010 Ctrl Dolor			1001									
HCM 2010 LOS			0.00.0 F									

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HCM 2010 Signalized Intersection Summary 5: I-5 South On-Ramp/I-5 SB Ramps & Palomar Airport Rd.

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Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4413			‡	¥				F		¥C.
Traffic Volume (veh/h)	0	610	06	0	770	350	0	0	0	1310	0	450
Future Volume (veh/h)	0	610	06	0	770	350	0	0	0	1310	0	450
Number	2	2	12		9	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1:00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	678	90	0	826	0				1456	0	200
Adj No. of Lanes	0	က	0	0	2	-				2	0	_
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	0	50 400		0 0	300	ر د ا				2 1	0 0	
Arrivo On Groon		0.31	707		0.21	460				/001		01/
Sat Flow veb/h	9.0	4605	648	9.0	35.07	1568				3408	0.00	1568
Cry Volume Call with the	0	123	270	0	000					1 45.4	0	
Gro Sat Flow(s) yeh/h/ln	0 0	16.70	1730	0 0	1752	1568				1704	o c	1568
O Serve(a s) s	00	2 9	5.7	00	10.0	000				18.2	0	11.4
Cycle O Clearin c) s	0.0	2 9	5.7	0.0	10.0	0.0				18.2	0.0	114
Prop In Lane	0.00		0.37	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1039	535	0	1084	485				1557	0	716
V/C Ratio(X)	0.00	0.49	0.50	0.00	0.79	0.00				0.94	00:0	0.70
Avail Cap(c_a), veh/h	0	1802	929	0	1881	841				1928	0	887
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	12.6	12.7	0.0	14.2	0.0				11.6	0.0	6.7
Incr Delay (d2), s/veh	0.0	0.1	0.3	0.0	0.5	0.0				7.3	0.0	1.
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.6	2.7	0.0	4.8	0.0				6.6	0.0	5.1
LnGrp Delay(d),s/veh	0.0	12.8	12.9	0.0	14.7	0.0				18.9	0.0	10.9
LnGrp LOS		В	В		В					В		8
Approach Vol, veh/h		778			826						1956	
Approach Delay, s/veh		12.8			14.7						16.9	
Approach LOS		В			В						8	
Timer		2	33	4	2	9	7	00				
Assigned Phs		2		4		9						
Phs Duration (G+Y+Rc), s		19.3		25.6		19.3						
Change Period (Y+Rc), s		5.4		5.1		5.4						
Max Green Setting (Gmax), s		24.1		25.4		24.1						
Max Q Clear Time (g_c+I1), s		7.7		20.2		12.0						
Green Ext Time (p_c), s		1.0		0.3		1.2						
Intersection Summary												
HCM 2010 Ctrl Delay			15.5									
HCM 2010 LOS			В									

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HCM 2010 Signalized Intersection Summary 6: 1-5 NB Ramps & Palomar Airport Rd.

Long-Term AM 08/24/2017

Long-Term AM 08/24/2017

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	je.	444			444	K.K.		₩	K.			
Traffic Volume (veh/h)	06	1840	0	0	086	200	80	0	1320	0	0	0
Future Volume (veh/h)	06	1840	0	0	086	200	80	0	1320	0	0	0
Number	2	2	12	-	9	16	က	ω (18			
Initial Q (Qb), veh	0 5	0	0 0	0 6	0	0 10	0 0	0	0			
Parking Bus Adi	00.1	1 00	100	100	100	1.00	100	100	100			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	93	1897	0	0	1010	515	82	0	1361			
Adj No. of Lanes	-	m	0	0	3	2	0	-	2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	16.0	16.0	0.97	0.97			
Percent Heavy Veh, %	33	3	0	0	3	က	က	co	3			
Cap, veh/h	114	2077	0	0	1581	826	901	0	1383			
Arrive On Green	90:0	0.41	0.00	0.00	0.10	0.10	0.51	0.00	0.51			
Sat Flow, veh/h	1757	5202	0	0	5202	2629	1757	0	2699			
Grp Volume(v), veh/h	93	1897	0	0	1010	515	82	0	1361			
Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1315	1757	0	1349			
Q Serve(g_s), s	7.3	49.7	0.0	0.0	27.0	26.3	3.3	0.0	69.4			
Cycle Q Clear(g_c), s	7.3	49.7	0.0	0.0	27.0	26.3	3.3	0.0	69.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	114	2077	0	0	1581	826	901	0	1383			
V/C Ratio(X)	0.82	0.91	0.00	0.00	0.64	0.62	0.09	0.00	0.98			
Avail Cap(c_a), veh/h	161	2077	0	0	1581	826	926	0	1423			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.57	0.57	0.00	0.00	0.78	0.78	1.00	0.00	1.00			
Uniform Delay (d), s/veh	9.49	38.8	0.0	0.0	55.1	54.8	17.4	0.0	33.5			
Incr Delay (d2), s/veh	8.3	4.7	0.0	0.0	1.6	5.8	0.0	0.0	19.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfO(50%),veh/ln	3.8	23.9	0.0	0.0	12.8	6.6	1.6	0.0	29.5			
LnGrp Delay(d),s/veh	72.9	43.5	0.0	0.0	26.7	97.6	17.5	0.0	53.2			
LnGrp LOS	ш				ᆈ	ᆈ						
Approach Vol, veh/h		1990			1525			1443				
Approach Delay, sweh		44.8			27.0			51.2				
Approach LOS		О			ш			О				
Timer	-	2	33	4	2	9	7	∞				
Assigned Phs		2			2	9		8				
Phs Duration (G+Y+Rc), s		63.1			13.8	49.4		76.9				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		55.7			* 13	38.2		73.8				
Max Q Clear Time (g_c+I1), s		21.7			9.3	29.0		71.4				
Green Ext Time (p_c), s		1.9			0.0	1.6		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			50.4									
HCM 2010 LOS			O									
Notes												

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HCM 2010 Signalized Intersection Summary 7: Paseo Del Norte & Palomar Airport Rd.

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Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	r.	441		F	Ħ	¥C	į,	4₽		K.	4₽	
Traffic Volume (veh/h)	150	2870	150	110	1220	220	150	20	110	100	20	06
Future Volume (veh/h)	120	2870	120	110	1220	220	120	20	110	100	20	06
Number	ഹ	2 0	12	- -	9 0	9 0	m c	∞ <	<u> </u>	~ 0	4 0	4 0
Pod-Bike Adi(A phT)	8	>	0 00	5	>	000	100	>	0 00	100	>	0.05
Parking Bus, Adi	108	1.00	1.00	8.0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	160	3053	160	117	1298	234	160	23	117	106	53	96
Adj No. of Lanes	2	m	0	2	4	_	2	2	0	2	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	က
Cap, veh/h	1298	3084	159	122	1723	479	207	279	238	127	228	193
Arrive On Green	0.13	0.21	0.21	0.01	0.09	0.09	90:0	0.16	0.16	0.04	0.13	0.13
Sat Flow, veh/h	3408	4899	252	3408	6346	1551	3408	1752	1499	3408	1752	1488
Grp Volume(v), veh/h	160	2074	1139	117	1298	234	160	53	117	106	53	96
Grp Sat Flow(s),veh/h/In	1704	1679	1794	1704	1586	1551	1704	1752	1499	1704	1752	1488
Q Serve(g_s), s	2.8	86.0	88.1	4.8	28.0	12.7	6.5	3.7	10.0	4.3	3.8	8.4
Cycle Q Clear(g_c), s	2.8	86.0	88.1	4.8	28.0	12.7	6.5	3.7	10.0	4.3	3.8	8.4
Prop In Lane	1.00		0.14	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1298	2113	1129	122	1723	479	207	279	238	127	228	193
V/C Ratio(X)	0.12	0.98	1.01	96:0	0.75	0.49	0.77	0.19	0.49	0.84	0.23	0.50
Avail Cap(c_a), veh/h	1298	2113	1129	122	3010	794	236	488	418	127	432	367
HCM Platoon Ratio	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.23	0.23	0.23	69.0	69.0	69.0	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.4	54.6	55.5	69.1	59.1	33.8	64.8	51.0	53.7	0.79	54.7	26.7
Incr Delay (d2), s/veh	0.0	0.9	15.1	22.7	2.1	2.4	10.9	0.1	9.0	34.8	0.2	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	41.8	48.6	3.2	12.6	20.0	3.4	<u>←</u> ∞:	4.2	2.7	1.9	3.5
LnGrp Delay(d),s/veh	40.5	60.7	70.5	124.8	61.3	36.2	75.7	51.2	54.3	101.8	54.8	57.4
LnGrp LOS		ш	-	-	ш		ш			-		"
Approach Vol, veh/h		3373			1649			330			255	
Approach Delay, s/veh		63.0			62.2			64.2			75.3	
Approach LOS		ш			ш			ш			ш	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	9.2	94.1	13.5	23.2	59.3	44.0	9.4	27.3				
Change Period (Y+Rc), s	* 4.2	0.9	2.0	* 5	0.9	9 *	* 4.2	2.0				
Max Green Setting (Gmax), s	* 5	71.4	6.7	* 35	10.0	99 *	* 5.2	39.0				
Max Q Clear Time (g_c+11), s	8.9	90.1	8.5	10.4	7.8	30.0	6.3	12.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	9.0	0.1	8.1	0:0	0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			63.4									
HCM 2010 LOS			ш									
N. S.												
Notes												

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HCM 2010 Signalized Intersection Summary 8: Armada Dr. & Palomar Airport Rd.

Long-Term AM 08/24/2017

Long-Term AM 08/24/2017

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Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	***	æ	k	***	¥.	K	£	æ	K.	*	k.
Traffic Volume (veh/h)	190	2620	210	130	1210	230	130	40	190	130	40	8
Future Volume (veh/h)	190	2620	210	130	1210	230	130	40	190	130	40	8
Number	2	2	12		9	16	3	00	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.95	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	202	2787	223	138	1287	245	138	0	231	138	43	96
Adj No. of Lanes	2	co	-		co	-	2	0	2	2	_	_
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	m	3	3	m	3	3	3	m	3	m	3
Cap, veh/h	1273	3207	1056	118	1599	549	141	0	320	122	210	169
Arrive On Green	0.75	1.00	1.00	0.02	0.10	0.10	0.04	0.00	0.12	0.04	0.11	0.11
Sat Flow, veh/h	3408	5036	1561	1757	5036	1553	3514	0	2964	3408	1845	1479
Grp Volume(v), veh/h	202	2787	223	138	1287	245	138	0	231	138	43	96
Grp Sat Flow(s),veh/h/ln	1704	1679	1561	1757	1679	1553	1757	0	1482	1704	1845	1479
Q Serve(g_s), s	2.4	0.0	0.0	9.4	35.0	15.5	5.5	0.0	8.9	2.0	3.0	4.2
Cycle Q Clear(g_c), s	2.4	0.0	0.0	9.4	35.0	15.5	5.5	0.0	8.9	2.0	3.0	4.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1273	3207	1056	118	1599	249	141	0	320	122	210	169
V/C Ratio(X)	0.16	0.87	0.21	1.17	0.80	0.45	0.98	0.00	99.0	1.13	0.20	0.57
Avail Cap(c_a), veh/h	1273	3207	1056	118	2266	755	141	0	860	122	527	423
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.71	0.71	0.71	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.4	0.0	0.0	68.4	58.4	47.4	67.1	0.0	42.8	67.5	56.3	14.1
Incr Delay (d2), s/veh	0.0	0.3	0.0	1.22.7	3.5	∞.	/0.0	0:0	0.8	122.0	0.5	=
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	=	0.1	0.0	9.8	16.8	7.0	4.0	0.0	3.7	4.4	1.5	<u>~</u>
LnGrp Delay(d),s/veh	11.4	0.3	0.0	191.1	61.6	49.2	137.1	0.0	43.6	189.5	56.4	15.2
LnGrp LOS	۵	⋖	⋖	-	ᆈ		-			-	ᅵ	^m
Approach Vol, veh/h		3212			1670			369			277	
Approach Delay, síveh		1.0			70.5			78.6			108.5	
Approach LOS		A			ш			ш			ш	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	13.6	95.1	10.3	21.0	58.3	50.5	10.0	21.3				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.7	* 5	0.9	9 *	* 5	4.7				
Max Green Setting (Gmax), s	* 9.4	65.1	* 5.6	* 40	11.5	* 63	* 5	40.6				
Max Q Clear Time (g_c+I1), s	11.4	2.0	7.5	6.2	4.4	37.0	7.0	10.9				
Green Ext Time (p_c), s	0.0	28.9	0.0	0.3	0.2	7.5	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			32.6									
HCM 2010 LOS			ပ									

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HCM 2010 Signalized Intersection Summary 9: Hidden Valley Rd. & Palomar Airport Rd.

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0.0

1148 1679 0.0 0.0

2410 0.96 5036 5914 1679 67.0

Grp Volume(v), veh/h Grp Sat Flow(s),veh/h/ln Q Serve(g_s), s

Percent Heavy Veh, % Cap, veh/h Arrive On Green Sat Flow, veh/h

269 0.08 514 1.00 1.00

75 757 5.9 5.9 94 0.80 1.00 1.00 1.00 65.5 23.1 0.0 3.5 88.6

86 6.3 6.3 6.3 1.00 79 79 79 79 1.00 1.00 66.8 66.8 66.8 66.8 66.8

1757 1757 113.3 113.3 11.00 11.00 0.89 2.00 0.09 0.09 6.6 6.6

Avail Cap(c_a), veh/h HCM Platoon Ratio

Lane Grp Cap(c), veh/h V/C Ratio(X)

Cycle Q Clear(g_c), s Prop In Lane

0.0

0.00 0.00 0.00 0.0 0.0 0.0 0.0

1847 0.62 1847 2.00 0.63 0.0 0.0 0.0 0.3

2410 2410 2.00 0.09 3.0 3.0 94.5 0.0 0.0

Upstream Filter(I) Uniform Delay (d), s/veh Incr Delay (d2), s/veh

51.7 D 183 68.2

236

3204

Approach Vol, veh/h Approach Delay, s/veh

Approach LOS

%ile BackOfQ(50%),veh/ln

-nGrp Delay(d),s/veh

Initial Q Delay(d3),s/veh

24.1 *5.7 *37 15.0 0.5

12.5 5.0 9.0 7.9 0.0

83.0 6.0 54.8 2.0 12.3

20.4 5.0 19.0 15.3 0.1

26.1 5.7 39.0 9.3 0.2

* 4.2 * 6.3 8.3 0.0

30.4 6.0 7.6 7.0 0.0

79 × 69.0

Max O Clear Time (g_c+I1), s

Green Ext Time (p_c), s

Max Green Setting (Gmax)

Assigned Phs Phs Duration (G+Y+Rc), s Change Period (Y+Rc), s

62.0 E

HCM 2010 Ctrl Delay HCM 2010 LOS

269 0.15 1845

94 0.05 757

2525 1.00 4590

306 306 0.35 1757

0.93

0.93

0.93 193 0.22 1757

Parking Bus, Adj Adj Sat Flow, veh/h/In Adj Flow Rate, veh/h Adj No. of Lanes Peak Hour Factor

0 1.00 845 75

110 0.95 1.00 1900 0 0.93 3

160 0 0.96 1.00 172 0 0

1.00

0 1.00 1.00 1845 86

110 12 0 0.99 1.00 1.845

391

Lane Configurations Traffic Volume (veh/h) Future Volume (veh/h)

Number Initial Q (Qb), veh Ped-Bike Adj(A_pbT)

1.00 1.00 1.00 172

1.00 1845 32 3 3 44 0.13 331

0.00 1.00 1.00 1845 86 1 1 0.93 3 79 79 0.05

777 1544 1544 0.0 0.0 0.0 1.00 777 1.00 2.0.7 0.1 0.2 4.9

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ntersection Summary HCM 2010 Ctrl Delay HCM 2010 LOS

HCM 2010 Signalized Intersection Summary 11: Camino Vida Roble & Palomar Airport Rd.

	4	†	>	>	ţ	4	•	•	•	٠	→	*
Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	r	4413		je-	4413		ř.	¢		r	*	*-
Traffic Volume (veh/h)	160	1640	410	210	1190	370	150	100	70	70	40	9
Future Volume (veh/h)	160	1640	410	210	1190	370	120	100	70	70	40	09
Number	2	2	12	-	9	16	က	ω	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	6	0.96	1.00	6	0.06	1.00	6	0.96	1.00	7	0.96
Parking Bus, Adj	1.00	1.00	0001	00.1	1.00	00.1	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, Verynyln	174	1702	0061	1845	1202	906	142	100	0061	1845	1845	1845
Adj Flow Rate, vervn	+/-	1/83	440	977	1293	402	103	6	0 0	0 6	45	00
Adj No. or Lanes	- 6	~ C	0 0	- 6	~ C	0 6	7 00	- 0	0 6	- 0	- 6	- 0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Ven, %	· .	S :	S 1	ر د ا	20 10	· ·	, i	· ·	· ;	, c	5 5	20 1
Cap, veh/h	452	2044	497	247	1425	442	186	163	114	94	301	245
Arrive On Green	0.26	0.51	0.51	0.14	0.38	0.38	0.05	0.16	0.16	0.05	0.16	0.16
Sat Flow, veh/h	1757	4010	926	1757	3767	1167	3408	993	693	1757	1845	1200
Grp Volume(v), veh/h	174	1485	744	228	1152	543	163	0	185	16	43	92
Grp Sat Flow(s),veh/h/ln	1757	1679	1629	1757	1679	1578	1704	0	1686	1757	1845	1500
Q Serve(g_s), s	12.2	58.3	61.9	19.2	48.7	49.0	7.1	0.0	15.5	6.4	3.0	3.4
Cycle Q Clear(g_c), s	12.2	58.3	61.9	19.2	48.7	49.0	7.1	0.0	15.5	6.4	3.0	3.4
Prop In Lane	1.00		09.0	1.00		0.74	1.00		0.41	1.00		1.00
Lane Grp Cap(c), veh/h	452	1711	830	247	1270	265	186	0	277	94	301	245
V/C Ratio(X)	0.38	0.87	0.00	0.92	0.91	0.91	0.87	0.00	0.67	0.81	0.14	0.27
Avail Cap(c_a), veh/h	452	1711	830	247	1419	299	186	0	429	94	467	380
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.9	32.3	33.2	63.6	44.1	44.2	70.4	0.0	28.8	70.3	53.8	19.9
Incr Delay (d2), s/veh	0.2	6.2	14.4	36.4	10.9	20.3	32.8	0.0	1.0	37.4	0.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	28.5	31.0	11.8	24.5	24.6	4.2	0:0	7.3	4.7	7.5	1.4
LnGrp Delay(d), s/ven	46.1	38.6	4/.6	1001	55.0	64.5	103.2	0.0	59.9	9./01	53.9	70.1
Lugrp LUS				-	T 1007	ш	-	2	ш	-	ر ا د	اد
Approach Vol. Vervin		2403			1923			348			184	
Approach LOS		4 I.7			- Ш			90.iz			ў Н	
	,	c	c	ŀ	ı		r	c				ı
l Imer	-	7	2	4	2	۰ ۵	_	∞				
Assigned Phs	-	7	· ·	4	2	9	_	∞				
Phs Duration (G+Y+Rc), s	25.3	87.8	12.4	29.5	42.0	63.2	12.2	29.7				
Change Period (Y+Rc), s	* 4.2	* 6.4	* 4.2	* 5	* 6.4	* 6.4	* 4.2	× 2				
Max Green Setting (Gmax), s	* 21	* 63	* 8.2	æ *	* 21	* 63	∞ *	* 38				
Max Q Clear Time (g_c+I1), s	21.2	63.6	9.1	5.4	14.2	21.0	8.4	17.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.2	0.1	20.00	0.0	0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			53.9									
HCM 2010 LOS			Q									
Notes												
Notes												

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HCM 2010 Signalized Intersection Summary 12: Yarrow Dr./McClellan & Palomar Airport Rd.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	-	443		F	4413		۳	*	¥.		÷	
Traffic Volume (veh/h)	2	1360	190	290	1570	130	09	20	80	20	20	30
Future Volume (veh/h)	2	1360	190	290	1570	130	09	20	80	20	70	30
Number	2	2	12	-	9	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		96.0	1.00		0.98	0.99		0.95	0.98		0.95
Parking Bus, Adj	1:00	1.00	1.00	1.00	1.00	1:00	1.00	1:00	1.00	1:00	1.00	1:00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	79	1528	213	326	1764	146	49	22	06	26	22	34
Adj No. of Lanes	-	က	0	-	3	0	-	-	—	0	-	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	co	33	33	က	33	3	co	3	co	3	က	3
Cap, veh/h	86	1631	227	959	3298	272	221	271	219	130	23	64
Arrive On Green	90.0	0.37	0.37	0.37	0.70	0.70	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1757	4442	618	1757	4733	391	1310	1845	1495	638	360	435
Grp Volume(v), veh/h	79	1154	287	326	1250	099	19	22	06	112	0	0
Grp Sat Flow(s),veh/h/ln	1757	1679	1703	1757	1679	1767	1310	1845	1495	1433	0	0
Q Serve(g_s), s	6.7	49.7	6.64	21.4	27.0	27.1	0.0	1.5	8.2	9.8	0.0	0.0
Cycle Q Clear(g_c), s	6.7	49.7	49.9	21.4	27.0	27.1	89	1.5	8.2	10.6	0.0	0.0
Prop In Lane	1.00		0.36	1.00		0.22	1.00		1.00	0.50		0.30
Lane Grp Cap(c), veh/h	86	1233	625	959	2339	1231	221	271	219	246	0	0
V/C Ratio(X)	0.81	0.94	0.94	0.50	0.53	0.54	0.30	0.08	0.41	0.45	0.00	0.00
Avail Cap(c_a), veh/h	120	1276	647	959	2339	1231	371	481	390	406	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	70.0	45.8	45.8	36.2	11.0	11.0	58.3	55.3	58.1	59.0	0.0	0.0
Incr Delay (d2), s/veh	0.6	14.3	23.7	0.5	6.0		0.3	0.0	0.5	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	25.5	27.6	10.5	12.6	13.8	2.5	0.8	3.4	4.3	0.0	0.0
LnGrp Delay(d),s/veh	79.0	60.1	9.69	36.4	11.9	12.7	58.6	55.3	28.6	59.5	0.0	0.0
LnGrp LOS	ᅵ	ᅵ	ᆈ			۵	ш	ᆈ	ᅵ	ш		
Approach Vol, veh/h		1820			2236			179			112	
Approach Delay, síveh		64.0			15.7			58.2			59.5	
Approach LOS		ш			B			ш			ш	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	_	2		4	2	9		8				
Phs Duration (G+Y+Rc), s	62.0	61.1		26.9	12.6	110.5		26.9				
Change Period (Y+Rc), s	0.9	9 *		4.9	* 4.2	0.9		4.9				
Max Green Setting (Gmax), s	38.8	* 57		39.1	* 13	83.0		39.1				
Max Q Clear Time (g_c+I1), s	23.4	51.9		10.8	8.7	29.1		12.6				
Green Ext Time (p_c), s	0.4	3.1		0.3	0.0	10.2		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay HCM 2010 LOS			38.8 D									

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HCM 2010 Signalized Intersection Summary 13: El Camino Real & Palomar Airport Rd.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	444	¥.	K.	444	K.	ř.	444	K.	K.	444	¥.
Traffic Volume (veh/h)	190	1030	340	800	1770	710	290	790	460	540	1150	380
Future Volume (veh/h)	190	1030	340	800	1770	710	290	790	460	540	1150	380
Number	2	2	12	-	9	16	က	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		66.0
Parking Bus, Adj	1.00	1:00	1.00	1:00	1.00	1.00	1.00	1:00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Kate, ven/h	207	1120	370	0/8	1924	112	315	826	200	28/	1250	413
Adj No. of Lanes	7 00 0	m (- 6	7.	e 0	7 500	7	e 0	7	7	5 0	- 0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy ven, %	2 (ى د	γ (¢	γ .	ا د	ر د	٠, ٢	, i	2,00	200	٠, ۲	2 0
Cap, veryn	247	1305	407	424	11/5	030	304	1244	1214	480	01/1	6//
Sat Float worth	2400	0.20	1550	2400	0.10	07.70	2400	U.31 E026	0.51	2400	5024	1554
Gra Volume(v) veh(h	700	1120	370	070	10.24	777	315	950	2700	587	1250	413
Grn Sat Flow(s) veh/h/ln	1704	1679	1550	1704	1679	1362	1704	1679	1380	1704	1679	1554
O Serve(n s) s	83	31.8	34.9	20.0	35.0	35.0	13.6	21.4	66	21.1	32.6	80
Cycle O Clear(a_c), s	8.2	31.8	34.9	20.0	35.0	35.0	13.6	21.4	6.6	21.1	32.6	8.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	542	1305	402	454	1175	929	364	1544	1214	480	1716	779
V/C Ratio(X)	0.38	98.0	0.92	1.91	1.64	1.21	0.87	0.56	0.41	1.22	0.73	0.53
Avail Cap(c_a), veh/h	298	1343	413	454	1175	989	545	1544	1214	480	1716	779
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.00	0.09	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	29.5	52.9	54.1	68.3	63.3	63.3	62.9	43.5	11.2	64.4	43.4	9.8
Incr Delay (d2), s/veh	0.5	5.4	24.9	412.3	287.2	0.86	6.4	1.5	1.0	101.9	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	15.4	17.7	35.4		21.8	8.9	10.1	3.9	16.7	15.2	6.2
LnGrp Delay(d),s/veh	56.6	58.3	79.0	480.6	350.4	161.2	72.4	44.9	12.2	166.3	43.6	10.0
LnGrp LUS	ш	ц ;	ш	-		-	ш	ع	20	-	عا	20
Approach Vol, veh/h		/691			3566			16/4			2250	
Approach Delay, swen		07.0			341.2			40.3			0.Y.O	
Approach LOS		ш			_			n			ш	
Timer	-	2	3	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	26.0	44.9	22.0	57.1	29.9	41.0	27.1	52.0				
	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9				
	20.0	40.0	24.0	42.0	70.0	35.0	20.0	46.0				
Green Ext Time (n. c) s	0.00	17	0.6	0.4.0	0.3	0.70	0.0	4.62				
5 (/c=d) cuit vi (c) (c)	5	:	-	!	2	2	5	2				
Intersection Summary												
HCM 2010 Ctrl Delay			168.4									
HCM 2010 LOS			_									

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HCM 2010 Signalized Intersection Summary 14: Innovation Way/Loker Ave. & Palomar Airport Rd.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	-	444	×.	F	443		۴	*	¥.	F	*	*
Traffic Volume (veh/h)	300	1420	330	390	2880	170	160	80	110	20	40	140
Future Volume (veh/h)	300	1420	330	390	2880	170	160	80	110	20	40	140
Number	2	2	12	—	9	16	က	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.99	1.00		96.0	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00	1:00	1:00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	326	1543	326	424	3130	182	174	87	120	24	43	152
Adj No. of Lanes	-	က	-	-	3	0	-	-	-	-	-	_
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	m	3	c	c	3	c	3	3	c	c	c	3
Cap, veh/h	344	1673	579	263	2283	132	91	311	253	69	287	233
Arrive On Green	0.39	99.0	99.0	0.64	0.94	0.94	0.05	0.17	0.17	0.04	0.16	0.16
Sat Flow, veh/h	1757	5036	1496	1757	4867	282	1757	1845	1502	1757	1845	1498
Grp Volume(v), veh/h	326	1543	326	424	2139	1176	174	87	120	54	43	152
Grp Sat Flow(s),veh/h/ln	1757	1679	1496	1757	1679	1791	1757	1845	1502	1757	1845	1498
Q Serve(g_s), s	26.9	39.8	6.5	25.1	70.4	70.4	7.8	6.2	2.7	4.6	3.0	14.3
Cycle Q Clear(g_c), s	26.9	39.8	6.5	25.1	70.4	70.4	7.8	6.2	2.7	4.6	3.0	14.3
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	344	1673	279	263	1575	840	91	311	253	69	287	233
V/C Ratio(X)	0.95	0.92	0.62	0.75	1.36	1.40	1.90	0.28	0.47	0.78	0.15	0.65
Avail Cap(c_a), veh/h	762	2192	733	263	1575	840	91	464	377	71	443	326
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1:00	1.00	1.00
Upstream Filter(I)	0.30	0.36	0.36	0.09	0.09	0.09	1.00	00.1	1.00	00.1	1.00	9. 5
Uniform Delay (d), siven	44.9	23.5	7.7	8.77	4.0	4.0	1.1.	54.4	15.7	4.1.4	54.7	59.5
Incr Delay (dz), síven	2.5	- 4	×. 6	0.5	0.161	180.1	445.0	0.7	0.5	31.1	0.1	_ 6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOrU(50%),veh/ln	13.3	18.6	25.00	177.1	61.1	9.69	15.1	3.2	7.7	2.9	5.5	0.0
LnGrp Delay(d),S/ven	47.4	9.17	9.0	23.2	7.991	184.7	516.1	54.6	7.91	7.601	54.8	60.6
LNGrp LOS		یا	⋖	اد	-	-	-			-		٦
Approach Vol, veh/h		2228			3739			381			249	
Approach Delay, swen		27.5			155.8			253.3			70.7	
Approach LOS		ပ			_			_			ш	
Timer	-	2	3	4	2	9	7	8				
Assigned Phs	-	2	m	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	54.1	55.8	12.0	28.1	33.5	76.4	10.1	30.0				
Change Period (Y+Rc), s	0.9	9 *	* 4.2	* 4.7	* 4.2	0.9	* 4.2	* 4.7				
Max Green Setting (Gmax), s	21.8	_* 65	* 7.8	* 36	* 65	22.0	* 6.1	* 38				
Max Q Clear Time (g_c+I1), s	27.1	41.8	8.6	16.3	28.9	72.4	9.9	8.2				
Green Ext Time (p_c), s	0.0	8.0	0.0	0.4	0.4	0.0	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			114.9 F									
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HCM 2010 Signalized Intersection Summary 15: El Fuerte St. & Palomar Airport Rd.

Long-Term AM 08/24/2017

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	444	*	F	443		K.	₽ ₽		F	₽ ₽	
Traffic Volume (veh/h)	130	1210	200	380	3210	210	160	140	140	120	200	100
Future Volume (veh/h)	130	1210	200	380	3210	210	160	140	140	120	200	100
Number	2	2	12	_	9	16	က	ω	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	,	0.99	1.00	,	0.98	1.00		96.0	1.00	,	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1:00	1:00	1:00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj No of Long	- 4	1313	717	4 5	3489	977	-/4 C	701	701	130	/17	60
Auj No. of Laffes	7 00 0	200	- 60	7 000	200		7 000	7 0 0		7 0 0	7 000	000
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy ven, %	200	2 5	2 0	٠,	2 000	ا د	ν (2 0	γ (200	2 6	, ć
Cap, veh/h	321	2/43	846	460	2//0	//	132	2/3	233	170	348	168
Arrive On Green	0.19	1.00	1.00	0.27	1.00	1.00	0.04	0.16	0.16	0.04	0.15	0.15
Sat Flow, veh/h	3408	2036	1559	3408	4831	308	3408	1752	1498	3408	2279	1098
Grp Volume(v), veh/h	141	1315	217	413	2399	1318	174	152	152	130	165	161
Grp Sat Flow(s),veh/h/ln	1704	1679	1559	1704	1679	1782	1704	1752	1498	1704	1752	1625
Q Serve(g_s), s	5.5	0.0	0.0	17.5	0.0	0.98	2.8	12.0	14.3	5.3	13.2	14.0
Cycle Q Clear(g_c), s	5.5	0.0	0:0	17.5	0.0	0.98	2.8	12.0	14.3	5.3	13.2	14.0
Prop In Lane	1.00		1.00	1.00		0.17	1.00		1.00	1.00		0.68
Lane Grp Cap(c), veh/h	321	2743	849	460	1925	1022	132	273	233	120	267	248
V/C Ratio(X)	0.44	0.48	0.26	06:0	1.25	1.29	1.32	0.56	0.65	1.08	0.62	0.65
Avail Cap(c_a), veh/h	321	2743	849	1518	1925	1022	132	403	345	120	397	368
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	99.0	99.0	99.0	0.00	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.4	0.0	0.0	53.8	0.0	0.0	72.1	58.5	59.5	72.3	59.5	59.8
Incr Delay (d2), s/veh	0.2	0.4	0.5	0.2	111.3	131.1	187.4	0.7	1.1	105.0	6.0	1.
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.1	0.1	8.3	29.7	37.2	6.2	5.9	0.9	4.2	6.5	6.4
LnGrp Delay(d),s/veh	97.6	0.4	0.5	54.0	111.3	131.1	259.5	59.2	9.09	177.3	60.3	6.09
LnGrp LOS	ш	A	A	۵	띡	띡	۳	ш	ш	ш	ш	Ш
Approach Vol, veh/h		1673			4130			478			456	
Approach Delay, s/veh		5.2			111.9			132.6			93.9	
Approach LOS		V			ш.			ш.			ш.	
Timer		2	3	4	2	9	7	00				
Assigned Phs	1	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	24.4	87.7	10.0	27.9	20.1	92.0	9.5	28.4				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	2.0	0.9	9 *	* 4.2	2.0				
Max Green Setting (Gmax), s	. 67	24.0	* 5.8	34.0	4.8	98 _*	* 5.3	34.5				
Max Q Clear Time (g_c+I1), s	19.5	2.0	7.8	16.0	7.5	88.0	7.3	16.3				
Green Ext Time (p_c), s	0.7	0.9	0.0	1.0	0.0	0.0	0.0	1.0				
Intersection Summary												
HCM 2010 Ctrl Delay			85.6									
HCM 2010 LOS			ш									

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HCM 2010 Signalized Intersection Summary 16: Melrose Dr. & Palomar Airport Rd.

Long-Term AM 08/24/2017

1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0		EBR 180 180 180 180 180 199 1.00 0.99 1.00 186 186 186 186 186 186 185 185 185 185 185 185 185 185 185 185	WBL 130 130 130 1.00 1.00 1.00 1.00 1.00 1.	WBT 1860 1860 6 0 0 1900 1918 1544 0.31 5036 1918 1679 46.0	WBR 100 100 100 100 100 100 100 100 100 10	NBL 600 600 3 3 3 1.00 1.00 1.00 619 619 619 619 619 619 619 619 619 619	NBT 870 870 870 870 870 11,00 11,00 14,5 897 6346 897 6346 897 1586	NBR 240 240 180 0.99 1.00 1.00 1.00 1.00 1.00 1.00 1.0	SBL 100 90 90 90 7 7 7 1.00 1.00 1.00 93 3 3 1.135 0.04 3.408	SBT 1030 1030 1030 1030 1000 11062 2 2 0.97 3848 848 3505 1062 3565 3565 3565 3565 3565 3565 3565 35	SBR 1430 1430 1430 1.00 1.00 1.00 2 20.9 1.130 0.97 1.130 2.725 1.130 1.25 1.25 1.25 1.25 1.25 1.25 1.25 1.25
	1 1 5 6 2	180 180 12 0 0 0.99 1.00 1.845 186 186 1 100 1 1557 1557 3 3.0 3 3.0 3 3.0 1.00	130 130 130 1.00 1.00 1.00 1.00 134 2 0.05 3 3408 134 178	1860 1860 6 0 0 1.00 1.00 1.00 3 0.97 3 0.97 3 1544 6.31 1679 46.0	100 100 100 100 100 100 100 100 100 100	600 600 3 3 1.00 1.00 1.00 1.00 2 2 2 2 2 0.97 3 3 495 0.15 3408 619 619	870 870 870 870 0 0 1.00 1.45 897 897 3 2207 0.35 6346 897	240 240 240 18 0 0.99 1.00 1.00 1.00 1.00 1.00 1.00 1.	90 90 90 7 7 0 1.00 1.00 1.00 1.35 0.07 3 3 3.408	1030 1030 1030 1000 1100 1062 1062 1062 3 848 1062 1162 3505	1430 1430 1430 0 0.99 1.00 1845 1474 1730 0.24 1725 1725 29.1 29.1
	1 2 2 2 1	180 12 0 0 0 0 0 0 1,00 1,00 1,00 1,00 1,0	130 130 100 1.00 1.00 1.00 1.34 1.34 1.34 1.34	1860 6 6 0 0 1.00 1.00 3 3 0.97 3 3 1.544 5.036 1.079 46.0	100 100 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0	600 600 1.00 1.00 1.00 1.00 2 2 0.97 3 3 495 0.15	870 870 870 870 1.00 1.00 1.00 1.00 3.220 0.35 6346 897 897 1.586	240 240 240 0 0 0.99 1.00 1.845 247 1 0.97 1 0.97 1 1845 247 1554	90 90 90 1.00 1.00 1.00 1.845 93 2 0.07 3 3 3408	1030 1030 1030 1.00 1.00 2 2 2 2 0.97 3 848 848 0.24 3505 1162 1762 3505	1430 1430 0 0.99 1.00 1845 1474 1730 0.24 2725 29.1 1.00
	1 1 1 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1	180 0 0.99 1.00 1.845 1845 1 186 1 0.97 1557 1557 3.0 3.0 1.50 1.00	130 1.00 1.00 1.00 1845 134 2 0.97 3 3 178 0.05 134	1860 6 6 0 0 1.00 11918 3 3 3 0.97 3 1544 0.31 5036 46.0	100 0.09 1.00 1.00 1.00 1.00 3 3 476 0.31 1553 103 1553 6.4	600 3 3 1.00 1.00 1.00 619 2 0.97 3 4495 0.15 619	870 8 8 0 0 1.00 1845 897 4 4 0.97 3 2207 0.35 6346 897	240 0 0 0.99 1.00 1.845 247 247 247 0.97 0.35 1.554	90 7 0 1.00 1.00 1.00 2 2 2 2 0.97 3408	1030 0 1.00 1.00 2 2 0.97 3 848 848 0.24 3505 1152 367 3763	1430 0.99 11.00 1845 1474 2725 1130 0.24 2725 1474 1363 29.1
		12 0.09 1.00 1.845 1.86 1.86 1.097 3.3 6.87 1.557 3.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	1 0 0 1.00 1.00 1.00 1.00 1.00 3 3 1.78 0.05 3.408	6 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	16 0 0 0 1.00 1845 103 1 0.97 3 3 476 0.31 1553 6.4	1.00 1.00 1.00 1.00 1.00 2 2 0.97 3 3 495 0.15 1704	1.00 1.00 1.845 897 4 4 0.97 3 2207 0.35 6346 897 1586	0 0.99 1.00 1.00 1.00 247 247 252 0.35 1.554 247 247 247 247 247 247 247 247 247 24	1.00 1.00 1.00 1.00 1.00 1.00 1.35 0.07 3.408	1.00 1845 1062 2 0.97 3 8 848 0.24 3505 11752 36,3	14 0.99 1.00 1845 1474 2725 1130 0.24 2725 1474 1363 29.1
		0.09 1.00 1.00 1.00 1.00 3 681 0.87 1.557 1.557 3.0 3.0 3.0 3.0	1.00 1.00 1.00 1.34 2 0.97 3 3.408 1.78 1.78	1.00 1.845 1918 3 0.97 3 1544 0.31 5036 1918 1679 46.0	0.09 1.00 1845 103 103 3 476 0.31 1053 1053 6.4	1.00 1.00 1.00 1.00 2 2 2 0.97 3 3 495 0.15 3408 619	1.00 1845 897 4 0.97 3 2207 0.35 6346 897 1586	0.09 1.00 1.00 1.845 247 1 0.97 3 622 0.35 1554	1.00 1.00 1845 93 2 0.97 3 135 0.04 3408	1.00 1845 1062 2 0.97 3 848 0.24 3505 1752 36,3	0.99 1.00 1845 1474 2 0.97 3 1130 0.24 2725 1474 1363 29.1 29.1 1.00
		1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.34 2 2 2 0.97 3 3.408 1.78 1.34 1.704	1.00 1845 1918 3 0.97 3 1544 0.31 5036 1918 1679 46.0	100 1845 103 103 476 0.31 103 1053 6.4	1.00 11.00 11.00 2 2 2 2 0.97 3 3 495 0.15 619 619	1.00 1845 897 4 0.97 3 2207 0.35 6346 897 1586	1.00 1.845 247 1 0.97 3 622 0.35 1554 247	1.00 1845 93 2 0.97 3 135 0.04 3408	1.00 1845 1062 2 0.97 3 848 0.24 3505 1162 1752	1.00 1845 1845 1974 20.97 3 1130 0.24 2725 1747 1363 29.1 29.1 1.00
		1845 186 1 0.97 3 681 0.87 1557 11557 3.0 3.0	1845 134 2 0.97 3 178 0.05 3408 134	1918 3 3 0.97 3 1544 0.31 5036 11018 11679 46.0	1845 103 1 0.97 3 476 0.31 1553 164 6.4	1845 619 2 0.97 3 495 0.15 3408 619	1845 897 4 0.97 3 2207 0.35 6346 897 1586	1845 247 1 0.97 3 622 0.35 1554 247	1845 93 2 0.97 3 135 0.04 3408	1845 1062 2 0.97 3 848 0.24 3505 1762 1752	1845 1474 2 0.97 3 1130 0.24 2725 1474 1363 29.1 1.00
		186 1 0.97 3 681 0.87 1557 1557 3.0 3.0	134 2 0.97 3 178 0.05 3408 134	1918 3 0.97 3 1544 0.31 5036 1918 1679 46.0	103 1 0.97 3 476 0.31 1553 1653 6.4	619 2 0.97 3 495 0.15 3408 619	897 4 0.97 3 2207 0.35 6346 897 1586	247 0.97 3 622 0.35 1554	93 2 0.97 3 135 0.04 3408	1062 2 0.97 3 848 0.24 3505 1762 1752 34.3	1474 2 0.97 3 11130 0.24 2725 1474 1363 29.1 29.1
		0.97 0.87 0.87 1557 1557 3.0 3.0	2 0.97 3 178 0.05 3408 134 1704	3 1544 0.31 5036 1918 1679 46.0	1 0.97 3 476 0.31 1553 103 1553 6.4 6.4	2 0.97 3 495 0.15 3408 619 1704	0.97 3 2207 0.35 6346 897 1586	0.97 3 622 0.35 1554 247	2 0.97 3 135 0.04 3408	2 0.97 3 848 0.24 3505 1062 1752	20.097 3 1130 0.24 2725 1474 1363 29.1 29.1
		0.97 3 681 0.87 1557 1557 3.0 3.0	3 178 0.05 3408 134	0.97 3 1544 0.31 5036 1918 1679 46.0	0.97 3 476 0.31 1553 163 6.4 6.4	0.97 3 495 0.15 3408 619	0.97 3 2207 0.35 6346 897 1586	0.97 3 622 0.35 1554 247	0.97 3 135 0.04 3408	0.97 3 848 0.24 3505 1762 1752	0.97 3 1130 0.24 2725 1474 1363 29.1 29.1
		3 681 0.87 1557 1557 3.0 3.0	3 178 0.05 3408 134	3 1544 0.31 5036 1918 1679 46.0	3 476 0.31 1553 1553 6.4 6.4	3 495 0.15 3408 619	3 2207 0.35 6346 897 1586	3 622 0.35 1554 247	3 135 0.04 3408	3 848 0.24 3505 1752	3 1130 0.24 2725 1474 1363 29.1 29.1 1.00
		0.87 1557 186 186 1557 3.0 3.0	178 0.05 3408 134 1704	1544 0.31 5036 1918 1679 46.0	476 0.31 1553 103 1553 6.4	495 0.15 3408 619	2207 0.35 6346 897 1586 16.1	0.35 0.35 1554 247	135 0.04 3408	948 0.24 3505 1752 36.3	1130 0.24 2725 1474 1363 29.1 29.1 1.00
		0.87 1557 186 1557 3.0 3.0	0.05 3408 134	0.31 5036 1918 1679 46.0	0.31 1553 103 1553 6.4 6.4	0.15 3408 619	0.35 6346 897 1586 16.1	0.35	3408	0.24 3505 1062 1752	0.24 2725 1474 1363 29.1 29.1 29.1
		186 186 1557 3.0 3.0	3408 134 1704	5036 1918 1679 46.0	1553 1553 6.4 6.4	3408 619	897 1586 16.1	247	3408	3505 1062 1752 36.3	2725 1474 1363 29.1 29.1 1.00
		186 1557 3.0 3.0	134	1918 1679 46.0 46.0	103 1553 6.4 6.4	619	1586	247	C	1062	1474 1363 29.1 29.1 1.00
		3.0 3.0 1.00	1704	1679 46.0 46.0	1553 6.4 6.4	1704	1586		93	1752	29.1 29.1 1.00
. veh/h/ln		3.0		46.0	6.4	5	16.1	1554	1704	242	29.1
		3.0	2.8	46.0	6.4	21.8	7 ' 7	17.0	4.0	20.0	1.00
r(g_c), s		1.00	2.8			21.8	10.	17.0	4.0	36.3	1.00
			1.00		1.00	1.00	1000	1.00	1.00		
p(c), ven/h		681	1/8	1544	4/6	495	2207	622	135	848	1 30
		0.27	0.75	1.24	0.22	1.25	0.41	0.40	0.69	C77	11.30
Avall Cap(c_a), vervn 580 HCM Diston Patio 200	200	180	100	100	100	100	1007	1 00	1 00	248	1 30
		0.82	100	100	1 00	100	100	100	100	00.1	8.6
, s/veh		5.5	70.1	52.0	28.8	64.1	37.2	32.1	71.1	56.9	23.6
_		8.0	8.4	114.6	1.0	128.3	0.0	0.2	5.9	123.2	143.3
	0.0 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0:0	0.0
eh/ln		1.3	2.9	37.7	5.9	19.1	7.0	7.3	2.0	32.1	33.3
LnGrp Delay(d),s/veh 60.3	9	6.3	78.5	166.6	29.8	192.4	37.2	32.3	77.0	180.0	166.9
LnGrp LOS	E A	A	ш	ш	U	-		U	ш	ш	-
Approach Vol, veh/h	1691			2155			1763			2629	
Approach Delay, s/veh	7.7.7			154.6			91.0			169.0	
Approach LOS	ر			_			_			_	
Timer	1 2	3	4	2	9	7	8				
	1 2	က	4	2	9	7	8				
	-	26.0	42.3	31.6	52.0	10.1	58.2				
		4.2	0	0.0	0	4.7	0.0				
Max Green Setting (Gmax), s 9.6	36.0	72.8	38 3	25.8	480	7.7	20.6				
		0.0	0.0	0.3	0.0	0.0	4.1				
Intersection Summary											
HCM 2010 Ctrl Delay		118.5									
HCM 2010 LOS		ш									
Notes											

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HCM 2010 Signalized Intersection Summary 17: El Camino Real & Town Garden Rd.

0.099 11.00 2741 0.61 2741 1.00 1.00 23.4 1.0 0.0 16.1 24.4 1.00 1845 1681 1681 1679 34.3 34.3 159 1.00 1.00 1.00 372 631 0.36 757 372 25.8 25.8 25.8 25.8 25.8 631 1.00 1.00 1.00 39.1 1.0 0.0 0.0 0.0 12.7 40.1 0.98 1.00 1845 170 394 0.26 1537 1289 1.36 1.00 1.00 55.8 167.7 0.0 37.8 24.7 4.2 40.0 15.1 0.8 1.00 1845 1755 1755 1679 38.4 38.4 0.94 0.26 5036 5 0 1.00 1.00 191 191 193 3 3 150 0.09 * 6.4 * 40 36.3 2.9 1.00 1845 64 0.94 3 95 0.14 698 0.0 0.0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 7.0 7.4.2 7.13 14.8 0.0 309 62.8 E 20.3 * 4.2 * 38 10.5 0.4 64 6.1 6.1 1.00 1.158 0.40 3.74 1.00 1.00 62.5 0.0 0.0 62.5 0.0 62.5 0.0 63.1 60 60 14 0 0 0.94 1.00 1.845 7 64 0.94 3 158 0.11 112.2 1.00 1845 32 1 0.94 3 58 0.11 538 0.0 0.0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 170 64.0 F 44.8 * 6.4 * 38 40.4 0.0 Ť *15 27.8 0.0 1.00 1900 74 0 0.94 133 0.11 106 1782 8.5 8.5 0.70 0.70 0.055 452 1.00 1.00 6.3.6 0.9 0.0 0.0 0.0 60.2 Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max O Clear Time (g_c+I1), s
2 %ile BackOfQ(50%),veh/ln Percent Heavy Veh, %
Cap, veh/h
Arrive On Green
Sat Flow, veh/h
Grp Volume(v), veh/h
Grp Sat Flow(s), veh/h
O'D Sarve(g_s), s Upstream Filter(I) Uniform Delay (d), s/veh Incr Delay (d2), s/veh LnGrp LOS Approach Vol, veh/h Approach Delay, s/veh Approach LOS Lane Grp Cap(c), veh/h V/C Ratio(X) Initial Q Delay(d3),s/veh Parking Bus, Adj Adj Sat Flow, veh/h/In Adj Flow Rate, veh/h Adj No. of Lanes Peak Hour Factor Green Ext Time (p_c), s Number Initial Q (Qb), veh Ped-Bike Adj(A_pbT) Cycle Q Clear(g_c), s Prop In Lane Lane Configurations Traffic Volume (veh/h) Avail Cap(c_a), veh/h HCM Platoon Ratio Future Volume (veh/h) LnGrp Delay(d),s/veh HCM 2010 Ctrl Delay HCM 2010 LOS

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Synchro 10 Report Page 30

HCM 2010 Signalized Intersection Summary 18: El Camino Real & Camino Vida Roble

Long-Term AM 08/24/2017

Long-Term AM 08/24/2017

Marcement Fig. E8P WB1 WB1 WB1 WB1 NB1 NB1 SB1		1	†	1	>	ļ	1	•	—	4	۶	→	*
10	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
70	Lane Configurations	r	4	*		4		K.	*	*	F	444	
1) 70 20 100 20 20 470 150 20 30 152 1 4 4 4 3 8 18 5 2 12 1 6 1 0	Traffic Volume (veh/h)	70	20	100	20	20	20	470	1590	20	30	1520	290
7 4 14 3 8 18 18 5 2 12 1 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Future Volume (veh/h)	70	20	100	20	20	20	470	1590	20	30	1520	290
100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	7	4	14	က	ω (18	2	2	12	-	9	16
100 100 100 100 100 100 100 100 100 100	Initial Q (Qb), veh	0 6	0	0	0 0	0	0	0 0	0	0	0 6	0	0 0
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	Ped-Bike Adj(A_pb1)	9.6	100	1.00	00.1	1	1.00	00.1	100	1.00	9.6	5	1.98
56 76 71 21 21 490 1656 21 31 1583 8 3 76 71 21 21 490 1656 21 31 1583 8 3 <td< td=""><td>Adi Sat Flow veh/h/ln</td><td>1845</td><td>1845</td><td>1845</td><td>1900</td><td>1845</td><td>1900</td><td>1845</td><td>1845</td><td>1845</td><td>1845</td><td>1845</td><td>1900</td></td<>	Adi Sat Flow veh/h/ln	1845	1845	1845	1900	1845	1900	1845	1845	1845	1845	1845	1900
1	Adj Flow Rate, veh/h	26	76	71	21	21	21	490	1656	21	31	1583	302
0.96 0.96 <td< td=""><td>Adj No. of Lanes</td><td></td><td>—</td><td>_</td><td>0</td><td>_</td><td>0</td><td>2</td><td>2</td><td>-</td><td></td><td>က</td><td>0</td></td<>	Adj No. of Lanes		—	_	0	_	0	2	2	-		က	0
1757 1845 1470 557 557 3408 350 359 379 389 399	Peak Hour Factor	96.0	96.0	96.0	96.0	96.0	96.0	96:0	96:0	96:0	96:0	96:0	96:0
176 185 147 50 50 273 1094 481 627 2495 1715 1845 147 50 50 50 50 50 50 50 5	Percent Heavy Veh, %	3	3	co	3	3	3	3	3	3	3	3	3
173 174 174 175	Cap, veh/h	176	185	147	20	20	20	273	1094	481	627	2495	473
1757 1845 1470 557 557 3408 3505 1543 1757 4237 156	Arrive On Green	0.10	0.10	0.10	0.09	60.0	60.0	80.0	0.31	0.31	0.36	0.59	0.59
56 76 71 63 0 490 1656 21 31 1252 44 58 68 54 0.0 0 1704 1752 1543 175 1679 100 38 64 0.0 0.0 120 468 14 1.7 367 100 100 0.33 0.0 0.0 120 468 14 1.7 367 110 180 140 0.0 0.0 120 488 14 1.7 367 445 467 372 445 0 0 273 1094 481 627 1977 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Sat Flow, veh/h	1757	1845	1470	557	557	557	3408	3505	1543	1757	4237	803
1757 1845 1470 1670 0 0 1704 1752 1543 1757 1679 144 58 68 54 0.0 0.0 120 46.8 1.4 1.7 36.7 1.00 1.00 0.33 1.00 1.20 46.8 1.4 1.7 36.7 1.00 0.33 0.33 1.00	Grp Volume(v), veh/h	29	9/	71	63	0	0	490	1656	21	31	1252	633
44 58 68 54 00 00 120 468 14 17 367 10 0 0.0 120 468 14 17 367 10 0 0.0 120 468 14 17 367 10 100 0.033 1.00 1.00 1.00 1.00 1.00 176 185 147 149 0 0 273 1094 481 627 1977 445 30 445 0 0 273 1094 481 627 1977 100 1.0	Grp Sat Flow(s),veh/h/ln	1757	1845	1470	1670	0	0	1704	1752	1543	1757	1679	1683
44 58 68 54 00 00 120 468 14 17 367 1.00 1.00 0.33 0.33 100 100 100 100 1.00 1.8 1.4 1.4 0 0 273 1094 0.05 0.05 0.32 0.41 0.48 0.42 0.00 0.00 1.80 1.51 0.04 0.05 0.63 4.45 3.72 445 0.0 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Q Serve(g_s), s	4.4	2.8	8.9	5.4	0.0	0.0	12.0	46.8	1.4	1.7	36.7	37.1
100	Cycle Q Clear(g_c), s	4.4	2.8	8.9	5.4	0.0	0.0	12.0	46.8	1.4	1.7	36.7	37.1
176 185 147 149 0 0 273 1094 481 627 1977 492 041 048 042 0000 000 180 151 004 005 068 494 467 47 47 048 0 0 0 273 1094 481 627 1977 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Prop In Lane	1.00		1.00	0.33		0.33	1.00		1.00	1.00		0.48
0.32 0.41 0.48 0.42 0.00 0.00 1.80 1.51 0.04 0.05 0.63	Lane Grp Cap(c), veh/h	176	185	147	149	0	0	273	1094	481	627	1977	991
445 467 372 445 0 0 273 1094 481 627 1977 1.00	V/C Ratio(X)	0.32	0.41	0.48	0.42	0.00	0.00	1.80	1.51	0.04	0.05	0.63	0.64
100 100	Avail Cap(c_a), veh/h	445	467	372	445	0	0	273	1094	481	627	1977	991
100 1.00 1.00 1.00 0.00 0.00 1.00 1.00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
627 633 638 646 0.0 0.0 690 516 360 316 202 2 10 1.5 2.4 1.9 0.0 0.0 3730 2362 0.2 16 22 30 2.9 2.5 0.0 0.0 198 585 0.6 0.8 173 1 22 30 2.9 2.5 0.0 0.0 198 585 0.6 0.8 173 1 2 4 6.5 0.0 0.0 0.0 0.0 0.0 0.0 22 30 2.9 2.5 0.0 0.0 198 585 0.6 18 173 1 2 50 65 0 65 0 7 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
10 1.5 2.4 1.9 0.0 0.0 373.0 26.2 0.2 0.0 1.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	62.7	63.3	63.8	9.49	0.0	0.0	0.69	51.6	36.0	31.6	20.2	20.3
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	1:0	1.5	2.4	1.9	0.0	0.0	373.0	236.2	0.5	0.0	1.6	3.1
22 3.0 2.9 2.5 0.0 0.0 198 585 0.6 0.8 173 E E E E E E 6.3 0.0 0.0 4420 2878 36.2 11.6 21.8 203 6.5 6.5 0.0 0.0 4420 2878 36.2 11.6 2.18 E E E F F O C C 203 6.5 6.5 8.2 320.2 1 2 3 4 5 6 7 8 5 40 6.0 0.0 180 94.4 17.6 5 5 6 7 8 40.0 5 3.7 48.8 8.8 14.0 39.1 7.4 5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.3	Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
637 648 662 665 00 00 4420 2878 362 316 218 E E E F F D C C 203 665 3202 2167 650 665 225 Cc), S 59, 6 52, 8 200 180 944 17.6 1 2 3 4 5 6 7 8 Innay), S 40 468 38 120 388 400 c+II), S 37 488 88 140 39.1 74 c. S 0.0 0.0 0.8 0.0 0.0 0.3	%ile BackOfQ(50%),veh/ln	2.2	3.0	5.9	2.5	0.0	0.0	19.8	58.5	9.0	0.8	17.3	18.1
F E E E F F D C C C C C C C C C C	LnGrp Delay(d),s/veh	63.7	64.8	66.2	99.2	0.0	0.0	442.0	287.8	36.2	31.6	21.8	23.4
h 650 66.5 320.2 65.6 66.5 320.2 1 2 3 4 5 6 7 8 1 3 59,6 52.8 20.0 180 94.4 17.6 2,1,5 59,6 52.8 20.0 180 94.4 17.6 2,1,5 59,6 52.8 3.8 14.0 39.1 7.4 3,1 48.8 88 14.0 39.1 7.4 3,2 0.0 0.0 0.8 0.0 0.0 0.3	LnGrp LOS	ш	ш	ш	ш			니	니		ပ	ပ	ပ
h 650 66.5 320.2 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 4 5 6 7 8 1 2 4 5 6 8 1 2 8 20.0 18.0 94.4 17.6 3), s 6.0 6.0 75.8 40.0 1, s 6.0 6.0 75.8 40.0 1, s 7 48.8 8 8 12.0 38.8 40.0 1, s 7 48.8 8 8 12.0 38.8 40.0 1, s 7 48.8 8 8 12.0 38.8 40.0 1, s 7 48.8 8 8 12.0 38.8 40.0 1, s 7 48.8 8 8 12.0 38.8 40.0 1, s 7 48.8 8 8 12.0 38.8 40.0 1, s 7 48.8 8 8 12.0 38.8 40.0 1, s 7 48.8 8 8 12.0 38.8 40.0 1, s 7 48.8 8 8 8 12.0 38.8 40.0 1, s 9 12.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5	Approach Vol, veh/h		203			63			2167			1916	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 2 5 6 52.8 20.0 18.0 944 3), s 6.0 6.0 .*5 6.0 6.0 imax), s 4.0 46.8 *38 12.0 38.8 5-H), s 3.7 48.8 8.8 14.0 39.1 5 0.0 0.0 0.8 0.0 0.0	Approach Delay, sweh		0.59			999			320.2			22.5	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 4 5 6 7 1 3 59.6 52.8 2.0 18.0 94.4 5), s 60 60 .5 60 60 c+II), s 3.7 48.8 8.8 14.0 39.1 c, s 0.0 0.0 0.8 0.0 0.0	Approach LOS		ш			ш			ш			O	
1 2 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Timer		2	33	4	2	9	7	∞				
(c), s 59.6 52.8 20.0 18.0 94.4 (c), s 50.0 6.0 (c) 6.	Assigned Phs	-	2		4	2	9		∞				
imax), s 6.0 6.0 ° 5 6.0 6.0 imax), s 6.0 46.8 ° 5 8.0 12.0 38.8 c-th), s 3.7 48.8 ° 8.8 14.0 39.1 c-th), s 0.0 0.0 0.8 0.0 0.0 imax, s 173.5	Phs Duration (G+Y+Rc), s	9.69	52.8		20.0	18.0	94.4		17.6				
imay, s 4.0 46.8 *3.8 12.0 38.8 c+11), s 3.7 48.8 8.8 14.0 39.1 s 5 0.0 0.0 0.0 0.0 173.5 F	Change Period (Y+Rc), s	0.9	0.9		* 5	0.9	0.9		4.2				
C+fl), s 3.7 48.8 8.8 14.0 39.1 , s 0.0 0.0 0.8 0.0 0.0 173.5 F	Max Green Setting (Gmax), s	4.0	46.8		* 38	12.0	38.8		40.0				
,s 0.0 0.0 0.8 0.0 0.0 173.5	Max Q Clear Time (g_c+I1), s	3.7	48.8		8.8	14.0	39.1		7.4				
	Green Ext Time (p_c), s	0.0	0.0		0.8	0.0	0.0		0.3				
	Intersection Summary												
HCM 2010 LOS F	HCM 2010 Ctrl Delay			173.5									
Mates	HCM 2010 LOS			ш									
	oo to N												

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HCM 2010 Signalized Intersection Summary 19: El Camino Real & Poinsettia Ln.

Long-Term AM 08/24/2017

EBI EBI WBI WBI WBI WBR 100 50 30 410 30 180 100 0 0.94 100 0.0 100 1.00 1.00 1.00 1.00 1.00 1845 1845 1900 1845 1900 1.00 1845 1845 1900 1845 1900 1.00 1845 1845 1900 1845 1900 1.00 1846 1845 1900 1845 1900 1.00 1847 1845 1845 1900 1.00 1848 1845 1900 1.00 1849 1845 1900 1.00 1840 1845 1900 1.00 1840 1845 1900 1.00 1841 1845 1900 1.00 1842 1845 1900 1.00 1845 1845 1900 1.00 1846 1845 1900 1.00 1847 1845 1945 1900 1.00 1848 1848 1948 1.02 1848 1848 1948 1.00 1849 1849 1.00 1840 1.	EBL EBI EBR WBI		ich	LDT	FRR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
10 10 10 10 10 10 10 10	10 10 10 10 10 10 10 10		EBL	101)
70 50 30 410 30 180 7 4 14 14 3 8 18 7 0 0 0 0 0 0 0 1.00 1.00 1.00 1.00 1.00	70 50 30 410 30 180 70 1510 71 50 30 410 30 180 70 1510 72 50 30 410 30 180 70 1510 1100 1.00 1.00 1.00 1.00 1.00 1.00 1100 1.00 1.		r.	₹		K.	₩\$		F	444	¥L.	F	4413	
70 50 30 410 30 180 7 4 14 3 8 18 7 0 0 0 0 0 0 0 0 1.00 1.00 1.00 1.00 1.	70 50 30 410 30 180 70 1510 7 4 14 13 8 18 18 5 2 0 0 0 0 0 0 0 0 0 1.00 1.00 1.00 1.00		0/	20	30	410	30	180	70	1510	290	130	1390	50
1,00	1.00		02	20	8	410	8	180	02	1510	290	130	1390	20
1.00 0.94 1.00 0.97 1.00 0.97 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 0.90 0.90	1.00		7	4 0	14	m	ω (∞ 0	ഹ	5	12	- -	9 0	16
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00		1.00	>	0.94	1.00	>	0.97	1.00	>	0.99	1.00	>	0.98
1845 1845 1940 1845 1845 1940 1845 1845 1940 1845 1845 1940 1845 1845 1940 1845 1845 1940 1845	1845 1845 1900 1845 1845 1900 1845		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
78 56 33 456 33 200 2 2 2 0 0 2 2 0 0 0.90 0.90 0.90 0.90 0.90 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 10 0.02 0.12 0.15 0.24 3 0.03 0.12 0.15 0.15 1516 3 2 1 1704 172 1563 1704 1752 1516 1 3 14 34 34 39 198 22 173 3 1 34 3.4 3.9 198 22 173 3 1 456 406 568 432 374 1 100 1.00 1.00 1.00 1.00 1.00 1.00 1.	78 56 33 456 33 200 78 1678 2 2 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0		1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1900
0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90	0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90		78	26	33	456	33	200	78	1678	322	144	1544	26
0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90	0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90		2	2	0	2	2	0	2	3	-	2	3	0
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	9 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3		06:0	06:0	0.00	0.90	0.00	0.00	0.00	0.00	0.00	0.90	0.00	0.00
91 254 134 502 423 366 6 903 0.12 0.15 0.15 0.24 33 66 78 44 45 45 33 200 78 44 45 45 704 1752 1516 3 3.4 3.4 3.4 3.9 198 2.2 173 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	91 254 134 502 423 366 114 1900 903 0.12 0.13 0.15 0.24 0.03 0.38 308 2168 1148 3108 1752 1516 3408 0.38 178 44 45 53 200 78 1678 34 34 34 39 198 22 173 34 467 100 100 100 100 100 100 100 100 100 100	Percent Heavy Veh, %	co :	3	3	3	c	3	m	e	8	3	e	3
March Marc	10		91	254	134	502	423	366	114	1900	287	728	2838	103
3408 2166 1148 3408 1752 1516 3 78 44 45 456 456 178 34 34 39 198 22 173 100 100 100 100 100 100 100 110 100 10	1704 1748 3408 1752 1516 3408 5036 178 34 34 34 34 34 34 34 3			0.12	0.12	0.15	0.24	0.24	0.03	0.38	0.38	0.21	0.57	0.57
In 1704 1752 1563 37 200 1704 1752 1563 1704 1752 1516 1 3.4 3.4 3.9 198 2.2 17.3 3.4 3.4 3.9 198 2.2 17.3 1.00	1764 1752 1563 1678 1678 1678 1679			2168	1148	3408	1752	1516	3408	5036	1555	3408	4985	181
In 1704 1752 1563 1704 1752 1516 1 3.4 3.4 3.9 19.8 2.2 173 3.4 3.4 3.9 19.8 2.2 173 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1704 1752 1563 1704 1752 1516 1704 1679 1679 1834 34 34 34 34 34 34 34			44	42	456	33	200	78	1678	322	144	1040	260
3.4 3.4 3.9 19.8 2.2 17.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	3.4 3.4 3.9 19.8 2.2 17.3 3.4 46.7 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.			1752	1563	1704	1752	1516	1704	1679	1555	1704	1679	1808
3.4 3.4 3.9 19.8 2.2 17.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	3.4 3.4 3.9 198 2.2 713 3.4 46.7 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	O Serve(g_s), s	3.4	3.4	3.9	19.8	2.2	17.3	3.4	46.7	24.4	5.2	29.0	29.0
H 100 0,73 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0	The following the following state of the foll	Cycle Q Clear(g_c), s	3.4	3.4	3.9	19.8	2.2	17.3	3.4	46.7	24.4	2.5	29.0	29.0
h 91 205 183 502 423 366 086 021 025 091 008 025 0 100 100 100 100 100 100 100 100 1 100 100	h 91 205 183 502 423 366 114 1900 108 0.25 0.21 0.25 0.91 0.08 0.55 0.69 0.88 114 1900 100 1.00 1.00 1.00 1.00 1.00 1.00	Prop In Lane	1.00		0.73	1.00		1.00	1.00		1.00	1.00		0.10
0.86 0.27 0.25 0.91 0.08 0.55 0.91 0.08 0.55 0.91 0.08 0.55 0.91 0.08 0.55 0.91 0.08 0.55 0.91 0.08 0.55 0.91 0.00 1.00 1.00 1.00 1.00 1.00 1.00	0.86 0.21 0.25 0.91 0.08 0.55 0.69 0.88 0.88 0.88 0.88 0.21 0.25 0.91 0.08 0.55 0.69 0.88 0.88 0.100 1.00 1.00 1.00 1.00 1.0		6	205	183	205	423	399	114	1900	284	728	1912	1030
How the proof of t	Honge of the control		0.86	0.21	0.25	0.91	0.08	0.55	69.0	0.88	0.55	0.20	0.54	0.54
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		16	456	400	208	432	3/4	1.14	/161	265	87/	1912	1030
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
72.7 60.0 60.2 62.9 44.0 49.7 49.8 0.2 0.2 0.3 16.1 0.0 0.9 5.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	12,2 60,0 60,2 62,9 44,0 49,1 71,1 43,6 50,0 60,0 60,0 60,4		1.00	00 !	1.00	1.00	00 !	1.00	1.00	1:00	1.00	1.00	1.00	1.00
49.8 0.2 0.3 16.1 0.0 0.9 2.2 1.7 1.7 10.4 1.1 7.4 1.1 7.4 1.1 7.4 1.1 7.4 1.1 7.4 1.1 7.4 1.1 7.4 1.1 7.4 1.1 7.4 1.1 7.4 1.1 7.4 1.1 7.4 1.1 2 3 4 5 6 1.1 7.2 1.1 2.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1	49.8 0.2 0.3 16.1 0.0 0.9 20.1 6.4 2.2 1.7 1.7 10.4 1.1 7.4 1.9 22.7 1 122.5 60.2 60.4 79.1 44.0 50.6 91.9 50.0 4 16.7 1.8 6.9 50.1 6.4 17 2 3 4 5 6 7 8 18 6.9 5 7 2 6 7 8 18 6.0 6 5 4.1 5 6 7 18 6.0 6 5 6 7 8 18 6.0 6 7 18 6.0 6 7 18	eh	72.7	0.09	60.2	62.9	44.0	49.7	71.7	43.6	36.7	48.4	20.1	20.1
22 1.7 10.4 1.1 70.4 7.2 7.2 7.2 7.2 7.3 7.5 7.3	22 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		49.8	0.2	0.3	16.1	0.0	6:0	20.1	6.4	3.7	0.0	-	2.1
22 1.7 1.7 10.4 1.1 7.4 112.5 6.02 6.04 79.1 44.0 50.6 5.6 5.6 5.6 5.6 5.1 5.2 5.1 5.2	22 1.7 1.7 10.4 1.1 7.4 1.9 22.7 12.5 60.2 60.4 79.1 40.0 50.6 919 50.0 F E E E D D F D F D F D F D F D F D F D	Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
102.5 60.2 60.4 79.1 44.0 50.6 F E E D D D D G 99.3 69.1 F E E D D D D G 99.3 69.1 F E E D D D D G 99.3 69.1 69.1 69.1 69.1 69.1 69.1 69.1 69.1	122.5 60.2 60.4 79.1 44.0 50.6 91.9 50.0 F E E E D D F F D 167 689 2078 89.3 69.1 50.1 T 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 60 6.6 27.1 22.3 92 91.4 82 41.2 60 6 5 74.7 42 60 42 7 72 48.7 21.8 5.9 5.4 31.0 5.4 19.3 0.1 7.9 0.4 0.3 0.0 9.5 0.0 0.9		2.2	1.7	1.7	10.4	- :	7.4	1.9	22.7	11.1	2.5	13.7	15.1
F E E E D D	F E E E D D F D D F D D F D D	y(d),s/veh	22.5	60.2	60.4	79.1	44.0	9.09	91.9	20.0	40.3	48.5	21.3	22.2
167 689 89.3 689 1 2 3 4 5 6 1 2 3 4 5 6 380 62.6 27.1 22.3 92 91.4 6.0 6 5 4.7 4.2 60 7 9.8 57 25 39 5 61.9 7.2 48.7 21.8 5.9 5.4 31.0 0.1 7.9 0.4 0.3 0.0 9.5	167 689 89.3 689 F F E E 7 38.0 62.6 27.1 22.3 92 914 82.2 98 '57 '25 '39 '5 61.9 '4 7.2 48.7 21.8 5.9 5.4 31.0 5.4 0.1 7.9 0.4 0.3 0.0 9.5 0.0		-	ш	ш	ш			-				ပ	
89.3 69.1 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 38.0 62.6 27.1 22.3 9.2 91.4 6.0 6 5 4.7 4.2 6.0 ° 9.8 '57 '25 '39 '5 61.9 7.2 48.7 21.8 5.9 5.4 31.0 0.1 7.9 0.4 0.3 0.0 9.5 44.5	89.3 69.1 F E E 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 38.0 62.6 27.1 22.3 9.2 914 8.2 6.0 6 5 4.7 4.2 6.0 4.2 9.8 57 25 39 5 619 4 7.2 48.7 21.8 5.9 5.4 310 5.4 0.1 7.9 0.4 0.3 0.0 9.5 0.0	Approach Vol, veh/h		167			689			2078			1744	
1 2 3 4 5 6 1 2 3 4 5 6 1 380 626 27.1 22.3 9.2 91.4 6.0 6. 5 .4.7 .4.2 6.0 . 9.8 .57 .25 .39 .5 61.9 7.2 48.7 21.8 5.9 5.4 31.0 0.1 7.9 0.4 0.3 0.0 9.5 44.5	F E E 6 7 3 4 5 6 7 3 8 6 7 3 8 6 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Approach Delay, s/veh		89.3			69.1			20.1			23.8	
1 2 3 4 5 6 1 2 3 4 5 6 380 626 27.1 22.3 92 9.6 9.8 57 25 39 5 61.9 7.2 48.7 21.8 5.9 5.4 31.0 0.1 7.9 0.4 0.3 0.0 9.5 44.5	1 2 3 4 5 6 7 1 2 3 4 5 6 7 380 626 277, 223 92 914 82 60 6 5 747 42 60 42 98 57 25 39 5 619 74 72 487 218 59 54 310 54 0.1 7.9 0.4 0.3 0.0 9.5 0.0	Approach LOS		ட			ш			٥			ပ	
380 626 27.1 22.3 92 914 6.0 6 5 7.4 7 42 60 9.8 57 25 39 5 619 7.2 48.7 218 59 54 310 0.1 7.9 0.4 0.3 0.0 9.5	380 626 277 223 92 914 82 60 60 6 6 75 747 42 60 74.2 98 75 725 739 75 619 74 72 60 74.2 98 75 725 739 75 619 74 74.5 619 74 74.5 74 7	Timer	1	2	3	4	2	9	7	8				
38.0 62.6 27.1 22.3 9.2 91.4 6.0 ° 6 ° 5 ° 4.7 ° 4.2 6.0 ° 9.8 ° 57 ° 2.5 ° 39 ° 5 6.19 7.2 48.7 21.8 5.9 5.4 31.0 0.1 7.9 0.4 0.3 0.0 9.5 44.5	380 626 27.1 22.3 92 914 82 60 "6" 5" 47" 42 60 "4".2 98 "5" 47" 42 60 "4".2 48.7 21.8 5.9 5.4 31.0 5.4 0.1 7.9 0.4 0.3 0.0 9.5 0.0 44.5 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1	Assigned Phs	1	2	3	4	2	9	7	8				
60 '6 '5 '47 '42 60 ' 98 '57 '25 '39 '5 619 72 48.7 218 5.9 5.4 31.0 0.1 7.9 0.4 0.3 0.0 9.5 44.5	60 *6 *5 *47 *42 60 *42 9.8 *57 *25 *39 *5 619 *4 *7 7.2 48.7 21.8 5.9 5.4 31.0 5.4 1 0.1 7.9 0.4 0.3 0.0 9.5 0.0 44.5		38.0	62.6	27.1	22.3	9.2	91.4	8.2	41.2				
98 *57 *25 *39 *5 7.2 48.7 21.8 5.9 5.4 0.1 7.9 0.4 0.3 0.0 44.5	98 '57 '25 '39 '5 619 '4 72 48.7 21.8 5.9 5.4 31.0 5.4 0.1 7.9 0.4 0.3 0.0 9.5 0.0 44.5 D	Change Period (Y+Rc), s	0.9	9 *	* 5	* 4.7	* 4.2	0.9	* 4.2	* 5				
7.2 48.7 21.8 5.9 5.4 0.1 7.9 0.4 0.3 0.0 44.5	72 487 218 59 54 310 54 0.1 79 0.4 0.3 0.0 9.5 0.0 44.5	Max Green Setting (Gmax), s	8.6	* 57	* 25	* 39	* 5	61.9	* 4	* 37				
s 0.1 7.9 0.4 0.3 0.0	s 0.1 7.9 0.4 0.3 0.0 9.5 0.0 44.5 D	Max Q Clear Time (g_c+I1), s	7.2	48.7	21.8	6.5	5.4	31.0	5.4	19.3				
		Green Ext Time (p_c), s	0.1	7.9	0.4	0.3	0.0	9.5	0.0	6.0				
		Intersection Summary												
		HCM 2010 Ctrl Delay			44.5									
		HCM 2010 LOS			D									
		J. Company												

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HCM 2010 Signalized Intersection Summary 1: Faraday Ave. & Canon Rd.

	4	†	>	>	ţ	4	•	•	•	٠	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	₩		r	₩		r	4			4	
Traffic Volume (veh/h)	99	1200	250	30	540	20	089	20	110	20	20	20
Future Volume (veh/h)	09	1200	250	30	540	70	089	70	110	20	20	20
Number	2	2	12	-	9	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	,	0.98	1.00	,	0.96	1.00		1.00	1.00	,	0.91
Parking Bus, Adj	00!	1.00	1.00	1.00	1.00	1:00	1:00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1900
Adj Flow Rate, veh/h	65	1290	269	35	281	22	857	0	0	22	22	22
Adj No. of Lanes	-	2	0	-	2	0	2	_	0	0	_	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	c	m	m	m	c	c	c	3	c	m	3	m
Cap, veh/h	83	1186	244	20	1389	23	717	513	0	28	28	28
Arrive On Green	0.02	0.41	0.41	0.04	0.40	0.40	0.28	0.00	0.00	0.05	0.02	0.05
Sat Flow, veh/h	1757	2883	592	1757	3438	130	3514	1845	0	551	551	551
Grp Volume(v), veh/h	99	777	782	32	296	307	857	0	0	99	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1723	1757	1752	1815	1757	1845	0	1652	0	0
O Serve(g_s), s	3.7	41.1	41.1	1.8	12.1	12.1	23.3	0.0	0.0	4.0	0.0	0.0
Cycle Q Clear(g_c), s	3.7	41.1	41.1	1.8	12.1	12.1	23.3	0.0	0.0	4.0	0.0	0.0
Prop In Lane	1.00		0.34	1.00		0.07	1.00		0.00	0.33		0.33
Lane Grp Cap(c), veh/h	83	721	709	70	708	734	716	513	0	83	0	0
V/C Ratio(X)	0.78	1.08	1.10	0.46	0.42	0.42	0.88	00:00	0.00	0.79	0.00	0.00
Avail Cap(c_a), veh/h	123	721	709	20	708	734	1160	609	0	66	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	47.1	29.4	29.4	46.9	21.4	21.4	34.5	0.0	0.0	47.0	0.0	0.0
Incr Delay (d2), s/veh	9.4	299	9.59	19.8	1.8	7.8	9.9	0.0	0.0	25.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	31.1	32.4	1.2	6.2	6.4	12.2	0.0	0.0	2.4	0.0	0.0
LnGrp Delay(d),s/veh	299	85.6	95.2	2.99	23.2	23.1	41.1	0.0	0.0	72.0	0.0	0.0
LnGrp LOS	ш	ᅵ	ᅵ	ш	ပ	ပ				ш		
Approach Vol, veh/h		1624			635			857			99	
Approach Delay, s/veh		89.1			25.3			41.1			72.0	
Approach LOS		ш			ပ			D			ш	
Timer	-	2	က	4	2	9	7	∞				
Assigned Phs	7	2		4	2	9		8				
Phs Duration (G+Y+Rc), s	10.0	47.1		10.0	10.7	46.4		32.8				
Change Period (Y+Rc), s	0.9	0.9		2.0	0.9	0.9		2.0				
Max Green Setting (Gmax), s	4.0	35.0		0.9	7.0	32.0		33.0				
	33	43.1		0.9	2.7	14.1		25.3				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	4.8		1.7				
Intersection Summary												
HCM 2010 Ctrl Delay			63.1									
HCM 2010 LOS			ш									
Notes												

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Synchro 10 Report Page 1

HCM 2010 Signalized Intersection Summary 2: College Blvd. & El Camino Real

Long-Term PM 08/24/2017

Long-Term PM 08/24/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<i>y</i> -	444	¥C.	je-	444	*	F	₩		K.	₩	
Traffic Volume (veh/h)	510	1160	160	20	2260	370	710	440	20	270	170	460
Future Volume (veh/h)	210	1160	160	20	2260	370	710	440	20	270	170	460
Number	വ	2	12	-	9	16	co c	∞ (9	7	4	14
Initial Q (Qb), ven	0 6	0	0 0	0 6	0	0 0	0 0	О	0 20	0 6	0	_ [
Ped-Bike Adj(A_pb1)	9.1	100	00.1	00.1	100	1.00	0.1	100	1.00	00.1	5	10.97
Adi Sat Flow vab/h/lp	1845	1845	1845	1845	1845	1845	1945	1845	1000	1845	18.4F	1000
Adj Flow Rate, veh/h	537	1221	0+0	53	2379	386	747	463	53	284	179	484
Adj No. of Lanes	_	3	_	-	co	_	2	2	0	2	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	c	3	3	3	3	3	3	מיז
Cap, veh/h	24	1407	438	178	1801	226	446	652	74	751	239	469
Arrive On Green	0.03	0.28	0.00	0.10	0.36	0.36	0.13	0.21	0.21	0.22	0.31	0.31
Sat Flow, veh/h	1757	5036	1568	1757	2036	1555	3408	3158	390	3408	1752	1523
Grp Volume(v), veh/h	237	1221	0	23	2379	386	747	256	260	284	179	484
Grp Sat Flow(s),veh/h/ln	1757	1679	1568	1757	1679	1555	1704	1752	1765	1704	1752	1523
O'serve(g_s), s	0.4	30.0	0.0	3.6	46.5	14.1	17.0	17.6	17.0	9.7	10.2	40.0
Cycle of Clear (9_c), 3 Prop In Lane	1.00	20.00	1.00	1.00	5.0	1.00	1.00	0.7	0.20	1.00	7.01	1.00
Lane Grp Cap(c), veh/h	24	1407	438	178	1801	226	446	362	365	751	539	469
V/C Ratio(X)	9.93	0.87	0.00	0.30	1.32	0.70	1.68	0.71	0.71	0.38	0.33	1.03
Avail Cap(c_a), veh/h	24	1763	549	178	1801	929	446	209	611	751	539	469
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00
Uniform Delay (d), s/veh	63.0	44.6	0.0	54.1	41.8	9.2	299	47.9	48.0	43.1	34.7	45.0
Incr Delay (d2), s/veh	4057.0	7.5	0.0	0.3	148.3	7.2	313.9	1.0	1.0	0.1	0.1	50.3
wile BackOfO(50%) veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	73.3
LnGrp Delav(d),s/veh	4120.0	52.0	0.0	54.5	190.1	16.4	370.4	48.9	49.0	43.2	34.8	95.3
LnGrp LOS	ш	۵		۵	ш	В	ш	۵	۵	Q	O	_
Approach Vol, veh/h		1758			2821			1263			947	
Approach Delay, s/veh		1294.7			163.6			239.1			68.2	
Approach LOS		ıL			Œ.			ш			ш	
Timer	1	2	3	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	19.2	42.3	22.0	46.5	0.6	52.5	35.1	33.4				
Change Period (Y+Rc), s	0.9	9 *	2.0	6.5	2.0	0.9	6.5	* 6.5				
Max Green Setting (Gmax), s	S 5.0	* 46	17.0	40.0	4.0	46.5	12.0	* 45				
Green Ext Time (p. c). s		4.3	0.0	0.0	0.0	0.0	0.0	2.1				
Good Extension (P-5) 3	2	?	2	9	2	2	2	- ij				
Intersection Summary												
HCM 2010 Ctrl Delay			457.2									
HCM 2010 LOS			4									

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HCM 2010 Signalized Intersection Summary 3: College Blvd. & Faraday Ave.

	4	†	>	/	ţ	4	•	•	•	٠	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	₩.		r	₩.		K.	₩.		ř.	₩₽	
Traffic Volume (veh/h)	%	540	310	340	510	240	190	510	160	30	330	06
Future Volume (veh/h)	06	540	310	340	510	240	190	210	160	30	330	90
Number	7	4	14	3	00	18	2	2	12		9	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	112	675	388	425	638	300	238	638	200	38	412	112
Adj No. of Lanes	-	2	0	-	2	0	2	2	0	2	2	0
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	c	က	က	က	က	က	3	က	က	က	က	n
Cap, veh/h	139	720	414	288	974	428	186	730	229	81	681	183
Arrive On Green	0.08	0.34	0.34	0.16	0.42	0.42	0.05	0.28	0.28	0.03	0.25	0.25
Sat Flow, veh/h	1757	2123	1219	1757	22%	1079	3408	2607	816	3408	2711	728
Grp Volume(v), veh/h	112	222	206	425	487	451	238	429	409	38	265	259
Grp Sat Flow(s),veh/h/ln	1757	1752	1590	1757	1752	1623	1704	1752	1671	1704	1752	1687
Q Serve(g_s), s	9.9	32.2	32.2	17.1	23.2	23.2	2.7	24.4	24.4	1.7	13.9	14.2
Cycle Q Clear(g_c), s	9.9	32.2	32.2	17.1	23.2	23.2	5.7	24.4	24.4	1.1	13.9	14.2
Prop In Lane	1.00		0.77	1.00		0.67	1.00		0.49	1.00		0.43
Lane Grp Cap(c), veh/h	139	262	539	288	743	889	186	491	468	87	440	424
V/C Ratio(X)	0.81	0.94	0.94	1.48	99.0	99.0	1.28	0.87	0.88	0.44	09.0	0.61
Avail Cap(c_a), veh/h	160	604	548	288	743	889	186	222	526	131	523	504
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.3	33.4	33.4	43.7	24.0	24.0	49.4	35.8	35.9	20.1	34.5	34.6
Incr Delay (d2), s/veh	23.0	22.2	24.0	232.9	2.1	2.3	160.6	13.3	14.1	3.4	1.4	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	19.1	17.6	26.8	11.5	10.7	8.9	13.6	13.1	9.0	6.9	8.9
LnGrp Delay(d),s/veh	70.3	55.6	57.4	276.5	26.1	26.2	209.9	49.2	49.9	53.6	35.9	36.2
LnGrp LOS	ш	ш	ш	-	ပ	ပ	-					٥
Approach Vol, veh/h		1175			1363			1076			562	
Approach Delay, siven		97.8			104.2			82.0			3/.2	
Approach LOS		ш			ш.			ш.			٥	
Timer	-	2	3	4	2	9	7	00				
Assigned Phs	-	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	7.2	35.2	21.6	40.4	10.2	32.2	12.7	49.3				
Change Period (Y+Rc), s	4.5	0.9	4.5	2.0	4.5	0.9	4.5	2.0				
Max Green Setting (Gmax), s	4.0	32.9	17.1	36.0	2.7	31.2	9.5	43.6				
Max Q Clear Time (g_c+I1), s	3.1	26.4	19.1	34.2	7.7	16.2	9.8	25.2				
Green Ext Time (p_c), s	0.0	5.6	0.0	Ξ	0:0	2.4	0.0	2.7				
Intersection Summary												
HCM 2010 Ctrl Delay			77.2									
HCM 2010 LOS			ш									

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HCM 2010 Signalized Intersection Summary 4: El Camino Real & Faraday Ave.

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National Configuration Fig. EB Fig. Well We		4	†	1	/	↓	4	•	—	•	۶	→	*
100 100	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
300 800 900 220 300 470 190 1740 150 1120 300 800 900 220 300 470 190 1740 150 1120 300 800 900 220 300 470 190 1740 150 1120 100 100 100 100 100 100 100 100 100 10	Lane Configurations	F	*	*	r	#	ĸ.	K.	443		F	444	×.
300 800 900 220 300 470 190 1740 150 310 1120 7 4 14 3 8 18 5 2 12 1 6 100 0 <td< td=""><td>Traffic Volume (veh/h)</td><td>300</td><td>800</td><td>006</td><td>220</td><td>300</td><td>470</td><td>190</td><td>1740</td><td>150</td><td>310</td><td>1120</td><td>20</td></td<>	Traffic Volume (veh/h)	300	800	006	220	300	470	190	1740	150	310	1120	20
7 4 14 3 8 18 18 5 2 12 10 10 100 100 100 100 100 100 100	Future Volume (veh/h)	300	800	006	220	300	470	190	1740	150	310	1120	20
100 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	7	4	14	က	∞ (18	വ	2	12	- (9	16
1.00	Initial Q (Qb), ven	0 0	0	0 0	0 0	0	0 6	0 0	0	0 0	0 6	0	0 00
1945 1945	Ped-Bike Adj(A_pbT)	1.00	5	0.99	1.00	5	1.00	1.00	00	0.98	1.00	5	0.99
12.50 1.00	Adi Sat Flow web/h/lb	1845	1845	1845	1845	1845	1845	1845	1845	1000	1845	18.4F	18.4F
1 2 1 1 2 1 1 2 2 1 1 1 2 2 1 3 0 0 2 3 0 3 0 3 3 3 3 3 3 3 3 3 3 3 3	Adj Flow Rate, veh/h	323	860	896	237	323	505	204	1871	161	333	1204	54
0.93 0.93	Adj No. of Lanes	-	2	-	-	2	-	2	m	0	2	e	_
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
208 1240 550 186 1219 531 1048 2452 210 252 1372 1051 235 335 0.35 0.35 0.35 0.35 0.35 0.35 0.3	Percent Heavy Veh, %	က	3	3	က	3	3	က	33	က	က	33	33
1757 3505 1555 1757 3505 1526 3408 4716 404 3408 5036 1757 3505 1525 1526 1625 3408 4716 404 3408 5036 1757 3505 1525 1757 3505 1525 1757 3505 1526 3408 4716 404 3408 5036 1757 1752 1555 1757 1752 1526 1704 1679 1763 1704 1679 1757 1752 1555 1757 1752 1526 1704 1679 1763 1704 1679 1757 1752 1555 1757 1752 1526 1704 1679 1763 1704 1679 1763 1704 1679 1763 1704 1679 1763 1704 1679 1705 1700 1700 1700 1700 1700 1700 1700	Cap, veh/h	208	1240	220	186	1219	531	1048	2452	210	252	1372	422
1157 3605 1555 1757 3605 1226 3408 4716 404 3408 5036 1 132 386 968 968 1757 1365 1254 137 1365 1264 137 1365 1264 137 1365 1264 137 1365 1264 137 1365 1264 137 1365 1264 137 1406 120 1204 1204 1204 1204 1204 1204 1204	Arrive On Green	0.12	0.35	0.35	0.11	0.35	0.35	0.31	0.52	0.52	0.07	0.27	0.27
1737 1742 1555 1757 1752 1556 1704 1679 1703 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1679 1704 1704 1704 1704 1704 1704 1704 1704 1704 1704 1704 1704 1704 1705 1706	Sat Flow, veh/h	1757	3505	1555	1757	3505	1526	3408	4716	404	3408	5036	1551
1757 1752 1555 1757 1752 1256 1704 1679 1764 1679 1765	Grp Volume(v), veh/h	323	098	896	237	323	202	204	1329	703	333	1204	54
15.4 27.3 460 13.8 8.6 41.9 57 40.9 41.4 96 29.7 15.4 27.3 46.0 13.8 8.6 41.9 5.7 40.9 41.4 9.6 29.7 1.00 1.00 1.00 1.00 1.00 0.00 0.00 0.	Grp Sat Flow(s),veh/h/ln	1757	1752	1555	1757	1752	1526	1704	1679	1763	1704	1679	1551
15.4 27.3 46.0 13.8 8.6 41.9 57 40.9 41.4 96 29.7 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	Q Serve(g_s), s	15.4	27.3	46.0	13.8	9.8	41.9	2.7	40.9	41.4	9.6	29.7	3.5
1100 100 100 100 100 100 100 100 100 10	Cycle Q Clear(g_c), s	15.4	27.3	46.0	13.8	9.8	41.9	2.7	40.9	41.4	9.6	29.7	3.5
hh 208 1240 550 186 1219 531 1048 1746 917 252 1372 208 1240 5069 1.76 1.27 0.927 0.95 0.19 0.76 0.77 132 0.88 1240 506 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.23	1.00		1.00
1155 0.69 1.76 1.27 0.27 0.95 0.19 0.76 0.77 1.32 0.88 1.20 1.24 0.550 1.80 1.70 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Grp Cap(c), veh/h	208	1240	220	186	1219	231	1048	1746	917	252	1372	422
208 1240 550 186 1219 531 1048 1746 917 222 1519 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	V/C Ratio(X)	1.55	69.0	1.76	1.27	0.27	0.95	0.19	0.76	0.77	1.32	0.88	0.13
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	508	1240	220	186	1219	531	1048	1746	917	252	1519	468
1,00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
57.3 36.0 42.0 58.1 30.5 41.3 33.2 24.8 24.9 60.2 45.2 2707 1.4 349.3 157.0 0.0 0.0 0.0 0.0 0.0 231 13.4 73.1 14.8 4.2 21.6 2.7 19.2 20.9 10.5 14.9 328.0 37.4 391.3 215.1 30.5 68.5 33.2 26.4 28.0 230.6 53.4 F	Upstream Filter(I)	1:00	1.00	1.00	1.00	1.00	1.00	0.49	0.49	0.49	1.00	1.00	1.00
2707 1.4 349.3 157.0 0.0 27.1 0.0 1.6 3.1 170.4 8.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	57.3	36.0	45.0	58.1	30.5	41.3	33.2	24.8	24.9	60.2	45.2	36.9
13.8	Incr Delay (d2), s/veh	270.7	1.4	349.3	157.0	0.0	27.1	0.0	9.1	3.7	170.4	8.2	9.0
243. 15.4 73.1 14.8 4.2 21.0 2.7 19.2 20.9 10.5 14.9 32.8 32.8 26.4 28.0 230.6 53.4 1	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240.3	%ile BackOrU(50%),ven/in	23.1	13.4	701.5	14.8	4.2	0.12	1.7	7.61	20.9	10.5	14.9	0.1
240.3 89.6 27.5 240.3 89.6 27.5 7	Ingra I OS	320.U	4.70	541.5 F	Z 13.1	50.0	00.3 H	23.2	70.4 C	70.0 C	230.0 F	53.4	0.70
240.3 89.6 27.5 F F C C C C C C C C C C C C C C C C C	Approach Vol. veh/h	-	2151			1065	1		2236			1591	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 138 744 188 510 46.8 414 19.6 9.6 41.2 114 46 11.6 39 115 116 434 15.8 48.0 7.7 31.7 17.4 0.0 0.0 0.0 0.1 3.7 0.0	Approach Delay, s/veh		240.3			9.68			27.5			89.9	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 138 744 188 510 46.8 14 19.6 9.6 41.2 14 46 11.6 39 15 116 43.4 15.8 48.0 7.7 31.7 17.4 0.0 0.0 0.0 0.1 3.7 0.0	Approach LOS		ш.			ш			S			ш	
13.8 74.4 18.8 51.0 46.8 41.4 19.6 13.8 74.2 18.8 51.0 46.8 41.4 19.6 19.6 19.6 19.6 19.6 19.6 19.6 19.6	Timer		2	3	4	2	9	7	∞				
13.8 74.4 18.8 51.0 46.8 41.4 19.6 42.2 6.0 "5 "5 6.0 "6 "4.2 7.0 46.8 11.6 "39 "15 11.6 43.4 15.8 48.0 7.7 31.7 17.4 0.0 0.0 0.0 0.0 0.1 3.7 0.0 116.0 F	Assigned Phs	-	2	c,	4	2	9	7	∞				
7.4.2 6.0 .5 .5 6.0 .6 7.2 9.6 41.2 .14 .46 11.6 .39 .15 11.6 43.4 15.8 48.0 7.7 31.7 17.4 0.0 0.0 0.0 0.0 0.1 3.7 0.0 116.0	Phs Duration (G+Y+Rc), s	13.8	74.4	18.8	51.0	46.8	41.4	19.6	50.2				
10,6 41,2 14 46 11,6 39 15 11,6 43,4 15,8 48,0 7,7 31,7 17,4 0.0 0.0 0.0 0.1 3.7 0.0 116,0	Change Period (Y+Rc), s		0.9	* 5	* 5	0.9	9 *	* 4.2	* 5				
11.0 43.4 15.8 48.0 7.1 31.7 17.4 0.0 0.0 0.0 0.1 3.7 0.0 116.0 F	Max Green Setting (Gmax), s		41.2	* 14	* 46	11.6	* 39	* 15	* 44				
116.0 UV	Max Q Clear Time (g_c+11), s		43.4	2.0	48.0		21.7	4.7	43.9				
	Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0	3.7	0.0	0.7				
	Intersection Summary												
HCM 2010 LOS F	HCM 2010 Ctrl Delay			116.0									
Natac	HCM 2010 LOS			ш									
	Motoc												

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HCM 2010 Signalized Intersection Summary 5: I-5 SB Ramps & Palomar Airport Rd.

Long-Term PM

g-Term PM	08/24/2017

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Aovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations		4413			‡	¥.				F		*
raffic Volume (veh/h)	0	1010	290	0	890	1210	0	0	0	099	0	200
-uture Volume (veh/h)	0	1010	290	0	890	1210	0	0	0	099	0	200
Number	2	2	12	-	9	16				7	4	14
nitial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1:00	1.00	1:00	1:00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/In	0	1845	1900	0	1845	1845				1845	0	1845
Adj Flow Rate, veh/h	0	1063	302	0	937	0				969	0	211
Adj No. of Lanes	0	3	0	0	2	-				2	0	_
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	3	0	3	3				3	0	3
Cap, veh/h	0	1462	419	0	1317	289				894	0	411
Arrive On Green	0.00	0.38	0.38	0.00	0.38	0.00				0.26	0.00	0.26
sat Flow, veh/h	0	4056	1116	0	3597	1568				3408	0	1568
3rp Volume(v), veh/h	0	917	451	0	937	0				969	0	211
3rp Sat Flow(s),veh/h/ln	0	1679	1648	0	1752	1568				1704	0	1568
2 Serve(g_s), s	0.0	8.9	8.9	0.0	9.9	0.0				5.5	0.0	3.3
Sycle Q Clear(g_c), s	0.0	8.9	9.9	0.0	9.9	0.0				5.5	0.0	3.3
Prop In Lane	0.00		0.68	0.00		1.00				1.00		1.00
ane Grp Cap(c), veh/h	0	1262	619	0	1317	289				894	0	411
//C Ratio(X)	0.00	0.73	0.73	0.00	0.71	0.00				0.78	0.00	0.51
vail Cap(c_a), veh/h	0	3470	1703	0	3622	1620				1702	0	783
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
pstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
niform Delay (d), s/veh	0.0	7.8	7.8	0.0	7.7	0.0				6.6	0.0	9.1
ncr Delay (d2), s/veh	0.0	0.3	9.0	0.0	0.3	0.0				9.0	0.0	0.4
nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.1	3.1	0.0	3.2	0.0				5.6	0.0	1.4
nGrp Delay(d),s/veh	0.0	8.1	8.4	0.0	8.0	0.0				10.5	0.0	9.5
nGrp LOS		A	A		A					В		A
Approach Vol, veh/h		1368			937						906	
Approach Delay, s/veh		8.2			8.0						10.2	
Approach LOS		A			A						В	
imer	_	2	3	4	2	9	7	∞				
ssigned Phs		2		4		9						
Phs Duration (G+Y+Rc), s		16.3		12.7		16.3						
Change Period (Y+Rc), s		5.4		5.1		5.4						
Max Green Setting (Gmax), s		30.0		14.5		30.0						
Max Q Clear Time (g_c+I1), s		8.8		7.5		9.8						
sreen Ext Time (p_c), s		2.1		0.1		1.5						
ntersection Summary												
HCM 2010 Ctrl Delay			8.7									

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HCM 2010 Signalized Intersection Summary 6: I-5 NB Ramps & Palomar Airport Rd.

Long-Term PM 08/24/2017

Comparison Com		4	Ť	>	/	↓	4	•	←	•	٠	→	*
	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
256 1420 0 0 2000 1100 100 0 600 0 0 0 0 0 0 0 0 0 0 0	Lane Configurations	-	444			444	R.R.		₩	R. R.			
250 1420 0 2000 1100 10 <	Traffic Volume (veh/h)	250	1420	0	0	2000	1100	100	0	009	0	0	0
5	Future Volume (veh/h)	250	1420	0	0	2000	1100	100	0	009	0	0	0
100	Number 1-141-10 (Ott.)	ഹ	7	12	 c	9	16	m (∞ α	<u>@</u> <			
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Dod Biko Adi(A phT)	0 0	0	0 0	0 0	>	0 00	0 0	0	0 00			
1845 1845 0 0 1845 1845 1900 1845	Parking Bus. Adi	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
255 1449 0 0 2041 1122 102 0 1 1 3 0 0 0 3 2 0 0 1 1 0 0 0 0 0 0 3 2 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
1 3 0 0 3 2 0 0 0 0 0 0 0 0 0	Adj Flow Rate, veh/h	255	1449	0	0	2041	1122	102	0	612			
0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98	Adj No. of Lanes		3	0	0	3	2	0	-	2			
3 3 3 3 9 0 0 2 23 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
275 3676 0 0 2729 1442 351 0 0 1757 5202 0 0 0 236 026 020 0 0 0 1757 0 0 1 1757 5202 0 0 0 5202 2661 1757 0 0 1 1757 1679 0 0 0 1679 1320 1757 0 0 1 1757 1679 0 0 0 1 1679 1320 1757 0 0 1 125 1674 0 0 0 0 1 1679 1320 1757 0 0 1 1679 1320 1757 0 0 1 1679 1320 1757 0 0 1 1679 1320 1757 0 0 1 1679 1320 1757 0 0 1 1679 1320 1757 0 0 1 1679 1320 1757 0 0 1 1679 1320 1757 0 0 1 1679 1320 1 1679 1	Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
0.16 0.73 0.00 0.00 0.36 0.36 0.20 0.00 2.55 1449 0 0 0.5202 2661 1757 0 0 2.15 1679 0 0 1679 1322 102 0 2.15 16.4 0.0 0.0 53.2 56.2 7.4 0.0 2.15 16.4 0.0 0.0 53.2 56.2 7.4 0.0 2.15 36.4 0.0 0.0 53.2 56.2 7.4 0.0 2.15 36.6 0 0 0.0 0.0 2729 1422 351 0 3.51 36.76 0 0 0 0.0 0.729 1422 351 0 0.76 0.76 0.00 0.00 0.75 0.78 0.29 0.00 0.76 0.76 0.00 0.00 0.67 0.67 1.00 0.00 6.2.4 7.7 0.0 0.0 38.8 39.8 51.0 0.0 1.9.4 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.1 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.0 2.3 2.2 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Cap, veh/h	275	3676	0	0	2729	1442	351	0	531			
1757 5002 0 0 5202 2661 1757 0 3 255 1449 0 0 2041 1122 102 0 215 1649 0 0 0 2041 1122 102 0 215 164 0.0 0.0 53.2 56.2 74 0.0 215 3676 0 0 0 2729 142 351 0 275 3676 0 0 0 2729 142 351 0 275 3676 0 0 0 2729 142 351 0 351 3676 0 0 0 2729 142 351 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Arrive On Green	0.16	0.73	0.00	0.00	0.36	0.36	0.20	0.00	0.20			
1757 1679 0 0 2041 1122 102 0 1 1757 1679 0 0 1679 1330 1757 0 0 1 1679 1330 1757 0 0 1 1679 1330 1757 0 0 1 1679 1330 1757 0 0 1 1679 1330 1757 0 0 1 1679 1330 1757 0 0 1 1679 1330 1757 0 0 1 1679 1330 1757 0 0 1 1679 1330 1 1679 1	Sat Flow, veh/h	1757	5202	0	0	5202	2661	1757	0	2656			
1757 1679 0 0 1679 1330 1757 0 0 1757 1679 0 0 0 53.2 56.2 74 0.0 0 0 53.2 56.2 74 0.0 0 0 53.2 56.2 74 0.0 0 0 0 53.2 56.2 74 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Grp Volume(v), veh/h	255	1449	0	0	2041	1122	102	0	612			
215 164 0.0 0.0 53.2 56.2 74 0.0 1.00 275 36.7 0 0.0 53.2 56.2 74 0.0 1.00 275 36.7 0 0.0 53.2 56.2 74 0.0 1.00 275 36.7 0 0.0 27.2 144.2 35.1 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1330	1757	0	1328			
1,000 1,00	Q Serve(g_s), s	21.5	16.4	0.0	0.0	53.2	56.2	7.4	0.0	30.0			
1,00 275 3676 00 00 00 00 00 00 00 00 00 00 00 00 00		21.5	16.4	0.0	0.0	53.2	56.2	7.4	0.0	30.0			
275 3876 0 0 2729 1442 351 0 0 0 93 351 3676 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
36.93 0.39 0.00 0.00 0.75 0.78 0.29 0.00 0.75 0.00 0.75 0.72 0.00 0.75 0.72 0.00 0.75 0.72 0.00 0.75 0.72 0.00 0.75 0.72 0.00 0.72 0.72 0.00 0.72 0.00 0.72 0.00 0.72 0.00 0.72 0.00 0.00	Lane Grp Cap(c), veh/h	275	3676	0	0	2729	1442	321	0	231			
351 3676 0 0 2729 1442 351 0 0 1.00 1.00 1.00 1.00 0.05 1.00 1.00	V/C Ratio(X)	0.93	0.39	0.00	0.00	0.75	0.78	0.29	0.00	1.15			
1.00 1.00 1.00 0.67 0.67 1.00 1.00 0.66 0.65 0.67 0.67 1.00 1.00 0.66 0.65 0.65 0.60 0.00 0.62 0.65 0.65 0.65 0.60 0.00 0.62 0.62 0.00 0.00 0.00 0.00	Avail Cap(c_a), veh/h	321	3676	0	0	2729	1442	351	0	531			
0.76 0.76 0.00 0.54 0.54 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00			
62.4 7.7 0.0 0.0 388 398 51.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	0.76	0.76	0.00	0.00	0.54	0.54	1.00	0.00	1.00			
19.4 0.2 0.0 0.0 1.0 2.3 0.2 0.0 0.0 1.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	62.4	7.7	0.0	0.0	38.8	39.8	51.0	0.0	0.09			
119 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	Incr Delay (d2), s/veh	19.4	0.5	0.0	0.0	1.0	2.3	0.5	0.0	88.3			
H. 9 7.6 0.00 0.00 24.9 21.1 51.1 00 1 F A 00 0.0 0.0 39.9 42.1 51.1 00 1 F A 3163 D D D D D D D D D D D D D D D D D D D	Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Total	Wile BackOlu(50%), ven/in	- 5 - 5	0.7	0.0	0.0	20.0	17.17	5.0	0.0	1/18 3			
1704 3163 19.0 40.6 B D D D 2 3 4 5 6 7 2 5 6 114.9 28.7 5.4 .4.7 5.4 109.5 .30 74.8 18.4 .30 74.8 2.7 0.0 4.5 D 46.0	InGrp LOS	<u>.</u>	₹ <	2	9	2	D C		3	25			
19.0 40.6 B D O O O O O O O O O O O O O O O O O O	Approach Vol. veh/h		1704			3163	1	1	714				
1 2 3 4 5 6 7 2 5 6 7 114.9 28.2 86.7 5.4 *4,7 5.4 1109.5 30 74.8 2.7 0.0 4.5 D	Approach Delay, s/veh		19.0			40.6			134.4				
1 2 3 4 5 6 7 2 5 6 7 114.9 28.2 86.7 5.4 *4.7 5.4 1109.5 *30 74.8 2.7 0.0 4.5 D	Approach LOS		В			D			ட				
114.9 28.2 86.7 5.4 7.4.7 5.4 109.5 2.7 0.0 4.5 D.0 4.5 D.0 4.5 D.0 4.5 D.0	Timer	-	2	က	4	2	9	7	∞				
114.9 28.2 86.7 5.4 6.7 109.5 7.4.7 8.4 109.5 7.3.5 58.2 2.7 0.0 4.5 D. 46.0 D. 4.5 D.	Assigned Phs		2			2	9		∞				
5.4 • 4.7 5.4 109.5 • 30 74.8 18.4 23.5 58.2 2.7 0.0 4.5 0.0 4.5	Phs Duration (G+Y+Rc), s		114.9			28.2	86.7		35.1				
109.5 * 30 74.8 18.4 23.5 58.2 2.7 0.0 4.5 46.0	Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
11), S 18.4 23.5 38.2 2.7 0.0 4.5 46.0 D	Max Green Setting (Gmax), s		109.5			* 30	74.8		30.0				
2.7 0.0 4.5 46.0 D	Max U Clear IIIme (g_c+II), s		18.4			23.5	2.83		32.0				
	Green Ext Time (p_c), s		7.7			0.0	4.5		0.0				
	Intersection Summary												
2010 LOS	HCM 2010 Ctrl Delay			46.0									
Motoc	HCM 2010 LOS			۵									
	Notes												

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HCM 2010 Signalized Intersection Summary 7: Paseo Del Norte & Palomar Airport Rd.

404 0.23 1752 156 1752 11.3 120 1.00 1845 156 404 473 473 1.00 1.00 0.2 0.0 5.5 49.0 D D 70.6 E 7 0 1.00 1.00 845 302 395 0.12 3408 302 704 12.9 12.9 12.9 395 0.76 395 1.00 1.00 64.3 7.8 64.3 7.8 6.5 6.5 1.00 1845 146 2 0.96 3 348 0.20 1752 146 10.9 348 0.42 456 1.00 1.00 52.5 0.0 5.3 5.3 635 68.0 34.8 *5 *39 23.5 1.4 5.0 5.0 16.8 14.9 0.1 350 350 16 0.99 11.00 11.00 1 0.96 3 877 0.89 1557 365 1.7 1.7 1.00 0.42 8877 2.00 0.18 1.1 1.1 1.1 1.1 1.4 73.0 6.0 59.0 29.0 2448 1586 27.0 27.0 2835 0.86 2.00 2.00 0.18 5.9 0.7 0.0 10.7 74.2 * 16 * 16 15.6 0.0 1.00 1.00 1.00 1.00 281 39.6 5.0 40.5 33.3 1.3 7.6 * 4.2 * 15 13.3 0.1 40.5 D 1594 0.24 4429 1090 1679 47.2 3 0.96 0.90 0.90 0.67 0.80 0.80 9.1 0.0 23.5 63.5 60.0 * 6 * 58 49.3 4.7 1438 1958 Ť 1.00 1.00 1.00 312 312 0.96 300 300 32.8 6.0 16.8 11.5 0.3 Assigned Phs
Phs Duration (G+Y+RC), s
3
Change Period (Y+RC), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_C+I1), s %ile BackOfQ(50%),veh/ln Parking Bus, Adj Adj Sat Flow, vehhinn Adj Flow Rate, vehh Adj No. of Lanes Peak Hour Factor Percent Heavy Veh, % Cap, vehh Arrive On Green Sat Flow, vehh Grip Volume(y), vehVih Grip Sat Flow(s), vehVih Op Sat Flow(s), vehVih Op Sat Flow(s), sehVihin Op Serve(g_s), sehVihin Upstream Filter(I) Uniform Delay (d), s/veh Incr Delay (d2), s/veh LnGrp LOS Approach Vol, veh/h Approach Delay, s/veh Approach LOS Lane Grp Cap(c), veh/h V/C Ratio(X) Initial Q Delay(d3),s/veh Lane Configurations Traffic Volume (veh/h) Future Volume (veh/h) Green Ext Time (p_c), s Intersection Summary HCM 2010 Ctrl Delay HCM 2010 LOS Cycle Q Clear(g_c), s Prop In Lane Avail Cap(c_a), veh/h HCM Platoon Ratio LnGrp Delay(d),s/veh Ped-Bike Adj(A_pbT) Number Initial Q (Qb), veh

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HCM 2010 Signalized Intersection Summary 8: Armada Dr. & Palomar Airport Rd.

Long-Term PM 08/24/2017

Long-Term PM 08/24/2017

Name	WBR NBL					
10 10 10 10 10 10 10 10		SE NE	NBR	SBL	SBT	SBR
230 1530 180 350 250 230 1530 180 350 250 230 1530 180 360 250 250 250 250 250 250 250 250 250 25			¥.	K.	*	W.
230 1530 180 350 350 350 350 350 350 350 350 350 35		400 70	290	260	06	260
5 2 12 1 100 009 100 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 2 2 3 1 1 1 1 0.96 0.96 0.96 0.96 0.21 0.55 0.55 0.36 2 3 1 8 35 5 2 0.1 82 3 3 3 3 3 3 3 3 3 3 3 3 3 4 8 201 82 35 5 120 1.55 0.55 0.36 120 1.57 1757 18 92 36.5 7.8 27.2 100 1.00 1.00 1.15 1.33 2.101 820 319 2 1.34 2.00 0.00 0.56 0.56 0.56 0.09 1.35 27.6 14.3 47.8 1.37 17.1 3.4 19.2 1.48 30.6 1.50 0.00 0.00 0.0 1.50 0.00 0.00 0.0 1.50 0.00 0.00 0.0 1.50 0.00 0.00 0.00 1.50 0.00 0.00 0.00 0.00 0.00 1.50 0.00 0.00 0.00 0.00 0.00 0.00 0.00		400 70	290	260	06	260
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	16	3	18	7	4	14
100 0.099 100 1045 1045 1045 1040 1.00 1045 1045 1045 1040 1.00 1046 0.04 0.04 0.04 3 3 3 3 3 3 3 3 538 2101 820 319 5 240 1594 188 365 5 240 1594 188 365 139 240 1594 188 365 139 240 1594 188 365 1757 192 104 1679 1557 1757 192 105 105 0.05 0.05 0.00 1.33 1.33 1.33 1.33 2.00 0.45 0.76 0.23 1.15 538 2101 820 319 2 1.33 1.33 1.33 2.00 0.05 0.05 0.05 0.05 0.00 1.05 0.05 0.05 0.00 1.00 0.0 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0			0	0	0	0
100 100 100 100 100 100 100 100 100 100			96:0	1.00		0.96
1845 1845			1.00	1.00	1.00	1.00
240 1994 188 365 36 36 96 096 096 096 096 096 096 096 319 32 31 33 31 31	_	_	1845	1845	1845	1845
0.2 0.3 0.4 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	188 417	7 245	188	271	94	271
0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	_	2 1	_	2	-	_
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	96:0 96:0	96:0 90	96:0	96:0	96:0	0.96
538 2101 820 319 319 310 310 310 310 310 310 310 310 310 310	3	3 3	3	3	3	3
021 055 055 036 036 3408 5036 1557 1757 3408 5036 1557 1757 057 057 057 057 057 057 057 057 057	821 38	382 314	256	335	295	240
3408 5036 1557 1757 5240 1894 386 5240 1894 188 385 54 187 1757 1757 1757 1757 1757 1757 1757	0.86 0.11	1 0.17	0.17	0.10	0.16	0.16
240 1594 188 365 1787 1794 1699 1557 1757 1757 1757 1757 1757 1757 17	1557 3514		1502	3408	1845	1499
1704 1679 1557 1757 7 1757 92 36.5 7.8 272 92 36.5 7.8 272 92 36.5 7.8 272 92 92 36.5 7.8 272 92 92 36.5 7.8 272 92 92 92 92 92 92 92 92 92 92 92 92 92	188 417	7 245	188	271	94	271
92 36.5 7.8 27.2 100 100 100 319 5.2 538 2101 820 319 5.2 0.45 0.76 0.23 115 5.2 1.33 133 133 2.0 0.56 0.56 0.56 0.09 53.5 27.6 14.3 47.8 100 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 110 0.0 0.0 0.0 0.0 0.0 110 0.0 0.0 0.0 0.0 0.0 110 0.0 0.0 0.0 0.0 0.0 0.0 110 0.0 0.0 0.0 0.0 0.0 0.0 0.0 110 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1557 1757	_	1502	1704	1845	1499
9,2 36.5 7.8 27.2 1,00 1,00 1,0			12.6	11.7	8.9	17.4
h 100 100 100 100 100 100 100 100 100 10			12.6	11.7	8.9	17.4
hh 558 2101 820 319 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	-		1.00	1.00		1.00
0.45 0.76 0.23 1.15 1.38 2.00 0.56 0.56 0.56 0.09 0.56 0.56 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0			256	335	295	240
588 2101 820 319 5101 820 319 5100 820 819 5100 8133 1.33 200 810 810 810 810 810 810 810 810 810 8	_	Ŭ	0.73	0.81	0.32	1.13
1.33 1.33 1.33 2.00 5.56 6.156 6.156 0.109 5.55 6.156 1.04 6.94 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0			414	341	492	400
0.56 0.56 0.09 53.5 27.6 14.3 47.8 0.1 1.5 0.4 69.4 0.0 0.0 0.0 0.0 0.0 4.3 17.1 3.4 19.2 53.6 29.1 14.7 117.2 D C B F 2022 C B F 2022 C C C C C C C C C C C C C C C C C C			1.00	1.00	1.00	1.00
53.5 27.6 14.3 47.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0			1.00	1.00	0.1	1.00
0.1 1.5 0.4 69.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		L,	29.7	66.3	55.8	33.1
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1		1.5	12.4	0.2	
43 17.1 3.4 19.2 53.6 29.1 14.7 17.2 C B F C C C C C C C C C C C C C C C C C			0.0	0.0	0.0	0.0
536 29,1 14,7 117.2 D C B F 2022 30,6 C C 1 2 3 4 1 2 3 4 1 2 3 4 21.4 68,6 21.0 29.0 24,2 6.0 4,7 5 27,7 46,6 116 40			2.3	6.1	3.5	12.4
2022 6 F F 2022 3.04 1 2 3 4 4 1 2 3 4 4 2 6.0 4.7 5 5 7.7 46.6 7.16 4.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7	4.4 140.0	.0 61.1	31.3	78.7	26.0	111.2
2022 30.6 C C 3 4 1 2 3 4 11.2 3 4 31.4 68.6 21.0 29.0 *4.2 6.0 *4.7 *5 *2.7 46.6 16 *40	⋖		اد	ш	ш	-
30.6 C 3 4 1 2 3 4 1 2 3 4 31.4 68.6 21.0 29.0 *4.2 6.0 *4.7 *5 *2.7 46.6 *16 *40		820			636	
C C 3 4 1 2 3 4 1 1 2 3 4 1 1 2 3 4 1 1 2 3 1 4 1 1 2 1 1 2 1 1 2 1 1 1 1 1 1 1 1 1		93.2			89.2	
1 2 3 4 1 2 3 4 3 1 4 68 6 21.0 29.0 5 4 2 6 0 4.7 5 5 6 0 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0		ш.			L.	
1 2 3 4 4 31.4 68.6 21.0 29.0 2 4 4.2 6.0 4.7 5 5 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7	9	7 8				
31.4 68.6 21.0 29.0 2 4.2 6.0 4.7 5 27 46.6 16 40						
*4.2 6.0 *4.7 *5 *27 46.6 *16 *40	_	. ,				
*27 46.6 *16 *40						
JO 70 10 10 10 10 10 10 10 10 10 10 10 10 10						
L+II), S 27.2 30.3 10.3 17.4		.7 21.1				
Green Ext Time (p_c), s 0.0 4.5 0.0 0.8 0.0	0.0	0.1 1.1				
Intersection Summary						
HCM 2010 Ctrl Delay 72.5						
HCM 2010 LOS						

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HCM 2010 Signalized Intersection Summary 9: Hidden Valley Rd. & Palomar Airport Rd.

ΡM	7117
ng-Term	08/24
Lon	

ons		1	†	<u> </u>	-	Ļ	1	•	—	•	۶	→	*
	Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
90 2190 150 130 2830 90 180 50 100 100 100 120 150 130 2830 90 180 50 100 100 0	Lane Configurations	<i>y</i> -	444	*	<u>, </u>	4413		<i>y</i> -	æ,		<u>, </u>	*	*-
) 90 2190 150 130 2830 90 180 50 100 100 100 100 100 100 100 100 100	Traffic Volume (veh/h)	06	2190	150	130	2830	06	180	20	100	220	09	240
100	Future Volume (veh/h)	8	2190	120	130	2830	8	180	20	100	220	09	240
1.00 1.00 0.99 1.00 0.96 1.00 0.96 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Number	ഹ വ	7 0	12	- -	9 0	91	m c	∞ ⊂	<u> </u>	~ 0	4 0	14
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Ped-Bike Adi(A.nhT)	100	>	66 0	100	>	960	100	>	960	100	>	0.06
1845 1845 1845 1845 1845 1900 1845 1900 1846 1845 1900 1846 1845 1845 1845 1900 1846 1845 1900 1846 1845 1900 1846 1845 1900 1846 1845 1900 1846 1845 1900 1846 1845 1845 1900 1846 1846 1846 1846 1846 1846 1846 1846	Parking Bus, Adj	1.00	1.00	1.00	1.08	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
96 2330 160 138 3011 96 191 53 106 11 1 1 1 3 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 0 1 0 0 1 1 0 0 1 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1845
1 3 1 1 3 0 1 0 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.02 0.32 1.57 1.77 5.70 87 150 0.04 0.94 0.94 1.05 0.02 1.00 0.00 0.09 0.16 0.16 0.04 0.94 0.94 0.94 0.94 1.05 0.03 0.22 1.00 0.00 0.09 0.16 0.16 0.06 0.16 0.16 0.06 0.16 0.16 0.06 0.16 0.16 0.16 0.06 0.16 0.16 0.07 <	Adj Flow Rate, veh/h	%	2330	160	138	3011	%	191	23	106	234	64	255
0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94	Adj No. of Lanes	_	c	-	_	m	0	-	-	0	-	-	
3 166 0.0	Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
47 2270 833 215 2770 83 166 1757 5036 1551 1757 5010 198 175 616 106 107 106 175 166 175 167 181 1757 533 1065 9 16 0.16 0.0 0.16 0.10 0.09 0.16 0.16 0.0 175 153 1065 0.0 158 1757 533 1065 0.0 140 179 158 175 533 1065 0.0 140	Percent Heavy Veh, %	m i	co	က	က	က	co	co	က	က	co ;	3	co
002 0.33 0.24 1.05 1.06 1.06 96 2.33 1.60 1.75 5.01 1.16 1.10 1.16 1.16 1.10 1.16 1.10 1.16 1.10 1.16 1.10 1.27 1.40<	Cap, veh/h	47	2270	833	215	2770	87	120	83	166	211	361	295
1757 6036 1551 1757 5010 158 1757 5036 1055 1	Arrive On Green	0.02	0.30	0.30	0.24	1.00	1.00	0.09	0.16	0.16	0.12	0.20	0.20
96 2330 160 138 2005 1102 159 0 159 1757 1679 1575 1679 18102 191 0 1598 4.0 67.6 4,9 10.6 0.0 792 12.8 0.0 14.0 1.00 1.00 1.00 0.0 79.2 12.8 0.0 14.0 1.00 1.00 1.00 1.00 79.2 12.8 0.0 14.0 1.00 1.03 1.04 1.06 1.0 79.2 12.8 0.0 14.0 2.06 1.03 0.19 0.64 1.08 1.10 1.27 0.0<	Sat Flow, veh/h	1757	2036	1551	1757	5010	158	1757	533	1065	1757	1845	1508
1757 1679 1551 1757 1679 1810 1757 1679 1551 1757 1679 1810 1757 1679 1810 1757 1679 1810 1750 1810 1410	Grp Volume(v), veh/h	%	2330	160	138	2005	1102	191	0	159	234	64	255
4.0 67.6 4.9 10.6 0.0 79.2 12.8 0.0 14.0 4.0 67.6 4.9 10.6 0.0 79.2 12.8 0.0 14.0 1.00 1.00 1.00 0.09 1.00 0.67 0.0 14.0 2.05 1.03 0.19 0.64 1.00 1.00 0.64 0.0 0.64 0.0 0.64 0.0 0.64 0.0 0.64 0.0 0.64 0.0 0.64 0.0 0.64 0.0 0.64 0.0 0.64 0.0 0.64 0.0 0.64 0.0 0.64 0.0 0.64 0.0 <	Grp Sat Flow(s),veh/h/ln	1757	1679	1551	1757	1679	1810	1757	0	1598	1757	1845	1508
4.0 67.6 4.9 10.6 0.0 79.2 12.8 0.0 14.0 1.00 </td <td>Q Serve(g_s), s</td> <td>4.0</td> <td>9.79</td> <td>4.9</td> <td>10.6</td> <td>0.0</td> <td>79.2</td> <td>12.8</td> <td>0.0</td> <td>14.0</td> <td>18.0</td> <td>4.3</td> <td>24.5</td>	Q Serve(g_s), s	4.0	9.79	4.9	10.6	0.0	79.2	12.8	0.0	14.0	18.0	4.3	24.5
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Cycle Q Clear(g_c), s	4.0	9.79	4.9	10.6	0.0	79.2	12.8	0.0	14.0	18.0	4.3	24.5
47 2270 833 215 1856 1001 130 0 249 47 2270 833 215 1856 1001 130 0 0.64 47 2270 833 215 1856 1001 130 0 0.64 0.38 0.38 0.38 0.09 0.09 100 100 100 3.37 5.2 0.0 0.0 0.0 0.0 0.0 1.0 0.0	Prop In Lane	9:	000	00.1	00.1	i c	0.03	0.1	•	0.67	1.00		00.1
2.05 1.03 0.14 0.64 1.08 1.10 1.24 0.00 0.64 0.67 0.67 0.67 2.00 2.00 1.00 1.00 0.04 0.38 0.38 0.39 0.09 0.09 1.00 1.00 1.00 0.38 0.38 0.09 0.09 0.09 1.00 1.00 13.7 1.2 0.0 0.0 6.0 1.00 1.00 0.0	Lane Grp Cap(c), ven/n	4/	7.50	833	215	1856	1001	120	0 00	249	7.11	361	295
0.67 0.67 0.67 2.00 2.00 1.00 1.00 0.00 0.38 0.38 0.38 0.39 0.09 0.09 0.09 1.00 1.00 1.00 0.38 0.38 0.38 0.09 0.09 0.09 1.00 0.00 0.00 0.00 0.00	V/C Katio(X)	2.05	07.00	0.19	0.04	1056	1001	150	0.00	0.64	711	0.18	0.80
0.97 0.97 0.97 0.97 0.90 0.99 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veli/ii	/+	0177	000	212	000	1001	200	0 6	202	117	400	1 00
73.7 52.4 88 53.7 0.0 0.0 68.6 0.0 59.4 4993 19.3 0.2 0.5 37.3 47.1 165.0 0.0 1.0 0.0 8.4 35.4 2.1 5.2 9.6 13.1 13.1 0.0 6.3 573.0 71.6 9.0 54.2 37.3 47.1 233.6 0.0 60.4 10.2 58.6 37.3 47.1 233.6 0.0 60.4 10.2 58.6 3.2 45.2 37.3 47.1 233.6 0.0 60.4 10.2 58.6 4 41.3 47.1 233.6 0.0 60.4 11.2 3.4 5 6 7 8 8 7 3.4 5 6 7 8 8 7 3.4 5 6 0.0 5.0 5.0 15.0 10.0 0.0 0.0 0.5 0.0 0.0 0.5 0.0 0.0	How Filter(I)	0.07	0.07	0.9	00.0	00.0	0.00	8.0	00.0	00.1	001	100	1.00
499.3 19.3 0.2 0.5 37.3 47.1 165.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	73.7	52.4	80	53.7	0.0	0.0	9.89	0.0	59.4	0.99	50.3	58.4
90 00 00 00 00 00 00 00 00 00 00 00 00 0	Incr Delay (d2), s/veh	499.3	19.3	0.2	0.5	37.3	47.1	165.0	0.0	1.0	94.6	0.1	11.6
84 35.4 21 52 9.6 13.1 13.1 0.0 6.3 5730 71.6 9.0 542 17.2 17.2 17.2 17.2 17.2 17.2 17.2 17.	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
573 0 716 90 542 373 471 2336 00 664 7 2586 3245 355 86.4 41.3 73 4 5 6 7 8 243 736 170 351 9.0 88.9 29.1 10.5 696 148 265 60 812 200 160 0 0 0 0 0 0 0.5 0 0 0.0 0.0 65.8 698 148 265 60 812 200 160 66.9 698 16.8 60 812 200 160 66.9 698 16.8 60 812 200 160 66.9 698 16.8 60 812 200 160	%ile BackOfQ(50%),veh/ln	8.4	35.4	2.1	5.2	9.6	13.1	13.1	0.0	6.3	14.3	2.2	11.2
F F A D F F F F F F F F F F F F F F F F	LnGrp Delay(d),s/veh	573.0	71.6	0.6	54.2	37.3	47.1	233.6	0.0	60.4	160.6	50.3	70.0
2586 3245 86.4 41.3 F F D D D D D D D D D D D D D D D D D D	LnGrp LOS	ш	ш	Α		ш	ш	ш		ш	ш	۵	۳
864 413 F D D D D D D D D D D D D D D D D D D D	Approach Vol, veh/h		2586			3245			320			553	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 243 736 170 35.1 90 889 23.0 6.0 6 42 5.7 5.0 6.0 5.0 126 696 148 265 6.0 812 20.0 0 0 0 0 0.5 0 0 0.5 0 0 0.0	Approach Delay, s/veh		86.4			41.3			154.9			106.0	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 24.3 73.6 17.0 35.1 9.0 88.9 23.0 10.5 68 71 39.0 4.0 26.0 18.0 12.6 69.6 14.8 26.5 6.0 81.2 20.0 0.0 0.0 0.5 0.0 0.0 0.0	Approach LOS		ш.			٥			ш.			ш.	
1 2 3 4 5 6 7 7 8 1 1 2 3 4 5 6 7 7 8 1 1 2 1 1 1 2 1 1 1 2 1 1 1 1 2 1	Timer	_	2	3	4	2	9	7	8				
24.3 73.6 17.0 35.1 9.0 88.9 23.0 6.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	Assigned Phs	1	2	3	4	2	9	7	8				
60 '6 '42 5.7 5.0 6.0 5.0 '105 '6 '105 '6 '105 '6 '105 '6 '113 '99.0 4.0 26.0 18.0 12.6 69.6 14.8 26.5 6.0 812 20.0 0.0 0.0 0.0 0.0 0.5 0.0 0.0 0.0 0.0	Phs Duration (G+Y+Rc), s	24.3	73.6	17.0	35.1	0.6	88.9	23.0	29.1				
105 *68 *13 39.0 4.0 26.0 18.0 12.6 69.6 14.8 26.5 6.0 812 20.0 0.0 0.0 0.5 0.0 0.0 0.0 69.8 69.8	Change Period (Y+Rc), s	0.9	9 *	* 4.2	2.7	2.0	0.9	2.0	* 5.7				
126 696 148 26.5 6.0 81.2 20.0 0.0 0.0 0.0 0.5 0.0 0.0 0.0 0.0 0.0	Max Green Setting (Gmax), s	10.5	89 _*	* 13	39.0	4.0	26.0	18.0	* 34				
00 00 02 00 00 00 00 00 869	Max O Clear Time (g_c+11), s	12.6	9.69	14.8	26.5	0.9	81.2	20.0	16.0				
	Green Ext Time (p_c), s	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5				
	Intersection Summary												
L 00 000 000 000	HCM 2010 Ctrl Delay			8.69									
HCM Z010 LOS	HCM 2010 LOS			ш									
MANAGE	Notes												

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Synchro 10 Report Page 15

HCM 2010 Signalized Intersection Summary 10: College Blvd. & Palomar Airport Rd.

Long-Term PM 08/24/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u> </u>	444	*	K.	444	¥.	K.	*	*	r	*	*-
Traffic Volume (veh/h)	200	1480	330	310	1870	110	220	290	180	20	200	630
Future Volume (veh/h)	700	1480	330	310	1870	110	220	290	180	20	200	630
Number	വ	2	12	-	9	16	3	ω (18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	00	1.00	1.00	6	0.99	1.00	7	0.99	1.00	5	0.99
Adi Cat Elow Vob/h/lb	1045	1045	1045	1045	1045	1000	1045	1045	1045	1000	10.00	1045
Adj Flow Rate, veh/h	225	1663	371	348	2101	124	247	326	202	290	562	708
Adj No. of Lanes	7	3	-	2	<u>ب</u>	-	2	2	-	-	-	-
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	co	c	c	n	m	m	3	3	3	3	3	3
Cap, veh/h	411	1990	620	400	1904	288	223	1087	482	71	504	613
Arrive On Green	0.24	0.79	0.79	0.12	0.38	0.38	0.07	0.31	0.31	0.04	0.27	0.27
Sat Flow, veh/h	3408	5036	1568	3408	5036	1556	3408	3505	1553	1757	1845	1551
Grp Volume(v), veh/h	225	1663	371	348	2101	124	247	326	202	99	299	708
Grp Sat Flow(s),veh/h/ln	1704	1679	1568	1704	1679	1556	1704	1752	1553	1757	1845	1551
Q Serve(g_s), s	8.7	30.6	10.7	15.1	26.7	9.9	8.6	10.6	15.5	4.7	41.0	41.0
Cycle Q Clear(g_c), s	8.7	30.6	10.7	15.1	26.7	9.9	8.6	10.6	15.5	4.7	41.0	41.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	411	1990	620	400	1904	288	223	1087	482	71	204	613
V/C Ratio(X)	0.55	0.84	09.0	0.87	1.10	0.21	1.11	0.30	0.42	0.79	1.11	1.15
Avail Cap(c_a), veh/h	489	1990	620	920	1904	288	223	1087	482	82	204	613
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.37	0.37	0.37	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	12.7	6.3	65.1	46.6	21.3	70.1	39.4	41.0	71.3	54.5	45.4
Incr Delay (d2), s/veh	0.7		9.	2.3	29.5	8.0	92.7	0.1	0.5	26.5	75.3	87.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/lin	4.1	13.8	4.6	7.2	36.0	3.0	7.5	5.2	6.7	2.8	31.4	32.3
LnGrp Delay(d),s/veh	53.5	14.4	7.9	67.4	101.8	22.1	162.8	39.4	41.3	97.8	129.8	132.6
LnGrp LOS		۵	⋖	ш	4	ပ	-			-	-	-
Approach Vol, veh/h		2259			2573			775			1326	
Approach Delay, s/veh		17.2			93.3			79.2			129.9	
Approach LOS		В			ш			ш			ш.	
Timer	_	2	3	4	5	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	21.8	97.99	15.6	47.0	24.4	63.0	10.3	52.3				
Change Period (Y+Rc), s	* 4.2	* 6.3	* 5.8	9 *	* 6.3	* 6.3	* 4.2	2.8				
Max Green Setting (Gmax), s	* 41	* 38	* 9.8	* 41	* 22	* 57	* 7.3	43.7				
Max Q Clear Time (g_c+I1), s	17.1	32.6	11.8	43.0	10.7	58.7	6.7	17.5				
Green Ext Time (p_c), s	9.0	3.6	0.0	0.0	0.3	0.0	0.0	1.5				
Intersection Summary												
HCM 2010 Ctrl Delay HCM 2010 LOS			74.0 F									

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HCM 2010 Signalized Intersection Summary 11: Camino Vida Roble & Palomar Airport Rd.

ΡM	170017
Long-Term	1/C/8U

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<i>y</i> -	4413		-	4413		K.	æ		<u></u>	*	¥c_
Traffic Volume (veh/h)	20	1810	290	09	1590	09	420	20	200	430	150	220
Future Volume (veh/h)	20	1810	290	99	1590	9	420	20	200	430	150	220
Number Initial O (Oh) veh	w C	0 5	12	- c	9 0	9 0	m C	∞ ⊂	<u> </u>	~ 0	4 0	4 0
Ped-Bike Adj(A_pbT)	1.00		96.0	1.00		96.0	1.00		96.0	1.00		0.97
Parking Bus, Adj	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	24	1967	315	92	1728	99	457	24	217	467	163	239
Adj No. of Lanes	-	3	0	-	3	0	2	-	0	-	-	_
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	c
Cap, veh/h	109	1776	279	61	1816	89	503	64	259	377	514	424
Arrive On Green	90.0	0.41	0.41	0.03	0.37	0.37	0.15	0.21	0.21	0.21	0.28	0.28
Sat Flow, veh/h	1757	4363	684	1757	4972	187	3408	312	1255	1757	1845	1520
Grp Volume(v), veh/h	24	1504	778	99	1166	627	457	0	271	467	163	239
Grp Sat Flow(s),veh/h/ln	1757	1679	1689	1757	1679	1802	1704	0	1567	1757	1845	1520
Q Serve(g_s), s	4.5	61.1	61.1	5.2	20.7	20.8	19.8	0.0	24.9	32.2	10.5	16.3
Cycle Q Clear(g_c), s	4.5	61.1	61.1	5.2	20.7	20.8	19.8	0.0	24.9	32.2	10.5	16.3
Prop In Lane	1.00		0.41	1.00		0.10	1.00		0.80	1.00		1.00
Lane Grp Cap(c), veh/h	109	1367	889	19	1226	929	203	0	323	377	514	424
V/C Ratio(X)	0.50	1.10	1.13	1.07	0.95	0.95	0.91	0.00	0.84	1.24	0.32	0.56
Avail Cap(c_a), veh/h	109	1367	889	19	1247	699	263	0	387	377	246	420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.1	44.5	44.5	72.4	46.3	46.3	65.9	0.0	57.1	58.9	42.8	30.3
Incr Delay (d2), s/veh	1.3	26.8	76.3	135.2	16.4	25.2	16.5	0.0	11.3	128.0	0.1	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfO(50%),veh/ln	2.2	39.1	43.0	8. 4	26.3	29.8	10.5	0.0	7.8	29.0	5.4	7.0
LnGrp Delay(d),s/veh	69.4	101.2	120.8	209.5	62.7	71.5	79.5	0.0	68.4	186.9	42.9	31.0
LnGrp LOS	ш	4	4	-	ш	ᆈ	ᆈ		ᆈ	-		ပ
Approach Vol, veh/h		2336			1858			728			698	
Approach Delay, s/veh		107.0			8.07			75.4			117.0	
Approach LOS		_			ш			ш			_	
Timer	-	2	3	4	2	9	7	8				
Assigned Phs		2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	9.4	67.5	26.3	46.8	15.7	61.2	37.2	35.9				
Change Period (Y+Rc), s	* 4.2	* 6.4	* 4.2	٠ ک	* 6.4	* 6.4	٠ ک	ر د د				
Max Green Setting (Gmax), s	5.2	. 56	2,7	444	5.3	92,	32	3/				
Max Q Clear Time (g_c+II), s	7.7	03.1	8.12	2.0	0.0	27.0	24.2	607				
Green Ext Time (p_c), s	0.0	0.0	0.3	6:0	0.0	7.0	0.0	0.8				
Intersection Summary												
HCM 2010 Ctrl Delay			92.9									
HCM 2010 LOS			Œ.									
Notes												
COLON												

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Synchro 10 Report Page 19

HCM 2010 Signalized Intersection Summary 12: Yarrow Dr./McClellan & Palomar Airport Rd.

Long-Term PM 08/24/2017

Moreoment Fig. EBF Fig. Well Wilst W		4	†	1	-	Ļ	1	•	←	•	۶	→	*
	Movement	EBE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
56 2010 80 150 80 170 30 330 110 30 50 2010 80 130 1510 80 170 30 330 110 30 100 0	Lane Configurations	*	4413		۴	441		r	*	¥.		4	
50 2010 80 130 1510 80 170 30 330 310 110 30 1 0	Traffic Volume (veh/h)	20	2010	80	130	1510	80	170	30	330	110	30	70
5	Future Volume (veh/h)	20	2010	80	130	1510	80	170	30	330	110	30	2
100 100 0.06 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Number	വ	5	12	- 0	9 0	16	7	4 (4 0	m	∞ α	9
1.00	milal C (Cb), ven	0 6	0	0 0	0 0	>	0 0	0 0	0	0 0	0 0	0	0 0
1845 1845 1900 1845 1940 1845 1900 1845 1845 1900 1845 1845 1900 1845 1845 1900 1845 1845 1900 1845 1845 1900 1845 1845 1900 1845 1845 1900 1845 1845 1900 1845 1845 1845 1900 1845	Ped-Bike Adj(A_pb)	3 6	1 00	1.00	100	100	100	100	1 00	100	1.00	1 00	1.00
56 2233 89 144 1678 89 189 33 36 12 33 1 3 0 1 3 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 0 1 1 1 1 0	Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1900	1845	1900
1 3 0 1 3 0 1 3 0 1 1 1 1 1 1 1 1 1	Adj Flow Rate, veh/h	29	2233	89	144	1678	88	189	33	367	122	33	78
090 090 090 090 090 090 090 090 090 090	Adj No. of Lanes		က	0	_	က	0	-	_	_	0	-	0
3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	06:0	0.00	06:0	06:0	06.0	06:0	06:0	06:0	06:0	06:0	06:0	06:0
72 2425 96 250 2945 156 317 473 389 188 53 1504 0.04 0.04 0.05 0.05 0.05 0.026	Percent Heavy Veh, %	co	m	3	3	e	m	3	m	3	3	m	co
1757 489 0.44 0.44 0.46 0.66 0.26 0.26 0.26 0.26 0.26 0.26 0.26 0.26 0.26 1757 4891 1757 4891 1757 4891 1757 1679 1801 1757 1679 1801 1757 1679 1801 1757 1679 1801 1757 1679 1801 1757 1679 1801 1757 1679 1801 1757 1679 1801 1757 1679 1801 1757 1679 1752 1252 1253 1518 1195 0.0 47	Cap, veh/h	72	2425	96	250	2945	156	317	473	386	188	23	103
1757 4962 197 1757 4891 259 1256 1845 1518 590 205 1757 1679 1815 144 1715 1616 189 33 387 233 0 1757 1679 1810 1757 1679 1810 1757 1679 1810 1757 1679 1810 1757 1679 1810 1758 1845 1518 1955 0 0 0 0 0 0 0 0 0	Arrive On Green	0.04	0.49	0.49	0.14	09.0	09.0	0.26	0.26	0.26	0.26	0.26	0.26
1757 1807 815 144 1151 616 189 33 367 233 0 1757 1679 1801 1757 1679 1793 1256 1835 1518 1195 0 4.7 62.4 63.4 11.5 31.2 31.2 2.0 35.6 24.9 0.0 1.00 0.11 0.10 0.10 0.14 0.10 0.10 0.52 1.00 0.00 0.00 0.00 1.	Sat Flow, veh/h	1757	4962	197	1757	4891	259	1256	1845	1518	290	205	400
1757 1679 1801 1757 1679 1793 1256 1845 1518 1195 0 47 62.4 63.4 11.5 31.2 31.2 2.0 35.6 24.9 0.0 47 62.4 63.4 11.5 31.2 31.2 2.0 35.6 26.9 0.0 100 0.11 1.00 0.11 0.10 0.10 0.10 0.052 0.0 172 1746 936 256 2021 1079 356 530 436 80 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.13 35.6 35.8 60.1 18.1 18.1 51.6 42.2 54.7 51.4 0.0 1.00 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.00 0.00 0.0 0.0 0.0 0.0 0.0 0.0 1.00 0.00 0.0 0.0 0.0 0.0 0.0 0.0 1.00 0.00 0.00 0.00 0.0 0.0 0.0 1.00 0.00 0.00 0.00 0.00 0.0 1.00 0.00 0.00 0.00 0.00 0.0 1.00 0.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 0.00	Grp Volume(v), veh/h	29	1507	815	144	1151	616	189	33	367	233	0	0
H 7 62,4 63,4 115 312 312 02 20 35,6 24,9 0.0 H 1,00	Grp Sat Flow(s),veh/h/ln	1757	1679	1801	1757	1679	1793	1256	1845	1518	1195	0	0
47 62.4 63.4 11.5 31.2 31.2 27.2 2.0 35.6 26.9 0.0 1.00	Q Serve(g_s), s	4.7	62.4	63.4	11.5	31.2	31.2	0.2	2.0	35.6	24.9	0.0	0.0
1,00	Cycle Q Clear(g_c), s	4.7	62.4	63.4	11.5	31.2	31.2	27.2	2.0	35.6	26.9	0.0	0.0
National Color Nati	Prop In Lane	1.00	;	0.11	1.00		0.14	1.00		1.00	0.52	•	0.33
172 1746 93 0.58 0.57 0.57 0.60 0.07 0.74 0.06 0.00 0.07 0.74 0.06 0.00 0.07 0.74 0.06 0.00 0.07 0.07 0.74 0.06 0.00 0.07 0.07 0.07 0.07 0.07 0.07	Lane Grp Cap(c), veh/h	72	1641	088	250	2021	1079	317	473	386	343	0	0
100 100 100 100 100 100 100 100 100 100	V/C Katio(X)	0.78	0.92	0.93	0.58	0.57	10.57	0.60	0.07	0.94	0.68	0.00	0.00
1.00	Avail Cap(c_a), ven/h	71.7	1/46	936	7.00	2021	10/9	356	530	436	380	0 6	0 0
Honor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	HCM Platoon Katio	3.6	00.1	00.1	00.1	0.1	00.1	00.1	00.1	00.1	9.5	8.0	8.6
He control of the con	Upstream Polar (4) skiph	0.17	1.00	00.1	1.00	10.1	101	1.00	00.1	1.00	1.00	0.00	0.00
hh 000 00 00 00 00 00 00 00 00 00 00 00	Unidili Delay (d.), siveli Incr Delay (d2), siveli	6.17	0.00	0.00	2.1	1.0	10.1	0.1.0	7.7	24.7	2.1.4	0.0	0.0
Harmon 2.4 31.1 35.6 5.7 14.7 16.0 7.3 10 17.8 9.2 0.0 F D D E B C D D F D E B C D D F D E B 1 1 2 3 4 5 6.2 8.7 14.3 10.1 17.8 9.2 0.0 F D D F D E B C D D D F D E B C D D F D E B C D D F D E B C D D D F D E B C D D D F D E B C D D D F D E B C D D D F D E B C D D D F D E B C D D D F D E B C D D D F D E B C D D D F D E B C D D D D F D E B C D D D D D D E B C D D D D E B C D D D D D E B C D D D D D D D E B C D D D D D D D D D E B C D D D D D E B C D D D D D D D D D D D E B C D D D D D D D D D D D D D D D D D D	Initial O Delay(d3) s/yeh	0.0	0.0	0.0	0.0	7.0	0.0	0	0.0	0.0	- 0	0.0	0.0
77.9 45.3 52.7 62.3 19.2 20.3 52.7 42.3 81.4 54.6 0.0 E D D E B C D D F D A B C D D F D C B C D D F D C B C D D F D C B C D D F D C B C D D F D C B C D D F D C B C D D F D C B C D D F D C B C D C C C C C C C C C C C C C C C C	%ile BackOfO(50%) veh/ln	2.0	31.1	35.6	5.7	14.7	16.0	7.3	10	17.8	9.5	0.0	0.0
E D D E B C D D F D 233 1911 589 233 1911 589 233 1911 589 233 1928 1911 1928 1	LnGrp Delay(d),s/veh	77.9	45.3	52.7	62.3	19.2	20.3	52.7	42.3	81.4	54.6	0.0	0.0
2378 1911 569 486 22.8 700 C E C E 1 2 3 4 5 6 7 8 3,5 27.3 79.3 43.3 10.3 96.3 43.3 1.5 60 6 49 42 60 49 1.5 0.0 7.9 0.7 0.1 0.0 1.0 D A1.7	LnGrp LOS	ш	۵	۵	ш	В	O	۵	۵	ш	۵		
1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 4 5 6 7 8 1,5 27.3 79.3 43.3 10.3 96.3 43.3 1,5 6.0 6 4.9 4.2 6.0 4.9 nax),s 138 78 43.1 61 31.0 43.1 5 0.0 7.9 0.7 0.1 0.0 1.0	Approach Vol, veh/h		2378			1911			289			233	
1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 3 43.3 1,5 27.3 79.3 43.3 10.3 96.3 43.3 1,5 27.3 79.3 43.3 10.3 96.3 43.3 1,8 78 43.1 61 31.0 43.1 5 0.0 7.9 0.7 0.1 0.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Approach Delay, s/veh		48.6			22.8			70.0			54.6	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 1,5 27.3 79.3 43.3 10.3 96.3 1,5 6.0 7.9 4.9 42.5 6.0 100,5 13.6 65.4 37.6 6.7 33.2 5 00 7.9 0.7 0.1 0.0	Approach LOS		D			O			ш			٥	
3), s 27.3 79.3 43.3 10.3 96.3 96.3 10.3 96.3	Timer	—	2	3	4	2	9	7	∞				
5), s 273 793 433 103 963 1, s 60 6 43 942 60 may, s 138 793 431 10 meth, s 135 65,4 37.6 6.7 33.2 s 00 7.9 0.7 0.1 0.0 A1.7	Assigned Phs	_	2		4	2	9		8				
Ls 60 6 49 42 60 nax), S 138 78 43.1 6.7 31.0 s 0.0 7.9 0.7 0.1 0.0 A1.7 D	Phs Duration (G+Y+Rc), s	27.3	79.3		43.3	10.3	96.3		43.3				
nax), s 138	Change Period (Y+Rc), s	0.9	9 *		4.9	* 4.2	0.9		4.9				
C+ff), s 135 66.4 37.6 6.7 33.2 s 0.0 7.9 0.7 0.1 0.0 41.7	Max Green Setting (Gmax), s	13.8	* 78		43.1	* 61	31.0		43.1				
s 0.0 7.9 0.7 0.1 0.0 41.7 D	C+I1),	13.5	65.4		37.6	6.7	33.2		28.9				
cction Summary 2010 Ctrl Delay 2010 LOS	Green Ext Time (p_c), s	0.0	7.9		0.7	0.1	0.0		1.0				
2010 Chi Delay 2010 LOS	Intersection Summary												
	HCM 2010 Ctrl Delay			41.7									
)									i

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HCM 2010 Signalized Intersection Summary 13: El Camino Real & Palomar Airport Rd.

Long-Term PM 08/24/2017

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Comment					٠								
	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
420 1789 240 589 1150 590 380 1130 660 760 1060 420 1780 240 589 1150 590 380 1130 660 760 1060 5 0	Lane Configurations	F	444	¥	F	444	K.	F	444	K.	F	444	-
420 1780 240 580 1150 590 380 1130 660 760 100 1 0 </td <td>Traffic Volume (veh/h)</td> <td>420</td> <td>1780</td> <td>240</td> <td>280</td> <td>1150</td> <td>280</td> <td>380</td> <td>1130</td> <td>099</td> <td>760</td> <td>1060</td> <td>250</td>	Traffic Volume (veh/h)	420	1780	240	280	1150	280	380	1130	099	760	1060	250
100	Future Volume (veh/h)	420	1780	240	280	1150	200	380	1130	099	760	1060	25
1,00	Number	2	2	12	_	9	16	m	∞	18	7	4	-
1,00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	
100	Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.9
1845 1845	Parking Bus, Adj	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.0
447 1894 255 617 1223 628 404 1202 702 89 1128 2 3 1 2 3 2 3 2 3 </td <td>Adj Sat Flow, veh/h/ln</td> <td>1845</td> <td>184</td>	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	184
2 3 1 2 3 2 3 2 3	Adj Flow Rate, veh/h	447	1894	255	617	1223	628	404	1202	702	809	1128	266
0.94 0.94 <td< td=""><td>Adj No. of Lanes</td><td>2</td><td>က</td><td>-</td><td>2</td><td>က</td><td>2</td><td>2</td><td>m</td><td>2</td><td>2</td><td>3</td><td></td></td<>	Adj No. of Lanes	2	က	-	2	က	2	2	m	2	2	3	
495 133 3 <td>Peak Hour Factor</td> <td>0.94</td> <td>0.9</td>	Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.9
495 1343 413 386 1183 640 496 1386 1072 630 1712 3.015 50.27 0.27 0.27 0.04 0.08 </td <td>Percent Heavy Veh, %</td> <td>3</td> <td>. ,</td>	Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	. ,
0.15 0.27 0.27 0.04 0.08 0.06 0.12 0.28 0.28 0.18 0.34 3408 0.363 1550 1704 1679 1362 1704 1679 1362 1704 1679 1362 1704 1679 1362 1704 1679 1362 1704 1679 1362 1704 1679 1362 1704 1679 1	Cap, veh/h	495	1343	413	386	1183	640	409	1386	1072	630	1712	756
3408 5036 1550 3408 5036 2724 3408 5036 2724 3408 5036 2784 3408 5036 2786 3408 5036 2786 447 1894 255 647 1223 628 404 1202 702 702 703 909 1138 1704 400 157 170 35.2 22.6 178 34.1 14.3 27.7 28.6 100 100 100 100 100 100 100 100 100 4.95 134.3 413 386 1188 640 409 138 177 28.6 5.91 140 100 1	Arrive On Green	0.15	0.27	0.27	0.04	0.08	0.08	0.12	0.28	0.28	0.18	0.34	0.3
144 1894 255 617 1223 628 404 1202 702 809 1128 1704 6179 1362 1704 6179 1362 1704 6179 1362 1704 6179 1362 1704 6179 1362 1704 6179 1362 1704 6179 1362 1704 6179 1362 1704 6179 1362 1704 6179 1362 1705 1700	Sat Flow, veh/h	3408	5036	1550	3408	5036	2724	3408	5036	2760	3408	5036	1554
1704 1679 1550 1704 1679 1362 1704 1679 1360 1704 1679 1360 1704 1679 1360 1704 1679 1360 1704 1679 1360 1704 1679 1360 1704 1679 1360 1706 1707 1700 1362 2.26 1718 34.1 14.3 27.7 28.6 1.00	Grp Volume(v), veh/h	447	1894	255	617	1223	628	404	1202	702	608	1128	266
19.4 400 15.7 17.0 35.2 22.6 17.8 34.1 14.3 27.7 28.6 1.00 1	Grp Sat Flow(s),veh/h/ln	1704	1679	1550	1704	1679	1362	1704	1679	1380	1704	1679	1554
194 400 157 170 35.2 226 178 34.1 14.3 27.7 28.6 100	Q Serve(g_s), s	19.4	40.0	15.7	17.0	35.2	22.6	17.8	34.1	14.3	27.7	28.6	15.0
1,00	Cycle Q Clear(g_c), s	19.4	40.0	15.7	17.0	35.2	22.6	17.8	34.1	14.3	27.7	28.6	15.0
495 1343 413 386 1183 640 499 1386 1072 650 1712 591 141 0.62 1.60 103 0.99 0.89 0.99 0.88 0.66 666 128 0.66 666 1712 100	Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
0.99 1.41 0.62 1.60 1.03 0.98 0.99 0.87 0.65 1.28 0.66 591 1.42 0.02 1.60 1.03 0.99 0.87 0.65 1.28 0.66 1.00 1.00 1.00 0.33 0.33 0.33 1.00 1.00	Lane Grp Cap(c), veh/h	495	1343	413	386	1183	640	409	1386	1072	630	1712	75(
1,00	V/C Ratio(X)	0.00	1.41	0.62	1.60	1.03	0.98	0.99	0.87	0.65	1.28	99.0	0.3
1.00	Avail Cap(c_a), veh/h	591	1343	413	386	1183	640	409	1578	1177	630	1712	75(
1.00 1.00 0.28 0.28 0.28 0.09 0.00	HCM Platoon Ratio	1.00	1:00	1:00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
631 550 255 722 892 294 659 518 376 611 42.1 142 1892 2.0 2722 235 14.4 471 75 3.1 129.1 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	1.00	1.00	1:00	0.28	0.28	0.28	1.00	1.00	1.00	0.09	0.09	0.0
142 1892 2.0 2722 235 144 411 75 3.1 1291 0.2 10.1 42.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10.1 42.0 22.6 19.0 9.8 10.7 16.8 5.8 24.3 13.3 77.3 244.2 27.6 244.4 92.7 43.9 107.0 59.3 40.7 190.2 42.3 5.8 2596 2468 2308 2203 194.2 143.2 143.2 143.2 1	Uniform Delay (d), s/veh	63.1	22.0	25.5	72.2	69.2	29.4	62.9	51.8	37.6	61.1	42.1	24.0
10.1 42.0 0.	Incr Delay (d2), s/veh	14.2	189.2	2.0	272.2	23.5	14.4	41.1	7.5	3.1	129.1	0.2	0
101 420 70 226 190 98 107 168 58 24.3 13.3 77.3 244.2 27.6 344.4 92.7 43.9 107.0 59.3 40.7 190.2 42.3 E	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
773 2442 276 3444 927 439 1070 593 407 1902 423 E	%ile BackOfQ(50%),veh/ln	10.1	42.0	7.0	22.6	19.0	9.8	10.7	16.8	2.8	24.3	13.3	9.9
E F C F F D F E D F E D F E D F E	LnGrp Delay(d),s/veh	77.3	244.2	27.6	344.4	92.7	43.9	107.0	59.3	40.7	190.2	42.3	24.1
25% 2468 2308 2308 1942 1432 62.0 F F F F F F E E E E E E E E E E E E E	LnGrp LOS	ш	ш	U	ш	ч	۵	ш	ш		ч	۵	
1942 1432 62.0 F F F F F E E E E E E E E E E E E E E E	Approach Vol, veh/h		2596			2468			2308			2203	
1 2 3 4 5 6 7	Approach Delay, s/veh		194.2			143.2			62.0			94.4	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 230 460 240 570 278 412 37 60 60 60 60 60 60 60 5 170 400 180 510 260 310 220 5 190 420 198 306 214 372 297 00 00 00 63 04 00 00	Approach LOS		ш			ш			ш			ш	
230 460 240 570 278 412 33.7 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Timer	-	2	က	4	2	9	7	∞				
230 460 240 570 27.8 412 33.7 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Assigned Phs	—	2	3	4	2	9	7	8				
60 60 60 60 60 60 60 60 60 60 80 80 80 80 80 80 80 80 80 80 80 80 80	Phs Duration (G+Y+Rc), s	23.0	46.0	24.0	57.0	27.8	41.2	33.7	47.3				
s 17.0 40.0 18.0 51.0 26.0 31.0 22.0 s 19.0 42.0 19.8 30.6 21.4 37.2 29.7 0.0 0.0 0.0 6.3 0.4 0.0 0.0 176.2 176.2	Change Period (Y+Rc), s	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9				
s 190 420 198 306 214 372 29.7 s 00 00 00 63 04 00 00 1762	Max Green Setting (Gmax), s	17.0	40.0	18.0	21.0	26.0	31.0	22.0	47.0				
s 0.0 0.0 0.0 6.3 0.4 0.0 0.0 176.2	Max Q Clear Time (g_c+I1), s	19.0	45.0	19.8	30.6	21.4	37.2	29.7	36.1				
	Green Ext Time (p_c), s	0.0	0.0	0.0	6.3	0.4	0.0	0.0	5.2				
	Intersection Summary												
	HCM 2010 Ctrl Delay			1363									

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HCM 2010 Signalized Intersection Summary 14: Innovation Way/Loker Ave. & Palomar Airport Rd.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	444	*	r	4413		*	*	*	r	*	*
Traffic Volume (veh/h)	140	2810	320	130	1800	70	260	20	300	130	0/	370
Future Volume (veh/h)	140	2810	320	130	1800	70	260	20	300	130	0/	370
Number	2	2	12	-	9	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		96.0	1.00		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	146	2927	333	135	1875	73	271	25	312	135	73	382
Adj No. of Lanes	-	က	_		3	0	-	-	-	-		_
Peak Hour Factor	96.0	96.0	96.0	96.0	96.0	96:0	96:0	96:0	96:0	96:0	96:0	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	170	2595	881	744	4248	165	115	453	372	141	480	395
Arrive On Green	90.0	0.35	0.35	0.85	1.00	1.00	0.07	0.25	0.25	0.08	0.26	0.26
Sat Flow, veh/h	1757	5036	1511	1757	4973	193	1757	1845	1516	1757	1845	1518
Grp Volume(v), veh/h	146	2927	333	135	1265	683	271	52	312	135	73	382
Grp Sat Flow(s),veh/h/ln	1757	1679	1511	1757	1679	1809	1757	1845	1516	1757	1845	1518
Q Serve(g_s), s	12.3	77.3	31.0	2.1	0.0	0.0	8.6	3.3	25.8	11.5	4.6	37.7
Cycle Q Clear(g_c), s	12.3	77.3	31.0	2.1	0.0	0.0	8.6	3.3	25.8	11.5	4.6	37.7
Prop In Lane	1.00		1.00	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	170	2595	881	744	2868	1545	115	453	372	141	480	395
V/C Ratio(X)	98.0	1.13	0.38	0.18	0.44	0.44	2.36	0.11	0.84	96:0	0.15	0.98
Avail Cap(c_a), veh/h	704	2595	881	744	2868	1545	115	453	372	141	480	395
HCM Platoon Ratio	0.67	0.67	0.67	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.48	0.48	0.48	1.00	1.00	1:00	1.00	1.00	1.8
Uniform Delay (d), s/veh	69.1	49.1	92.9	8.9	0.0	0.0	70.1	44.0	41.5	8.89	42.8	55.0
Incr Delay (d2), s/veh	0.5	28.1	0.1	0.0	0.2	0.4	638.6	0.0	14./	63.3	0.1	38.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	49.8	13.0	1:0	0.1	0.2	25.1	1.7	12.3	8.1	2.3	20.0
LnGrp Delay(d),s/veh	9.69	107.2	65.7	8.9	0.2	0.4	708.7	44.0	56.3	132.1	42.8	93.5
LnGrp LOS	ш	니	ш	⋖	A	⋖	니		ш	니		"
Approach Vol, veh/h		3406			2083			635			593	
Approach Delay, síveh		101.5			0.7			333.7			96.1	
Approach LOS		ш			A			ш.			ш.	
Timer		2	33	4	2	9	7	8				
Assigned Phs	-	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	9.07	83.3	14.0	43.7	18.7	135.2	16.2	41.5				
Change Period (Y+Rc), s	0.9	9 *	* 4.2	* 4.7	* 4.2	0.9	* 4.2	* 4.7				
Max Green Setting (Gmax), s	4.8	* 77	* 9.8	* 39	09 *	22.0	* 12	* 37				
Max Q Clear Time (g_c+I1), s	4.1	79.3	11.8	39.7	14.3	2.0	13.5	27.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.2	8.3	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			91.7									

HCM 2010 Signalized Intersection Summary 15: El Fuerte St. & Palomar Airport Rd.

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Lane Configurations Traffic Volume (veh/h) Future Volume (veh/h)

Number Initial Q (Qb), veh Ped-Bike Adj(A_pbT)

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0.0 0.0 4.6 46.3 D D 588 12.4 552 0.25 2245 135 1752 9.4 9.4 431 431 431 1.00 1.00 46.2 279 0.08 320 1704 12.3 12.3 1.00 1.10 1.15 279 1.10 68.8 98.8 0.0 7 0 0 1.00 1.00 320 2 2 2 2 300 3 410 0 0.97 1.00 1900 423 0 0 0.97 423 34.0 34.0 1.00 343 1.23 343 1.23 343 1.00 1.00 27.6 27.6 85.6 343 0.23 1514 39.0 *5 *34 36.0 0.0 1.00 1845 216 2 0.97 3 397 0.23 1752 216 1752 16.3 397 0.54 397 1.00 1.00 51.2 0.9 0.0 8.0 8.0 52.0 D D D D S45 30.6 17.3 5.0 12.3 14.3 0.0 * 67.7 * 79 * 79 53.5 8.2 100 100 0.098 100 103 3 3 3 3 3 3 1121 103 0.097 627 734 627 734 627 734 627 734 627 734 627 734 60.45 1380 26.0 6.0 5.0 7.1 0.0 1.00 1845 1701 1993 0.14 4848 41.9 5.0 36.1 12.1 0.8 250 250 12 0 0.099 1.00 1.00 258 *4.2 *10 *10 11.0 0.97 62.7 6.0 24.0 58.7 0.0 3 0.97 1903 0.50 5036 2691 1679 56.7 1903 1.41 1903 1.33 0.15 37.3 186.9 0.0 59.1 224.2

Lane Grp Cap(c), veh/h V/C Ratio(X)

Avail Cap(c_a), veh/h HCM Platoon Ratio

Cycle Q Clear(g_c), s Prop In Lane

Upstream Filter(I) Uniform Delay (d), s/veh Incr Delay (d2), s/veh

%ile BackOfQ(50%),veh/ln

LnGrp Delay(d),s/veh

Initial Q Delay(d3),s/veh

LnGrp LOS Approach Vol, veh/h Approach Delay, s/veh Approach LOS

1.00 1845 2691

0.97

Parking Bus, Adj Adj Sat Flow, vehhinn Adj Flow Rate, vehh Adj No. of Lanes Peak Hour Factor Percent Heavy Veh, % Cap, vehh Arrive On Green Sat Flow, vehh Grip Volume(y), vehVih Grip Sat Flow(s), vehVih Op Sat Flow(s), vehVih Op Sat Flow(s), sehVihin Op Serve(g_s), sehVihin

1.00 1.00 1.00 134

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138.1

Intersection Summary HCM 2010 Ctrl Delay HCM 2010 LOS

* 60 25.9 0.9

Green Ext Time (p_c), s

31.0

Assigned Phs
Phs Duration (G+Y+Rc), s 3°Change Period (Y+Rc), s *
Max Green Setting (Gmax), s *
Max Q Clear Time (g_C+I1), s 2°

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HCM 2010 Signalized Intersection Summary 16: Melrose Dr. & Palomar Airport Rd.

Long-Term PM 08/24/2017

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	444	*	K.	444	¥.	F	Ħ	¥.	K.	‡	K. K.
Traffic Volume (veh/h)	1180	2150	220	270	1040	06	260	790	290	210	1150	820
Future Volume (veh/h)	1180	2150	220	270	1040	90	260	790	290	210	1150	820
Number	വ	7	12	- -	9	16	m	∞ α	<u> </u>	_	4 (14
Initial Q (Qb), ven	0 5	0	0 0	0 0	0	0 0	0 0	0	0 0	0 6	0	0 0
Ped-Bike Adj(A_pb1)	1.00	00	1.00	1.00	100	0.99	1.00	100	100	1.00	5	0.99
Adi Sat Flow veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	1255	2287	585	287	1106	96	277	840	309	223	1223	872
Adj No. of Lanes	2	33		2	33	-	2	4	_	2	2	2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	က	co	က	33	3	က	က	co	က	က	က	3
Cap, veh/h	1100	3079	954	314	1857	574	186	1599	535	209	872	1568
Arrive On Green	0.32	0.61	0.61	0.09	0.37	0.37	0.05	0.25	0.25	90.0	0.25	0.25
Sat Flow, veh/h	3408	5036	1560	3408	5036	1555	3408	6346	1549	3408	3505	2726
Grp Volume(v), veh/h	1255	2287	282	287	1106	96	277	840	306	223	1223	872
Grp Sat Flow(s),veh/h/ln	1704	1679	1560	1704	1679	1555	1704	1586	1549	1704	1752	1363
Q Serve(g_s), s	48.4	48.5	36.6	12.5	26.6	6.5	8.2	17.1	24.5	9.5	37.3	0.0
Cycle Q Clear(g_c), s	48.4	48.5	36.6	12.5	26.6	6.5	8.2	17.1	24.5	9.2	37.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1100	3079	954	314	1857	574	186	1599	535	209	872	1568
V/C Ratio(X)	1.14	0.74	0.61	0.92	09.0	0.17	1.49	0.53	0.58	1.07	1.40	0.56
Avail Cap(c_a), veh/h	1100	3079	954	314	1857	574	186	1599	535	500	872	1568
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.8	20.7	19.8	67.5	38.3	34.3	70.9	48.4	40.3	70.4	56.3	20.1
Incr Delay (d2), s/veh	64.7	0.2	0.3	29.5	0.4	0.7	245.4	0.7	0.1	81.1	188.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	32.6	22.3	15.7	7.2	12.5	2.8	10.2	7.5	10.7	6.7	40.8	11.2
LnGrp Delay(d),s/veh	115.5	20.9	20.1	97.0	38.7	34.3	316.3	48.5	41.3	151.5	244.7	20.4
LnGrp LOS	-	ပ	ပ	4		U	-			-	4	ပ
Approach Vol, veh/h		4127			1489			1426			2318	
Approach Delay, s/veh		49.6			49.6			99.0			151.4	
Approach LOS		O			D			_			_	
Timer	_	2	3	4	2	9	7	∞				
Assigned Phs	_	2	m	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	18.0	7.79	14.2	43.0	54.4	61.3	13.4	43.8				
Change Period (Y+Rc), s	* 4.2	0.9	0.9	* 5.7	0.9	9 *	* 4.2	0.9				
Max Green Setting (Gmax), s	* 14	9.07	8.2	* 37	48.4	* 36	* 9.2	36.0				
Max Q Clear Time (g_c+I1), s	_	50.5	10.2	39.3	50.4	28.6	11.2	26.5				
Green Ext Time (p_c), s	0.0	12.7	0.0	0.0	0.0	2.9	0.0	2.9				
Intersection Summary												
HCM 2010 Ctrl Delay			82.3									
HCM 2010 LOS			_									
Notes												

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HCM 2010 Signalized Intersection Summary 17: El Camino Real & Town Garden Rd.

2287 0.81 1.00 1.00 1.00 35.4 3.3 0.0 22.9 38.7 D 0 1.00 1.00 845 289 430 0.24 1757 289 757 722.3 22.3 22.3 1.00 1.00 1.00 51.2 3.3 3.3 0.0 0.0 0.98 1.00 1845 216 360 0.23 1535 216 1535 18.8 18.8 11.00 360 360 360 11.00 11.00 7.2 7.2 68.3 1182 1.24 1.00 1.00 57.4 114.9 0.0 28.9 36.5 4.2 40.0 29.2 1.3 1.00 1845 1464 0.23 0.23 1464 1679 35.2 35.2 3 0.97 5 0 1.00 1.00 1845 82 82 1 0.97 3 70 82 6.0 6.0 6.0 1.00 70 70 70 70 1.00 1.00 72.0 59.4 74.5 * 47 49.8 0.0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 10.2 * 6 8.0 0.0 0 & 20 20 1.00 1845 52 1 0.97 3 71 0.22 329 0.0 0.0 28.8 * 4.2 * 38 20.5 0.9 320 320 320 0 1.00 1.00 1 0.97 3 330 3 378 3 378 88.0 140 140 0 0.96 1.00 144 0.97 0.97 3 40 0.16 241 0.0 0.0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 * 35 * 35 37.2 0.0 1.00 371 Ť * 18 24.3 0.0 190 0 1.00 1900 0 0.97 250 0.16 1527 227 1768 118.5 0.86 290 0.78 448 1.00 1.00 60.1 2.0 0.0 9.2 43.1 Assigned Phs
Phs Duration (G+Y+Rc), s 4:
Change Period (Y+Rc), s 6:
Max Green Setting (Gmax), s 7:
Max O Clear Time (g_C+I1), s 2: %ile BackOfQ(50%),veh/ln Percent Heavy Veh, %
Cap, veh/h
Arrive On Green
Sat Flow, veh/h
Grp Volume(v), veh/h
Grp Sat Flow(s), veh/h
O'D Sarve(g_s), s Upstream Filter(I) Uniform Delay (d), s/veh Incr Delay (d2), s/veh LnGrp LOS Approach Vol, veh/h Approach Delay, s/veh Approach LOS Lane Grp Cap(c), veh/h V/C Ratio(X) Initial Q Delay(d3),s/veh Lane Configurations Traffic Volume (veh/h) Future Volume (veh/h) Parking Bus, Adj Adj Sat Flow, veh/h/In Adj Flow Rate, veh/h Adj No. of Lanes Peak Hour Factor Green Ext Time (p_c), s Number Initial Q (Qb), veh Ped-Bike Adj(A_pbT) Cycle Q Clear(g_c), s Prop In Lane Avail Cap(c_a), veh/h HCM Platoon Ratio LnGrp Delay(d),s/veh HCM 2010 Ctrl Delay HCM 2010 LOS

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HCM 2010 Signalized Intersection Summary 18: El Camino Real & Camino Vida Roble

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Movement Lane Configurations	EBL											
Lane Configurations	-	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
	F	4	¥.		4		F	*	*	F	444	
Traffic Volume (veh/h)	310	20	510	20	20	20	190	1460	20	40	1890	110
Future Volume (veh/h)	310	20	510	20	20	20	190	1460	20	40	1890	110
Number	7	4	14	3	∞	18	2	2	12	-	9	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.93	1.00		66.0	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	00:1	1:00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1900	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	220	0	647	21	21	21	196	1505	21	41	1948	113
Adj No. of Lanes	_	0	2	0	-	0	2	2	-	-	m	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	က	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	415	0	715	20	20	20	114	1775	786	47	2431	141
Arrive On Green	0.24	0.00	0.24	0.00	0.00	0.09	0.03	0.51	0.51	0.03	0.50	0.50
Sat Flow, veh/h	1757	0	3030	557	557	557	3408	3505	1552	1757	4864	281
Grp Volume(v), veh/h	220	0	647	63	0	0	196	1505	21	41	1342	719
Grp Sat Flow(s),veh/h/ln	1757	0	1515	1670	0	0	1704	1752	1552	1757	1679	1788
Q Serve(g_s), s	16.4	0.0	31.1	5.4	0.0	0.0	2.0	55.7	1.0	3.5	20.0	50.4
Cycle Q Clear(g_c), s	16.4	0.0	31.1	5.4	0.0	0.0	2.0	55.7	1.0	3.5	20.0	50.4
Prop In Lane	1.00		1.00	0.33		0.33	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	415	0	715	149	0	0	114	1775	786	47	1678	894
V/C Ratio(X)	0.53	0.00	0.90	0.42	0.00	0.00	1.73	0.85	0.03	0.88	0.80	0.80
Avail Cap(c_a), veh/h	445	0	768	445	0	0	114	1775	786	47	1678	894
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.0	0.0	22.7	9.49	0.0	0.0	72.5	32.0	18.5	72.8	31.3	31.4
Incr Delay (d2), s/veh	- -	0.0	13.6	1.9	0.0	0.0	360.5	5.2	0.1	85.7	4.1	7.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	 	0.0	14.3	2.5	0.0	0.0	0.8	28.3	0.5	2.8	24.1	26.6
LnGrp Delay(d),s/veh	51.1	0.0	69.3	99.2	0.0	0.0	433.0	37.2	18.6	158.5	35.4	39.0
LnGrp LOS			ш	w			-		۵	-		
Approach Vol, veh/h		867			63			1722			2102	
Approach Delay, sweh		64.7			999			82.1			39.0	
Approach LOS		ш			ш			ш.			Ω	
Timer	1	2	3	4	2	9	7	8				
Assigned Phs	_	2		4	2	9		8				
Phs Duration (G+Y+Rc), s	10.0	82.0		40.4	11.0	81.0		17.6				
Change Period (Y+Rc), s	0.9	0.9		* 5	0.9	0.9		4.2				
Max Green Setting (Gmax), s	4.0	46.8		* 38	2.0	45.8		40.0				
Max Q Clear Time (g_c+I1), s	5.5	27.7		33.1	7.0	52.4		7.4				
Green Ext Time (p_c), s	0.0	0.0		1.7	0.0	0.0		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			9.69									
HCINI ZUTU EUS			ш									

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HCM 2010 Signalized Intersection Summary 19: El Camino Real & Poinsettia Ln.

Long-Term PM 08/24/2017

Control Cont	938 WBL 14 3 320 320 320 320 320 320 320 320 320 3	WBT 70 70 70 70 70 70 70 70 70 70 70 70 70	MBR N 1140 1140 1140 1140 1140 1140 1150 1170 1171 0 0 0.093 0.093 0.093 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	NBL NE 50 147 50 147 0 0 1.00	NBT N 1470 E		SBL 250 250	2170	SBR 50
ons				• 1				2170	20
eh/h) 30 30 90 90 90 90 90 90 90 90 90 90 90 90 90								2170	20
reh/h) 30 30 30 bbf) 100 100 100 100 100 100 100 100 100 10							250	0110	
pbT) 1.00				0 0	c	540	2 7	0/17	20
pbT) 1.00				00	7 0	7 0		٥ ٥	0 0
rhin 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00							1.00	>	0.98
hirhin 1845 1845 1845 1846 1846 1846 1846 1846 1846 1846 1846					1.00		1.00	1.00	1.00
s 2 32 32 32 32 32 32 32 32 32 32 33 33 3							1845	1845	1900
s con 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3				54 158	1581	581	269	2333	24
7 ch, % 3 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.							7	က	0
Jeh, % 3 3 3 4 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2 5 2			- ~	0.93 0.9	0.93 0.	0.93	0.93	0.93	0.93
erith 0.02 0.12 or 2.48 or 2.48 or 2.48 or 2.48 or 2.49 or 2.48 or 2.49 or 2.4			- (~				23	n	n
weh/h/ 34 3408 1768 13 3408 1768 13 3408 1768 13 32 32 32 32 32 32 32 32 32 32 32 32 32							313	2298	23
3408 1768 1 vehrlin 1704 1752 1 -0, s 1.04 2.4 2.4 -0, vehrlin 67 204 67 204 10, vehrlin 67 204 67 204 10, vehrlin 67 204 67 204 11, vehrlin 67 204 100 100 100 100 100 100 100 100 100 1							60.0	0.45	0.45
1704 1752 1 1.4 2.4 1.4 2.4 1.0 2.4 1.0 2.4 0.48 0.16 9 1.0 1.00 1.00 72.8 59.7 1 2.0 0.1 0.0 0.0 0.0 0.0 1.0 0.7 1.2 74.7 59.8 6 64.9 64.9		75 1752 5.3 5.3 375			_	~	3408	5061	117
1704 1752 1 1.4 2.4 1.4 2.4 1.00 204 0.48 0.16 91 91 456 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	,	1752 5.3 5.3 375		54 1581		581	269	1545	842
1.4 2.4 1.4 2.4 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.01 1.01 1.2 1.02 1.2 1.03 1.2 1.04 6.4.9 E E E E E E E E E E E E E E E E E E E		5.3	_	`			1704	1679	1821
1.4 2.4 1.00 0.48 0.16 0.48 0.16 0.48 0.16 0.10 0.10 0.10 0.10 0.10 0.10 0.10		5.3					11.7	68.1	68.1
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		375			31.2 2.		11.7	68.1	68.1
67 204 048 0.16 01 456 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.0 1.00 0.0 1.00 0.0 1.2 5.8 1.2 6.4 9 64.9 64.9		375					1.00		90.0
0.48 0.16 0.48 0.16 0.49 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.1							313	1524	827
100 1.00 1.00 1.00 1.00 1.00 1.00 1.00		0.20			0.58 0.		0.86	1.01	1.02
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		625					357	1524	827
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		1:00	1.00 1.	1.00 1.0			1.00	1.00	1.00
h 728 59.7 1 1 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2		1:00					00.	1.00	1.00
2.0 0.1 1.0 0.0 0.0 1.1 1.2 5.98 4 1.2 96 64.9 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	_	48.4					67.1	41.0	41.0
h 0.0 0.0 tv/n 0.7 1.0 74.7 59.8 4 E E E 96 96 1 2 64.9		0.1				`	15.4	26.4	36.1
hin 0.7 1.2 74.7 59.8 6 E E 96 64.9 E E 1		0.0					0.0	0.0	0.0
74.7 59.8 E E 64.9 64.9		2.6					6.2	37.1	42.5
64.9 64.9 1 2	0.1 82.9	48.5		52.5 23			82.5	67.4	77.1
96 64.9 E E	u u				o	ا ۵	4	4	۱
64.9 E 1 2		570		2216	16			2656	
1 2 E		70.1		21	21.4			72.0	
1 2		ш			S			ш	
	3 4	2	9	7	∞				
7	3 4	2	9	7	8				
18.0 87.8 2		31.7		7.1 37	37.1				
* 4.2 6.0		0.9	×		* 5				
* 16 57.4	19 * 39	2.0			* 54				
7+11), S 1		4.0		_	15.1				
		0.0	0.0	0.0	1.0				
Intersection Summary									
HCM 2010 Ctrl Delay 51.4	1.4								
	Q								
Motor									
Notes									

N-i2772/Analysistnlersections/Synchrot14. Horizon Yr PM.syn

HCM 2010 Signalized Intersection Summary 1: Faraday Ave. & Canon Rd.

Long-Term + Project (PAL2) AM

m + Project (PAL2) AM	08/24/2017

Movement Fig. Fig	Movement Lane Configurations Traffic Volume (veh/h) Number Initial O (Ob), veh	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NRT	NBR	SBL	SBT	SBR
100	Lane Configurations Traffic Volume (veh/h) Future Volume (veh/h) Number Initial O (Ob), veh								2				
20 256 621 82 1010 20 191 20 31 20 20 5	Traffic Volume (veh/h) Future Volume (veh/h) Number Inilial O (Ob), veh	-	₩		je-	₹		F	4			÷	
10	Future Volume (veh/h) Number Initial O (Ob). veh	20	250	621	82	1010	70	191	20	31	20	20	20
100	Number Initial O (Ob), veh	20	250	621	82	1010	70	191	70	31	20	20	70
1.00	Initial O (Ob), veh	വ	2	12	,	9	16	က	∞ .	18	7	4	14
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		0	0	0	0	0	0	0	0	0	0	0	0
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		1.00		0.98	1.00		96.0	1.00		0.95	1.00		0.91
1845 1845 1940 1845 1940 1845 1845 1940 1940 1845 1845 1940 1845 1845 1940 1845 1845 1940 1940 1845 1845 1940		1.00	1.00	1:00	1:00	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00
22 2.8 6.90 91 1122 22 134 131 34 22 22 23	_	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1900
Feh, % 10.00 0.01 0.00 0.00 0.00 0.00 0.00 0	Adj Flow Rate, veh/h	72	278	069	91	1122	77	134	131	34	22	22	22
ceh, % 190 0.90 0.90 0.90 0.90 0.90 0.90 0.90		-	2	0	- ;	2	0	_	_	0	0	- !	0
Feh, % 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3		0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
1757 1752 1751 1751 1751 1752	Percent Heavy Veh, %	က	က	က	က	က	က	3	co	က	co	က	c
175 175		420	606	795	115	1211	24	256	203	53	28	28	28
leighth 22 178 175 175 175 175 175 175 175 175 175 175		0.24	1752	0.52	1757	0.34	0.34	0.15	1207	0.15	0.05	0.05	0.05
1, child	101	2070	1007	5	21.00	000	107	200	37.	100	- 6	3	
-0, s		777	1752	1534	1757	1752	1820	1757	0 0	1760	1652	o c	0 0
Ci), S 1.0 9.1 39.4 5.1 30.8 30.8 7.1 0.0 8.8 4.0 0.0 0.0 1.0 0.1 3.3 1.0 0.0 0.2 1.0 0.3 1.0 0.0 0.0 0.2 1.0 0.3 1.0 0.0 0.0 0.0 0.2 1.0 0.3 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		1.0	9.1	39.4	5.1	30.8	30.8	7.1	0.0	8.8	4.0	0.0	0.0
1,00 1,00	Cycle Q Clear(g_c), s	1.0	9.1	39.4	5.1	30.8	30.8	7.1	0.0	8.8	4.0	0.0	0:0
420 909 795 115 604 630 256 0 256 83 0 6.05 909 795 14 613 640 580 0 554 079 000 420 909 795 14 613 640 580 0 640 79 0 1.00	Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.21	0.33		0.33
0.05 0.31 0.87 0.79 0.93 0.95 0.05 0.064 0.79 0.00 0.420 9.09 795 141 613 640 580 0 681 0.79 0.00 0.00 0.00 1.00 1.00 1.00 1.00 1.0		420	606	795	115	604	630	256	0	256	83	0	0
420 909 795 141 613 640 580 0 581 99 0 1.00		0.05	0.31	0.87	0.79	0.93	0.93	0.52	0.00	0.64	0.79	0.00	0.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		420	606	795	141	613	640	280	0	281	66	0	0
1,00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
29.3 13.8 21.1 46.1 31.5 31.5 39.5 0.0 40.3 47.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		1.00	0.1	1:00	1.00	1.00	1:00	1.00	0.00	1.00	1.00	0.00	0.00
0.0 0.9 12.3 17.6 22.4 218 112 0.0 2.0 25.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		29.3	13.8	21.1	46.1	31.5	31.5	39.5	0.0	40.3	47.0	0.0	0.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/ven	0.0	0.9	12.3	9./1	22.4	21.8	7.1	0.0	7.0	72.1	0.0	0.0
0.5 4.6 19.2 3.0 18.5 19.2 3.5 0.0 4.5 2.4 0.0 29.3 14.6 33.4 5.8 53.9 53.3 0.0 4.5 2.4 0.0 C B C E D D D D C C 990	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280		0.5	4.6	19.2	3.0	18.5	19.2	3.5	0.0	4.5	2.4	0.0	0.0
990 1235 299 299 290 290 280 280 544 416 299 290 290 290 290 290 290 290 290 290		24.3	0. 4 .0	33.4	03.0 F	93.9	53.3	40.7	0:0	42.3	72.0 F	0.0	0.0
280 544 41.6 C D D D D 1 2 3 4 5 6 7 8 125 578 100 29,9 40.5 19,6 6.0 6.0 5.0 6.0 5.0 8.0 31.0 6.0 4.0 35.0 33.0 7.1 41.4 6.0 3.0 32.8 10.8 0.0 0.0 0.0 0.0 0.0 1.7 0.9			066		ı	1235		2	999	,	ı	99	
1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 125 578 4 5 6 8 60 60 60 50 80 310 60 40 350 330 7.1 41.4 60 30 32.8 108 00 0.0 0.0 0.0 1.7 0.9	Approach Delay, s/veh		28.0			54.4			41.6			72.0	
1 2 3 4 5 6 7 125 57.8 4 5 6 6 60 60 50 60 60 80 31.0 6.0 4.0 35.0 7.1 41.4 6.0 3.0 32.8 0.0 0.0 0.0 1.7	Approach LOS		ပ			Ω			Ω			ш	
12.5 57.8 10.0 29.9 40.5 6.0 6.0 6.0 6.0 6.0 6.0 6.0 7.1 41.4 6.0 3.0 0.0 0.0 1.7 6.0 0.0 0.0 1.7 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Timer	-	2	3	4	വ	9	7	00				
12.5 57.8 10.0 29.9 40.5 6.0 6.0 6.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8	Assigned Phs	-	2		4	2	9		∞				
60 60 50 50 60 60 80 310 60 40 350 7.1 41.4 60 30 32.8 00 00 00 0.1.7		12.5	57.8		10.0	29.9	40.5		19.6				
80 310 60 40 350 7.1 41.4 60 3.0 32.8 0.0 0.0 0.0 1.7 43.3 D		0.9	0.9		2.0	0.9	0.9		2.0				
7.1 414 6.0 3.0 32.8 0.0 0.0 0.0 1.7 43.3 D	Max Green Setting (Gmax), s	8.0	31.0		0.9	4.0	32.0		33.0				
43.3 D	Max Q Clear Time (g_c+I1), s Green Ext Time (n, c), s	1.7	41.4		0.9	3.0	32.8		9.00				
		9	2		9	9.0	1		6.5				
	Intersection Summary			9									
	HCM 2010 Ctrl Delay			43.3									
Notes				٥									
	Notes												

Synchro 10 Report Page 1

HCM 2010 Signalized Intersection Summary 2: College Blvd. & El Camino Real

Long-Term + Project (PAL2) AM 08/24/2017

National Coloradia Feb. Feb. Feb. Feb. National Coloradia		1	t	~	>	Į.	4	•	←	*	۶	→	*
1444 76 71 744 76 71 744 76 71 744 76 77 744 76 77 744 76 77 744 76 77 744 76 77 744 76 77 74 74	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
210 2258 700 200 652 210 130 220 220 420 390 5	Lane Configurations	r	444	*	r	444	¥.	F	₩		K.	₩	
210 2268 700 500 652 210 130 220 20 420 390 100	Traffic Volume (veh/h)	210	2258	700	200	652	210	130	220	20	420	390	410
5	Future Volume (veh/h)	210	2258	700	200	652	210	130	220	70	420	390	410
100 100 100 100 100 100 100 100 100 100	Number	2	7	12	- 0	9	16	m d	∞ α	9	_	4 (4
1,00	Initial O (Ob), ven	0	0	0	0	0	0	0	0	0 [0	0	0 [
1845 1845	Ped-Bike Adj(A_pb1)	1.00	00	1.00	1.00	00	00.1	1.00	100	100	1.00	00	100
228 2454 0 217 709 129 129 129 120 120 120 120 120 120 120 120 120 120	Adi Sat Flow vehibile	1845	1845	1845	1845	1845	1845	1845	1845	1000	1845	18.4F	1000
1 3 1 1 3 1 1 3 1 2 2 2 0 2 2 2 2 3 3 3 3 3 3	Adj Flow Rate, veh/h	228	2454	0+0	217	709	228	141	239	22	457	424	446
0.92	Adj No. of Lanes	-	8	· —	-	3	-	2	2	0	2	2	0
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
68 2072 645 470 3265 1012 105 991 90 105 536 004 004 004 000 027 065 065 005 003 031 031 031 031 031 031 031 031 031	Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
1757 678 1757 676 67	Cap, veh/h	89	2072	645	470	3265	1012	105	991	06	105	236	466
1757 5636 1568 1757 5636 1561 3408 3239 295 3408 1752 1728 1737 1579 1	Arrive On Green	0.04	0.41	0.00	0.27	0.65	0.65	0.03	0.31	0.31	0.03	0.31	0.31
128 2454 0 217 709 228 141 128 133 457 424 175 156 156 1757 169 1561 1704 1752 1782 1704 1752 1782 1704 1752 1705 17	Sat Flow, veh/h	1757	5036	1568	1757	5036	1561	3408	3239	295	3408	1752	1523
1757 1679 1568 1757 1679 1561 1704 1752 1782 1704 1752 1858 1757 1679 1561 1704 1752 1782 1704 1752 1785 1705	Grp Volume(v), veh/h	228	2454	0	217	402	228	141	128	133	457	424	446
5.0 53.5 0.0 13.4 7.5 7.8 4.0 7.1 7.3 4.0 28.8 1.0 1.00 1.00 1.00 0.13.4 7.5 7.8 4.0 7.1 7.3 4.0 28.8 1.00 1.00 1.00 1.00 0.10 0.10 0.10 0	Grp Sat Flow(s),veh/h/ln	1757	1679	1568	1757	1679	1561	1704	1752	1782	1704	1752	1523
5.0 53.5 0.0 13.4 7.5 7.8 4.0 7.1 7.3 4.0 28.8 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	Q Serve(g_s), s	2.0	53.5	0.0	13.4	7.5	7.8	4.0	7.1	7.3	4.0	28.8	37.4
1100 1100 1100 1100 1100 1100 1100 110	Cycle Q Clear(g_c), s	2.0	53.5	0.0	13.4	7.5	7.8	4.0	7.1	7.3	4.0	28.8	37.4
Hy 68 2072 645 470 3265 1012 105 536 545 105 538 645 105 538 645 105 539 648 105 539 648 105 539 648 105 539 648 105 100 1.00 1.00 1.00 1.00 1.00 1.00 1	Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.17	1.00		1.00
337 118 0.00 0.46 0.22 0.23 134 0.24 4.36 0.79 68 2072 645 470 3265 1012 105 539 548 105 539 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Grp Cap(c), veh/h	89	2072	645	470	3265	1012	105	536	545	105	536	466
68 2072 645 470 3265 1012 105 539 548 105 539 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	V/C Ratio(X)	3.37	1.18	0.00	0.46	0.22	0.23	1.34	0.24	0.24	4.36	0.79	0.96
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	89	2072	645	470	3265	1012	105	539	248	105	539	469
1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
105.00 89.8 9.4 9.4 63.0 33.8 33.8 63.0 41.3 105.00 80.0 0.0 0.0 0.0 0.0 0.0 0.0 23.2 41.7 0.0 6.5 3.5 3.5 4.9 3.5 3.6 24.2 15.0 107.5 126.3 0.0 40.0 9.5 9.9 2686 33.9 33.9 136.0 107.5 126.3 0.0 40.0 9.5 9.9 2686 33.9 33.9 15.0 107.5 126.3 0.0 40.0 9.5 9.9 2686 33.9 33.9 15.0 107.5 126.3 1.5 1.5 1.5 107.5 126.3 1.5 1.5 108.5 1.5 1.5 1.5 109.5 1.5 1.5 1.5 109.5 1.5 1.5 1.5 109.5 1.5 1.5 109.5 1.5 1.5 109.5 1.5 1.5 109.5 1.5 1.5 109.5 1.5 1.5 109.5 1.5 1.5 109.5 1.5 1.5 109.5 1.5 1.5 109.5 1.5 1.5 109.5 1.5 109.5 1.5 1.5 109.5	Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1105.0 88.1 0.0 0.3 0.2 0.5 205.6 0.1 0.1 153.0 72 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Uniform Delay (d), s/veh	62.5	38.3	0.0	39.8	9.4	9.4	63.0	33.8	33.8	63.0	41.3	44.3
10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	1105.0	88.1	0.0	0.3	0.2	0.5	205.6	0.1	0.1	1533.0	7.2	30.6
73.2 41.7 0.0 6.5 3.5 3.5 4,9 3.5 3.6 24.2 15.0 1167.5 126.3 0.0 4.0 9.5 9.9 268.6 33.9 33.9 1596.0 48.5 5.6 24.2 15.0 1167.5 126.2 1.0 A F C C C F D C C F D C C F D C C C F D C C C F D C C C F D C C C C	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5 126.3 0.0 40.0 9.5 9.9 268.6 33.9 1396.0 48.5 126.8 126.8 115.4 126.8 126.	%ile BackOfQ(50%),veh/ln	23.2	41.7	0.0	6.5	3.5	3.5	4.9	3.5	3.6	24.2	15.0	19.7
2682 1154 A A F C C F F 14.9 B A B B A B B A B B A B B A B B A B B A B B A B B A B B A B B A B B A B B A B B A B B B A B	LnGrp Delay(d),s/veh	1167.5	126.3	0.0	40.0	9.5	6.6	268.6	33.9	33.9	1596.0	48.5	74.9
2682 1154 402 214.9 15.3 16.2 F B F F B 7 8 41.5 59.5 9.0 46.3 10.0 91.0 9.0 46.3 6.0 '54 4.0 40.0 5.0 5.0 5.0 5.0 15.4 55.5 6.0 39.4 7.0 9.8 6.0 9.3 0.0 0.0 0.0 0.3 0.0 3.2 0.0 1.0 Z55.9 F 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8	LnGrp LOS	-	-			⋖	⋖	-	ပ	ပ	-		۳
10.2 F H H H H H H H H H H H H H H H H H H H	Approach Vol, veh/h		2682			1154			402			1327	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 41.5 59.5 9.0 46.3 10.0 91.0 9.0 6.0 *6 5.0 6.5 5.0 6.0 5.0 15.4 55.5 6.0 39.4 7.0 9.8 6.0 0.0 0.0 0.0 0.3 0.0 3.2 0.0 255.9	Approach Delay, swen		214.9 F			15.3 R			110.2 F			590.3 F	
1 2 3 4 5 6 7 41.5 59.5 9.0 46.3 10.0 91.0 9.0 6.0 *6 5.0 6.5 5.0 6.0 5.0 10.0 *54 4.0 40.0 5.0 58.5 4.0 115.4 55.5 6.0 39.4 7.0 9.8 6.0 0.0 0.0 0.0 0.3 0.0 3.2 0.0			-			2						-	
1 2 3 4 5 6 7 7 4.15 59.5 9.0 46.3 10.0 91.0 9.0 6.0 6.0 6.5 5.0 6.0 5.0 10.0 °5.4 4.0 40.0 5.0 58.5 4.0 15.4 55.5 6.0 39.4 7.0 9.8 6.0 0.0 0.0 0.0 0.3 0.0 3.2 0.0 255.9	Timer	_	2	3	4	2	9	7	8				
415 59.5 9.0 46.3 10.0 91.0 9.0 6.0 .* 6 5.0 6.5 5.0 6.0 5.0 10.0 ** 5.5 6.0 8.9 4.0 40.0 5.0 6.0 5.0 0.0 0.0 0.0 0.3 0.0 3.2 0.0 0.0 0.0 0.0 0.3 0.0 3.2 0.0 255.9	Assigned Phs	_	2	m	4	2	9	7	∞				
60 °6 50 65 50 60 50 100 °54 40 40.0 5.0 585 4.0 4 15.4 55.5 6.0 39.4 7.0 9.8 6.0 0.0 0.0 0.3 0.0 3.2 0.0 255.9	Phs Duration (G+Y+Rc), s	41.5	26.2	0.6	46.3	10.0	91.0	0.6	46.3				
10.0 °54 4.0 40.0 5.0 58.5 4.0 15.4 55.5 6.0 39.4 7.0 9.8 6.0 0.0 0.0 0.3 0.0 3.2 0.0 255.9 F	Change Period (Y+Rc), s		9 *	2.0	6.5	2.0	0.9	2.0	6.5				
255.9 F.	Max O Clear Time (G p. 11)		, 54	4.0	40.0	5.0	28.5	4.0	40.0				
255.9 CC	Green Ext Time (b, c) s		0.00	0.0	0.3	0.0	3.0	0.0	1.0				
	Geen Ext Time (P-c); 3	5	9	9.	5	9.	3.5	9	2				
	Intersection Summary												
HCM 2010 LOS F	HCM 2010 Ctrl Delay			255.9									
Natac	HCM 2010 LOS			ш									
	Motos												

Baseline Synchro 10 Report Page 3

HCM 2010 Signalized Intersection Summary 3: College Blvd. & Faraday Ave.

	4	†	<i>></i>	\	ţ	4	•	•	•	٠	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	r	₩.		r	₩.		K.	₩		F	₩.	
Traffic Volume (veh/h)	0/	430	173	210	420	06	272	310	390	260	540	130
Future Volume (veh/h)	70	430	173	210	420	06	272	310	390	260	540	130
Number	7	4	14	က	∞	18	2	2	12	-	9	16
Initial O (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	,	0.97	1.00	,	0.97	1.00	,	0.97	1.00	,	0.97
Parking Bus, Adj	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	9,	46/	88	5.78	45/	æ (546	337	424	283	28/	141
Adj No. of Lanes	- 6	7	0 0		7	0 0	7	7.	0 0	7	7	0 0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy ven, %	ა [٥,	2 0	2 5	2 0	2 10	2 .	2	2 1	2 .	٥ ٥	200
Cap, vervn	16	789	717	130	868	8 8	700	5/1	497	700	909	218
Arrive On Green	0.00	0.28	0.28	0.08	0.30	0.30	0.08	0.33	0.33	0.08	0.33	0.33
Sat Flow, ven/n	/2/	b7 b7	70/	/6/1	7890	909	3408	797	1224	3408	68/7	808
Grp Volume(v), veh/h	9/	337	318	228	279	276	296	337	424	283	368	360
Grp Sat Flow(s),veh/h/ln	1757	1752	1639	1757	1752	1716	1704	1752	1524	1704	1752	1704
Q Serve(g_s), s	3.6	14.3	14.6	6.5	11.1	11.2	6.5	13.5	21.8	6.5	15.1	15.2
Cycle Q Clear(g_c), s	3.6	14.3	14.6	6.5	11.1	11.2	6.5	13.5	21.8	6.5	15.1	15.2
Prop In Lane	1.00		0.59	1.00		0.35	1.00		1.00	1.00		0.39
Lane Grp Cap(c), veh/h	4	493	461	136	532	521	264	571	497	264	571	222
V/C Ratio(X)	0.78	89.0	69.0	1.68	0.52	0.53	1.12	0.59	0.85	1.07	0.64	0.65
Avail Cap(c_a), veh/h	119	751	702	136	168	752	264	647	295	264	647	679
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	26.8	56.9	38.8	24.2	24.3	38.8	23.6	26.5	38.8	24.2	24.2
Incr Delay (d2), s/veh	23.3	1.7	1.9	334.7	0.8	0.8	92.5	1.	1.1	76.2	1.8	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	7.1	8.9	15.8	5.5	5.4	6.4	9.9	10.7	5.8	7.6	7.4
LnGrp Delay(d),s/veh	62.5	28.5	28.8	373.5	25.0	25.1	131.2	24.8	37.6	115.0	26.0	26.1
LnGrp LOS	В	ပ	ပ	Ь	ပ	ပ	Ь	ပ	D	ч	ပ	S
Approach Vol, veh/h		731			783			1057			1011	
Approach Delay, s/veh		32.2			126.5			59.7			51.0	
Approach LOS		ပ			ш			Ш			O	
Timer		2	3	4	2	9	7	00				
Assigned Phs	-	2	3	4	2	9	7	ω				
Phs Duration (G+Y+Rc), s	11.0	33.4	11.0	28.6	11.0	33.4	9.1	30.5				
Change Period (Y+Rc), s	4.5	0.9	4.5	2.0	4.5	0.9	4.5	2.0				
Max Green Setting (Gmax), s	6.5	31.0	6.5	36.0	6.5	31.0	2.7	36.8				
Max Q Clear Time (g_c+I1), s	8.5	23.8	8.5	16.6	8.5	17.2	9.6	13.2				
Green Ext Time (p_c), s	0:0	2.6	0.0	3.8	0.0	3.4	0.0	3.2				
Intersection Summary												
HCM 2010 Ctrl Delay			66.2									
HCM 2010 LOS			ш									

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Baseline

HCM 2010 Signalized Intersection Summary 4: El Camino Real & Faraday Ave.

Long-Term + Project (PAL2) AM 08/24/2017

Movement EB EB EB WB WB WB WB WB		4	†	1	>	Ļ	4	•	•	•	٠	→	*
66 380 190 225 880 200 800 722 153 500 1788 6 0 380 190 225 880 200 800 722 153 500 1788 6 100 20 9 100 0 0 0 10 10 10 10 10 10 10 10 10 10	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
60 350 190 225 860 200 800 772 153 500 1788 60 350 190 225 860 200 800 722 153 500 1788 7 4 10 0<	Lane Configurations	F	‡	*	r	‡	*	K.	4413		K.	444	¥.
60 350 190 225 860 200 800 722 153 50 1788 7 4 14 3 8 18 5 2 12 1 6 1 0 <td>Traffic Volume (veh/h)</td> <td>09</td> <td>320</td> <td>190</td> <td>225</td> <td>980</td> <td>200</td> <td>800</td> <td>722</td> <td>153</td> <td>200</td> <td>1788</td> <td>250</td>	Traffic Volume (veh/h)	09	320	190	225	980	200	800	722	153	200	1788	250
100	Future Volume (veh/h)	09	320	190	225	860	200	800	722	153	200	1788	250
100	Number	7	4	14	က	ω .	18	2	2	12	-	9	16
1,00	Initial Q (Ob), veh	0 5	0	0	0 0	0	0 0	0 0	0	0	0 8	0	0
1845 1845	Ped-Bike Adj(A_pb1)	1.00	6	0.99	1.00	6	100	1.00	00	0.98	00.1	5	0.99
Color Colo	Parking Bus, Adj	1045	1001	1000	1001	1045	1001	1000	1045	1000	1000	10.00	1045
1	Adj Flow Rate veh/h	65	380	207	245	935	217	870	785	166	543	1943	272
0.92	Adi No. of Lanes	- 8	2	-	-	2	-	2	2 6	0	2		1
173 1240 550 105 1084 471 2011 379 685 414 1530 1757 3305 1355 1757 3305 1523 3408 4158 817 3408 1530 1757 3305 1355 1757 3305 1523 3408 4158 817 3408 5038 1757 1752 1355 1757 1752 1523 1704 1679 1672 1704 1757 1752 1355 1757 1752 1523 1704 1679 1672 1704 1757 1752 1355 1757 1752 1523 1704 1679 1672 1704 1757 1752 1355 1757 1752 1523 1704 1679 1672 1704 1757 1752 1355 1757 1752 1253 1704 1679 1679 1758 1240 550 105 1084 471 2011 2639 1314 414 1530 1758 1240 550 105 1286 559 2011 2639 1314 414 1530 1758 1240 550 105 1286 559 2011 2639 1314 414 1530 1759 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 110 110 110 110 110 110 110 100 120 120 110 110 110 110 110 110 100 120 120 120 141 141 151 141 141 151 100 120 120 120 120 120 120 120 120 120 100 110 110 120 1	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
173 1240 550 105 1084 471 2011 3269 685 414 1530 1757 3856 1555 1757 3856 1523 3408 4158 817 3408 1757 3752 1555 1757 3752 1523 3408 4158 817 3408 1757 1752 1555 1757 1752 1523 1704 1679 1704 1757 1752 1555 1757 1752 1523 1704 1679 1704 1757 1752 1555 1757 1752 1209 183 6.5 6.5 158 395 100 100 100 100 100 100 100 0.052 1314 414 1530 173 1240 550 105 1286 595 2011 2639 1314 414 1530 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	Percent Heaw Veh, %	co	က	3	3	3	က	3	3	က	co	က	3
1757 3505 1555 1757 3505 1523 3408 4159 6175	Cap, veh/h	173	1240	220	105	1084	471	2011	3269	982	414	1530	472
1757 3805 1555 1757 3805 1523 3408 4158 871 3408 5036 1757 1805 1	Arrive On Green	0.10	0.35	0.35	90.0	0.31	0.31	0.59	0.79	0.79	0.12	0.30	0.30
6 380 207 245 935 217 870 652 319 543 1943 1943 1757 1752 1555 1757 1752 1523 1704 1679 1679 1707 1679 1707 1679 1707 1707 1707 1707 1707 1707 1707 17	Sat Flow, veh/h	1757	3505	1555	1757	3505	1523	3408	4158	871	3408	5036	1552
1757 1752 1555 1757 1752 1523 1704 1679 1672 1704 1679 1705 145 102 88 7.8 32.7 20.9 18.3 6.5 6.5 6.5 15.8 39.5 1.00 1	Grp Volume(v), veh/h	99	380	207	245	935	217	870	632	319	543	1943	272
45 102 88 78 327 209 183 65 65 158 395 100 100 1.00 1.00 1.00 1.00 1.00 1.00	Grp Sat Flow(s),veh/h/ln	1757	1752	1555	1757	1752	1523	1704	1679	1672	1704	1679	1552
45 102 88 78 32.7 20.9 18.3 65 65 15.8 39.5 10.0 1.00 1.00 1.00 1.00 1.00 1.00 1.	Q Serve(g_s), s	4.5	10.2	8.8	7.8	32.7	20.9	18.3	6.5	6.5	15.8	39.5	19.2
1100 1100 1100 1100 1100 1100 1100 110	Cycle Q Clear(g_c), s	4.5	10.2	8.8	7.8	32.7	20.9	18.3	6.5	6.5	15.8	39.5	19.2
Hr 173 1240 550 105 1084 471 2011 2659 1314 414 1530 173 1240 550 105 1084 471 2011 2659 1314 414 1530 173 1240 530 135 123 0.86 046 043 024 024 131 127 029 130 100 1.00 1.00 1.00 1.00 1.00 1.00 1	Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.52	1.00		1.00
0.38 0.31 0.38 2.32 0.86 0.46 0.43 0.24 0.24 1.31 1.27 0.10 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Grp Cap(c), veh/h	173	1240	220	105	1084	471	2011	2639	1314	414	1530	472
173 1240 550 105 1286 559 2011 2639 1314 414 1530 100 1.00 1.00 1.00 1.00 1.00 1.00 1.0	V/C Ratio(X)	0.38	0.31	0.38	2.32	98.0	0.46	0.43	0.24	0.24	1.31	1.27	0.58
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	173	1240	220	105	1286	529	2011	2639	1314	414	1530	472
1.00 1.00 1.00 1.00 1.00 1.00 0.70 0.70	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
54.9 30.4 14.7 61.1 42.3 71.2 14.7 3.7 3.7 57.1 45.3 6.1 6.1 6.2 6.245 4.8 0.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.70	0.70	0.70	1.00	1.00	1.00
6.1 0.6 2.0 624.5 4.8 0.3 0.0 0.2 0.3 156.3 126.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	54.9	30.4	14.7	61.1	42.3	71.2	14.7	3.7	3.7	57.1	45.3	38.2
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	6.1	9.0	2.0	624.5	4.8	0.3	0:0	0.2	0.3	156.3	126.7	5.1
2.5 5.1 4.1 22.1 16.6 8.8 8.6 3.0 3.1 16.4 36.2 6.10 31.1 16.6 685.6 47.1 71.5 14.7 3.8 4.0 213.4 172.0 E C B R A R A F F F F E 652 1397 162.9 9.0 172.0 E 8.7 4.2 6.0 10.0 12.0 51.0 84.5 45.5 17.8 45.2 17.8	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
610 31.1 166 6856 47.1 71.5 14.7 3.8 4.0 2134 7720. E C B F D E B A A F F F F 652 29.5 162.9 9.0 162.4 17.15 14.7 2.8 4.0 20.0 110.0 1.2 3.4 5.6 6.7 8 8 7.2 20.0 110.0 51.0 51.0 51.0 51.0 51.0 51.0	%ile BackOfQ(50%),veh/ln	2.5	5.1	4.1	22.1	16.6	8.8	9.8	3.0	3.1	16.4	36.2	8.9
E C B F D E B A A F E C B F D E B B A A F E C B F D E B B A A F D E B B A A F D E B B A A F D E B B A A F D E B B A A B D E B B A A B D E B B A A B D E B B A A B D E B B A A B D E B B A B D E B B A B D E B B A B D E B B D E B B A B D E B B D E B B D E B B D E B B D E B	LnGrp Delay(d),s/veh	61.0	31.1	16.6	9.589	47.1	71.5	14.7	3.8	4.0	213.4	172.0	43.3
652 1397 1821 29.5 162.9 9.0 C C	LnGrp LOS	ш	ပ	В	띡		ш	В	⋖	⋖	띡	ᅵ	
29.5 162.9 9.0 C	Approach Vol, veh/h		652			1397			1821			2758	
C F F 6 7 200 1100 12.0 51.0 84.5 45.5 17.8 42.6 0.7 42.0 51.0 84.5 45.5 17.8 44.0 17.8 46.17.3 40 6.1 17.8 85.9 812.2 20.3 41.5 6.5 0.0 4.8 0.0 2.1 0.0 0.0 0.0 0.0	Approach Delay, síveh		29.5			162.9			0.6			167.4	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 200 1100 120 510 845 455 178 42 60 42 5 60 6 5 16 410 778 46 173 40 61 178 85 9,8 12.2 20.3 415 65 0.0 4.8 0.0 2.1 0.0 0.0 0.0	Approach LOS		ပ			Œ.			V			ш	
1 2 3 4 5 6 7 200 1100 12.0 51.0 84.5 45.5 17.8 14.2 6.0 12. 5 6.0 6 5 16 41.0 7.8 14.6 17.3 14.0 6.1 17.8 8.5 9.8 12.2 20.3 41.5 6.5 0.0 4.8 0.0 2.1 0.0 0.0 0.0 109.4	Timer		2	က	4	2	9	7	∞				
200 1100 12.0 51.0 84.5 45.5 17.8 14.2 5.6 1.2 5.60 7.5 5.0 7.6 5.0 17.8 17.8 8.5 9.8 12.2 20.3 41.5 6.5 0.0 4.8 0.0 2.1 0.0 0.0 0.0 0.0 10.9 4.8 10.0 2.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Assigned Phs	-	2	3	4	2	9	7	8				
12 60 .42 .5 6.0 .6 .5 16 41.0 .7.8 .46 17.3 .40 .6.1 17.8 8.5 9.8 12.2 20.3 41.5 6.5 0.0 4.8 0.0 2.1 0.0 0.0 0.0 109.4	Phs Duration (G+Y+Rc), s	20.0	110.0	12.0	51.0	84.5	45.5	17.8	45.2				
16 410 778 46 17.3 40 61 178 8.5 9.8 12.2 20.3 41.5 6.5 0.0 4.8 0.0 2.1 0.0 0.0 0.0 109.4	Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	* 2	0.9	9 *	* 5	* 2				
(1), s 17,8 8.5 9.8 12.2 20.3 41.5 6.5 0.0 0.0 0.0 2.1 0.0 0.0 0.0 0.0 109.4	Max Green Setting (Gmax), s	* 16	41.0	* 7.8	* 46	17.3	* 40	* 6.1	* 48				
0.0 4.8 0.0 2.1 0.0 0.0 0.0 10.9.4 F	Max Q Clear Time (g_c+I1), s	17.8	8.5	8.6	12.2	20.3	41.5	6.5	34.7				
	Green Ext Time (p_c), s	0.0	4.8	0.0	2.1	0.0	0.0	0.0	4.3				
	Intersection Summary												
HCM 2010 LOS F	HCM 2010 Ctrl Delay			109.4									
Notes	HCM 2010 LOS			ш									
	Notes												

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HCM 2010 Signalized Intersection Summary 5: I-5 South On-Ramp/I-5 SB Ramps & Palomar

Long-Term + Project (PAL2) AM	08/24/2017
_	ar Airport Rd.

1.00		EBT	EBR	WBL	WBT	WDD	NBL	NBT	NBR	SBL	SBT	SBR
hfgurations blume (veh/h) blume (veh/h) Ob), veh Adj(A_pbT) Sus, Adj ilow, veh/h/in f1 Lanes rr Facior	1					WDR						
Jume (veh/h) Jume (veh/h) Jume (veh/h) Ob), veh Adj(A_pbT) Jus, Adj Jus, Adj Jus, Veh/h/ln Adj (A_pub yeh/h Adj (A_pub yeh/h A A A A A A A A A A A A A A A A A A A		₹			*	*				F		*
olume (veh/h) Ob), veh Adi(A_pbT) 3us, Adi Iow, veh/h/lin Rate, veh/h Irt anes		612	06	0	177	363	0	0	0	1329	0	450
OD), veh Adi(A_pbT) Sus, Adi India, vehMin Rate, veMin f Lanes In Factor	0	612	06	0	171	363	0	0	0	1329	0	450
	2	2	12	_	9	16				7	4	14
	0	0	0	0	0	0				0	0	0
			1.00	1.00		1.00				1.00		1.00
		1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
		1845	1900	0	1845	1845				1845	0	1845
		089	100	0	857	0				1477	0	200
		co	0	0	2	-				2	0	_
		0.90	0.90	0.0	0.90	0.90				0.90	0.90	0.90
avy ven, %	0	c	c	0	3	2				2	0	c
		1370	199	0	1081	484				1575	0	724
Arrive On Green 0.00		0.31	0.31	0.00	0.31	0.00				0.46	0.00	0.46
Sat Flow, veh/h		4607	647	0	3597	1568				3408	0	1568
	0	512	268	0	857	0				1477	0	200
.veh/h/ln		1679	1731	0	1752	1568				1704	0	1568
2 Serve(g_s), s 0.0	0	2.7	2.8	0.0	10.2	0.0				18.8	0.0	11.5
Sycle Q Clear(g_c), s 0.0	0	2.7	5.8	0.0	10.2	0.0				18.8	0.0	11.5
Prop In Lane 0.00			0.37	0.00		1.00				1.00		1.00
p(c), veh/h		1035	534	0	1081	484				1575	0	724
0		0.49	0.50	0.00	0.79	0.00				0.94	0.00	69.0
/h		1769	912	0	1847	826				1893	0	871
0	0	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
0	0	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
Jniform Delay (d), s/veh 0.0	0	12.9	12.9	0.0	14.5	0.0				11.7	0.0	6.7
	0	0.1	0.3	0.0	0.5	0.0				8.0	0.0	1.2
nitial Q Delay(d3), s/veh 0.0	0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln 0.0	0	2.7	2.8	0.0	2.0	0.0				10.4	0.0	5.1
nGrp Delay(d),s/veh 0.0	0	13.0	13.2	0.0	15.0	0.0				19.7	0.0	10.9
nGrp LOS		В	В		В					В		В
spproach Vol, veh/h		780			857						1977	
Approach Delay, s/veh		13.1			15.0						17.5	
Approach LOS		В			В						В	
mer 1	_	2	cc	4	2	9	7	8				
Assigned Phs		2		4		9						
Phs Duration (G+Y+Rc), s		19.5		26.2		19.5						
Change Period (Y+Rc), s		5.4		5.1		5.4						
Max Green Setting (Gmax), s		24.1		25.4		24.1						
Max Q Clear Time (g_c+11), s		7.8		20.8		12.2						
Green Ext Time (p_c), s		1.0		0.3		1.2						
ntersection Summary												
HCM 2010 Ctrl Delay			15.9									
HCM 2010 LOS			В									

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Baseline

HCM 2010 Signalized Intersection Summary 6: I-5 NB Ramps & Palomar Airport Rd.

Long-Term + Project (PAL2) AM 08/24/2017

Movement EB EB WB WB WB WB WB WB		4	†	~	-	ţ	4	•	•	•	٠	→	*
	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
90 1861 0 0 994 513 80 0 1339 0 0 0 1 8 0	Lane Configurations	r	444			444	R.R.		₩	R.R.			
90 1861 0 0 994 513 80 0 1339 0 0 0 1 100 0 0 0 0 0 0 0 0 0 0 0 0 0	Traffic Volume (veh/h)	06	1861	0	0	994	513	80	0	1339	0	0	0
5	Future Volume (veh/h)	06	1861	0	0	994	513	80	0	1339	0	0	0
1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	2	2	12	-	9	16	3	∞	18			
1.00	Initial O (Ob), veh	0	0	0	0	0	0	0	0	0			
1945 1945 1940 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,	Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		0.98			
1845 1845 0 0 1845 1845 1940 1845 1845 194	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
1 1 2 04 0 05 05 05 05 05 05 05 05 05 05 05 05 0	Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97	Adj No of London	5, 5	6161	0	0	1072	679	78	o -	1380			
14	Adj No. of Lanes	- 100	2 5	0 0	0 0	2 5	7 200	0 0	- 60	7 20 0			
1 114 2044 0 0 1549 8 9 1 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
114 2044 0 0 1549 808 912 0 0 0 0 1547 808 912 0 0 0 0 1547 80 913 1 0 0 0 0 0 1 0 0 1 0 0 1 0 0 0 0 0 0	Percent Heavy Ven, %	· ·	5 5	0 0	0 0	2 2	r 000		m (2 2			
1757 1757 1757 1757 1757 1757 1757 1757	Cap, ven/h	114	2044	0 0	0 0	1549	808	912	0 0	1401			
1/57 5.022 0 5.022 2.628 1/57 0 43 1/37 0 0 0 5.02 2.628 1/57 0 7.3 51.2 0 0 0 1025 5.29 82 0 7.3 51.2 0 0 0 0 27.4 27.1 3.3 0.0 7.3 51.2 0 0 0 0 27.4 27.1 3.3 0.0 7.3 51.2 0 0 0 0 27.4 27.1 3.3 0.0 7.3 51.2 0 0 0 0 27.4 27.1 3.3 0.0 7.3 51.2 0 0 0 0 27.4 27.1 3.3 0.0 7.3 51.2 0 0 0 0 0 0 0 7.4 2.4 0 0 0 0 0 0 0 7.5 0 0 0 0 0 0 0 0 7.5 0 0 0 0 0 0 0 8.1 6.2 0 0 0 0 0 0 0 9.2 0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 1.0 0 0 0 0 0 0 2. 0 0 0 0 0 2. 0 0 0 0 3. 0 0 0 0 4 3 0 0 0 5 0 0 0 0 6 0 0 0 0 7 0 0 0 8 0 0 0 0 9 0 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 2 0 0 0 2 0 0 0 3 0 0 0 4 0 0 0 5 0 0 0 6 0 0 0 7 0 0 8 0 0 0 9 0 0 0	Arrive On Green	0.00	0.41	0.00	0.00	0.10	0.10	7227	0.00	757			
1757 1679 0 0 1025 529 82 0 0 1757 1679 1714 1757 0 0 1705 529 82 0 0 173 173 173 173 173 173 173 170 173 173 170 173 170 170 170 170 170 170 170 170 170 170	Sat Flow, veh/h	1/2/	2029	0	0	2079	2628	1/2/	0	5696			
1757 1679 0 0 1679 1314 1757 0 0 1 1571 1679 0 0 1 1679 1314 1757 0 0 1 1573 1512 0 0 0 0 2774 27.1 33 0.0 0 1 100 0 0 0 1 100 1 100 0 0 0 0 0	Grp Volume(v), veh/h	93	1919	0	0	1025	529	82	0	1380			
S 7.3 51.2 0.0 0.0 27.4 27.1 3.3 0.0 cm. ship of the color of the colo	Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1314	1757	0	1350			
s 73 512 0.0 0.0 27.4 27.1 33 0.0 1.00 0.00 0.00 0.00 1.00 1.00 1.00	Q Serve(g_s), s	7.3	51.2	0.0	0.0	27.4	27.1	3.3	0.0	70.4			
1,00 1,00 1,00 1,00 1,00 0,00 0,00 0,00		7.3	51.2	0.0	0.0	27.4	27.1	3.3	0.0	70.4			
114 2044 0 0 1549 808 972 0 0 082 094 000 0082 094 000 000 0066 065 0099 000 006 065 065 009 000 006 065 009 000 006 065 000 000 000 000 000 000 000	Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
161 2094 0.00 0.06 0.66 0.66 0.09 0.00 161 2094 0.00 0.00 0.66 0.66 0.06 0.00 0.00 0.0	Lane Grp Cap(c), veh/h	114	2044	0	0	1549	808	912	0	1401			
161 2044 0 0 1549 808 926 0 0 100 1.00 1.00 1.00 1.00 1.00 1.00	V/C Ratio(X)	0.82	0.94	0.00	0.00	99.0	0.65	0.09	0.00	0.98			
1,00 1,00 1,00 0,33 0,33 1,00 1,00 0,56 0,50 0,00 0,00 0,78 1,00 0,00 0,64 6, 39,9 0,0 0,0 0,78 1,00 0,00 0,00 0,00 0,00 0,00 0,00 0,0	Avail Cap(c_a), veh/h	161	2044	0	0	1549	808	956	0	1423			
0.56 0.56 0.00 0.00 0.78 0.78 1.00 0.00 0.46 39,9 0.00 0.0 5.78 0.78 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
64.6 39.9 0.0 0.0 55.9 55.7 17.0 0.0 8.1 6.2 0.0 0.0 18.3 2 0.0 0.0 0.0 0.0 0.0 0.0 18.3 2 0.0 0.0 3.8 24.8 0.0 0.0 13.0 10.3 1.6 0.0 72.7 46.1 0.0 5.7 6.9 17.0 0.0 E D E E D E E B 2012 1554 146.2 47.3 58.1 58.1 51.1 D A S A S A S A S A S A S A S A S A S A	Upstream Filter(I)	0.56	0.56	0.00	0.00	0.78	0.78	1.00	0.00	1.00			
8.1 6.2 0.0 0.0 1.8 3.2 0.0 0.0 3.8 24.8 0.0 0.0 0.0 0.0 0.0 0.0 72.7 46.1 0.0 0.0 57.6 59.0 17.0 0.0 E D E E B H65 2012 1554 146.2 1 2 3 4 5 6 7 8 6.2 15.4 -1.13 84.5 77.8 55.7 -1.13 84.5 77.8 55.7 -1.13 84.5 77.8 55.7 -1.13 84.5 77.8 55.7 -1.13 84.5 77.8 55.7 -1.13 84.5 77.8 55.7 -1.13 84.5 77.8 55.7 -1.13 84.5 77.8 55.7 -1.13 84.5 77.8 55.7 -1.13 84.5 77.8 55.7 -1.13 84.5 77.8 55.7 -1.13 84.5 77.8 55.7 -1.13 84.5 77.8	Uniform Delay (d), s/veh	9.49	39.9	0.0	0.0	55.9	55.7	17.0	0.0	33.1			
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh		6.2	0.0	0.0	<u>~</u>	3.2	0.0	0.0	20.0			
3.8 24.8 0.0 0.0 13.0 10.3 1.0 0.0 7.2 46.1 0.0 0.0 57.6 59.0 17.0 0.0 E	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	%ile BackOfQ(50%),veh/ln	3.08	24.8	0.0	0.0	13.0	10.3	1.6	0.0	30.0			
2012 1554 1462 47.3 58.1 51.1 1 2 3 4 5 6 7 8 62.2 138 485 77.8 5.4 713 38.2 73.8 5.5 7 113 38.2 73.8 51.8 51.8 51.8	LnGrp Delay(d),s/veh	12.1	46.1	0.0	0.0	97.6	59.0	17.0	0.0	53.2			
2012 1554 47.3 58.1 D E E 7 62.2 15.4 48.5 5.4 7.4,7 5.4 55.7 7.13 38.2 53.2 9.3 29.4 1.3 0.0 1.6 D	LITGIPLOS		0,500			<u>ا</u> ا			0,74				
1 2 3 4 5 6 7 2 3 4 5 6 7 62.2 138 48.5 5.4 .4.7 5.4 55.7 .13 38.2 53.2 9.3 29.4 1.3 0.0 1.6 D	Approach Vol. veh/h		2012			1554			1462				
1 2 3 4 5 6 7 2 5 6 6 7 62.2 138 48.5 5.4 .4.7 5.4 55.7 .13 38.2 53.2 9.3 29.4 1.3 0.0 1.6 D	Approach Delay, swell		5. C			- u							
5.7)			J)				
2 6.22 1.38 48.5 5.4 *4.7 5.4 5.4 5.3 2 9.3 29.4 1.3 5.18	Timer	-	2	3	4	2	9	7	∞				
62.2 13.8 48.5 5.4 • 4.7 5.4 55.7 • 13 38.2 53.2 9.3 29.4 1.3 0.0 1.6 D	Assigned Phs		2			2	9		∞				
5.4 * 4.7 5.4 55.7 * '13 38.2 53.2 9.3 29.4 1.3 0.0 1.6 51.8	Phs Duration (G+Y+Rc), s		62.2			13.8	48.5		77.8				
55.7 * 13 38.2 53.2 9.3 29.4 1.3 0.0 1.6 51.8	Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
11), s 53.2 9.3 29.4 1.3 0.0 1.6 51.8 D	Max Green Setting (Gmax), s		22.7			* 13	38.2		73.8				
1.3 0.0 1.6 51.8 D	Max Q Clear Time (g_c+l1), s		53.2			9.3	29.4		72.4				
	Green Ext Time (p_c), s		1.3			0.0	1.6		0.2				
	Intersection Summary												
2010 LOS	HCM 2010 Ctrl Delay			51.8									
Notice	HCM 2010 LOS			۵									
	N COLON												

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HCM 2010 Signalized Intersection Summary 7: Paseo Del Norte & Palomar Airport Rd.

HCM 2010 Signalized Intersection Summary 8: Armada Dr. & Palomar Airport Rd.

Long-Term + Project (PAL2) AM 0824/2017

Notification Feb. Feb. Notification Feb.		1	†	<u> </u>	/	Ļ	4	•	—	4	۶	→	*
150 2910 150 111 1247 221 150 50 111 101 50 150 2910 150 111 1247 221 150 50 111 101 50 150 2910 150 111 1247 221 150 50 111 101 50 100 0 0 0 0 0 0 0 0	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
150 2910 150 111 1247 221 150 50 111 101 50	Lane Configurations	F	441		1	Ш	ĸ.	1	4₽		1	4₽	
150 2910 150 111 1247 221 150 50 111 101 50	Traffic Volume (veh/h)	150	2910	150	111	1247	221	150	20	111	101	20	90
5	Future Volume (veh/h)	120	2910	120	11	1247	221	120	20	1	101	20	90
1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	2	2	12	-	9	16	က	∞	18	7	4	14
1.00 0.098 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		96.0	1.00		0.95
1845 1845 1900 1845 1845 1845 1845 1845 1845 1845 1845	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
160 3096 160 118 1327 235 160 53 118 107 53 2 3 0 0 2 4 1 2 2 2 0 0 2 2 2 2 2 2 2 3 0 0 34 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.9	Adj Sat Flow, veh/h/In	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
2 3 0 0 2 4 1 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj Flow Rate, veh/h	160	3096	160	118	1327	235	160	23	118	107	53	96
6 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94	Adj No. of Lanes	2	က	0	2	4	-	2	2	0	2	2	0
6 1 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
1277 3087 157 122 1761 489 207 279 238 127 228 20.1 20.21	Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
0.12 0.21 0.21 0.01 0.09 0.09 0.06 0.16 0.16 0.014 0.013 348 0.012 0.012 0.01 0.09 0.00 0.014 0.015 0.013 0.013 0.012 0.013 1.75 0.014 0.013 0.014 0.013 0.014 0.015 0.014 0.015 0.014 0.015 0.014 0.015 0.014 0.015 0.014 0.015 0.014 0.015 0.014 0.015 0.014 0.0	Cap, veh/h	1277	3087	157	122	1761	489	207	279	238	127	228	193
3408 4903 249 3408 6346 1551 3408 1752 1499 3408 1752 140 1704 1679 1715 118 1327 235 160 53 718 175 53 160 55 180 175 53 180 175 1704 1586 1551 1704 1752 1499 1704 1709 1709 1709 1709 1709 1709 1709 1709	Arrive On Green	0.12	0.21	0.21	0.01	60:0	0.09	90:0	0.16	0.16	0.04	0.13	0.13
160 2101 1155 118 1327 235 160 53 118 107 53 1704 1679 1795 1704 1886 1551 1704 1752 1499 1704 1752 159 875 881 48 286 127 65 3.7 10.1 4.4 3.8 100 201 101 102 102 100 100 100 100 1100 211 1130 122 3010 794 236 488 418 127 432 1277 2113 1130 122 3010 794 236 488 418 127 432 1277 2113 1130 122 3010 794 236 488 418 127 432 1277 2113 1130 122 3010 794 236 488 418 127 432 1277 2113 1130 122 3010 794 236 488 418 127 432 1277 2113 1130 122 3010 794 236 488 418 127 432 1278 218 218 256 691 589 334 648 510 53.7 67.0 54.7 12 28 21 22 22 23 23 23 23 128 22 23 23 23 23 23 23 128 23 24 5 5 5 5 5 5 5 128 23 23 23 23 33 33 128 23 24 5 5 5 5 128 23 24 5 5 5 128 24 5 5 5 5 128 24 5 5 5 128 24 5 5 5 128 24 5 5 5 128 24 5 5 5 128 24 5 5 5 128 24 5 5 5 129 24 1135 232 285 449 94 27.3 128 24 24 24 24 128 24 24 24 24 129 24 24 24 120 24 24 24 120 24 24 24 120 24 24 24 120 24 24 24 120 24 24 24 120 24 24 24 120 24 24 24 120 24 24 24 120 24 24 24 120 24 24 24 24 24 24 24 25 24 24 24 25 25 25 25 25 25 25	Sat Flow, veh/h	3408	4903	249	3408	6346	1551	3408	1752	1499	3408	1752	1488
Mn 1704 1679 1795 1704 1586 1551 1704 1752 1499 1704 1752 1881 48 286 12.7 65 3.7 10.1 4.4 3.8 15.9 87.5 88.1 4.8 286 12.7 65 3.7 10.1 4.4 3.8 11.00 1.00 1.00 1.00 1.00 1.00 1.00 1	Grp Volume(v), veh/h	160	2101	1155	118	1327	235	160	23	118	107	53	96
59 87.5 88.1 4.8 28.6 12.7 6.5 3.7 10.1 4.4 3.8 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.27 2.13 1.13 1.22 1.76 1.49 207 279 238 1.27 228 1.27 2.13 1.13 1.22 1.76 1.49 207 279 238 1.27 228 1.27 2.13 1.13 1.22 1.76 1.48 207 279 238 1.27 228 0.20 0.20 0.09 0.7 0.74 0.74 0.74 0.74 0.74 0.74 0.74 0.75 0.74	Grp Sat Flow(s),veh/h/ln	1704	1679	1795	1704	1586	1551	1704	1752	1499	1704	1752	1488
5.9 87.5 88.1 4.8 28.6 12.7 6.5 3.7 10.1 4.4 3.8 1.00 <td>Q Serve(g_s), s</td> <td>5.9</td> <td>87.5</td> <td>88.1</td> <td>4.8</td> <td>28.6</td> <td>12.7</td> <td>6.5</td> <td>3.7</td> <td>10.1</td> <td>4.4</td> <td>3.8</td> <td>8.4</td>	Q Serve(g_s), s	5.9	87.5	88.1	4.8	28.6	12.7	6.5	3.7	10.1	4.4	3.8	8.4
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		5.9	87.5	88.1	4.8	28.6	12.7	6.5	3.7	10.1	4.4	3.8	8.4
11277 2113 1130 1122 1761 489 207 279 238 1127 228 1127 2113 1130 1122 1761 489 207 279 238 1127 228 1127 2131 1130 1122 2097 079 049 049 049 048 048 1130 1122 2010 794 236 077 019 049 049 085 023 033 033 033 033 033 100 100 100 100 10	Prop In Lane	1.00		0.14	1.00		1.00	1.00		1.00	1.00		1.00
0.13 0.99 102 0.97 0.75 0.48 0.77 0.19 0.49 0.85 0.23 1.27 2.13 1.13 1.13 1.12 0.72 3.0 4.8 0.77 0.19 0.49 0.85 0.23 0.33 0.33 0.33 0.33 0.33 0.33 0.33	Lane Grp Cap(c), veh/h	1277	2113	1130	122	1761	489	207	279	238	127	228	193
1277 2113 1130 1122 3010 794 236 488 418 127 432 0.33 0.33 0.33 0.33 1.00 1.00 1.00 1.00	V/C Ratio(X)	0.13	0.99	1.02	0.97	0.75	0.48	0.77	0.19	0.49	0.85	0.23	0.50
0.33 0.33 0.33 0.33 0.33 1.00 1.00 1.00	Avail Cap(c_a), veh/h	1277	2113	1130	122	3010	794	236	488	418	127	432	367
0.20 0.20 0.20 0.68 0.68 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	HCM Platoon Ratio	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
409 552 555 69.1 589 33.4 648 510 53.7 67.0 54.7 19 00 7.6 18.1 57.6 2.1 2.3 10.9 0.1 0.6 0.2 2.8 43.0 49.5 3.3 12.8 5.8 3.4 1.8 4.2 2.7 1.9 40.9 62.8 73.6 12.6 7 61.0 35.6 75.7 51.2 54.3 103.5 54.8 19 D E F F E D E D D F D F E F C E D E D D F D F E F C E D D F D F E F C E D D F D F E F C E D D F D F E F C E D D D F E F C E D D D F E F F C E D D D F E F F C E D D D F E F F C E D D D F E F F C E D D D F E F F C E D D D F E F F C E D D D F E F F C E D D D F E F F C E D D D F E F F C E D D D F E F F C E D D D F E F F F C E D D D F E F F F C E D D D F E F F F F F F F E F F F F F F F E F F F F	Upstream Filter(I)	0.20	0.20	0.20	0.68	0.68	0.68	1.00	1.00	1.00	1.00	1.00	1.00
0.0 76 18.1 576 2.1 2.3 10.9 0.1 0.6 36.5 0.2 2.8 43.0 49.5 3.3 12.8 5.8 3.4 1.8 4.2 2.7 1.9 0.1 0.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	40.9	55.2	55.5	69.1	58.9	33.4	64.8	51.0	53.7	0.79	54.7	56.7
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	0.0	7.6	18.1	97.6	2.1	2.3	10.9	0.1	9.0	36.5	0.2	0.7
2.8 43.0 49.5 3.3 12.8 5.8 3.4 1.8 4.2 2.7 1.9 40.9 6.28 73.6 126.7 61.0 35.6 75.7 51.2 54.3 103.5 54.8 10 3.416 F E E D E D D D D F D 5.54 6.2.1 64.2	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
409 628 736 1267 610 356 757 512 543 1035 548 D E F F E D F D D F D 3416 65.4 62.1 64.2 331 256 65.4 62.1 185 23.2 58.5 44.9 94 27.3 92 94.1 135 23.2 58.5 44.9 94 27.3 58 71.4 97 35 10.0 56 5.4 12.1 64.8 90.1 85 10.4 7.9 30.6 6.4 12.1 64.8 64.8 64.8 65.8 66.8 66.8 66.8 66.8 66.8 66.8 66	%ile BackOfQ(50%),veh/ln	2.8	43.0	49.5	3.3	12.8	2.8	3.4	-0.	4.2	2.7	1.9	3.5
D E F E D E D D F 416 1680 331 642 331 642 642 642 642 642 642 642 642 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 8 7 8 9 8 8 9 9 8 8 9 9 8 9	LnGrp Delay(d),s/veh	40.9	62.8	73.6	126.7	61.0	35.6	75.7	51.2	54.3	103.5	54.8	57.4
3416 1680 331 65.4 62.1 64.2 E E E 1 2 3 4 5 6 7 8 9.2 94.1 13.5 23.2 58.5 44.9 9.4 27.3 *4.2 6.0 5.0 *5 6.0 *6 *2.2 5.0 *8 7.14 79 30.6 *5.2 39.0 *8 8.5 10.4 7.9 30.6 *6.4 12.1 *0.0 0.0 0.6 0.1 8.3 0.0 0.7	LnGrp LOS		ш	ᅵ	ᅵ	ш		ᆈ			ᅵ		ا۳
654 621 642 E	Approach Vol, veh/h		3416			1680			331			256	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 92 941 135 232 585 449 94 *4.2 6.0 5.0 *5 6.0 *6 *4.2 5 71.4 9.7 *35 10.0 *66 *5.2 6.8 90.1 8.5 10.4 7.9 30.6 6.4 0.0 0.0 0.0 0.6 0.1 8.3 0.0	Approach Delay, s/veh		65.4			62.1			64.2			76.1	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 92 94.1 135 232 585 44.9 9.4 9.2 94.1 135 5.3 6.0 6 74.2 5 71.4 9.7 35 10.0 66 5.2 6.8 90.1 8.5 10.4 7.9 30.6 6.4 0.0 0.0 0.0 0.6 0.1 8.3 0.0	Approach LOS		ш			ш			ш			ш	
1 2 3 4 5 6 7 92 941 135 232 585 449 94 94.2 60 50 . 6 4.2 68 90.1 85 10.4 79 30.6 6.4 0.0 0.0 0.0 0.6 0.1 8.3 0.0 64.8 64.8	Timer	_	2	က	4	2	9	7	∞				
92 94.1 13.5 23.2 58.5 44.9 9.4 4.2 6.0 5.0 "5 6.0 "6 "4.2 5.7 71.4 9.7 "55 10.0 "6 "5.2 6.8 90.1 85 10.4 7.9 30.6 6.4 0.0 0.0 0.0 0.6 0.1 8.3 0.0 6.4 6.4 E.	Assigned Phs	—	2	က	4	2	9	7	∞				
.42 6.0 5.0 .5 6.0 .6 .4.2 .5 71.4 9.7 .35 10.0 .66 .5.2 0.0 0.0 0.0 0.0 0.6 0.1 8.3 0.0 64.8 64.8 64.8	Phs Duration (G+Y+Rc), s	9.2	94.1	13.5	23.2	58.5	44.9	9.4	27.3				
*5 71.4 9.7 *35 10.0 *66 *5.2 68 90.1 85 10.4 7.9 30.6 6.4 0.0 0.0 0.6 0.1 8.3 0.0 64.8 E	Change Period (Y+Rc), s	* 4.2	0.9	2.0	* 5	0.9	9 *	* 4.2	2.0				
6.8 90.1 8.5 10.4 7.9 30.6 6.4 0.0 0.0 0.0 0.6 0.1 8.3 0.0 64.8 E		* 5	71.4	6.7	* 35	10.0	99 *	* 5.2	39.0				
0.0 0.0 0.0 0.6 0.1 8.3 0.0 64.8 E	Max O Clear Time (g_c+I1), s		90.1	8.5	10.4	7.9	90.0	6.4	12.1				
	Green Ext Time (p_c), s		0.0	0.0	9.0	0.1	8.3	0.0	0.7				
	Intersection Summary												
	HCM 2010 Ctrl Delay			8 79									
	HCM 2010 LOS			5									
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Baseline

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	444	¥	je-	444	¥	F	¢\$	¥	F	*	*
Traffic Volume (veh/h)	190	2662	210	130	1239	230	130	40	190	131	40	06
Future Volume (veh/h)	190	2662	210	130	1239	230	130	40	190	131	40	8
Number Initial O (Oh) veh	ص ح	7 0	2 0		9 C	9 0	m C	∞ ⊂	<u> </u>		4 0	41 0
Ped-Bike Adj(A_pbT)	1.00	,	1.00	1.00		0.99	1.00		0.95	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	202	2832	223	138	1318	245	138	0	231	139	43	%
Adj No. of Lanes	2	3	-	-	3	-	2	0	2	2	_	_
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	1249	3207	1053	118	1635	290	133	0	320	122	214	172
Arrive On Green	0.73	1.00	1.00	0.02	0.11	0.11	0.04	0.00	0.12	0.04	0.12	0.12
Sat Flow, veh/h	3408	5036	1561	1757	5036	1553	3514	0	2964	3408	1845	1481
Grp Volume(v), veh/h	202	2832	223	138	1318	245	138	0	231	139	43	96
Grp Sat Flow(s),veh/h/ln	1704	1679	1561	1757	1679	1553	1757	0	1482	1704	1845	1481
Q Serve(g_s), s	2.5	0.0	0.0	9.4	35.8	15.5	5.3	0.0	8.9	2.0	3.0	4.3
Cycle Q Clear(g_c), s	2.5	0.0	0.0	9.4	35.8	15.5	5.3	0.0	8.9	2.0	3.0	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1249	3207	1053	118	1635	290	133	0	320	122	214	172
V/C Ratio(X)	0.16	0.88	0.21	1.17	0.81	0.44	1.04	0.00	99.0	1.14	0.20	0.56
Avail Cap(c_a), veh/h	1249	3207	1053	118	2266	755	133	0	098	122	531	426
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.69	0.69	0.69	1.00	0.00	1.00	1.00	1.00	1.00
Unitorm Delay (d), siven	77.7	0.0	0.0	68.4	28.5	46.8	67.3	0.0	42.8	6/.5	26.0	14.4
Incr Delay (d2), s/veh	0.0	0.4	0.0	121.9	3.0	7.7	88.4	0.0	8.0	124.8	0.5	= 0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/in	7.7	0.1	0.0	9.0	71.7	6.9	4.2	0.0	3.7	4.5	C. 7	i
LnGrp Delay(d),S/ven	7.71	0.4	0.0	190.3	7.10	48.5	156.1	0.0	43.0	192.3	20.7	15.5
LnGrp LUS		⋖	⋖	-	ш		-			-	الد	ا۳
Approach Vol, veh/h		3257			1701			369			278	
Approach Delay, swen		Ξ.			6.69			85.7			110.2	
Approach LOS		¥			ш			_			_	
Timer	—	2	3	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	13.6	95.1	10.0	21.3	57.3	51.5	10.0	21.3				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.7	٠ *	0.9	9 *	ب پ	4.7				
Max Green Setting (Gmax), s	4.64	65.1	* 5.3	* 40	11.5	, 63	. 5	40.6				
Green Ext Time (p. c.+11), s	0.0	30.0	0.0	0.3	0.2	7.6	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			32.9									
HCM 2010 LOS			ပ									
Notes	ı											
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HCM 2010 Signalized Intersection Summary 9: Hidden Valley Rd. & Palomar Airport Rd.

HCM 2010 Signalized Intersection Summary 10: College Blvd. & Palomar Airport Rd.
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Long-Term + Project (PAL2) AM 08/24/2017

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Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	444	¥C	je-	444		je-	\$		<u>,-</u>	+	R_
Traffic Volume (veh/h)	160	2753	110	80	1489	160	80	30	111	70	20	80
Future Volume (veh/h)	160	2753	110	8	1489	160	8	30	11	70	70	80
Number	വ	2	12	- -	9	92	m (∞ α	9 0	7	4 (14
Initial Q (Qb), Ven	0 ;	0	0	0 ;	0	0	0 ;	0	0 !	0 ;	0	0 10
Ped-Bike Adj(A_pb1) Parking Bus, Adi	9.1	1.00	1.00	8 8:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	172	2960	118	98	1601	172	98	32	119	7.5	22	98
Adj No. of Lanes		3	-		3	0		-	0	-		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	က	3	3
Cap, veh/h	193	2439	822	295	2528	271	79	44	162	94	270	219
Arrive On Green	0.22	0.97	0.97	0.34	1:00	1.00	0.02	0.13	0.13	0.05	0.15	0.15
Sat Flow, veh/h	1757	5036	1552	1757	4600	493	1757	329	1223	1757	1845	1495
Grp Volume(v), veh/h	172	2960	118	98	1168	909	98	0	151	75	22	98
Grp Sat Flow(s),veh/h/ln	1757	1679	1552	1757	1679	1736	1757	0	1552	1757	1845	1495
Q Serve(g_s), s	13.3	8.79	0.1	2.0	0.0	0.0	6.3	0.0	13.1	5.9	1.4	7.3
Cycle Q Clear(g_c), s	13.3	67.8	0.1	2.0	0.0	0.0	6.3	0.0	13.1	5.9	1.4	7.3
Prop In Lane	1.00		1.00	1.00		0.28	1.00		0.79	1.00		1.00
Lane Grp Cap(c), veh/h	193	2439	822	295	1845	954	79	0	202	94	270	219
V/C Ratio(X)	0.89	1.21	0.14	0.29	0.63	0.63	1.09	0.00	0.74	0.80	0.08	0.39
Avail Cap(c_a), veh/h	738	2439	822	595	1845	954	6/	0	402	113	514	416
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.61	0.61	0.61	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.8	2.2	0.3	40.4	0.0	0.0	8.99	0.0	58.4	65.5	21.6	54.1
Incr Delay (d2), s/veh	3.2	96.5	0.0	0.1	1.0	2.0	127.2	0.0	1.9	23.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.9	39.4	0.1	2.4	0.3	0.5	2.8	0:0	2.7	3.5	0.7	3.0
LnGrp Delay(d),s/veh	57.0	98.7	0.4	40.5	1.0	2.0	194.6	0.0	60.3	9.88	51.7	54.5
LnGrp LOS	ш	4	⋖		⋖	⋖	-		ᆈ	-		9
Approach Vol, veh/h		3250			1859			237			183	
Approach Delay, s/veh		93.0			3.2			109.1			68.2	
Approach LOS		ш.			⋖			ш			ш	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	29.5	73.8	10.5	26.2	20.4	82.9	12.5	24.2				
Change Period (Y+Rc), s	0.9	9 *	* 4.2	2.7	2.0	0.9	2.0	* 5.7				
Max Green Setting (Gmax), s	8.9	89 *	* 6.3	39.0	19.0	54.8	0.6	* 37				
Max Q Clear Time (g_c+11), s	7.0	8.69	8.3	9.3	15.3	2.0	7.9	15.1				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.2	0.1	12.7	0:0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			62.6									
HCM 2010 LOS			ш									
Notes												

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According a continue between EB1 EB1 EB1 WB1 WB1 WB1 WB1 MB1 MB1 SB1		1	†	<u> </u>	\	ļ	1	•	←	4	۶	→	*
101 101	Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
770 1994 180 172 1199 62 210 520 293 63 230 10 10 100 100 100 100 0 0 0 0 0 0 0 0	Lane Configurations	K.	444	¥	K.	444	¥L.	F	‡	*-	r	*	*
770 1904 180 172 199 62 210 520 293 63 230 100	Traffic Volume (veh/h)	0//	1904	180	172	1199	62	210	520	293	63	230	200
5	Future Volume (veh/h)	0//	1904	180	172	1199	62	210	520	293	63	230	200
100 100 100 100 100 100 100 100 100 100	Number	ഗ	2	12	- -	9 0	91	m	∞ <	∞ 0	_	4 0	14
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Ped-Rike Adi/A nhT)	100	>	100	100	0	000	100	0	000	9	0	0 08
1845 1845	Parking Bus, Adi	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
828 2047 194 185 1289 67 226 559 315 68 247 2 3 1 2 3 1 2 3 1 1 2 1 1 1 1 1 1 1 1 1	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93	Adj Flow Rate, veh/h	828	2047	194	185	1289	19	226	226	315	89	247	215
0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93	Adj No. of Lanes	2	m	<u></u>	2	m	_	2	2	-	_	-	-
6 101 2 497 717 121 121 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
1013 2497 777 214 1241 382 298 862 381 86 389 80.99 0.99 0.096 0.25 0.25 0.09 0.25 0.05 0.19 828 2047 194 185 1289 67 226 559 315 68 247 828 2047 194 185 1289 67 226 559 315 68 247 826 2.6 0.1 7.5 34.5 40 9.1 200 2.69 5.4 174 828 2.6 0.1 7.5 34.5 40 9.1 200 2.69 5.4 174 828 2.6 0.1 7.5 34.5 40 9.1 200 2.69 5.4 174 828 2.6 0.1 7.5 34.5 40 9.1 200 2.69 5.4 174 828 2.6 0.1 7.5 34.5 40 9.1 200 2.69 5.4 174 829 8.2 0.8 1.00 1.00 1.00 1.00 1.00 1.00 820 2.0 0.2 0.0 1.00 1.00 1.00 1.00 1.00	Percent Heavy Veh, %	3	3	က	m	co	m	3	3	3	m	3	3
0.059 0.099 0.099 0.06 0.25 0.05 0.09 0.05 0.09 0.09 0.09 0.099 0.099 0.090 0.	Cap, veh/h	1013	2497	777	214	1241	382	298	862	381	98	326	766
3408 5636 1568 3408 5636 1549 3408 3555 1549 1757 1845 177 1847 174 1848 1752 1549 1757 1845 174 1741 1741 1752 1549 1757 1845 174 1752 1549 1757 1845 174 1752 1549 1757 1845 174 1752 1549 1757 1845 174 1760 1760 1760 1760 1760 1760 1760 1760	Arrive On Green	0.59	0.99	0.99	90:0	0.25	0.25	60.0	0.25	0.25	0.05	0.19	0.19
R28 2047 194 185 1289 67 226 559 315 68 247 268	Sat Flow, veh/h	3408	5036	1568	3408	5036	1549	3408	3505	1549	1757	1845	1544
1704 1679 1568 1704 1679 1569 1704 1679 1589 1704 1679 1845 1704 1752 1549 1757 1845 174 268 26 0.1 75 34.5 40 91 2000 269 54 174 268 26 100	Grp Volume(v), veh/h	828	2047	194	185	1289	19	226	226	315	89	247	215
26 0.1 7.5 34.5 4.0 9.1 20.0 26.9 5.4 174 26.8 2.6 0.1 7.5 34.5 4.0 9.1 20.0 26.9 5.4 174 1001 1.00 1.00 1.00 1.00 1.00 1.00 1013 2497 777 214 1241 382 298 862 381 86 359 1013 208 0.25 0.86 1.04 1.08 1.06 1.00 1.00 1.00 200 200 2.00 1.00 <	Grp Sat Flow(s),veh/h/ln	1704	1679	1568	1704	1679	1549	1704	1752	1549	1757	1845	1544
26 0.1 7.5 34.5 4.0 9.1 20.0 26.9 5.4 17.4 100 1.00 1.00 1.00 1.00 1.00 1.00 110.3 2.47 7.7 2.14 1.24 1.382 2.98 86.2 381 86 389 1032 0.82 0.25 0.86 1.04 0.18 0.76 0.65 0.83 0.79 0.69 2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 2.00 2.00 1.0	Q Serve(g_s), s	26.8	5.6	0.1	7.5	34.5	4.0	9.1	20.0	26.9	5.4	17.4	0.0
1100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Cycle Q Clear(g_c), s	26.8	2.6	0.1	7.5	34.5	4.0	9.1	20.0	26.9	5.4	17.4	0.0
1013 2497 777 214 1241 382 298 862 381 86 359 682 682 682 682 689 693 699 682 682 689 693 699 698 698 698 698 698 698 698 698 698	Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
082 082 025 086 104 018 076 065 083 079 069 01013 2497 777 214 1241 382 298 1054 466 114 540 200 200 200 1.00 1.00 1.00 1.00 1.00 1	Lane Grp Cap(c), veh/h	1013	2497	777	214	1241	382	298	862	381	98	329	997
1013 2497 777 214 1241 382 298 1054 466 114 540 2200 2.000 1.000 1.000 1.000 1.000 1.000 1.00 2200 2.000 2.000 1.000 1.000 1.000 1.000 1.000 25.4 0.3 0.1 65.0 52.8 29.0 62.4 47.3 50.0 65.9 52.4 1.0 0.6 0.2 27.5 36.2 1.0 9.6 0.5 82 17.2 0.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	V/C Ratio(X)	0.82	0.82	0.25	98.0	1.04	0.18	97.0	0.65	0.83	0.79	69.0	0.28
200 200 100 100 100 100 100 100 100 100	Avail Cap(c_a), veh/h	1013	2497	777	214	1241	382	298	1054	466	114	540	918
25.4 0.20 0.20 1.00 1.00 1.00 1.00 1.00 1.00	HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
25.4 0.3 0.1 65.0 52.8 29,0 62.4 47,3 50.0 65.9 52.4 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	0.20	0.20	0.20	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10 0.6 0.2 27.5 36.2 1.0 9,6 0.5 8.2 17.2 0.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	25.4	0.3	0.1	0.59	52.8	29.0	62.4	47.3	20.0	62.6	52.4	21.0
126 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Incr Delay (d2), s/veh	1.0	9.0	0.2	27.5	36.2	1.0	9.6	0.5	8.2	17.2	0.0	0.1
12.6	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
264 1.0 0.3 92.5 88.9 30.0 72.0 47.9 582 83.1 53.3 C 7.0 47.9 58.2 83.1 53.3 C 7.0 47.9 58.2 83.1 53.3 C 7.0 47.9 58.2 83.1 53.3 C 7.0 47.0 47.9 58.2 83.1 53.3 C 7.0 47.0 6.2 6.2 6.3 6.4 6.0 7 8 6 7 8 6 7 8 7 6 7 75.7 13.0 75.7 13.3 5.8 6.6 7.4 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3	%ile BackOfQ(50%),veh/ln	12.6	0.5	0.1	4.4	20.1	_ ∞	4.7	8.6	12.4	3.0	0.6	4.9
C A A F F C E D E F 3069	LnGrp Delay(d),s/veh	26.4	1.0	0.3	92.5	88.9	30.0	72.0	47.9	58.2	83.1	53.3	21.0
3069 1541 1100 7.8 86.8 55.8 A 5 6 7 8 13.0 75.7 18.1 33.2 47.9 40.8 11.0 40.2 8.8 60 10 41 34 35 74.2 58 9.5 4.6 11.1 19.4 28.8 36.5 7.4 28.9 0.0 14.1 0.0 1.1 0.9 0.0 0.0 2.3 D	LnGrp LOS	ပ	⋖	⋖	니	니	ပ	ш		ш	ᅵ		ပ
7.8 86.8 55.8 1 2 3 4 5 6 7 8 13.0 75.7 18.1 33.2 47.9 40.8 11.0 40.2 4.2 6.3 5.8 6 6.3 4.2 5.8 9.5 4.6 11.1 19.4 28.8 36.5 7.4 28.9 0.0 14.1 0.0 1.1 0.9 0.0 0.0 2.3	Approach Vol, veh/h		3069			1541			1100			530	
1 2 3 4 5 6 7 8 1 1 2 3 4 5 6 7 8 1 1 2 3 4 5 6 7 8 1 1 3 1 3 1 4 5 6 7 8 1 1 3 1 4 5 6 7 8 1 1 0 40.2 1 1 0 40.2 1 1 0 40.2 1 0 41 1 1 0 41 1 3 4 1 3 5 9.1 4 2 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Approach Delay, s/veh		7.8			8.98			22.8			44.0	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 130 757 181 332 4 7 6 08 11.0 *8.8 *60 *10 *41 *34 *35 *9.1 95 4.6 11.1 194 28.8 36.5 74 5 00 14.1 0.0 1.1 0.9 0.0 0.0	Approach LOS		⋖			ш			ш			٥	
13.0 75.7 18.1 33.4 5 6 7 7 18.0 75.7 18.1 33.2 47.9 40.8 11.0 4 8.8 6.0 10 41 34 35 9.1 6 9.5 4.6 11.1 19.4 28.8 36.5 7.4 5 0.0 14.1 0.0 1.1 0.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Timer	—	2	3	4	2	9	7	8				
13.0 75.7 18.1 33.2 47.9 40.8 11.0 4 42.2 6.3 15.8 6.8 6.3 6.3 4.2 4.2 9.5 4.6 11.1 19.4 28.8 36.5 7.4 2.0 14.1 0.0 1.1 0.9 0.0 0.0 0.0 14.1 0.0 1.1 0.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Assigned Phs	_	2	3	4	2	9	7	8				
42 '63 '58 '6 '63 '63 '42 *8.8 '60 '10 '41 '34 '35 '9.1 6 9.5 4.6 11.1 19.4 28.8 36.5 7.4 5 0.0 14.1 0.0 1.1 0.9 0.0 0.0 38.8 38.8 38.8	Phs Duration (G+Y+Rc), s	13.0	75.7	18.1	33.2	47.9	40.8	11.0	40.2				
*88 *60 *10 *41 *34 *35 *9.1 9.5 4.6 11.1 19.4 28.8 36.5 7.4 0.0 14.1 0.0 1.1 0.9 0.0 0.0 38.8	Change Period (Y+Rc), s	* 4.2	* 6.3	* 5.8	9 *	* 6.3	* 6.3	* 4.2	2.8				
9,5 4.6 11.1 19.4 28.8 36.5 7.4 0.0 14.1 0.0 1.1 0.9 0.0 0.0 0.0 38.8 38.8 D	Max Green Setting (Gmax), s	φ φ υ	09 *	* 10	* 41	* 34	* 35	* 9.1	42.1				
, s 00 14.1 0.0 1.1 0.9 00 00 2. 38.8 D	Max U Clear Time (g_c+II), s	9.5	4.6		19.4	28.8	36.5	7.4	28.9				
38	Green Ext Time (p_c), s	0.0	14.1	0.0	=	6.0	0.0	0.0	2.3				
38	Intersection Summary												
2010 LOS	HCM 2010 Ctrl Delay			38.8									
Natac	HCM 2010 LOS			D									
	Notoe												

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HCM 2010 Signalized Intersection Summary 11: Camino Vida Roble & Palomar Airport Rd.

Long-Term + Project (PAL2) AM

08/24/2017

											٠		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	<i>y</i> -	4413		F	4413		K.	¢		r	+	¥L.	
Traffic Volume (veh/h)	184	1666	410	210	1207	370	150	100	70	70	40	76	
Future Volume (veh/h)	184	1666	410	210	1207	370	120	9	20	70	40	76	
Number	2	7	12	-	9	91	· 0	∞ (20	_	4	14	
Initial Q (Qb), veh	0 6	0	0 2	0 6	0	0 20	0 0	0	0 20	0 0	0	0 0	
Ped-Bike Adj(A_pb1)	00.1	,	0.76	00.1	,	0.76	1.00	,	0.76	00.1	,	0.96	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845	
Adj Flow Rate, veh/h	200	1811	446	228	1312	402	163	109	9/	9/	43	83	
Adj No. of Lanes	-	3	0	-	3	0	2	-	0	-	-	_	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %	m	c	3	3	c	m	m	3	c	3	m	3	
Cap, veh/h	446	2052	491	247	1444	441	186	163	114	94	301	245	
Arrive On Green	0.25	0.51	0.51	0.14	0.38	0.38	0.02	0.16	0.16	0.05	0.16	0.16	
Sat Flow, veh/h	1757	4026	696	1757	3783	1155	3408	993	693	1757	1845	1500	
Grp Volume(v), veh/h	200	1501	756	228	1164	220	163	0	185	9/	43	83	
Grp Sat Flow(s),veh/h/ln	1757	1679	1631	1757	1679	1581	1704	0	1686	1757	1845	1500	
Q Serve(g_s), s	14.4	59.5	63.5	19.2	49.2	49.5	7.1	0.0	15.5	6.4	3.0	4.5	
Cycle Q Clear(g_c), s	14.4	59.5	63.5	19.2	49.2	49.5	7.1	0.0	15.5	6.4	3.0	4.5	
Prop In Lane	1.00		0.59	1.00		0.73	1.00		0.41	1.00		1.00	
Lane Grp Cap(c), veh/h	446	1711	831	247	1281	603	186	0	277	94	301	245	
V/C Ratio(X)	0.45	0.88	0.91	0.92	0.91	0.91	0.87	0.00	0.67	0.81	0.14	0.34	
Avail Cap(c_a), veh/h	446	1711	831	247	1419	899	186	0	429	94	467	380	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	47.1	32.6	33.6	97.6	43.9	44.0	70.4	0.0	58.8	70.3	53.8	20.4	
Incr Delay (d2), s/veh	0.3	6.7	15.6	36.4	11.0	20.5	32.8	0.0	1.0	37.4	0.1	0.3	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	7.0	29.1	32.2	11.8	24.7	25.0	4.2	0.0	7.3	4.1	1.5	1.9	
LnGrp Delay(d),s/veh	47.4	39.3	49.2	100.1	54.9	64.5	103.2	0.0	59.9	107.6	53.9	20.7	
LnGrp LOS	۵			띡		ш	ш		ш	ш		٥	
Approach Vol, veh/h		2457			1942			348			202		
Approach Delay, s/veh		43.0			65.9			80.2			9.09		
Approach LOS		D			ш			ш			ш		
Timer		2	က	4	2	9	7	ω					
Assigned Phs	-	2	3	4	2	9	7	8					
Phs Duration (G+Y+Rc), s	25.3	82.8	12.4	29.5	44.5	9.89	12.2	29.7					
Change Period (Y+Rc), s	* 4.2	* 6.4	* 4.2	* 5	* 6.4	* 6.4	* 4.2	* 5					
Max Green Setting (Gmax), s	* 21	* 63	* 8.2	, 38 *	* 21	* 63	ω *	* 38					
Max Q Clear Time (g_c+I1), s	21.2	65.5	9.1	6.5	16.4	51.5	8.4	17.5					
Green Ext Time (p_c), s	0.0	0.0	0.0	0.3	0.1	2.7	0.0	0.7					
Intersection Summary													
HCM 2010 Ctrl Delay			54.2										
HCM 2010 LOS			D										
Notes													

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0.96 1.00 1900 53 0 0.89 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0 0.00 0. 0.0 0.0 27 24 1.00 1845 30 3 3 48 48 0.19 189 3 0 0.99 11.00 1900 0.89 3 3 172 0.19 189 11338 20.3 20.3 0.56 292 292 292 1.00 1.00 1.00 57.7 0.9 0.0 0.0 80 80 80 114 00.96 11.00 11.00 10.89 3 3 286 00.19 34 1 0.89 3 350 0.10 481 1.00 1.00 50.1 0.0 0.0 0.0 D D D D D D 552.2 350 0.19 1845 34 1845 2.3 2.3 0 0.99 1.00 1845 6.0 83.0 37.2 10.9 1570 1570 2879 0.64 4525 1306 1679 34.8 * 4.2 * 13 * 13 11.1 1.00 1845 1764 3 0.89 2136 0.61 2136 1.00 1.00 1.3 1.3 0.0 16.4 17.6 8 8 8 2311 21.4 1.00 1.00 1.00 1.00 1.00 3.26 1.00 3.33 0.33 33.4 4.9 39.1 10.4 0.4 42.1 1360 1360 3 1233 0.94 1276 1.00 1.00 45.8 45.8 0.0 0.0 25.5 61.1 * 6 * 57 51.9 1631 0.37 4442 1154 1154 49.7 1849 Ť 55.5 6.0 38.8 24.9 0.4 0 0 1.00 1.00 1.00 1.08 3 129 0.07 757 Prs Duration (G+Y+RC), s Change Period (Y+RC), s Max Green Setting (Gmax), s Max O Clear Time (g_C+11), s Avail Cap(c_a), veh/h HCM Platoon Ratio Upstream Filter(I) Uniform Delay (d), sveh Incr Delay (d2), sveh %ile BackOfQ(50%),veh/ln Percent Heavy Veh, %
Cap, veh/h
Arive On Green
Sat Flow, veh/h
Gip Sat Flow(s), veh/h
Gip Sat Flow(s), veh/h/n
O Serve(g_s), s
Cycle O Clear(g_c), s
Prop in Lane
Gip Cap(c), veh/h
VC Ratio(X) Green Ext Time (p_c), s LnGrp LOS Approach Vol, veh/h Approach Delay, s/veh Approach LOS nitial Q Delay(d3),s/veh Parking Bus, Adj Adj Sat Flow, veh/h/In Adj Flow Rate, veh/h Adj No. of Lanes Peak Hour Factor Number Initial Q (Qb), veh Ped-Bike Adj(A_pbT) -ane Configurations Traffic Volume (veh/h) -uture Volume (veh/h) -nGrp Delay(d),s/veh HCM 2010 Ctrl Delay HCM 2010 LOS **Assigned Phs**

HCM 2010 Signalized Intersection Summary 13: El Camino Real & Palomar Airport Rd.

ion Summ	& Paloma
HCM 2010 Signalized Intersection Summ	Way/Loker Ave. & Paloma
HCM 2010 Sig	14: Innovation Way/I

Taffic Volume (vehVn) Taffic Volume Taffic VehVn Taffic Volume Taffic Volume Taffic VehVn Taffic Volume Taffic Volume Taffic VehVn Taffic Volume Taffic VehVn Taf	EBT 1044 1044 2 2 0 0 0 1 1009 1135 3 3 1329 10579 1135 1135 1135 1135 1135 1135 1135 113	EBR 355 355 12 10.09 1.00 1.00 1.00 1.00 1.00 1.00 1.0	WBL 800 800 1.00 1.00	WBT +++ 1791	WBR	313	NBT PP4	NBR 460	SBL	SBT	SBR
() () () () () () () () () () () () () (355 355 12 0 0 0.09 11.00 11.00 13.86 3.86 15.50 3.86 15.50 3.86 11.50 3.86 11.50 3.86 11.50 3.86 11.50 11.5	\$008 C 0 0.1	1791	K _ 5	313	444	1 460	740 P	444	*
() () () () () () () () () () () () () (355 355 355 355 120 0.09 1100 1845 386 0.022 3 3 3 386 11550 386 11550 386 1150 366 1100 1100 1100 1100 1100 1100 1100	008 800 1.00 0.1	1791	710	313	700	460	540	C L T	
() L % U/L () 4/L		355 12 0 0.099 1.00 1845 386 10.02 3 409 10.26 1	008 - 0 0:1		0 /		170		240	1150	403
ר % יוף יי		12 0 0.099 1.00 1845 386 10.92 3 409 0.26 1550 386 11550 36.6 1.00 409	1.00	1791	710	313	790	460	240	1150	403
ulv		0.09 1.00 1845 386 1 0.092 3 409 10.26 1550 38.6 38.6 1.00 409	1.00	9	16	က	ω (18	7	4	14
ر الاستان المالية الم		0.99 1845 1845 186 10.92 3 409 10.26 11550 386 11550 386 1150 409	1.00	0	0	0	0	0	0	0	0
ר % יי י		1.00 1845 386 1 0.92 3 4 09 0.26 1550 38.6 36.6 1.00 1.00			0.99	1.00		1.00	1.00		0.99
ר % יין ען אין אין אין אין אין אין אין אין אין אי		1845 386 3 409 0.26 1550 366 366 100 100 100 100 100 100 100 100 100 1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
nlv s		386 409 1550 386 1550 366 100 100 409	1845	1845	1845	1845	1845	1845	1845	1845	1845
s r or (eh, % veh'n/in -c), s), veh/h		1 0.92 3 409 0.26 1550 386 1550 36.6 1.00 409	870	1947	772	340	826	200	283	1250	438
or (eh, % veh/h/ln c), s _), veh/h		0.92 409 0.26 1550 386 1550 36.6 36.6 1.00	2	က	2	2	က	2	2	က	_
/eh, % veh/h/ln -c), s		3 409 0.26 1550 386 1550 36.6 36.6 1.00	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
veh/h veh/h/ln _c), s		409 0.26 1550 386 1550 36.6 36.6 1.00	က	3	က	3	co	3	3	3	က
veh/h .veh/hln _c), s		0.26 1550 386 1550 36.6 36.6 1.00	454	1175	989	389	1544	1214	464	1656	768
veh/h .veh/h/ln _c), s), veh/h		386 386 1550 36.6 36.6 1.00 409	0.09	0.16	0.16	0.11	0.31	0.31	0.14	0.33	0.33
veh/h veh/h/in _c), s), veh/h		386 1550 36.6 36.6 1.00 409	3408	5036	2724	3408	5036	2760	3408	5036	1554
_c), s	32.1	1550 36.6 36.6 1.00 409	870	1947	772	340	826	200	287	1250	438
_c), s , veh/h	32.1	36.6 36.6 1.00 409	1704	1679	1362	1704	1679	1380	1704	1679	1554
_c), s), veh/h	32.1	36.6 1.00 409	20.0	35.0	35.0	14.7	21.4	10.1	20.4	33.2	9.1
٤		1.00	20.0	35.0	35.0	14.7	21.4	10.1	20.4	33.2	9.1
£		409	1.00		1.00	1.00		1.00	1.00		1.00
	1329		454	1175	989	389	1544	1214	464	1656	768
	0.85	0.94	1.91	1.66	1.21	0.87	0.56	0.41	1.26	0.75	0.57
Ę	1343	413	454	1175	989	545	1544	1214	464	1656	768
. 0	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
	1.00	1.00	0.09	0.09	0.09	1.00	1.00	1.00	0.00	0.09	0.09
eh E	52.5	54.1	68.3	63.3	63.3	65.4	43.5	11.3	64.8	44.9	10.3
	5.3	29.8	412.3	296.0	0.86	9.8	1.5	1.0	120.8	0.3	0.3
nitial Q Delay(d3),s/veh 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
/eh/In	15.6		35.4	48.4	21.8	7.4	10.1	4.0	17.4	15.4	8.9
nGrp Delay(d),s/veh 56.3	57.7	83.9	480.6	359.3	161.2	74.0	44.9	12.3	185.6	45.2	10.5
nGrp LOS E	Е	ч	ч	Н	Ь	Е	D	В	Н	D	В
Approach Vol, veh/h	1744			3589			1699			2275	
Approach Delay, s/veh	63.3			346.1			41.2			74.8	
Approach LOS	ш			ш			Ω			ш	
lmer 1	2	33	4	2	9	7	00				
4ssigned Phs 1	2	3	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s 26.0	45.6	23.1	55.3	30.6	41.0	26.4	52.0				
	0.9	0.9	0.9	0.9	0.9	0.9	0.9				
	40.0	24.0	42.0	25.0	35.0	20.0	46.0				
2+I1), S 2	38.6	16.7	35.2	10.8	37.0	22.4	23.4				
Green Ext Time (p_c), s 0.0	0.0	0.4	4.0	0.3	0:0	0.0	4.6				
ntersection Summary											
HCM 2010 Ctrl Delay		171.1									
HCM 2010 LOS		ш									

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Baseline

mary ıar Airport Rd.

Long-Term + Project (PAL2) AM 08/24/2017

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	jr.	444	¥	r	4413		<u>r</u>	*	¥	×	*	*-
Traffic Volume (veh/h)	300	1433	331	390	2900	170	161	80	110	20	40	140
Future Volume (veh/h)	300	1433	331	330	2900	170	161	80	110	20	40	140
Number	2	2	12	-	9	16	3	∞	18	7	4	14
Initial Q (Qb), veh	0 6	0	0 10	0 0	0	0 0	0 6	0	0 70 0	0 5	0	0 0
Parking Rus Adi	00.1	1 00	1.00	100	1 00	100	1.00	1 00	1.00	1.00	100	1.00
Adi Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	326	1558	360	424	3152	185	175	87	120	54	43	152
Adj No. of Lanes	-	က	-	-	က	0	-	-	-	-	-	_
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	e	8	3	3	3	m	3	3
Cap, veh/h	344	1686	583	226	2284	131	91	311	253	69	287	233
Arrive On Green	0.39	0.67	0.67	0.64	0.94	0.94	0.05	0.17	0.17	0.04	0.16	0.16
Sat Flow, veh/h	1757	5036	1497	1757	4869	280	1757	1845	1502	1757	1845	1498
Grp Volume(v), veh/h	326	1558	360	424	2154	1183	175	87	120	54	43	152
Grp Sat Flow(s),veh/h/ln	1757	1679	1497	1757	1679	1792	1757	1845	1502	1757	1845	1498
Q Serve(g_s), s	26.9	40.2	6.5	25.5	70.4	70.4	7.8	6.2	5.8	4.6	3.0	14.3
Cycle Q Clear(g_c), s	26.9	40.2	6.5	25.5	70.4	70.4	7.8	6.2	2.8	4.6	3.0	14.3
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	344	1686	583	226	1575	841	91	311	253	69	287	233
V/C Ratio(X)	0.95	0.92	0.62	0.76	1.37	1.41	1.92	0.28	0.47	0.78	0.15	0.65
Avail Cap(c_a), veh/h	747	2192	733	226	1575	841	91	443	360	91	443	359
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.35	0.35	0.35	0.09	0.00	0.09	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.9	23.1	7.0	23.3	4.6	4.6	71.1	54.4	15.9	71.4	54.7	59.5
Incr Delay (d2), s/veh	2.5	4.1	9.	0.5	165.6	184.1	449.8	0.2	0.5	19.6	0.1	7.
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.3	9.8	3.2	12.1	62.0	70.5	15.2	3.2	2.4	5.6	1.5	0.9
LnGrp Delay(d),s/veh	47.4	27.2	8.7	23.8	170.2	188.7	520.9	54.6	16.4	91.0	54.8	9.09
LnGrp LOS		U	⋖	اد	-	-	-		m	-		۳
Approach Vol, veh/h		2244			3761			382			249	
Approach Delay, swen		7.17			159.5			7207			7 2	
Approach LOS		ر			_			_			ш	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	1	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	53.7	299	12.0	28.1	33.5	76.4	10.1	30.0				
Change Period (Y+Rc), s	0.9	9 *	* 4.2	* 4.7	* 4.2	0.9	* 4.2	* 4.7				
Max Green Setting (Gmax), s	21.8	* 65	* 7.8	* 36	* 64	23.3	* 7.8	* 36				
Max Q Clear Time (g_c+I1), s	27.5	42.2	8.6	16.3	28.9	72.4	9.9	8.2				
Green Ext Time (p_c), s	0.0	8.0	0.0	0.4	0.4	0.0	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			116.8									
HCM 2010 LOS			ш									
Notes												
NOIES												

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HCM 2010 Signalized Intersection Summary 15: El Fuerte St. & Palomar Airport Rd.

Long-Term + Project (PAL2) AM 0824/2017

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	r.	444	¥	F	441		<u> </u>	4₽		E.	4₽	
Traffic Volume (veh/h)	131	1221	201	380	3228	210	161	140	140	120	200	101
Future Volume (veh/h)	131	1221	201	380	3228	210	161	140	140	120	200	101
Number	ഹ	5	12	- -	9 0	91	m	∞ α	∞ 0	_	4 0	14
milai U (Ub), ven	0 6	0	0 0	0 6	0	0 0	0 6	0	0 0	0 6	0	0 0
Ped-bike Auj(A_pur) Parking Birs Adi	8.6	100	1 00	8.6	1 00	1.00	00.1	1 00	100	100	100	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	142	1327	218	413	3509	228	175	152	152	130	217	110
Adj No. of Lanes	2	က	-	2	n	0	2	2	0	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	320	2742	849	460	2771	176	132	274	234	120	347	169
Arrive On Green	0.19	1.00	1.00	0.27	1.00	1.00	0.04	0.16	0.16	0.04	0.15	0.15
Sat Flow, veh/h	3408	5036	1559	3408	4833	307	3408	1752	1498	3408	2272	1105
Grp Volume(v), veh/h	142	1327	218	413	2412	1325	175	152	152	130	165	162
Grp Sat Flow(s),veh/h/ln	1704	1679	1559	1704	1679	1783	1704	1752	1498	1704	1752	1624
Q Serve(g_s), s	5.5	0.0	0.0	17.5	0.98	81.7	2.8	12.0	14.3	5.3	13.2	14.1
Cycle Q Clear(g_c), s	5.5	0.0	0.0	17.5	0.98	81.7	2.8	12.0	14.3	5.3	13.2	14.1
Prop In Lane	1.00		1.00	1.00		0.17	1.00		1.00	1.00		89.0
Lane Grp Cap(c), veh/h	320	2742	849	460	1925	1022	132	274	234	120	268	248
V/C Ratio(X)	0.44	0.48	0.26	0.90	1.25	1.30	1.33	0.56	0.65	1.08	0.62	0.65
Avail Cap(c_a), veh/h	320	2742	849	1518	1925	1022	132	403	345	120	397	368
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	99.0	99.0	99.0	0.09	0.09	0.09	1:00	1:00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.4	0.0	0.0	53.8	0.0	0.0	72.1	58.5	59.4	72.3	59.4	29.8
Incr Delay (d2), s/veh	0.2	0.4	0.5	0.2	114.3	134.1	190.4	0.7	- -	105.0	0.9	Ξ.
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.1	0.1	8.3	30.5	38.1	6.2	5.9	0.9	4.2	6.5	6.4
LnGrp Delay(d),s/veh	57.7	0.4	0.5	54.0	114.3	134.1	262.5	59.1	9.09	177.3	60.3	6.09
LnGrp LOS	ш	A	⋖		ᅵ	띡	ᅵ	ш	ш	ᆈ	ш	۳
Approach Vol, veh/h		1687			4150			479			457	
Approach Delay, s/veh		5.2			114.6			133.9			93.8	
Approach LOS		A			ш			ш			ш.	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	1	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	24.4	87.7	10.0	27.9	20.1	92.0	9.5	28.4				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	2.0	0.9	9 *	* 4.2	2.0				
Max Green Setting (Gmax), s	. 67	24.0	* 5.8	34.0	4.8	98 *	* 5.3	34.5				
Max Q Clear Time (g_c+I1), s	19.5	2.0	7.8	16.1	7.5	88.0	7.3	16.3				
Green Ext Time (p_c), s	0.7	6.1	0.0	1.0	0.0	0.0	0.0	1.0				
Intersection Summary												
HCM 2010 Ctrl Delay			87.3									
HCM 2010 LOS			ш									
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Baseline

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	1	444	R_	K.	444	W.	1	Ш	ĸ.	1	44	K. K.
Traffic Volume (veh/h)	205	296	182	130	1872	100	603	870	240	06	1030	1433
Future Volume (veh/h)	205	796	182	130	1872	100	603	870	240	06	1030	1433
Number Initial O (Oh) veh	o c	7 0	2 0		o c	9 0	m C	∞ ⊂	∞ ⊂	~ c	4 0	4 0
Ped-Bike Adi(A pbT)	1.00	•	0.99	1.00		0.99	1.00	•	0.99	1.00	>	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	518	266	188	134	1930	103	622	897	247	93	1062	1477
Adj No. of Lanes	2	3	-	2	3	_	2	4	-	2	2	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	591	2215	982	178	1544	476	495	2207	622	135	848	1138
Arrive On Green	0.35	0.88	0.88	0.05	0.31	0.31	0.15	0.35	0.35	0.04	0.24	0.24
Sat Flow, veh/h	3408	5036	1557	3408	5036	1553	3408	6346	1554	3408	3505	2725
Grp Volume(v), veh/h	518	266	188	134	1930	103	622	897	247	93	1062	1477
Grp Sat Flow(s),veh/h/ln	1704	1679	1557	1704	1679	1553	1704	1586	1554	1704	1752	1363
Q Serve(g_s), s	21.4	5.9	2.9	2.8	46.0	6.4	21.8	16.1	17.0	4.0	36.3	29.4
Cycle Q Clear(g_c), s	21.4	5.9	2.9	2.8	46.0	6.4	21.8	16.1	17.0	4.0	36.3	29.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	291	2215	982	178	1544	476	495	2207	622	135	848	1138
V/C Ratio(X)	0.88	0.45	0.27	0.75	1.25	0.22	1.26	0.41	0.40	69.0	1.25	1.30
Avail Cap(c_a), veh/h	291	2215	982	218	1544	476	495	2207	622	164	848	1138
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.81	0.81	1.00	1.00	1:00	1:00	1:00	1.00	1.00	1:00	1.00
Uniform Delay (d), s/veh	47.5	5.4	5.2	70.1	52.0	29.0	64.1	37.2	32.1	71.1	56.9	23.7
Incr Delay (d2), s/veh	11.3	0.5	0.8	8.4	117.9	1.0	130.8	0.0	0.2	5.9	123.2	140.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.9	2.7	 .	2.9	38.2	2.9	19.2	7.0	7.3	2.0	32.1	33.1
LnGrp Delay(d),s/veh	28.8	5.9	0.9	78.5	169.9	30.1	194.9	37.2	32.3	77.0	180.0	164.3
LnGrp LOS	ᆈ	⋖	⋖	ш	-	ပ	-		ပ	ᆈ	4	۱"
Approach Vol, veh/h		1703			2167			1766			2632	
Approach Delay, s/veh		22.0			157.6			92.0			167.5	
Approach LOS		ی			_			_			_	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	12.0	72.0	26.0	42.3	32.0	52.0	10.1	58.2				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	9 *	0.9	9 *	* 4.2	0.9				
Max Green Setting (Gmax), s	* 9.6 2.0	36.0	* 22	* 36	25.8	* 46	* 7.2	50.6				
Green Ext Time (n. c) s	0.0	۸.۶	0.00	20.0	0.3	0.0	0.0	0.41				
	9.0		9.0	9.5	5	9	9	ř				
Intersection Summary												
HCM 2010 Ctrl Delay			118.8									
HCM 2010 LOS			ı									
Notes												
COLON												

HCM 2010 Signalized Intersection Summary 17: El Camino Real & Town Garden Rd.

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(PAL2)	7100/170/17
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Long-Term	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		₩	¥C	<u>"</u>	æ		jr.	444	¥C	r	444	¥.
Traffic Volume (veh/h)	70	30	09	150	09	81	180	1672	160	351	1594	100
Future Volume (veh/h)	20	30	09	120	09	8	180	1672	160	321	1594	100
Number	7	4	14	co (∞ (9	2	2	12	-	9	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	5	0.94	1.00	9	0.95	1.00	6	0.98	1.00	6	0.99
Parking Bus, Adj	00.1	1000	100E	1000	1045	00.1	1000	100	100	100	100	1946
Adj Flow Rate veh/h	7400	33	1043	160	640	8	191	1779	170	373	1696	106
Adj No. of Lanes	0	4 ←	5 -	-	5 -	0	-	m	-	5 -	e e	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	co	က	co	က	က	က	က	3	co
Cap, veh/h	133	28	158	241	95	128	173	1289	394	630	2671	827
Arrive On Green	0.11	0.11	0.11	0.14	0.14	0.14	0.10	0.26	0.26	0.36	0.53	0.53
Sat Flow, veh/h	1244	538	1475	1757	693	931	1757	5036	1537	1757	5036	1559
Grp Volume(v), veh/h	106	0	64	160	0	150	191	1779	170	373	1696	106
Grp Sat Flow(s),veh/h/ln	1782	0	1475	1757	0	1624	1757	1679	1537	1757	1679	1559
Q Serve(g_s), s	8.5	0.0	6.1	13.0	0.0	13.2	14.8	38.4	13.9	25.9	35.8	5.1
Cycle Q Clear(g_c), s	8.5	0.0	6.1	13.0	0.0	13.2	14.8	38.4	13.9	25.9	35.8	5.1
Prop In Lane	0.70		1.00	1.00		0.57	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	191	0	158	241	0	223	173	1289	394	630	2671	827
V/C Ratio(X)	0.55	0.00	0.40	99.0	0.00	0.67	1.10	1.38	0.43	0.59	0.64	0.13
Avail Cap(c_a), veh/h	452	0	374	468	0	433	173	1289	394	630	2671	827
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1:00	1.00	0.00	1.00	1.00	1:00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.6	0.0	62.5	61.4	0.0	61.5	9.79	25.8	46.7	39.2	24.9	17.7
Incr Delay (d2), s/veh	0.9	0.0	9.0	1.2	0.0	 	98.3	175.9	3.4	1:0	1.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	2.5	6.4	0.0	0.9	11.9	38.8	6.3	12.7	16.8	2.3
LnGrp Delay(d),s/veh	64.5	0.0	63.1	62.6	0.0	65.9	165.9	231.7	20.1	40.2	26.1	18.1
LnGrp LOS	ш		ш	ш		۳	٠	-			راد	
Approach Vol, veh/h		170			310			2140			2175	
Approach Delay, s/veh		64.0			62.7			211.4			28.1	
Approach LOS		ш			ш			ш			ပ	
Timer	-	2	3	4	2	9	7	00				
Assigned Phs	-	2		4	2	9		8				
Phs Duration (G+Y+Rc), s	60.2	44.8		20.3	19.0	0.98		24.8				
Change Period (Y+Rc), s	* 6.4	* 6.4		* 4.2	* 4.2	* 6.4		4.2				
Max Green Setting (Gmax), s	* 15	* 38		* 38	* 15	* 38		40.0				
Max Q Clear Time (g_c+I1), s	27.9	40.4		10.5	16.8	37.8		15.2				
Green Ext Time (p_c), s	0.0	0.0		0.4	0.0	0.4		0.8				
Intersection Summary												
HCM 2010 Ctrl Delay			113.4									
HCM 2010 LOS			ш.									
Notes												

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Baseline

HCM 2010 Signalized Intersection Summary 18: El Camino Real & Camino Vida Roble

Long-Term + Project (PAL2) AM 08/24/2017

Machine Heaven Feb. Feb.		1	†	<u> </u>	-	ļ	4	•	—	4	۶	→	*
10	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
70	Lane Configurations	r	4	¥.		4		K.	*	*	F	444	
1) 70 20 107 20 20 20 480 1612 20 30 1534 10 0	Traffic Volume (veh/h)	70	20	107	20	20	20	480	1612	20	30	1534	290
7 4 14 3 8 18 18 5 2 12 1 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Future Volume (veh/h)	70	20	107	20	20	20	480	1612	20	30	1534	290
100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	7	4	14	က	ω (18	2	2	12	-	9	16
1945 1845 1845 1845 1845 1845 1845 1845 18	Initial Q (Qb), veh	0 0	0	0 0	0 0	0	0 0	0 0	0	0 00	0 6	0	0 00
1845 1845 1845 1940 1845 1940 1845 1945 1845	Parking Bus. Adi	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
56 0 144 21 21 50 1679 21 31 1598 14 0 2 0 1 0 2 2 1 1 3 8 3	Adj Sat Flow, veh/h/ln	1845	1845	1845	1900	1845	1900	1845	1845	1845	1845	1845	1900
1	Adj Flow Rate, veh/h	26	0	144	21	21	21	200	1679	21	31	1598	302
096 097 097 097 097 097 097 097 097 097 097 097 097 097 098 <td>Adj No. of Lanes</td> <td>-</td> <td>0</td> <td>2</td> <td>0</td> <td>—</td> <td>0</td> <td>2</td> <td>2</td> <td>-</td> <td>-</td> <td>က</td> <td>0</td>	Adj No. of Lanes	-	0	2	0	—	0	2	2	-	-	က	0
177 0 296 50 50 50 3 3 3 3 3 3 3 3 3	Peak Hour Factor	96.0	96.0	96.0	96.0	96.0	96:0	96:0	96:0	96:0	96:0	96:0	96:0
177 0 296 50 50 291 1094 481 627 2476 1757 0 296 50 50 50 50 50 50 50 1757 0 204 507 557 3408 3505 1543 1757 4244 1757 0 1470 1670 0 0 1704 1752 1543 1757 4244 1757 0 1470 1670 0 0 1704 1752 1543 1757 1679 1757 0 1470 1670 0 0 1704 1752 1543 1757 1679 170	Percent Heavy Veh, %	3	က	က	က	3	33	3	3	33	3	co	co
1757 0 000 0110 009 009 009 009 031 031 038 0588 1757 0 244	Cap, veh/h	177	0	296	20	20	20	291	1094	481	627	2476	465
1757 0 2941 557 557 3408 3505 1543 1757 4244 56	Arrive On Green	0.10	0.00	0.10	0.09	60.0	60.0	60.0	0.31	0.31	0.36	0.58	0.58
56 0 144 63 0 1679 21 31 1262 44 0 6.9 5.4 0.0 0 1704 1752 153 1757 1679 179 17 179 17 1679 17 1679 17 1679 17 1679 17 1679 17 1679 17 <	Sat Flow, veh/h	1757	0	2941	222	222	222	3408	3505	1543	1757	4244	797
1757 0 1470 1670 0 0 1704 1752 1543 1757 1679 144 0 6.9 5.4 0.0 0.0 12.8 46.8 1.4 1.7 37.6	Grp Volume(v), veh/h	99	0	144	63	0	0	200	1679	21	31	1262	638
44 0.0 69 54 0.0 0.0 128 468 14 1,7 37.6 37.7 37.6	Grp Sat Flow(s),veh/h/ln	1757	0	1470	1670	0	0	1704	1752	1543	1757	1679	1684
1,00	Q Serve(g_s), s	4.4	0.0	6.9	5.4	0.0	0.0	12.8	46.8	1.4	1.7	37.6	38.1
100	Cycle Q Clear(g_c), s	4.4	0.0	6.9	5.4	0.0	0.0	12.8	46.8	1.4	1.7	37.6	38.1
177 0 296 149 0 0 291 1094 481 627 1959 485 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Prop In Lane	1.00		1.00	0.33		0.33	1.00		1.00	1.00		0.47
0.32 0.00 0.49 0.42 0.00 0.00 1.72 154 0.04 0.05 0.64 0.45 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Grp Cap(c), veh/h	177	0	296	149	0	0	291	1094	481	627	1959	982
445	V/C Ratio(X)	0.32	0.00	0.49	0.42	0.00	0.00	1.72	1.54	0.04	0.05	0.64	0.65
1,00	Avail Cap(c_a), veh/h	445	0	745	445	0	0	291	1094	481	627	1959	982
1,00 0,00 1,00 1,00 0,00 0,00 1,00 1,00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
627 0.0 638 646 0.0 0.0 686 516 360 316 20.9 2 10 0.0 1.2 1.9 0.0 0.0 37.8 2456 0.2 0.0 1.6 22 0.0 2.9 2.5 0.0 0.0 19.7 59.9 0.6 0.8 17.8 1 22 0.0 650 665 0.0 0.0 19.7 59.9 0.6 17.8 1 20 0.650 665 0.0 0.0 19.7 59.9 0.6 17.8 1 20 0.650 665 0.0 0.0 19.7 59.9 0.6 17.8 17.8 1 20 0.650 665 0.0 19.7 59.9 0.6 17.8 17.8 1 20 0.0 0.0 0.0 0.0 19.7 59.9 0.6 17.8 17.6 17.6 17.8 17.8 17.8 17.8 17.8 17.8 17.8 17.8	Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
10 0.0 1.2 1.9 0.0 0.0 3378 2456 0.2 0.0 1.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	62.7	0.0	63.8	9.49	0.0	0.0	9.89	51.6	36.0	31.6	20.9	21.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	1.0	0.0	1.2	1.9	0.0	0.0	337.8	245.6	0.2	0.0	1.6	3.3
22 0.0 2.9 2.5 0.0 0.0 197 599 0.6 0.8 178 6.5 0.0 0.0 4064 2972 36.2 316 22.5 0.0 0.0 4064 2972 36.2 316 22.5 0.0 0.0 4064 2972 36.2 316 22.5 0.0 0.0 4064 2972 36.2 316 22.5 0.0 0.0 4064 2972 36.2 316 22.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
637 0.0 65.0 66.5 0.0 0.0 4064 2972 36.2 316 22.5 E E E F D C C C C C C C C C C C C C C C C C C	%ile BackOfQ(50%),veh/ln	2.2	0.0	2.9	2.5	0.0	0.0	19.7	59.9	9.0	0.8	17.8	18.6
F F D C	LnGrp Delay(d),s/veh	63.7	0.0	65.0	9,99	0.0	0.0	406.4	297.2	36.2	31.6	22.5	24.3
h 64.7 66.5 319.5 (6.5 4.7 66.5 5.200 6.5 5.200 7.8 (6.5 5.200 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	LnGrp LOS	ш		ш	ш			ᅵ	ᅵ		ပ	ပ	ပ
h 647 665 3195 E F F F 655 1 2 3 4 5 6 7 8 7 8 8 7 8 8 8 8 8 8 8 8 8 8 8 8 8	Approach Vol, veh/h		200			63			2200			1931	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 4 5 6 7 1 3 59.5 52.8 20.1 18.8 93.5 2 4.0 46.8 *38 12.8 38.0 3 7 4.0 46.8 *38 12.8 38.0 5 8.9 14.8 40.1 7 9 0.0 0.0 0.7 0.0 0.0	Approach Delay, s/veh		64.7			999			319.5			23.2	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 4 5 6 1 2 6 7 1 2 8 9.5 5.2 8 2.3 9.5 1), s 60 60 ° 5 60 6.0 1, s 3.7 48 8 8.9 14.8 40.1 174.1 174.1	Approach LOS		ш			ш			ш			O	
1 2 4 5 6 6 6 6 6 7 1 188 93.5 9.5 5.2 8 20.1 18.8 93.5 9.5 5.2 8 20.1 18.8 93.5 9.5 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Timer		2	3	4	2	9	7	∞				
(c), s 59.5 52.8 20.1 18.8 93.5 (c), s 60.0 60 60 60 60 60 60 60 60 60 60 60 60 60	Assigned Phs	τ-	2		4	2	9		8				
),s 60 6.0 *5 6.0 6.0 5 6.0	Phs Duration (G+Y+Rc), s	59.5	52.8		20.1	18.8	93.5		17.6				
imay, s 4.0 46.8 *38 12.8 38.0 c+11), s 3.7 48.8 8.9 14.8 40.1 s 3.7 48.1	Change Period (Y+Rc), s	0.9	0.9		* 2	0.9	0.9		4.2				
C+fl), s 3.7 48.8 8.9 14.8 40.1 , s 0.0 0.0 0.7 0.0 0.0 174.1 F	Max Green Setting (Gmax), s	4.0	46.8		* 38	12.8	38.0		40.0				
, s 0.0 0.0 0.7 0.0 0.0 174.1 F	Max Q Clear Time (g_c+I1), s	3.7	48.8		8.9	14.8	40.1		7.4				
	Green Ext Time (p_c), s	0.0	0.0		0.7	0.0	0.0		0.3				
	Intersection Summary												
HCM 2010 LOS F	HCM 2010 Ctrl Delay			174.1									
Natac	HCM 2010 LOS			ш									
	Noton												

Synchro 10 Report Page 32 Baseline

HCM 2010 Signalized Intersection Summary Long-Term + Project (PAL2) AM 19: El Camino Real & Poinsettia Ln.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	£	₩		K.	₩		K	444	¥.	K.	4413	
Traffic Volume (veh/h)	2	20	30	410	30	181	2	1541	290	131	1410	20
Future Volume (veh/h)	70	20	30	410	30	181	70	1541	290	131	1410	20
Number	_	4	14	က	ω (18	വ	2	12	- •	9	16
Initial Q (Qb), veh	S	0	0 80	0 6	0	0 0	0 0	0	0	0 0	0	0
Ped-bike Auj(A_pur)	8 6	1 00	1.00	00.1	1 00	1001	00.1	1 00	1.00	1.00	1 00	1.00
Adi Sat Elow veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	28	256	33	456	33	201	242	1712	322	146	1567	56
Adj No. of Lanes	2	2	0	2	2	0	2	က	-	2	co	0
Peak Hour Factor	06:0	06:0	06:0	06:0	0.90	0.90	0.90	06:0	06:0	06.0	06.0	06:0
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	16	254	134	203	423	366	114	1905	288	724	2840	101
Arrive On Green	0.03	0.12	0.12	0.15	0.24	0.24	0.03	0.38	0.38	0.21	0.57	0.57
Sat Flow, veh/h	3408	2168	1148	3408	1752	1516	3408	5036	1556	3408	4988	178
Grp Volume(v), veh/h	78	44	45	456	33	201	78	1712	322	146	1055	268
Grp Sat Flow(s),veh/h/In	1704	1752	1563	1704	1752	1516	1704	1679	1556	1704	1679	1809
Q Serve(g_s), s	3.4	3.4	3.9	19.8	2.2	17.4	3.4	48.0	24.3	5.3	29.6	29.6
Cycle Q Clear(g_c), s	3.4	3.4	3.9	19.8	2.2	17.4	3.4	48.0	24.3	5.3	29.6	29.6
Prop In Lane	1.00		0.73	1:00		1.00	1.00		1.00	1.00		0.10
Lane Grp Cap(c), veh/h	16	202	183	205	423	366	114	1905	288	724	1912	1030
V/C Ratio(X)	98.0	0.21	0.25	0.91	0.08	0.55	69.0	0.90	0.55	0.20	0.55	0.55
Avail Cap(c_a), veh/h	16	426	406	268	432	374	114	1917	592	724	1912	1030
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1:00	1:00	1:00	1:00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/ven	17.1	0.09	7.09	67.9	44.0	49.8	7.17	43.9	36.6	48.6	20.3	20.3
Incr Delay (d2), s/veh	49.8	0.2	0.3	16.1	0.0	6:0	20.1	7.2	3.6	0.1	1.2	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	1.7	1.7	10.4	;	7.4	1:9	23.5	11.1	2.5	13.9	15.3
LnGrp Delay(d),s/ven	27.7	2.09	90.4	1.6/	44.0	20.7	9.19	715	40.2	48.0	41.4	4.77
Lugip LOS	-	٦ ,	١	ш	٥		-	J 2445			ا د	اد
Approach Vol. vervn		/01			040			2112			69/1	
Approach Delay, siven		69.3			1.40 H			0.10			Z4:0	
SOJ LIBBOIRD		-			_			٥			>	
Timer	-	2	3	4	2	9	7	8				
Assigned Phs	-	2	m	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	37.9	62.7	27.1	22.3	9.2	91.4	8.2	41.2				
Change Period (Y+Rc), s	0.0	9	2	4./	7.4.7	0.0	4.7	ر ا				
Max Green Setting (Gmax), s	9.8	. 57	, 25	33		61.9	4 .	* 37				
Max U Clear Time (g_c+11), s	5.7	50.0	21.8	5.9	5.4	31.0	5.4	19.4				
Green Ext Time (p_c), s	0.1	6.7	0.4	0.3	0.0	9.6	0.0	6:0				
Intersection Summary												
HCM 2010 Ctrl Delay			44.9									
HCM 2010 LOS			D									
Notes												

HCM 2010 Signalized Intersection Summary 1: Faraday Ave. & Canon Rd.

HCM 2010 Signalized Intersection Summary 2: College Blvd. & EI Camino Real

Long-Term + Project (PAL 2) PM 08/24/2017

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	₩		F	₩.		F	4			4	
Traffic Volume (veh/h)	99	1200	251	32	540	20	681	20	111	20	20	20
Future Volume (veh/h)	9 ,	1200	251	32	240	2 3	681	20	111	50	50	50
Number	ഹ	7 0	7	- <	٥٥	<u>o</u> c	m c	∞ c	<u></u>	~ <	4 0	4 0
Dod-Bike Adir/A phT)	9	0	0 00	0 6	0	0 00	0 0	0	100	0 0	0	0 01
Parking Bus Adi	8.6	100	0.70	8.0	100	0.70	0.00	100	1.00	1.00	1 00	1001
Adi Sat Flow, veh/h/In	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1900
Adj Flow Rate, veh/h	92	1290	270	34	581	22	859	0	0	22	22	22
Adj No. of Lanes		2	0		2	0	2		0	0		0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	88	1184	244	2	1388	25	616	514	0	28	28	28
Arrive On Green	0.05	0.41	0.41	0.04	0.40	0.40	0.28	0.00	0.00	0.05	0.05	0.05
Sat Flow, veh/h	1/2/	7881	294	1/5/	3438	130	3514	1845	0	221	221	221
Grp Volume(v), veh/h	92	777	783	34	2%	307	826	0	0	99	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1722	1757	1752	1815	1757	1845	0	1652	0	0
O Serve(g_s), s	3.7	41.1	41.1	1.9	12.1	12.1	23.3	0.0	0.0	4.0	0.0	0.0
Cycle Q Clear(g_c), s	3.7	41.1	41.1	1.9	12.1	17.1	23.3	0.0	0.0	4.0	0.0	0.0
Prop In Lane	1.00	0	0.34	1.00	1	0.07	1.00		0.00	0.33		0.33
Lane Grp Cap(c), veh/h	£ 5	7.50	708	0 9	/0/	/33	6/6	514	0 0	83	0 0	0
V/C Katio(X)	173	2.08	1.1	0.48	0.42	732	11.40	0.00	0.00	0.79	0.00	0.00
Avall Cap(c_a), verimi	100	100	00/	100	100	1 23	100	1 00	100	100	100	100
How Flaton Ratio	8.6	8.6	8.6	8.0	8.0	8.6	8.6	00.0	00.0	1.00	000	00.0
Uniform Delay (d) slyeh	47.1	29.4	20.4	47.0	21.4	21.4	34.4	00.0	0.00	47.0	0.00	0.00
Incr Delay (d2) s/yeh	0 4	56.9	999	21.0		. 6	999	0.0	0.0	25.1	0.0	0.0
Initial O Delay(d3), sweh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	31.2	32.6	1.3	6.2	6.4	12.2	0.0	0.0	2.4	0.0	0.0
LnGrp Delay(d),s/veh	56.5	86.4	0.96	6.89	23.2	23.2	41.1	0.0	0.0	72.0	0.0	0.0
LnGrp LOS	ш	ч	ч	Н	ပ	ပ	D			Н		
Approach Vol, veh/h		1625			637			826			99	
Approach Delay, s/veh		8.68			25.6			41.1			72.0	
Approach LOS		ш			S			Ω			ш	
Timer		2	3	4	2	9	7	∞				
Assigned Phs	-	2		4	2	9		∞				
Phs Duration (G+Y+Rc), s	10.0	47.1		10.0	10.7	46.4		32.9				
Change Period (Y+Rc), s	0.9	0.9		2.0	0.9	0.9		2.0				
Max Green Setting (Gmax), s	9.0	35.0		0.9	7.0	32.0		33.0				
Green Ext Time (n. c.) s	0.0	0.0		0.0	00	4 4		17				
- 10-10 cm - 10-10-10-10-10-10-10-10-10-10-10-10-10-1	3	5		2	2	2						
Intersection Summary												
HCM 2010 CM Delay			03.5									
HCIM 2010 LOS			ш									
Notes												
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Synchro 10 Report Page 1

Movement Lang Configurations	FBI											
I and Confidentations	רטר	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
	<i>y</i> -	444	¥C.	r	444	¥C	F	₹		F	₩	
Traffic Volume (veh/h)	510	1178	160	20	2278	370	710	440	20	270	170	460
Future Volume (veh/h)	210	1178	160	20	2278	370	710	440	20	270	170	460
Number	2	2	12	-	9	16	က	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		96.0	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	537	1240	0	53	2398	389	747	463	53	284	179	484
Adj No. of Lanes	-	m	_	-	m	_	2	2	0	2	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	c	n	c	c	c	3	3	3	3	c	3	3
Cap, veh/h	24	1398	435	181	1801	226	446	652	74	751	539	469
Arrive On Green	0.03	0.28	0.00	0.10	0.36	0.36	0.13	0.21	0.21	0.22	0.31	0.31
Sat Flow, veh/h	1757	5036	1568	1757	5036	1555	3408	3158	360	3408	1752	1523
Grp Volume(v), veh/h	537	1240	0	53	2398	386	747	256	260	284	179	484
Grp Sat Flow(s),veh/h/ln	1757	1679	1568	1757	1679	1555	1704	1752	1765	1704	1752	1523
O Serve(q_s), s	4.0	30.7	0.0	3.6	46.5	14.1	17.0	17.6	17.8	9.5	10.2	40.0
Cycle Q Clear(g_c), s	4.0	30.7	0.0	3.6	46.5	14.1	17.0	17.6	17.8	9.5	10.2	40.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		1.00
Lane Grp Cap(c), veh/h	24	1398	435	181	1801	226	446	362	365	751	539	469
V/C Ratio(X)	9.93	0.89	0.00	0.29	1.33	0.70	1.68	0.71	0.71	0.38	0.33	1.03
Avail Cap(c_a), veh/h	24	1588	495	181	1801	226	446	209	611	751	539	469
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1:00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00
Uniform Delay (d), s/veh	63.0	42.0	0.0	53.9	41.7	9.5	299	47.9	48.0	43.1	34.7	45.0
Incr Delay (d2), s/veh	4057.0	9.8	0.0	0.3	153.0	7.2	313.9	1.0	1.0	0.1	0.1	50.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	65.9	15.4	0.0	1.8	47.0	7.1	27.4	9.8	8.8	4.4	2.0	23.3
LnGrp Delay(d),s/veh	4120.0	53.7	0.0	54.2	194.7	16.4	370.4	48.9	49.0	43.2	34.8	95.3
LnGrp LOS	ч	D		D	ч	В	Ь	D	D	D	ပ	4
Approach Vol, veh/h		1777			2840			1263			947	
Approach Delay, s/veh		1282.5			167.7			239.1			68.2	
Approach LOS		ш			ш			ட			ш	
Timer		2	က	4	2	9	7	∞				
Assigned Phs	_	2	3	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	19.4	42.1	22.0	46.5	0.6	52.5	35.1	33.4				
Change Period (Y+Rc), s	0.9	9 *	2.0	6.5	2.0	0.9	6.5	* 6.5				
Max Green Setting (Gmax), s		* 41	17.0	40.0	4.0	46.5	12.0	* 45				
Max Q Clear Time (g_c+I1), s	s 5.6	32.7	19.0	45.0	0.9	48.5	11.2	19.8				
Green Ext Time (p_c), s	0.0	3.4	0.0	0.0	0.0	0.0	0.0	2.1				
Intersection Summary												
HCM 2010 Ctrl Delay			457.3									
HCM 2010 LOS			ш									

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HCM 2010 Signalized Intersection Summary 3: College Blvd. & Faraday Ave.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u>,-</u>	₹		je-	₩		F	₩		F	₽	
Traffic Volume (veh/h)	06	540	313	340	510	240	192	510	160	30	330	06
Future Volume (veh/h)	8	240	313	340	210	240	192	210	160	30	330	06
Number	7	4 (4 0	က	ω (9	വ	2	12	- 0	9	16
Initial Q (Qb), veh	0	0	0 !	0	0	0	0 ;	0	0 !	0	0	0 [
Ped-Bike Adj(A_pbT)	1.00	,	0.97	1.00	,	0.98	1.00	,	0.97	1.00	,	0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	112	675	391	425	638	300	240	638	200	330	412	112
Adj No. of Lanes	-	2	0	-	2	0	2	2	0	2	2	0
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %				~	~	~	~	~	3	· ·		~
Cap, veh/h	139	719	416	287	974	458	186	730	228	87	089	183
Arrive On Green	1757	0.34	0.34 12.25	0.16	2200	10.70	3708	0.28	0.28	2,408	0.25	0.25
Satt tow, verifit	17.	2110	503	404	704	1017	240	4007	000	0000	376	027
Grn Sat Flow(s) ver/h/ln	1757	1752	1588	1757	1752	1623	1704	1752	1671	1704	1752	1687
O Serve(n.s). s	99	32.3	32.4	17.1	23.2	23.2	5.7	24.4	24.4	11	13.9	14.2
Cycle Q Clear(a c). s	9.9	32.3	32.4	17.1	23.2	23.2	5.7	24.4	24.4	7	13.9	14.2
Prop In Lane	1.00		0.77	1.00		0.67	1.00		0.49	1.00		0.43
Lane Grp Cap(c), veh/h	139	269	539	287	744	689	186	491	468	87	440	423
V/C Ratio(X)	0.81	0.94	0.94	1.48	0.65	99.0	1.29	0.87	0.88	0.44	09.0	0.61
Avail Cap(c_a), veh/h	160	604	547	287	744	689	186	225	526	130	523	504
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.4	33.5	33.5	43.7	24.0	24.0	49.4	35.9	35.9	50.2	34.5	34.7
Incr Delay (d2), s/veh	23.0	22.6	24.4	233.3	2.1	2.2	165.2	13.4	14.1	3.4	1.4	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	19.3	17.9	26.8	11.5	10.7	6.9	13.6	13.1	9.0	6.9	8.9
LnGrp Delay(d),s/veh	70.3	56.1	57.9	277.0	26.1	26.2	214.6	49.3	20.0	53.6	35.9	36.2
LnGrp LOS	ال	الد	ال	-	اد	اد	-					٦
Approach Vol, veh/h		1178			1363			1078			562	
Approach Delay, siven		28.2			104.4			80.3			37.3	
Approach LOS		ш			_			_			O	
Timer	1	2	3	4	2	9	7	8				
Assigned Phs	1	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	7.2	35.3	21.6	40.5	10.2	32.2	12.7	49.3				
Change Period (Y+Rc), s	4.5	0.9	4.5	2.0	4.5	0.9	4.5	2.0				
Max Green Setting (Gmax), s	4.0	32.9	17.1	36.0	5.7	31.2	9.5	43.6				
Max O Clear Time (g_c+I1), s	3.1	26.4	19.1	34.4	7.7	16.2	9.8	25.2				
Green Ext Time (p_c), s	0.0	5.6	0.0	1.0	0.0	2.4	0.0	2.7				
Intersection Summary												
HCM 2010 Ctrl Delay			17.7									
HCM 2010 LOS			ш									

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Synchro 10 Report Page 5

HCM 2010 Signalized Intersection Summary 4: El Camino Real & Faraday Ave.

Long-Term + Project (PAL 2) PM 08/24/2017

								-				
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	je.	ŧ	*	×	‡	¥	F	4413		F	444	*-
Traffic Volume (veh/h)	300	800	006	225	300	470	190	1758	155	310	1138	20
Future Volume (veh/h)	300	800	006	225	300	470	190	1758	155	310	1138	20
Number	7	4	14	3	∞	18	2	2	12	_	9	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	323	860	896	242	323	202	204	1890	167	333	1224	24
Adj No. of Lanes	-	2	-	_	2	-	2	က	0	2	က	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	m	m	m	co	c	m	c	co	c	co	co	m
Cap, veh/h	208	1240	220	186	1219	531	1038	2446	215	252	1387	427
Arrive On Green	0.12	0.35	0.35	0.11	0.35	0.35	0.30	0.52	0.52	0.07	0.28	0.28
Sat Flow, veh/h	1757	3205	1555	1757	3505	1526	3408	4705	413	3408	5036	1551
Grp Volume(v), veh/h	323	098	896	242	323	202	204	1346	711	333	1224	54
Grp Sat Flow(s),veh/h/ln	1757	1752	1555	1757	1752	1526	1704	1679	1761	1704	1679	1551
Q Serve(g_s), s	15.4	27.3	46.0	13.8	9.8	41.9	2.8	41.7	42.3	9.6	30.2	3.5
Cycle Q Clear(g_c), s	15.4	27.3	46.0	13.8	9.8	41.9	2.8	41.7	42.3	9.6	30.2	3.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	208	1240	220	186	1219	531	1038	1746	916	252	1387	427
V/C Ratio(X)	1.55	69.0	1.76	1.30	0.27	0.95	0.20	0.77	0.78	1.32	0.88	0.13
Avail Cap(c_a), veh/h	208	1240	220	186	1219	531	1038	1746	916	252	1519	468
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.47	0.47	0.47	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	36.0	45.0	58.1	30.5	41.3	33.4	25.0	25.1	60.2	45.1	36.6
Incr Delay (d2), s/veh	270.7	7.	349.3	9.791	0.0	27.1	0.0	1.6	3.1	170.4	8.4	9.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.1	13.4	73.1	15.4	4.2	21.6	2.7	19.6	21.3	10.5	15.1	1.6
LnGrp Delay(d),s/veh	328.0	37.4	391.3	225.7	30.5	68.5	33.5	56.6	28.3	230.6	53.5	37.2
LnGrp LOS	니		띡	니	ပ	ᆈ	ပ	ပ	ပ	니		ا"
Approach Vol, veh/h		2151			1070			2261			1611	
Approach Delay, síveh		240.3			97.6			27.8			89.5	
Approach LOS		ш			ı.			ပ			ш	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	-	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	13.8	74.4	18.8	51.0	46.4	41.8	19.6	50.2				
Change Period (Y+Rc), s	* 4.2	0.9	* 5	* 5	0.9	9 *	* 4.2	* 5				
Max Green Setting (Gmax), s	9.6 ×	41.2	* 14	* 46	11.6	* 39	* 15	* 44				
Max Q Clear Time (g_c+I1), s	11.6	44.3	15.8	48.0	7.8	32.2	17.4	43.9				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.1	3.6	0.0	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			116.0									
HCM 2010 DS												

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HCM 2010 Signalized Intersection Summary 5: I-5 SB Ramps & Palomar Airport Rd.

Movement EB EB WB1 WB1 WB1 WB1 NB1 NB1 NB1 SB1 SB1 SB1 SB2 SB1 SB2 SB1 SB2 SB1 SB2 S		1	1	~	>	ţ	4	•	-	4	٠	-	*
	Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
10 1012 290 0 892 1229 0 0 0 679 0 0 0 0 0 0 0 0 0	Lane Configurations		4413			ŧ	*-				F		¥
10 1012 290 0 892 1229 0 0 0 679 0 0 0 0 0 0 0 0 0	Traffic Volume (veh/h)	0	1012	290	0	892	1229	0	0	0	619	0	200
5	Future Volume (veh/h)	0	1012	290	0	892	1229	0	0	0	619	0	200
1.00	Number	2	2	12	-	9	16				7	4	14
1,00	Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
1,00 1,00	Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
0 1845 1900 0 1845 1845 1845 1845 0 1845 1900 0 1845 1845 0 1845 1900 0 1845 1845 0 1845 1900 0 1845 1845 0 1845 1900 0 1845 1845 0 1845 1900 0 1845 1	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
0 1065 305 0 939 0 775 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1845				1845	0	1845
0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	Adj Flow Rate, veh/h	0	1065	305	0	626	0				715	0	211
0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	Adj No. of Lanes	0	co	0	0	2	-				2	0	_
0 1466 418 0 135 588 911 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
0 1460 418 0 1315 588 911 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Percent Heavy Veh, %	0	3	3	0	3	3				3	0	c,
0.00 0.03 0.38 0.00 0.00 0.02 0.00 0.02 0.00 0.00 0.0	Cap, veh/h	0	1460	418	0	1315	288				911	0	419
0 4057 1114 0 3597 1568 3408 0 775 0 0 0 6 7 114 0 3597 1568 3408 0 0 775 0 0 0 1 6 7 14 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Arrive On Green	0.00	0.38	0.38	0.00	0.38	0.00				0.27	0.00	0.27
0 919 451 0 939 0 715 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Sat Flow, veh/h	0	4057	1114	0	3597	1568				3408	0	1568
0 1679 1648 0 1752 1568 1704 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Grp Volume(v), veh/h	0	919	451	0	686	0				715	0	211
0.0 69 69 0.0 67 0.0 5.7 0.0 0.00 6.8 0.0 6.7 0.0 5.7 0.0 0.00 0.83 0.00 6.7 0.0 1.00 1.00 0.00 0.73 0.73 0.0 0.115 5.88 9.11 0 0.00 0.73 0.0 0.0 0.0 0.0 1.00 1.00 1.00	Grp Sat Flow(s),veh/h/ln	0	1679	1648	0	1752	1568				1704	0	1568
0.00 6.9 6.9 0.0 6.7 0.0 1.0 1.0 1.0 1.0 1.0 1.0 1.2 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Q Serve(g_s), s	0.0	6.9	6.9	0.0	6.7	0.0				2.7	0.0	3.3
0.00 0.73 0.73 0.70 0.71 0.00 0.00 0.00 0.73 0.73 0.00 0.71 0.00 0.71 0.00 0.73 0.73 0.00 0.71 0.00 0.71 0.00 0.72 0.73 0.00 0.71 0.00 0.71 0.00 0.71 0.00 0.71 0.00 0.00	Cycle Q Clear(g_c), s	0.0	6.9	6.9	0.0	6.7	0.0				2.7	0.0	3.3
0.00 1259 618 0 1315 588 911 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Prop In Lane	0.00		0.68	0.00		1.00				1.00		1.00
0.00 0.73 0.73 0.00 0.71 0.00 0.00 0.00 0.00 0.00 0.00	Lane Grp Cap(c), veh/h	0	1259	618	0	1315	288				911	0	419
1.00 1430 1684 0 3581 1602 1683 0 0 1400 1.00 1.00 1.00 1.00 1.00 1.00	V/C Ratio(X)	0.00	0.73	0.73	0.00	0.71	0.00				0.78	0.00	0.50
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Avail Cap(c_a), veh/h	0	3430	1684	0	3581	1602				1683	0	774
0.00 1,00 1,00 0.00 1,00 0.00 1,00 0.00 0.	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
0.0 7.9 7.9 0.0 7.8 0.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Upstream Filter(I)	0.00	1.00	1.00	0.00	1:00	0.00				1.00	0.00	1.00
0.0 0.3 0.6 0.0 0.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	0.0	7.9	7.9	0.0	7.8	0.0				10.0	0.0	9.1
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	0.0	0.3	9.0	0.0	0.3	0.0				9.0	0.0	0.3
0.0 3.1 3.1 0.0 3.2 0.0 2.8 0.0 0.0 0.0 3.1 3.1 0.0 3.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
0.0 8.2 8.5 0.0 8.1 0.0 10.5 0.0 13.0 8.3 8.3 8.1 8.1 8.1 8.1 8.1 10.3 8.3 8.1 8.1 8.1 10.3 8.1 8.1 10.3 8.1 8.1 8.1 10.3 8.1 8.1 8.1 8.1 8.1 8.1 8.1 8.1 8.1 8.1	%ile BackOfQ(50%),veh/ln	0.0	3.1	3.1	0.0	3.2	0.0				2.8	0.0	1.4
1370 939 1370 939 1370 939 13.1 8.1 1 2 3 4 5 6 7 8 16.4 12.9 16.4 5.4 5.1 5.4 5.4 5.1 5.4 5.4 5.1 5.4 5.4 5.1 5.4 5.4 5.1 1.5 2.1 0.1 1.5	LnGrp Delay(d),s/veh	0.0	8.2	8.5	0.0	8.1	0.0				10.5	0.0	9.5
1370 939 8.3 8.1 A A A A A 5 6 7 8 16.4 12.9 16.4 5.4 5.1 5.4 5.4 5.1 5.4 5.4 5.4 8.9 7.7 8.7 2.1 0.1 1.5	LnGrp LOS		A	A		A					В		۷
8.3 8.1 A A A B 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 7 8	Approach Vol, veh/h		1370			626						926	
1 2 3 4 5 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 6 7 8 7 8	Approach Delay, s/veh		8.3			8.1						10.3	
1 2 3 4 5 6 7 2 4 6 7 16.4 12.9 16.4 5.4 5.1 5.4 30.0 14.5 30.0 8.9 7.7 8.7 2.1 0.1 1.5 A	Approach LOS		∢			A						В	
2 4 164 12.9 5.4 5.1 30.0 14.5 8.9 7.7 2.1 0.1	Timer	-	2	က	4	2	9	7	∞				
16.4 12.9 5.4 12.9 3.00 14.5 8.9 7.7 2.1 0.1 8.8	Assigned Phs		2		4		9						
5.4 5.1 30.0 14.5 8.9 7.7 2.1 0.1 8.8	Phs Duration (G+Y+Rc), s		16.4		12.9		16.4						
300 14.5 89 7.7 2.1 0.1 88	Change Period (Y+Rc), s		5.4		5.1		5.4						
8.9 7.7 2.1 0.1 8.8 A	Max Green Setting (Gmax), s		30.0		14.5		30.0						
2.1 0.1 8.8 A	Max Q Clear Time (g_c+I1), s		8.9		7.7		8.7						
	Green Ext Time (p_c), s		2.1		0.1		1.5						
	Intersection Summary												
	HCM 2010 Ctrl Delay			8.8									
	HCM 2010 LOS			A									

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HCM 2010 Signalized Intersection Summary 6: I-5 NB Ramps & Palomar Airport Rd.

Long-Term + Project (PAL 2) PM 08/24/2017

Manufacture Feb Fe		1	†	1	>	↓	4	•	←	•	۶	→	*
	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
256 1441 0 0 2021 1119 100 0 619 0 1	Lane Configurations	r	444			444	N.W.		4	N. W.			
250 1441 0 0 2021 1119 100 0 619 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Traffic Volume (veh/h)	250	1441	0	0	2021	1119	100	0	619	0	0	0
5	Future Volume (veh/h)	250	1441	0	0	2021	1119	100	0	619	0	0	0
100 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	വ	2	12	-	9	16	e 0	ω (18			
1.00	Initial Q (Qb), veh	0 6	0	0 0	0 0	0	0 0	0 0	0	0 00			
1845 1845 0 0 1845 1846 1900 1845 1845 1846 1900 1845 1845 1846 1900 1845 1845 1845 1846 1900 1845 1845 1846 1900 1845 1845 1846 1900 1845 1846 1900 1845 1846 1847 1	Ped-Bike Auj(A_pur)	9.1	1 00	1.00	100	1 00	100	100	100	100			
255 1470 0 0 2062 1142 102 0 1 0.08 0.98 0.98 0.98 0.98 0.98 0.98 0.98	Adi Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
1 3 0 0 3 2 0 0 1 21 38 0 0 3 3 3 3 3 3 3 3	Adj Flow Rate, veh/h	255	1470	0	0	2062	1142	102	0	632			
0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98	Adj No. of Lanes	-	33	0	0	က	2	0	-	2			
3 3 3 3 9 0 0 2723 143 33 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	86:0	86.0	86.0	86:0			
275 3676 0 0 2729 1442 351 0 0 1 1757 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
1757 5.00 0.00 0.36 0.36 0.20 0.00 0.35 0.35 0.20 0.00 0.35	Cap, veh/h	275	3676	0	0	2729	1442	351	0	531			
1757 5202 0 5202 2661 1757 0 255 1470 0 0 2062 142 102 0 215 1679 0 0 0 2062 142 102 0 215 16.7 0.0 0.0 53.9 57.6 7.4 0.0 215 16.7 0.0 0.0 53.9 57.6 7.4 0.0 215 3676 0 0 2729 142 351 0 351 3676 0 0 2729 1442 351 0 100 100 100 100 0.67 0.07 0.00 351 3676 0 0 0 2729 1442 351 0 100 100 100 0.07 0.07 0.00 101 102 100 0.00 0.67 0.07 0.00 102 0.75 0.75 0.00 0.00 0.67 0.00 0.00 103 0.2 0.0 0.0 0.0 0.0 0.0 104 17.7 0.0 0.0 0.0 0.0 0.0 119 7.7 0.0 0.0 0.0 0.0 0.0 119 7.7 0.0 0.0 0.0 0.0 0.0 119 7.7 0.0 0.0 0.0 0.0 0.0 119 7.7 0.0 0.0 0.0 0.0 119 7.7 0.0 0.0 0.0 0.0 119 7.7 0.0 0.0 0.0 0.0 119 7.7 0.0 0.0 0.0 0.0 119 7.7 0.0 0.0 0.0 0.0 110 7.7 0.0 0.0 110 7.7 0.0 0.0 110 7.7 0.0 0.0 110 7.7 0.0 0.0 110 7.7 0.0 0.0 110 7.7 0.0 0.0 110 7.7 0.0 0.0 0.0 110 7.7 0.0 0.0 0.0 110 7.7 0.0 0.0 0.0 110 7.7 0.0 0.0 110 7.7 0.0 0.0 110 7.7 0.0 0.0 110 7.7 0.0 0.0 110 7.7 0.0 0.0 110 7.7 0.0 0.0 1	Arrive On Green	0.16	0.73	0.00	0.00	0.36	0.36	0.20	0.00	0.20			
255 1470 0 0 2062 1142 102 0 1757 1679 0 0 1679 1330 1757 0 0 1757 1679 0 0 1679 1330 1757 0 0 1757 1679 0 0 1679 1330 1757 0 0 1757 1679 0 0 1757 1679 1330 1757 0 0 1757 1679 1330 1757 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Sat Flow, veh/h	1757	5202	0	0	5202	2661	1757	0	2656			
1757 1679 0 0 1679 1330 1757 0 0 1 1757 1679 0 0 1679 1330 1757 0 0 1 1757 167 0 0 0 1 1757 1 0 0 0 1 1757 1 0 0 0 0 1 1757 0 0 0 0 0 1 1757 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Grp Volume(v), veh/h	255	1470	0	0	2062	1142	102	0	632			
21.5 16.7 0.0 0.0 53.9 57.6 7.4 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1330	1757	0	1328			
215 16.7 0.0 0.0 53.9 57.6 7.4 0.0 0.0 0.00 1.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 0.00 1.00 0.	Q Serve(g_s), s	21.5	16.7	0.0	0.0	53.9	57.6	7.4	0.0	30.0			
h 100 000 000 100 100 100 100 100 000 2723 3676 0 0 2729 1442 351 0 0 0 2729 1442 351 0 0 0 0 2729 1442 351 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		21.5	16.7	0.0	0.0	53.9	57.6	7.4	0.0	30.0			
hh 275 3676 0 0 2729 1442 351 0 0 0 370 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
0.93 0.40 0.00 0.076 0.079 0.29 0.00 1.00 1.00 1.00 1.00 0.672 1442 351 0 0.75 0.75 0.00 0.00 0.52 0.52 1.00 0.00 eh 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 eh 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 eh 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 eh 0.11	Lane Grp Cap(c), veh/h	275	3676	0	0	2729	1442	351	0	531			
851 3676 0 0 2729 1442 351 0 0 170 1100 1100 1100 1100 1100 1100	V/C Ratio(X)	0.93	0.40	0.00	0.00	92.0	0.79	0.29	0.00	1.19			
the control of the co	Avail Cap(c_a), veh/h	351	3676	0	0	2729	1442	351	0	531			
eh 0.75 0.75 0.00 0.00 0.52 0.52 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	HCM Platoon Ratio	1.00	1.00	1.00	1.00	19:0	19.0	1.00	1.00	1.00			
eh 62.4 7.7 0.0 0.0 39.1 40.2 51.0 0.0 eh 19.3 0.2 0.0 0.0 0.1 0.2 4 0.2 0.0 0.0 eh 10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	0.75	0.75	0.00	0.00	0.52	0.52	1.00	0.00	1.00			
eh 193 0.2 0.0 0.0 1.0 24 0.2 0.0 eh 10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	62.4	7.7	0.0	0.0	39.1	40.2	51.0	0.0	0.09			
eth 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Incr Delay (d2), s/veh	19.3	0.2	0.0	0.0	1.0	2.4	0.2	0.0	103.0			
h 11.9 7.7 0.0 0.0 25.3 21.7 3.6 0.0 1.2 2.8 2.1 2.2 2.8 2.1 2.2 2.8 2.1 2.2 2.1 2.1 2.2 3.1 4.7 5.4 5.1 1.0 1.1 2.2 3.4 5.6 6.7 8.8 2.1 2.2 2.8 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
His 80 0.0 0.0 40.1 426 51.1 0.0 F A D D D D T1725 3.004 147.5 H 18.9 41.0 147.5 B D F F T1725 3.004 147.5 B C J S S S S S S S S S S S S S S S S S S	%ile BackOfQ(50%),veh/ln	11.9	7.7	0.0	0.0	25.3	21.7	3.6	0.0	18.6			
h 1725 3204 h 1725 3204 h 18.9 41.0 1 2 3 4 5 6 7 2 3 6 7 5, s 114,9 28,2 86,7 5, s 5,4 30 74,8 max),s 109,5 30 74,8 5 2.7 0.0 4,5 6 7 6 7 6 7 8 6 7 8 7 8 7 8 8 7 8 7 8 8 7 8 7 8	LnGrp Delay(d),s/veh	81.6	8.0	0.0	0.0	40.1	42.6	51.1	0.0	163.0			
1125 3304 1129 41.0 112 3 4 5 6 7 12 3 4 5 6 7 12 3 4 5 6 7 14 9 28.2 14 9.5 19 748 19 748 19 748 19 748 19 748 18 7 84 18 7 84 19 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	LnGrp LOS	ᅵ	⋖							니			
h 18.9 41.0 B D D 6 7 2 3 4 5 6 7 2 5 6 7 5, 5 114.9 28.2 86.7 5,5 5,4 .4.7 5,4 imax, s 109.5 .30 74.8 cell), s 18.7 23.5 59.6 , s 2.7 0.0 4.5	Approach Vol, veh/h		1725			3204			734				
1 2 3 4 5 6 7 2 5 6 7 3 114.9 28.2 86.7 3, s 5.4 *4.7 5.4 imax), s 109.5 *30 74.8 imax), s 18.7 2.3 59.6 i.s 2.7 0.0 4.5 i.s 48.0	Approach Delay, s/veh		18.9			41.0			147.5				
1 2 3 4 5 6 7 2 5 6 7 3 114.9 28.2 86.7 3, 5 5 4 *3.0 74.8 6-(-11), s 18.7 2.3 59.6 5 2.7 0.0 4.5 6 7	Approach LOS		В			Ω			Œ.				
(c), s 114.9 28.2 86.7 (c), s 114.9 28.2 86.7 (c), s 5.4 .4.7 5.4 (c), s 109.5 (c), s 2.7 (d), s 2.	Timer		2	3	4	2	9	7	∞				
(c), s 114.9 28.2 86.7 (c), s 5.4 4.7 5.4 (c), s 109.5 4.7 23.5 59.6 (c), s 2.7 0.0 4.5 (c), s 3.5 (c)	Assigned Phs		2			2	9		8				
), s 5.4 *4.7 5.4 max), s 109.5 *30 74.8 .30 74.8 .3109.5 *30 74.8 .3107	Phs Duration (G+Y+Rc), s		114.9			28.2	86.7		35.1				
may, s 109.5 *30 74.8 c+11), s 18.7 23.5 59.6 c+11), s 2.7 0.0 4.5 ft.	Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
C+ff), s 18.7 23.5 59.6 7.5 2.7 0.0 4.5 48.0 D	Max Green Setting (Gmax), s		109.5			* 30	74.8		30.0				
, s 2.7 0.0 4.5 48.0 D	Max Q Clear Time (g_c+I1), s		18.7			23.5	29.6		32.0				
	Green Ext Time (p_c), s		2.7			0.0	4.5		0.0				
	Intersection Summary												
2010 LOS	HCM 2010 Ctrl Delay			48.0									
Notes	HCM 2010 LOS			D									
	Notes												

N:\2772\Analysis\Intersections\Synchro\16. Horizon Yr + PAL2 PM.syn

HCM 2010 Signalized Intersection Summary 7: Paseo Del Norte & Palomar Airport Rd.

Long-Term + Project (PAL 2) PM 08/24/2017

alized Intersection Summary	Long-Term + Project (PAL 2) PM
Palomar Airport Rd.	08/24/2017

1475 1475	nfigurations olume (veh/h) olume (veh/h)												
30 1426 200 271 2390 351 250 140 221 300 1420 200 271 2390 351 250 140 221 300 1420 200 271 2390 351 250 140 221 0 0 0 0 0 0 0 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 <	olume (veh/h)	7	4		×	ŧ	*	×	A.		×	¥	
300 1420 200 271 2390 351 250 140 221 6 2 12 1 6 16 3 8 18 1 0 0 0 0 0 0 0 0 1 0 <td>olume (veh/h)</td> <td></td> <td><u>ء</u> ج</td> <td>200</td> <td>77.0</td> <td>2200</td> <td>251</td> <td>250</td> <td><u>*</u></td> <td>221</td> <td>201</td> <td>150</td> <td>210</td>	olume (veh/h)		<u>ء</u> ج	200	77.0	2200	251	250	<u>*</u>	221	201	150	210
1.00	Oldine (venini)		200	200	177	2200	251	250	140	22	201	150	210
10	100		2 0	2007	1/7	23,40	100	7200	04	177	1 67	001	210
100	700		7 0	7 0	- <	0 0	2 0	2	0 0	0 0	- 0	4 0	4 0
1.00			>	0 0	0 8	0	0 0	0 6	0	0 0	0 0	>	0 0
1.00	001)		8	1.00	3.5	00	1.00	00.1	5	0.40	00.1	00	100
1845 1940 1845 1845 1845 1845 1845 1940 312 313 32 36 260 366 260 316			3 !	00.1	00:1	00 !	00:	8:	00 !	00.1	00:1	00:1	00.1
312 1479 208 282 2490 366 260 146 230 3			45	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
2 3 0 2 4 1 2 0 0.96			79	208	282	2490	366	260	146	230	303	126	323
0.06 0.96 0.96 0.96 0.96 0.96 0.96 0.96			က	0	2	4	-	2	2	0	2	2	0
3 3			96	96.0	96.0	96:0	96:0	96.0	96.0	96.0	96.0	96.0	96.0
355 1626 228 590 283 817 394 339 300 3408 4447 625 3408 6346 1557 3408 100 020 020 3408 4447 625 3408 6346 1557 3408 1722 1500 020 312 1116 571 282 2490 366 260 146 230 1704 1679 1715 170 152 170 172 150 150 136 484 485 9.7 292 1.7 113 109 216 100 0.3 0.3 100 100 100 216 <td< td=""><td>ent Heavy Veh, %</td><td>3</td><td>c</td><td>c</td><td>co</td><td>m</td><td>c</td><td>m</td><td>m</td><td>co</td><td>m</td><td>m</td><td>co</td></td<>	ent Heavy Veh, %	3	c	c	co	m	c	m	m	co	m	m	co
0.07 0.24 0.24 0.25 3408 0.89 0.89 0.89 0.09 0.20 0.20 0.20 33408 4447 6.55 3408 6.346 1527 3408 1792 1509 1309 <			26	228	200	2835	877	304	349	300	394	404	349
3408 4447 625 3408 6346 1557 3408 1752 1509 33 312 1116 571 286 260 146 230 130 140 1509 130 140 1509 130 140 1509 130 140 1509 130 130 140 1509 110 100 1100 110 100 110 100 110 110 110 100 110 100 110 100 110 100 110 100 110 100 110 100 110 100 110 100 110 100 110 100 110 100 110 100			24	0.24	0.35	0.89	0.89	0.09	0.20	0.20	0.12	0.23	0.23
312 1116 571 282 2490 366 260 146 230 1704 1679 1715 173 173 173 199 216 136 48.4 48.5 9.7 29.2 1.7 113 109 216 136 48.4 48.5 9.7 29.2 1.7 113 109 216 100 0.38 1.00 1.00 1.00 1.00 1.00 216 216 216 216 216 30 216 30 216 30 216 30 42 30 30 30 42 30 30 30 30 30 30 30 30 30 42 30 30			47	625	3408	6346	1557	3408	1752	1509	3408	1752	1514
1704 1679 1715 1704 1586 1557 1704 1752 1509 136 484 4815 9.7 292 1.7 113 10.9 21.6 1.00 3.56 1.00 2.8 2.9 1.7 11.3 10.9 21.6 1.00 3.56 1.00 2.10 1.00 3.55 1.28 6.27 5.90 2835 877 3.94 3.90 3.90 3.95 3.90 3.95 3.90 3.95 3.90 3.95 3.90 3.95 3.90 3.95 3.90 3.95 3.90 3.95 3.90 3.9			16	571	282	2490	366	260	146	230	303	156	323
136 484 485 97 292 17 113 109 21.6 130			6/	1715	1704	1586	1557	1704	1752	1509	1704	1752	1514
136 484 485 9.7 292 1.7 11.3 10.9 21.6 1.00			3.4	48.5	6.7	29.2	1.7	11.3	10.9	21.6	12.9	11.3	31.3
100 0.36 1.00 1.00 1.00 1.00 3.35 1.20 3.35 3.55 3.55 3.55 3.55 3.00 3.40 3.00 3.35 3.55 3.55 3.00 3.35 3.55 3	c), s		3.4	48.5	6.7	29.2	1.7	11.3	10.9	21.6	12.9	11.3	31.3
355 1228 627 590 2835 877 304 349 300 0.88 0.49 0.91 0.49 0.48 0.42 0.88 0.42 0.04 0.07 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.00		00		0.36	1.00		1.00	1.00		1.00	1.00		1.00
088 091 091 094 088 042 085 042 077 0 389 1298 643 590 2835 877 348 465 392 0.79 0.79 0.79 0.15 0.15 0.10 100 100 100 0.79 0.79 0.79 0.15 0.15 0.15 100 100 100 100 16.9 94 16.5 0.0 0.			28	627	200	2835	877	304	349	300	394	404	349
359 1298 663 590 2835 877 348 456 392 0.67 0.67 0.67 2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.00			91	0.91	0.48	0.88	0.42	0.85	0.42	0.77	0.77	0.39	0.93
0.67 0.67 0.67 2.00 2.00 1.00 1.00 1.00 0.79 0.79 0.15 0.15 0.15 1.00 1.00 1.00 0.79 0.79 0.15 0.15 1.00 1.00 1.00 1.00 0.00 0.00			86	663	200	2835	877	348	456	392	394	473	409
688 542 542 437 6015 100 100 100 100 100 100 100 100 100	0		19	19.0	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
688 542 542 437 60 11 673 525 568 6 169 94 165 00 07 02 151 03 45 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 72 24.1 259 45 115 0.7 59 53 9.4 85.7 636 70.7 43.7 6.7 13 825 528 613 7 1999 3138 686 691 94 66 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8			79	0.79	0.15	0.15	0.15	1.00	1.00	1.00	1.00	1.00	1.00
16.9 9.4 16.5 0.0 0.7 0.2 15.1 0.3 4.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		ш,	1.2	54.2	43.7	0.9	1.	67.3	52.5	26.8	64.4	48.7	56.4
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0			7.4	16.5	0.0	0.7	0.2	15.1	0.3	4.5	8.2	0.2	23.2
7.2 24.1 25.9 45 115 0.7 5.9 5.3 9.4 85.7 636 70.7 43.7 6.7 1.3 825 5.28 613 7 F E E D A A F D E 1999 3138 630 69.1 9,4 68.0 E S 3 4 5 6 7 8 32.0 60.8 17.6 39.6 19.8 73.0 22.3 34.9 6.0 6 42 5.0 42 6.0 5.0 5.5 5.16.8 58 11 40.5 116 59.0 16.8 39.5 5.16.8 5.8 11.3 33.3 15.6 31.2 14.9 23.6 0.3 4.3 0.1 1.3 0.0 18.9 0.1 1.4			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85.7 63.6 70.7 43.7 6.7 13 82.5 52.8 61.3 (1999) 13188 636 636 69.1 9.4 68.0 69.1 9.4 68.0 69.1 1 2 3 4 5 6 7 8 6 7 8 6.0 6.0 17.6 9.9 17.8 6.0 17.6 9.9 17.8 6.0 17.6 9.9 17.8 17.8 17.8 17.8 17.8 17.8 17.8 17.8			_	25.9	4.5	11.5	0.7	5.9	5.3	9.4	6.5	5.5	15.3
F E E D A A F 1999 3138 69.1 1			9.6	70.7	43.7	6.7	1.3	82.5	52.8	61.3	72.6	49.0	79.6
th 69.1 9.4 3.3.8	rp LOS	L	ᆈ	ш		⋖	⋖	니		ш	ш		ا۳
69.1 94 E	roach Vol, veh/h	19	66			3138			989			782	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 1 2 3 4 5 6 7 320 6.08 176 396 198 730 22.3 6.0 6 42 5.0 42 6.0 5.0 5 16.8 58 15 40.5 16 59.0 16.8 5 11.7 50.5 13.3 33.3 15.6 31.2 14.9 0.3 4.3 0.1 1.3 0.0 18.9 0.1	roach Delay, s/veh	69	7.			9.4			0.89			70.8	
1 2 3 4 5 6 7 7 3 6 7 3 6 7 7 8 9 6 17 8 9 6 17 8 9 6 17 8 17 8 9 6 17 8 17 8 17 8 17 8 17 8 17 8 17 8 17	roach LOS		ш			A			Ш			ш	
32.0 60.8 176 39.6 19.8 730 22.3 5.6 0.8 176 39.6 19.8 730 22.3 5.6 0.8 5.0 18.9 5.0 18.9 5.0 18.9 0.1 17. 50.5 13.3 33.3 15.6 31.2 14.9 0.3 4.3 0.1 1.3 0.0 18.9 0.1 0.0 18.9 0.1	7	_	2	3	4	2	9	7	8				
320 608 176 396 198 73.0 22.3 6.0 6.0 6.1 7.0 2.3 6.0 5.0 6.0 5.0 6.0 5.0 6.0 5.0 6.0 5.0 6.0 5.0 6.0 5.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	gned Phs	_	2	3	4	2	9	7	8				
60 .6 .42 50 .42 60 50 5 168 .58 .15 405 .16 590 168 .5 11.7 50.5 13.3 33.3 15.6 31.2 149 2 0.3 4.3 0.1 1.3 0.0 18.9 0.1 D			8.	17.6	39.6	19.8	73.0	22.3	34.9				
s 16.8 '58 '15 40.5 '16 59.0 16.8 s 11.7 50.5 13.3 33.3 15.6 31.2 14.9 0.3 4.3 0.1 1.3 0.0 18.9 0.1 40.6			9	* 4.2	2.0	* 4.2	0.9	2.0	* 5				
s 11,7 50.5 13.3 33.3 15.6 31.2 14.9 0.3 4.3 0.1 1.3 0.0 18.9 0.1 40.6 D	(0		23	* 15	40.5	* 16	29.0	16.8	* 39				
03 43 0.1 1.3 0.0 189 0.1 40.6 D	S		.5	13.3	33.3	15.6	31.2	14.9	23.6				
	0	3	1.3	0.1	1.3	0.0	18.9	0.1	1.4				
	section Summary												
	A 2010 Ctrl Delay			40.6									
	4 2010 LOS												
	1 2010 LO3			٥									
Votes	Si												

Comparison		1	†	<u> </u>	>	Ļ	1	✓	—	4	۶	→	*
	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
250 1572 180 380 2492 181 400 70 290 261 90 230 1572 180 350 2492 181 40 70 290 261 90 100	Lane Configurations	1	444	¥C	je-	444	¥C.	1	æ,	¥C	K	*	_
230 1572 180 350 2492 181 400 70 290 261 90 9 0	Traffic Volume (veh/h)	230	1572	180	320	2492	181	400	70	290	261	8	260
5 2 12 1 6 16 6 6 0	Future Volume (veh/h)	230	1572	180	320	2492	181	400	70	290	261	06	260
100	Number	2	2	12		9	16	3	∞	18	7	4	14
1,00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	
1,00	Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		96:0	1.00		0.96
1845 1845 <td< td=""><td>Parking Bus, Adj</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td></td<>	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
240 1638 188 365 2596 189 417 245 188 272 94 2 3 1 3 <td>Adj Sat Flow, veh/h/ln</td> <td>1845</td>	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
2 3 1 1 3 1 1 3 1 1 2 1 2 1 1 2 1 2 1 1 2 1 3	Adj Flow Rate, veh/h	240	1638	188	365	2596	189	417	245	188	272	94	271
0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	Adj No. of Lanes	2	က	-	-	3	-	2	-		2	-	_
3 3	Peak Hour Factor	96.0	96.0	96.0	96.0	96.0	96.0	96:0	96.0	96.0	96:0	96:0	0.96
538 2014 793 349 2159 821 334 256 335 295 021 623 655 1556 1757 686 0.11 0.17 0.10 0.16 240 1638 1856 1757 5636 157 3514 1845 194 240 1638 188 365 2596 189 417 245 188 272 94 1704 1679 1557 1757 1845 185 272 94 1700 167 175 1681 191 123 117 68 92 40.2 83 298 64.3 0.0 16.3 191 127 68 92 40.2 83 298 64.3 10 16.3 191 127 68 1.00 1.00 1.00 1.00 1.00 10 10 10 10 10 10 10 10 <td>Percent Heavy Veh, %</td> <td>m</td> <td>3</td> <td>3</td> <td>3</td> <td>m</td> <td>m</td> <td>m</td> <td>m</td> <td>3</td> <td>m</td> <td>m</td> <td>(*)</td>	Percent Heavy Veh, %	m	3	3	3	m	m	m	m	3	m	m	(*)
021 053 053 040 086 086 011 017 017 010 016 3408 5036 1556 1757 5056 1857 3514 1851 1502 3408 1845 240 1638 83 265 5296 1857 1757 1845 1502 3408 1845 92 40.2 8.3 29.8 64.3 0.0 16.3 19.1 12.3 11.7 6.8 92 40.2 8.3 29.8 64.3 0.0 16.3 19.1 12.3 11.7 6.8 92 40.2 8.3 29.8 64.3 0.0 16.3 19.1 12.3 11.7 6.8 92 40.2 8.3 29.8 64.3 0.0 16.3 19.1 12.3 11.7 6.8 92 40.2 8.3 29.8 64.3 0.0 16.3 19.1 12.3 11.7 6.8 92 40.2 8.3 29.8 64.3 0.0 16.3 19.1 12.3 11.7 6.8 92 40.2 8.3 29.8 64.3 0.0 16.3 19.1 12.3 11.7 6.8 93 2014 793 349 2159 821 382 314 256 335 295 94 2014 793 349 2159 821 382 314 256 335 295 95 2014 793 349 2159 821 382 314 256 335 295 96 0.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Cap, veh/h	538	2014	793	349	2159	821	382	314	256	335	295	240
3408 5036 1556 1757 5036 1557 3514 1845 1862 3408 1845 240 1845 186 186 186 186 186 186 186 186 187 340 186 340 186 340 186 340 340 186 36 36 186 186 340 186 38 36 38 36 38 36 38 38	Arrive On Green	0.21	0.53	0.53	0.40	98.0	98.0	0.11	0.17	0.17	0.10	0.16	0.16
240 1638 188 365 2596 189 417 245 188 272 94 1704 1679 1856 175 169 185 175 169 170 185 170 1845 92 402 83 298 64.3 0.0 16.3 19.1 12.3 11.7 68 9.2 40.2 8.3 29.8 64.3 0.0 16.3 19.1 12.3 11.7 68 5.38 2014 793 349 2159 821 382 314 256 335 295 5.88 2014 793 349 2159 821 382 304 10.0 100	Sat Flow, veh/h	3408	5036	1556	1757	5036	1557	3514	1845	1502	3408	1845	1499
1704 1679 1556 1757 1679 1556 1757 1679 1556 1757 1679 1657 1757 168 1704 1845 92 40.2 8.3 29.8 64.3 0.0 16.3 19.1 12.3 11.7 68 9.2 40.2 8.3 29.8 64.3 0.0 16.3 19.1 12.3 11.7 68 1.00 <t< td=""><td>Grp Volume(v), veh/h</td><td>240</td><td>1638</td><td>188</td><td>365</td><td>2596</td><td>189</td><td>417</td><td>245</td><td>188</td><td>272</td><td>94</td><td>271</td></t<>	Grp Volume(v), veh/h	240	1638	188	365	2596	189	417	245	188	272	94	271
92 40.2 8.3 29.8 64.3 0.0 16.3 19.1 12.3 11.7 6.8 19.2 40.2 8.3 29.8 64.3 0.0 16.3 19.1 12.3 11.7 6.8 11.0 100 100 100 100 100 100 100 100 10	Grp Sat Flow(s),veh/h/ln	1704	1679	1556	1757	1679	1557	1757	1845	1502	1704	1845	1499
92 40.2 8.3 29.8 64.3 0.0 16.3 19.1 12.3 11.7 6.8 11.0 1.00 1.00 1.00 1.00 1.00 1.00 1.	Q Serve(g_s), s	9.2	40.2	8.3	29.8	64.3	0.0	16.3	19.1	12.3	11.7	8.9	17.4
1,00	Cycle Q Clear(g_c), s	9.2	40.2	8.3	29.8	64.3	0.0	16.3	19.1	12.3	11.7	8.9	17.4
538 2014 793 349 2159 821 382 314 256 335 296 645 681 024 105 1.20 023 109 078 0.32 296 538 2014 793 349 2159 821 382 314 256 335 296 133 133 133 200 200 200 100 100 100 100 100 053 053 053 009 009 009 100	Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
045 081 024 105 120 023 109 078 073 081 0.32 538 2014 793 349 2199 821 382 508 414 341 492 1.33 1.33 2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Grp Cap(c), veh/h	238	2014	793	349	2159	821	382	314	256	335	295	240
538 2014 793 349 2159 821 368 414 341 492 133 133 200 200 100 <td>V/C Ratio(X)</td> <td>0.45</td> <td>0.81</td> <td>0.24</td> <td>1.05</td> <td>1.20</td> <td>0.23</td> <td>1.09</td> <td>0.78</td> <td>0.73</td> <td>0.81</td> <td>0.32</td> <td>1.13</td>	V/C Ratio(X)	0.45	0.81	0.24	1.05	1.20	0.23	1.09	0.78	0.73	0.81	0.32	1.13
1.33 1.33 1.33 2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	238	2014	793	349	2159	821	382	208	414	341	492	400
0.53 0.53 0.53 0.09 0.09 0.09 1.00 1.00 1.00 1.00 1.00	HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
18.5 30.5 15.7 45.2 10.7 41.3 66.8 59.5 28.0 66.3 55.8 10.1 20.1 20.2 20.2 20.3 20.5 20.2 20.3 20.5 20.3 20.5	Upstream Filter(I)	0.53	0.53	0.53	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00
0.1 2.0 0.4 28.3 91.6 0.1 73.1 1.6 1.5 12.7 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	53.5	30.5	15.7	45.2	10.7	4.3	8.99	59.5	28.0	66.3	22.8	33.1
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	0.1	2.0	0.4	28.3	91.6	0.1	73.1	1.6	1.5	12.7	0.2	78.1
4.3 18.9 3.6 17.1 45.5 1.0 11.8 9.9 5.2 6.1 3.5 53.6 3.5 16.1 73.5 10.23 4.4 1400 61.1 29.5 79.0 56.0 13.5 2066 8 7 8 6.7 850 6.37 6.37 33.5 8 93.1 850 850 6.37 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 34.0 66.0 21.0 29.0 29.7 70.3 19.7 30.3 4.2 6.0 47 5 6 7 8 4 5 6 7 8 4 7 8 9.2 8 6 7 8 4 7 1 2 3 4 5 6 7 8 4 1 4 9 6 7 8 4 7 8 1 4 9 6 7 8 4 7 8 1 4 9 6 7	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33.5 3.7 10.1 73.5 10.2.3 4.4 140.0 0.1. 27.5 770 50.0 10.0 1.3 150.0 10.1 27.5 770 50.0 10.0 1.3 150.0 10.1 27.5 770 50.0 10.0 1.3 10.0 10.3 10.1 2.3 4 5 6 7 8 8 89.3 10.0 6.0 21.0 29.0 29.7 70.3 19.7 30.3 10.7 30.3	%ile BackOfU(50%),veh/in	4.3	18.9	3.6	1.7.	45.5	0.1	8.5	9.6	5.2	- 0° C	3.5	12.4
2006 B F F F F F F F C E C E S 33.5 33.5 93.1 92.8 60	LnGrp Delay(d),s/ven	53.6	32.5	 10. C	73.5	102.3	4.4	140.0	61.1	29.5	0.6/	26.0	= -
3.5 9.150 0.00 3.150 0.00 3.15	Approach Vol south		2000		-	2150	1		J 050	اد		7 7 7	
1 2 3 4 5 6 7 8 34.0 66.0 21.0 29.0 29.7 70.3 19.7 30.3 *3.0 440 *16 *40 9.5 *64 *15 41.3 31.8 42.2 18.3 19.4 11.2 66.3 13.7 21.1 0.0 1.3 0.0 0.8 0.0 0.0 0.1 1.1	Approach Delay, Sweh		33.5			93.1			92.8			89.3	
1 2 3 4 5 6 7 34.0 66.0 21.0 29,0 29,7 70.3 19,7 *4.2 6.0 *4.7 *5 6.0 *6 *5 31.8 42.2 18.3 19,4 11.2 66.3 13,7 0.0 1.3 0.0 0.8 0.0 0.0 0.1	Approach LOS		O			ш			ш			ш	
1 2 3 4 5 6 7 70.3 19.7 4.2 6.0 21.0 29.0 29.7 70.3 19.7 4.2 6.0 4.7 5 6.0 7 6 5 8 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Timer	<u>-</u>	2	c	4	LC:	9	7	00				
34.0 66.0 21.0 29.0 29.7 70.3 19.7 4.2 6.0 4.7 *5 6.0 *6 *5 3.3 44.0 *16 *40 9.5 *64 *15 0.0 1.3 0.0 0.8 0.0 0.0 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	Assigned Phs	-	2	c	4	22	9	7	0				
74.2 6.0 74.7 °5 6.0 °6 °5 °5 °30 44.0 °16 °40 9.5 °64 °15 °318 42.2 18.3 19.4 11.2 66.3 13.7 °0 °1 °1 °0 °1 °0 °0 °1 °0 °0 °1 °0 °0 °0 °0 °0 °0 °0 °0 °0 °0 °0 °0 °0	Phs Duration (G+Y+Rc), s	34.0	0.99	21.0	29.0	29.7	70.3	19.7	30.3				
30 44.0 *16 *40 9.5 *64 *15 318 42.2 18.3 19.4 11.2 66.3 13.7 0.0 1.3 0.0 0.8 0.0 0.0 0.1 74.3	Change Period (Y+Rc), s	* 4.2	0.9	* 4.7	*	0.9	9 *	× N	4.7				
31.8 42.2 18.3 19.4 11.2 66.3 13.7 0.0 1.3 0.0 0.8 0.0 0.0 0.1 74.3	Max Green Setting (Gmax), s	* 30	44.0	* 16	* 40	9.6	* 64	* 15	41.3				
, s 0.0 1.3 0.0 0.8 0.0 0.0 1.7 74.3 E	Max Q Clear Time (g_c+I1), s	31.8	42.2	18.3	19.4	11.2	66.3	13.7	21.1				
	Green Ext Time (p_c), s	0.0	1.3	0.0	0.8	0.0	0.0	0.1	1.1				
	Intersection Summary												
	HCM 2010 Ctrl Delay			74.3									
	HCM 2010 LOS			. ш									
													П

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HCM 2010 Signalized Intersection Summary 9: Hidden Valley Rd. & Palomar Airport Rd.

Long-Term + Project (PAL 2) PM 08/24/2017

Long-Term + Project (PAL 2) PM 08/24/2017

Movement EB EB EB WB WB WB WB NB NB NB N		4	1	~	\	Ļ	1	•	—	•	۶	→	*
	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
90 2233 150 131 2873 90 180 50 101	Lane Configurations	-	444	¥C	je-	441		je-	æ		y -	*	æ_
) 90 2233 150 131 2873 90 180 50 101 101 101 101 101 101 101 101 101	Traffic Volume (veh/h)	8	2233	150	131	2873	06	180	20	101	220	09	240
100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Future Volume (veh/h)	3 -	2233	150	131	28/3	96 %		20	101	220	09	240
1.00	Initial O (Ob), veh	n C	7 0	<u> </u>	- c	0 0	<u> </u>	n C	0 0	<u>o</u> C	· c	† C	<u>+</u> C
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Ped-Bike Adi(A pbT)	1.00	,	0.99	1.00	,	0.96	1.00	,	96.0	1.00		0.96
high 1845 1845 1845 1845 1900 1845 1945 1900 1944 1945 1845 1945 1945 1945 1945 1945 1945 1945 19	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
96, 2376, 160, 139, 3056, 96, 191, 53, 107, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1845
1	Adj Flow Rate, veh/h	%	2376	160	139	3056	%	191	23	107	234	64	255
0.94 0.94 <td< td=""><td>Adj No. of Lanes</td><td>- 3</td><td>c :</td><td>_ ;</td><td>- :</td><td>e .</td><td>0</td><td>- 3</td><td></td><td>0</td><td></td><td>- :</td><td></td></td<>	Adj No. of Lanes	- 3	c :	_ ;	- :	e .	0	- 3		0		- :	
9 3 4 4 4 4 4	Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
0.02 0.31 0.31 0.22 1.00 1.00 0.16 0.16 1.75 5.036 1551 1757 5.012 1.00 0.00 0.16 0.16 1.75 1.00 0.00 0.16 0.16 1.00 0.00 0.131 0.32 1.00 1.00 0.10 0.10 0.10 0.10 0.10 0.1	Can veh/h	47	2343	856	180	1777	, %	150	83	166	211	341	295
1757 5036 1551 1757 5012 155 1757 529 1068 196 1451 1757 1679 1810 1757 1679 1810 1757 1679 1810 1757 1679 1810 1757 1679 1810 1757 1679 1810 1757 1879 1810 1757 1879 1810 181	Arrive On Green	0.02	0.31	0.31	0.22	1.00	1.00	0.09	0.16	0.16	0.12	0.20	0.20
96 2376 160 139 2034 1118 191 0 160 1757 1679 1551 1757 1679 181 191 0 141 4.0 698 5.0 11.1 0.0 82.9 128 0.0 14.1 1.00 698 5.0 11.1 0.0 82.9 128 0.0 14.1 1.00 1.00 1.00 0.09 1.00 10.0 10.1 14.1 14.1 0.0 249 229 128 0.0 14.1 1.0 0.67 14.1 1.0 0.67 0.0 14.1 1.0 0.67 0.0 14.1 1.0 0.67 0.0	Sat Flow, veh/h	1757	5036	1551	1757	5012	155	1757	529	1068	1757	1845	1508
1757 1679 1551 1757 1679 1810 1757 0 1597 14.0 14.	Grp Volume(v), veh/h	%	2376	160	139	2034	1118	191	0	160	234	64	255
40 698 50 11.1 0.0 82.9 12.8 0.0 14.1 4.0 69.8 5.0 11.1 0.0 82.9 12.8 0.0 14.1 1.00 1.00 1.00 0.09 100 0.67 0.0 0.67 47 234.3 856 189 1856 1001 150 0 249 2.05 1.01 0.19 0.74 1.10 1.12 127 0 249 0.67 0.67 2.00 2.00 2.00 1.00 1.00 0.04 0 0.04 0	Grp Sat Flow(s),veh/h/ln	1757	1679	1551	1757	1679	1810	1757	0	1597	1757	1845	1508
4.0 69.8 5.0 11.1 0.0 82.9 12.8 0.0 14.1 1.00 1.00 1.00 1.00 0.05 1.00 0.67 1.00 1.00 1.00 1.00 0.04 0.00 1.00 0.04 2.06 1.01 0.19 0.74 1.10 1.12 1.27 0.00 0.04 47 2343 856 189 1856 1001 1.00 0.04 0.04 0.09 0.09 1.00 1.00 0.00 0.00 0.00 1.00 1.00 0.00 <	Q Serve(g_s), s	4.0	8.69	2.0	11.1	0.0	82.9	12.8	0.0	14.1	18.0	4.3	24.5
1.00		4.0	8.69	2.0	11:1	0.0	82.9	12.8	0.0	14.1	18.0	4.3	24.5
41 2343 8356 189 1856 1001 150 0.64 47 2343 856 189 1856 1001 150 0.60 664 47 2343 856 189 1856 1001 150 0.60 664 0.67 0.67 0.67 2.00 2.00 1.00 1.00 1.00 0.40 0.40 0.09 0.09 1.09 1.00 1.00 1.00 0.0	Prop In Lane	1.00	0	1.00	1.00	i i	0.00	1.00		0.67	1.00	,	1.00
47 2343 856 189 1856 1001 150 0 362 0.67 0.67 2.00 2.00 1.00	Lane Grp Cap(c), ven/n V/C Ratin(X)	2 05	101	820	0 74	1 10	11001	127	000	249	111	361	295
0.67 0.67 0.67 2.00 2.00 1.00 1.00 1.00 0.40 0.40 0.40 0.09 0.09 0.09 1.00 1.00 0.40 0.40 0.40 0.09 0.09 0.09 1.00 0.68 0.00 1.00 0.00 0.00 0.00 0.00 0.00 0.0	Avail Cap(c_a), veh/h	47	2343	856	189	1856	1001	150	0	362	211	480	392
0.40 0.40 0.40 0.09 0.09 0.09 1.00 0.00 1.00 0.03 153 153 8.4 56.9 0.0 0.0 0.6 686 0.0 59.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	HCM Platoon Ratio	19.0	19.0	19.0	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
73.7 51.6 8.4 56.9 0.0 0.0 68.6 0.0 59.4 50.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	0.40	0.40	0.40	0.09	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00
500.3 15.3 0.2 1.2 44.1 54.0 165.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	eh	73.7	51.6	8.4	26.9	0.0	0.0	9.89	0.0	59.4	0.99	50.3	58.4
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		500.3	15.3	0.2	1.2	44.1	54.0	165.0	0.0	1.0	94.6	0.1	11.6
8.5 35.7 2.2 5.4 11.4 15.0 13.1 0.0 0.3 5.3 5.7 2.2 5.4 11.4 15.0 13.1 0.0 0.3 5.3 5.3 5.2 5.2 5.2 5.4 11.4 15.0 13.1 0.0 0.3 5.3 5.2 5.2 5.2 5.2 5.2 5.2 5.2 5.2 5.2 5.2	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1		8.5	722.7	7.7	58.1	11.4	15.0	13.1	0:0	60.3	14.3	2.7	70.07
2632 3291 351 819 48.1 1154.7 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 22.1 758 170 35.1 9.0 88.9 23.0 29.1 6.0 6 42 5.7 5.0 6.0 5.0 5.7 8.3 70 13 390 4.0 73.3 18.0 '5.7 8.3 70 0 0 0.0 0.5 0.0 0.0 0.5 71.3 71.3		7. J		99	. Ш	- 1	5 1	F.555.0	9	÷ ш	- E	C.SC	5. П
81.9 48.1 F D D A B D A B D A D A D A D A D A D A D	Approach Vol, veh/h		2632			3291			351			553	
1	Approach Delay, s/veh		81.9			48.1			154.7			106.0	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 22.1 758 170 35.1 90 889 23.0 6.0 6 42 5.7 5.0 6.0 5.0 8.3 70 713 390 4.0 73.3 18.0 0.0 0.0 0.0 0.5 0.0 0.0 0.0 71.3 71.3	Approach LOS		ш.			Ω			ш			ட	
1 2 3 4 5 6 7 7 22.1 758 170 35.1 90 889 230 60 0 °6 °42 5.7 5.0 6.0 5.0 °6 13.1 71.8 148 26.5 6.0 849 200 60 0.0 0.0 0.0 0.5 0.0 0.0 0.0 0.0 13.1 71.3	Timer	_	2	3	4	5	9	7	8				
221 758 170 351 90 889 230 360 76 42 57 50 60 50 50 80 80 80 80 80 80 80 80 80 80 80 80 80	Assigned Phs	_	2	3	4	2	9	7	8				
60 6 76 742 57 50 60 50 80 81 31 31 718 148 265 60 849 200 00 00 00 05 00 00 00 00 00 00 00 00 0	Phs Duration (G+Y+Rc), s	22.1	75.8	17.0	35.1	0.6	88.9	23.0	29.1				
8.3 °70 °13 390 40 733 18.0 13.1 718 14.8 26.5 6.0 84.9 20.0 0.0 0.0 0.5 0.0 0.0 0.0 71.3 E	Change Period (Y+Rc), s	0.9	9 *	* 4.2	2.7	2.0	0.9	2.0	* 5.7				
0.0 0.0 0.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Max Green Setting (Gmax), s	8.3	* 70	* 13	39.0	4.0	73.3	18.0	* 34				
	Green Ext Time (p_c), s	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5				
	Intersection Summary												
	HCM 2010 Ctrl Delay			71.3									
	HCM 2010 LOS			ш									
Makes	Materia												

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10 Report	Page 15
Synchro	

Movement		1	†	<u> </u>	-	Ļ	1	•	—	•	۶	→	*
torns	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
verly(h) 200 1524 330 313 1914 112 220 Verly(h) 200 1524 330 313 1914 112 220 pbT) 100	Lane Configurations	F	444	¥	K.	444	¥	K.	*	¥	×	*	*-
(veh/h) 200 1524 330 313 1914 112 220 pbT) 0 </td <td>Traffic Volume (veh/h)</td> <td>200</td> <td>1524</td> <td>330</td> <td>313</td> <td>1914</td> <td>112</td> <td>220</td> <td>290</td> <td>183</td> <td>53</td> <td>200</td> <td>630</td>	Traffic Volume (veh/h)	200	1524	330	313	1914	112	220	290	183	53	200	630
th bit	Future Volume (veh/h)	200	1524	330	313	1914	112	220	290	183	53	200	630
hith 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	2	2	12		9	16	3	∞	18	7	4	14
Marchin 100	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
100 100	Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
within 1845 1847 1847 1847 1847 1847 1847 1847 1848 23 3	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
leichth 225 1712 371 352 2151 126 247 s	Adj Sat Flow, veh/h/In	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
s	Adj Flow Rate, veh/h	225	1712	371	352	2151	126	247	326	206	09	295	708
or 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89	Adj No. of Lanes	2	co	-	2	3	-	2	2	-	-	-	_
Veh, % 3 <td>Peak Hour Factor</td> <td>0.89</td>	Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
389 1984 618 404 1937 598 223 11 30.3 30.79 0.79 0.79 0.79 0.30 0.38 0.79 0.79 0.79 0.79 0.38 0.79 0.70 0.38 0.79 0.70 0.38 0.79 0.70 0.70 0.70 0.70 0.70 0.70 0.70	Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
1,000,000,000,000,000,000,000,000,000,0	Cap, veh/h	389	1984	618	404	1937	268	223	1077	477	76	504	603
3408 5036 1568 3408 5036 1556 3408 3408 3408 5036 1556 3408	Arrive On Green	0.23	0.79	0.79	0.12	0.38	0.38	0.07	0.31	0.31	0.04	0.27	0.27
225 1772 371 352 2151 126 247 1794 158 1704 1679 1556 1704 17 8 8 8 33.8 10.8 15.2 57.7 6.6 9.8 1 8 8 33.8 10.8 15.2 57.7 6.6 9.8 1 100 100 100 100 100 100 100 100 100	Sat Flow, veh/h	3408	5036	1568	3408	5036	1556	3408	3202	1553	1757	1845	1551
1704 1679 1568 1704 1679 1556 1704 1704 1679 1568 1704 1679 1568 1704 1679 1556 1704 188 33.8 10.8 15.2 57.7 6.6 9.8 1.00 1.0	Grp Volume(v), veh/h	225	1712	371	352	2151	126	247	326	206	09	295	708
88 338 10.8 15.2 57.7 6.6 9.8 1 80 338 10.8 15.2 57.7 6.6 9.8 1 100 389 1984 618 404 1937 598 223 11 2058 086 0.60 0.87 1,11 0.21 1,11 0 200 2.00 2.00 1.00 1.00 1.00 1.00 1.00 0.38 0.38 0.38 1.00 1.00 1.00 1.00 1.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 4,1 15.3 6,4 6.0 0.0 0.0 0.0 4,1 15.3 8,1 6.7 3.7 0.8 9.27 0.0 0.0 0.0 0.0 0.0 0.0 0.0 4,1 15.3 8,1 6.7 3.7 0.8 9.27 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	3rp Sat Flow(s),veh/h/ln	1704	1679	1568	1704	1679	1556	1704	1752	1553	1757	1845	1551
88 338 10.8 15.2 57.7 6.6 9.8 1 100 389 1984 618 4100 100 100 389 1984 618 8 20 100 100 258 0.86 0.60 0.87 1.11 0.21 1.11 0 200 2.00 2.00 1.00 1.00 1.00 1.00 1.00 0.8 0.38 0.38 1.00 1.00 1.00 1.00 1.00 0.1 17 2.3 57.7 0.8 9.27 1.00 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 1.5 3 4.6 5.0 46.2 20.6 70.1 3 0.2 2.1 1.7 2.3 57.7 0.8 9.27 1.00 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1 1.2 3 4.6 5.6 7 0.2 2.1 1.2 3 4.6 5.7 3.3 1.3 0.7 5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	2 Serve(g_s), s	8.8	33.8	10.8	15.2	57.7	9.9	8.6	10.7	15.9	5.1	41.0	41.0
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Cycle Q Clear(g_c), s	89.	33.8	10.8	15.2	57.7	9.9	8.6	10.7	15.9	5.1	41.0	41.0
389 1984 618 404 1937 598 223 11 626 026 026 111 021 1,111 200 2.00 2.00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1	Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
058 086 060 087 1,11 021 1,11 02 1 1,11 02 1 1,02 1 1,02 1 1,02 2,00 2,00	-ane Grp Cap(c), veh/h	386	1984	618	404	1937	298	223	1077	477	76	504	603
466 1984 618 920 1937 598 223 11 208 220 200 100 100 100 100 100 0.38 0.38 0.38 0.38 0.38 0.38 0.39 0.30 0.00 100 100 100 0.2 2.1 1.7 2.3 57.7 0.8 92.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	//C Ratio(X)	0.58	98.0	09.0	0.87	1.11	0.21	1.1	0.30	0.43	0.79	1.11	1.17
200 200 200 100 100 100 100 100 100 0.38 0.38 0.38 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Avail Cap(c_a), veh/h	466	1984	618	920	1937	298	223	1077	477	82	204	603
0.38 0.38 0.38 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
54.7 13.2 6.4 66.0 46.2 20.6 70.1 3 0.2 2.1 1.7 2.3 57.7 0.8 92.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 4.1 15.3 4.6 7.3 37.1 3.0 7.5 54.9 15.3 8.1 6.7 3 37.1 3.0 7.5 54.9 15.3 8.1 6.7 3 37.1 3.0 7.5 54.9 18.0 B A E F F C F 23.08 26.2 18.0 B A E F F C F 24.2 6.5 4 15.6 47.0 23.4 64.0 10.7 E 22.0 65.4 15.0 0.0 0.0 0.0 0.0 0.0	Jpstream Filter(I)	0.38	0.38	0.38	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
02 2.1 1.7 2.3 57.7 0.8 92.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Jniform Delay (d), s/veh	54.7	13.2	6.4	65.0	46.2	20.6	70.1	39.7	41.5	71.1	54.5	45.9
00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ncr Delay (d2), s/veh	0.2	2.1	1.7	2.3	27.7	0.8	92.7	0.1	0.2	30.3	75.3	95.3
4.1 15.3 4.6 7.3 37.1 3.0 7.5 54.9 15.3 8.1 6.73 103.9 2.1.4 16.28 3 0. 2308	nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54.9 15.3 8.1 67.3 103.9 21.4 162.8 2308 2308 262.9 15.0 18.0 85.0 B F C F C F C F C C F C C C C C C C C C	%ile BackOfQ(50%),veh/ln	4.1	15.3	4.6	7.3	37.1	3.0	7.5	5.2	8.9	3.1	31.4	33.4
1 2 3 4 5 6 7 7 1 1 2 3 4 5 6 7 7 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	LnGrp Delay(d),s/veh	54.9	15.3	8.1	67.3	103.9	21.4	162.8	39.7	41.7	101.3	129.8	141.2
2308 2629 18.0 95.0 18.0 95.0 18.0 17.2 3 4 5 6 7 22.0 65.4 15.6 47.0 23.4 64.0 10.7 10.2 10.0 15.5 17.2 35.8 11.8 43.0 10.8 59.7 77.1 0.6 1.7 0.0 0.0 0.3 0.0 0.0 175.5 172 35.8 11.8 43.0 10.8 59.7 77.1 10.0 10.0 0.0 0.0 0.0 0.0	LnGrp LOS		В	A	ш	띡	U	띡			띡	띡	۳
18.0 95.0 18.0 18.0 1 2 3 4 5 6 7 1 2 3 4 5 6 7 22.0 65.4 15.6 47.0 23.4 64.0 10.7 1.5 '41 '38 '9.8 '41 '21 '58 '7.3 1.5 '17.2 35.8 11.8 43.0 10.8 59.7 7.1 0.6 1.7 0.0 0.0 0.3 0.0 0.0 75.5	Approach Vol, veh/h		2308			2629			779			1330	
1 2 3 4 5 6 7 22.0 65.4 15.6 47.0 23.4 64.0 10.7 4.2 63. 58 76 63. 63 74.2 1.5 741 38 9.8 741 21 58 77.3 3,5 172 35.8 118 43.0 10.8 59.7 7.1 0.6 1.7 0.0 0.0 0.3 0.0 0.0	Approach Delay, síveh		18.0			95.0			79.3			134.6	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 22.0 65.4 15.6 4.0 23.4 64.0 10.7 • 42 6.3 58 4.0 6.3 6.3 4.2 1, s 41 38 9.8 41 21 58 7.3 0, s 172 35.8 11.8 43.0 10.8 59.7 7.1 0.6 1.7 0.0 0.0 0.3 0.0 0.0	Approach LOS		В			ш			ш			ш	
1 2 3 4 5 6 7 7 7 2.2 0 654 15.6 47.0 23.4 64.0 10.7 3.4 1.8 3.6 41.0 10.7 3.5 17.2 35.8 11.8 43.0 10.8 59.7 7.1 0.6 1.7 0.0 0.0 0.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Timer		2	3	4	2	9	7	00				
22.0 65.4 15.6 47.0 23.4 64.0 10.7 42.2 65.4 15.6 47.0 23.4 64.0 10.7 42.2 6.3 75.3 76.3 76.3 76.3 76.3 76.3 76.3 77.3 77	Assigned Phs	-	2	m	4	2	9	7	∞				
74.2 *6.3 *5.8 *6 *6.3 *6.3 *4.2 1,5 *41 *38 *98 *41 *21 *58 *7.3 1,5 *172 *35.8 *11.8 *43.0 *10.8 *59.7 *7.1 0.6 *1.7 *0.0 *0.0 *0.3 *0.0 *0.0 75.5 F	Phs Duration (G+Y+Rc), s	22.0	65.4	15.6	47.0	23.4	64.0	10.7	51.9				
0, s · 41 · 38 · 9.8 · 41 · 21 · 58 · 7.3 4 1), s 172 358 118 430 108 59.7 7.1 1 0.6 1.7 0.0 0.0 0.3 0.0 0.0 75.5 F	Change Period (Y+Rc), s	* 4.2	* 6.3	* 5.8	9 *	* 6.3	* 6.3	* 4.2	2.8				
(1), s 17.2 35.8 11.8 43.0 10.8 59.7 7.1 0.6 1.7 0.0 0.3 0.0 0.0 0.0 1.7 5.5 F.F.F.F.F.F.F.F.F.F.F.F.F.F.F.F.F.F	0	* 41	* 38	* 9.8	* 41	* 21	* 58	* 7.3	43.7				
0.6 1.7 0.0 0.0 0.3 0.0 0.0 0.0 1.7 75.5 F	Max Q Clear Time (g_c+l1), s	17.2	35.8	11.8	43.0	10.8	26.7	7.1	17.9				
	Green Ext Time (p_c), s	9.0	1.7	0.0	0.0	0.3	0.0	0.0	1.5				
	Intersection Summary												
	HCM 2010 Ctrl Delay			75.5									
	HOM 2010 CM BOILD			2. 1									
	ICM 2010 ECO			_									
	COLON												

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HCM 2010 Signalized Intersection Summary 11: Camino Vida Roble & Palomar Airport Rd.

Long-Term + Project (PAL 2) PM 08/24/2017

	1	†	~	\	ţ	4	•	←	•	٠	-	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	4413		r	4413		K.	Ŷ,		r	*	¥.
Traffic Volume (veh/h)	74	1836	290	99	1615	09	420	20	200	430	150	244
Future Volume (veh/h)	74	1836	290	09	1615	09	420	20	200	430	150	244
Number	2	2	12	-	9	16	က	ω	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		96.0	1.00		0.97
Parking Bus, Adj	1.00	1.00	1:00	1:00	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	8	1996	315	92	1755	92	457	24	217	467	163	265
Adj No. of Lanes	-	co !	0	-	က	0	2	-	0	-	-	_
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	· ·	. S	· ·	;		m (m (m ;	m (ر ا	· ·	· ·
Cap, veh/h	104	1780	275	19	1830	89 5	503	64	259	377	514	424
Arrive On Green	0.00	0.41	0.41	0.03	0.37	0.37	0.15	0.21	0.21	0.21	0.28	0.28
sat Flow, veh/h	1/2/	43/4	6/2	1/2/	49/0	184	3408	312	1255	/9/	1845	1520
Grp Volume(v), veh/h	8	1522	789	92	1184	636	457	0	271	467	163	265
Grp Sat Flow(s),veh/h/ln	1757	1679	1692	1757	1679	1802	1704	0	1567	1757	1845	1520
Q Serve(g_s), s	6.7	61.1	61.1	5.2	21.6	21.8	19.8	0.0	24.9	32.2	10.5	18.6
Cycle Q Clear(g_c), s	6.7	61.1	61.1	5.2	51.6	51.8	19.8	0.0	24.9	32.2	10.5	18.6
Prop In Lane	1.00		0.40	1.00		0.10	1.00		0.80	1.00		1.00
Lane Grp Cap(c), veh/h	104	1367	689	61	1234	663	503	0	323	377	514	424
V/C Ratio(X)	0.77	1.1	1.15	1.07	96.0	96:0	0.91	0.00	0.84	1.24	0.32	0.63
Avail Cap(c_a), veh/h	104	1367	689	61	1247	699	263	0	387	377	546	450
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.5	44.5	44.5	72.4	46.3	46.3	65.9	0.0	57.1	58.9	42.8	31.2
Incr Delay (d2), s/veh	25.9	61.8	82.1	135.2	17.5	26.4	16.5	0.0	11.3	128.0	0.1	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	40.0	44.2	4.8	27.0	30.7	10.5	0.0	11.8	29.0	5.4	8.0
LnGrp Delay(d),s/veh	95.5	106.2	126.6	209.5	63.8	72.8	79.5	0.0	68.4	186.9	45.9	32.9
LnGrp LOS	띡	ᅵ	띡	띡	ш	ш	ш		ш	띡		ပ
Approach Vol, veh/h		2391			1885			728			895	
Approach Delay, s/veh		112.6			71.9			75.4			115.1	
Approach LOS		ш.			ш			ш			ш	
Timer	-	2	3	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	9.4	67.5	26.3	46.8	15.3	9.19	37.2	35.9				
Change Period (Y+Rc), s	* 4.2	* 6.4	* 4.2	* 5	* 6.4	* 6.4	* 5	* 5				
Max Green Setting (Gmax), s	* 5.2	* 56	* 25	* 44	* 5.3	* 56	* 32	* 37				
	7.2	63.1	21.8	20.6	8.7	53.8	34.2	56.9				
Green Ext Time (p_c), s	0.0	0.0	0.3	1.0	0.0	1.4	0:0	0.8				
Intersection Summary												
HCM 2010 Ctrl Delay			95.4									
HCM 2010 LOS			ш.									
Notes												

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HCM 2010 Signalized Intersection Summary 12: Yarrow Dr./McClellan & Palomar Airport Rd.

Long-Term + Project (PAL 2) PM 08/24/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	4413		F	443		۳	*	*		4	
Traffic Volume (veh/h)	76	2010	80	130	1510	147	170	40	330	177	40	95
Future Volume (veh/h)	9/	2010	80	130	1510	147	170	40	330	177	40	95
Number	2	2	12	-	9	16	7	4	14	က	∞	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		96.0	1.00		0.98	1.00		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, ven/h/ln	0.45	1845	006	144	1470	14.0	1845	1845	1845	1070	1845	100
Adj No of Lance	ç -	2522	60 0	4 +	0/0	000	109	44	700	6	‡ -	9
Auj NO. OI Laires Doak Hour Factor	- 000	000	000	- 000	000	000	000	000	000	000	000	000
Percent Heavy Veh %	5 ~	0.70	0.70	0.70	0.70	0.30	0.30	0.30	0.30	0.70	2.5	5. %
Cap. veh/h	104	2425	96	195	2575	250	349	230	437	215	40	92
Arrive On Green	90.0	0.49	0.49	0.11	0.55	0.55	0.29	0.29	0.29	0.29	0.29	0.29
Sat Flow, veh/h	1757	4962	197	1757	4659	451	1220	1845	1521	618	138	332
Grp Volume(v), veh/h	84	1507	815	144	1208	633	189	44	367	347	0	0
Grp Sat Flow(s),veh/h/ln	1757	1679	1801	1757	1679	1753	1220	1845	1521	1088	0	0
Q Serve(g_s), s	7.1	62.4	63.4	11.9	37.7	37.9	0.0	5.6	34.0	40.5	0.0	0.0
Cycle Q Clear(g_c), s	7.1	62.4	63.4	11.9	37.7	37.9	23.5	5.6	34.0	43.1	0:0	0.0
Prop In Lane	1.00		0.11	1.00		0.26	1.00		1.00	0.57		0.31
Lane Grp Cap(c), veh/h	104	1641	088	195	1855	696	349	230	437	320	0	0
V/C Ratio(X)	0.81	0.92	0.93	0.74	0.65	0.65	0.54	0.08	0.84	0.99	0.00	0.00
Avail Cap(c_a), veh/h	712	1746	936	195	1822	696	346	230	437	320	0	0
HCM Platoon Ratio	00.1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	00.1	00.1
Upstream Filter(I)	1.00	35.6	1.00 25.8	1.00	1.00	1.00 2.2 F	1.00	30.0	1.00	1.00 54.8	0.00	9.0
Incr Delay (d2) slyeh	5.4	0.00	16.9	12.1	2 5	3.4	10.0	0.00	12.0	45.4	0.0	0.0
Initial O Delay(d3).s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%).veh/ln	3.6	31.1	35.6	6.5	17.9	19.2	6.9	1.3	15.8	18.8	0.0	0.0
LnGrp Delay(d),s/veh	75.1	45.3	52.7	7.97	25.2	26.9	47.4	39.0	63.1	102.2	0.0	0.0
LnGrp LOS	Ш	D	D	Е	ပ	ပ	D	D	Е	Ь		
Approach Vol, veh/h		2406			1985			009			347	
Approach Delay, síveh		48.9			29.5			56.4			102.2	
Approach LOS		D			O			ш			ш	
Timer	-	2	3	4	2	9	7	∞				
Assigned Phs	-	2		4	2	9		∞				
Phs Duration (G+Y+Rc), s	22.7	79.3		48.0	13.1	88.9		48.0				
	0.9	9 *		4.9	* 4.2	0.9		4.9				
Max Green Setting (Gmax), s	23.8	* 78		43.1	* 61	31.0		43.1				
	13.9	65.4		36.0	1.6	39.9		45.1				
Green Ext Time (p_c), s	0.0	7.9		0.0	0.1	0.0		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay HCM 2010 LOS			46.0 D									

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HCM 2010 Signalized Intersection Summary 13: El Camino Real & Palomar Airport Rd.

Long-Term + Project (PAL 2) PM 08/24/2017

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	444	¥	F	444	N. N.	F	444	N.	F	444	X _
Traffic Volume (veh/h)	443	1801	263	280	1171	200	403	1130	099	160	1060	273
Future Volume (veh/h)	443	1801	263	280	1171	200	403	1130	099	760	1060	273
Number	വ	2	12	- (9	16	က	∞ (18	7	4	14
Initial O (Ob), veh	0 6	0	0 8	0 6	0	0 8	0 6	0	0 6	0 6	0	0 0
Ped-Bike Adj(A_pb1)	9.6	5	0.99	9.6	5	0.99	1.00	6	1.00	1.00	6	0.99
Parking Bus, Adj	18/K	18.4F	18.4F	184E	1845	1845	1845	184F	1845	1845	1845	1845
Adj Flow Rate, veh/h	471	1916	280	617	1246	628	429	1202	707	809	1128	290
Adj No. of Lanes	2	c	-	2	<u>ب</u>	2	2	3	2	2	c	-
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	c	3	3	3	c	3
Cap, veh/h	517	1343	413	386	1149	621	409	1386	1072	630	1712	99/
Arrive On Green	0.15	0.27	0.27	0.04	0.08	0.08	0.12	0.28	0.28	0.18	0.34	0.34
Sat Flow, veh/h	3408	5036	1550	3408	5036	2723	3408	5036	2760	3408	5036	1554
Grp Volume(v), veh/h	471	1916	280	617	1246	628	429	1202	702	800	1128	290
Grp Sat Flow(s),veh/h/ln	1704	1679	1550	1704	1679	1362	1704	1679	1380	1704	1679	1554
Q Serve(g_s), s	20.4	40.0	17.6	17.0	34.2	22.5	18.0	34.1	14.3	27.7	28.6	17.5
Cycle Q Clear(g_c), s	20.4	40.0	17.6	17.0	34.2	22.5	18.0	34.1	14.3	27.7	28.6	17.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	217	1343	413	386	1149	621	409	1386	1072	630	1712	99/
V/C Ratio(X)	0.91	1.43	89.0	1.60	1.08	1.01	1.05	0.87	0.65	1.28	99.0	0.38
Avail Cap(c_a), veh/h	591	1343	413	386	1149	621	409	1578	1177	630	1712	766
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.26	0.26	0.26	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	62.6	22.0	26.0	72.2	69.4	29.9	0.99	21.8	37.6	61.1	42.1	23.8
Incr Delay (d2), s/veh	15.9	196.4	3.6	272.0	42.6	21.1	57.9	7.5	3.1	129.1	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.8	43.0	8.0	22.6	20.5	10.3	11.8	16.8	2.8	24.3	13.3	7.5
LnGrp Delay(d),s/veh	78.5	251.4	29.7	344.2	111.9	51.0	123.9	59.3	40.7	190.2	42.3	23.9
LnGrp LOS	ш	니	ပ	띡	니	ᅵ	니	ш		띡		ျ
Approach Vol, veh/h		2667			2491			2333			2227	
Approach Delay, s/veh		197.6			154.1			9.59			93.6	
Approach LOS		Ŀ			ш			Ш			ш	
Timer		2	က	4	2	9	7	∞				
Assigned Phs	1	2	3	4	2	9	7	80				
Phs Duration (G+Y+Rc), s	23.0	46.0	24.0	57.0	28.8	40.2	33.7	47.3				
	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9				
	10.0	40.0	18.0	51.0	72 4	31.0	75.0	47.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	6.4	0.4	0.0	0.0	5.2				
Intersection Summary												
HCM 2010 Ctrl Delay			130.9									
HCM 2010 LOS			ш									

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HCM 2010 Signalized Intersection Summary 14: Innovation Way/Loker Ave. & Palomar Airport Rd.

Long-Term + Project (PAL 2) PM 08/24/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	444	¥C.	*	4413		K	*	¥c.	je.	*	×
Traffic Volume (veh/h)	140	2830	321	130	1820	70	261	20	300	130	0/	370
Future Volume (veh/h)	140	2830	321	130	1820	70	261	20	300	130	70	370
Number	2	2	12	-	9	16	3	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		96.0	1.00		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	146	2948	334	135	1896	73	272	25	312	135	73	382
Adj No. of Lanes	-	က	_	_	က	0	-	-	_	-	-	_
Peak Hour Factor	96.0	96.0	96.0	96.0	96.0	96:0	96:0	96:0	96:0	96:0	96:0	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	170	2595	88	744	4250	163	112	453	372	141	480	395
Arrive On Green	90:0	0.35	0.35	0.85	1.00	1.00	0.07	0.25	0.25	80.0	0.26	0.26
Sat Flow, veh/h	1757	5036	1511	1757	4976	191	1757	1845	1516	1757	1845	1518
Grp Volume(v), veh/h	146	2948	334	135	1278	691	272	25	312	135	73	382
Grp Sat Flow(s),veh/h/ln	1757	1679	1511	1757	1679	1810	1757	1845	1516	1757	1845	1518
Q Serve(g_s), s	12.3	77.3	31.2	2.1	0.0	0.0	8.6	3.3	25.8	11.5	4.6	37.7
Cycle Q Clear(g_c), s	12.3	77.3	31.2	2.1	0.0	0.0	8.6	3.3	25.8	11.5	4.6	37.7
Prop In Lane	1.00		1.00	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	170	2595	881	744	2868	1546	115	453	372	141	480	395
V/C Ratio(X)	0.86	1.14	0.38	0.18	0.45	0.45	2.37	0.11	0.84	96:0	0.15	0.98
Avail Cap(c_a), veh/h	704	2595	881	744	2868	1546	115	453	372	141	480	395
HCM Platoon Ratio	0.67	0.67	0.67	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.00	0.48	0.48	0.48	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.1	49.1	65.7	8.9	0.0	0.0	70.1	44.0	41.5	8.89	42.8	55.0
Incr Delay (d2), s/veh	0.5	61.7	0.1	0.0	0.2	0.4	642.4	0.0	14.7	63.3	0.1	38.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	20.7	13.1	0.1	0.1	0.2	25.2	1.7	12.3	 	2.3	20.0
LnGrp Delay(d),s/veh	9.69	110.8	65.8	8.9	0.2	0.4	712.5	44.0	56.3	132.1	42.8	93.5
LnGrp LOS	ш	-	ш	⋖	⋖	⋖	٠		۳	-		-
Approach Vol, veh/h		3428			2104			636			593	
Approach Delay, s/veh		104.7			0.7			335.9			96.1	
Approach LOS		_			¥			_			_	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	1	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	9.07	83.3	14.0	43.7	18.7	135.2	16.2	41.5				
May Groop Soffing (Cmax) s	0.0	. 77	y 0 0 *	* 20	* 40	22.0	* 12	* 27				
Max O Clear Time (a c+l1) s	0.4	79.3	0.7.0	39.7	14.3	2.0	13.5	27.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.2	8.4	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			03 3									
HCM 2010 LOS			2.5									

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HCM 2010 Signalized Intersection Summary 15: El Fuerte St. & Palomar Airport Rd.

Long-Term + Project (PAL 2) PM 08/24/2017

HCM 2010 Signalized Intersection Summary 16: Melrose Dr. & Palomar Airport Rd.

Long-Term + Project (PAL 2) PM 08/24/2017

Movement												
CVCITICAL	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
-ane Configurations	F	444	¥C	F	441		<u> </u>	₩		E.	4₽	
raffic Volume (veh/h)	131	2628	251	230	1668	100	201	210	410	310	170	91
uture Volume (veh/h)	131	2628	251	230	1668	100	201	210	410	310	170	91
Number	2	2	12	_	9	16	m	∞	18	7	4	14
nitial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	132	2709	259	246	1720	103	207	216	423	320	175	94
Adj No. of Lanes	2	3	-	2	3	0	2	2	0	2	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	m	m	m	m	m	m	2	3	m	3	3
Cap, veh/h	441	1903	288	609	2015	120	232	397	343	279	220	281
Arrive On Green	0.17	0.50	0.50	90.0	0.14	0.14	0.07	0.23	0.23	0.08	0.25	0.25
Sat Flow, veh/h	3408	5036	1556	3408	4852	290	3408	1752	1514	3408	2236	1143
Grp Volume(v), veh/h	135	2709	259	546	1189	634	207	216	423	320	135	134
Grp Sat Flow(s),veh/h/ln	1704	1679	1556	1704	1679	1785	1704	1752	1514	1704	1752	1626
2 Serve(g_s), s	5.2	29.7	16.0	23.9	51.9	52.0	0.6	16.3	34.0	12.3	9.5	10.1
Cycle Q Clear(g_c), s	5.2	26.7	16.0	23.9	51.9	52.0	0.6	16.3	34.0	12.3	9.5	10.1
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		0.70
ane Grp Cap(c), veh/h	441	1903	288	609	1394	741	232	397	343	279	431	400
//C Ratio(X)	0.31	1.42	0.44	06.0	0.85	0.85	0.89	0.54	1.23	1.15	0.31	0.33
Avail Cap(c_a), veh/h	441	1903	288	1370	1775	944	232	397	343	279	431	400
HCM Platoon Ratio	1.33	1.33	1.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
pstream Filter(I)	0.14	0.14	0.14	0.40	0.40	0.40	1.00	1.00	1.00	1.00	1.00	1.00
Iniform Delay (d), s/veh	56.2	37.3	27.2	69.2	60.3	60.3	69.4	51.2	28.0	8.89	46.2	46.5
ncr Delay (d2), s/veh	0.0	191.1	0.3	0.8	2.9	5.3	31.5	0.9	127.6	8.8	0.2	0.2
nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	59.9	6.9	11.4	24.8	26.9	5.3	8.0	26.4	9.6	4.6	4.6
nGrp Delay(d),s/veh	2.99	228.4	27.5	0.0/	63.1	9:09	100.9	25.0	185.6	16/./	46.4	46.6
nGrp LOS	ᆈ	ᅵ	ပ	삐	삐	ᅦ	ᅵ		ᅵ	띡		
pproach Vol, veh/h		3103			2369			846			289	
Approach Delay, s/veh		204.1			65.4			130.7			112.3	
Approach LOS		ш			ш			ш.			ш.	
imer	_	2	က	4	2	9	7	00				
Assigned Phs	-	2	m	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	31.0	62.7	14.4	41.9	25.4	68.3	17.3	39.0				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	2.0	0.9	9 *	2.0	* 5				
Max Green Setting (Gmax), s	09 ;	24.0	* 10	36.1	2.0	* 79	12.3	* 34				
Max Q Clear Time (g_c+l1), s	25.9	58.7	11.0	12.1	7.2	54.0	14.3	36.0				
Green Ext Time (p_c), s	0.9	0.0	0.0	0.0	0.0	8.2	0.0	0.0				
ntersection Summary												
HCM 2010 Ctrl Delay			139.7									
ICM 2010 LOS			ш									
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Synchro	

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Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	444	¥C.	F	444	¥C.	F	Ħ	*-	F	+)E_
Traffic Volume (veh/h)	1183	2162	553	270	1052	06	263	790	290	210	1150	823
Future Volume (veh/h)	1183	2162	223	270	1052	06	263	790	290	210	1150	823
Number	2	2	12	_	9	16	က	00	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	1259	2300	288	287	1119	96	280	840	309	223	1223	876
Adj No. of Lanes	2	3	-	2	m	_	2	4	_	2	2	2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	33	co	က	33	3	3	က	co	co	33	33	3
Cap, veh/h	1100	3165	981	291	1910	260	186	1599	524	509	872	1568
Arrive On Green	0.32	0.63	0.63	0.09	0.38	0.38	0.02	0.25	0.25	90.0	0.25	0.25
Sat Flow, veh/h	3408	5036	1560	3408	5036	1556	3408	6346	1549	3408	3505	2726
Grp Volume(v), veh/h	1259	2300	288	287	1119	96	280	840	309	223	1223	876
Grp Sat Flow(s),veh/h/ln	1704	1679	1560	1704	1679	1556	1704	1586	1549	1704	1752	1363
Q Serve(g_s), s	48.4	46.8	36.3	12.6	56.6	6.9	8.2	17.1	24.8	9.5	37.3	0.0
Cycle Q Clear(g_c), s	48.4	46.8	36.3	12.6	26.6	6.5	8.2	17.1	24.8	9.5	37.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1100	3165	981	291	1910	280	186	1599	524	209	872	1568
V/C Ratio(X)	1.14	0.73	09.0	0.99	0.59	0.16	1.50	0.53	0.59	1.07	1.40	0.56
Avail Cap(c_a), veh/h	1100	3165	981	291	1910	260	186	1599	524	209	872	1568
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.8	19.0	19.3	68.5	37.2	34.3	70.9	48.4	41.1	70.4	56.3	20.2
Incr Delay (d2), s/veh	66.3	0.1	0.2	48.9	0.3	0.0	252.2	0.2	1.2	81.1	188.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	32.9	21.5	15.6	7.9	12.4	2.8	10.4	7.5	10.8	6.7	40.8	11.4
LnGrp Delay(d),s/veh	117.1	19.2	19.5	117.4	37.5	34.3	323.1	48.5	42.3	151.5	244.7	20.5
LnGrp LOS	ᅵ	В	<u>ه</u>	띡		ပ	니			띡	띡	ပ
Approach Vol, veh/h		4147			1502			1429			2322	
Approach Delay, s/veh		49.0			52.5			101.0			151.2	
Approach LOS		D			Ω			ш.			ш.	
Timer	_	2	3	4	5	9	7	8				
Assigned Phs	1	2	3	4	2	9	7	80				
Phs Duration (G+Y+Rc), s	17.0	100.3	14.2	43.0	54.4	67.9	13.4	43.8				
Change Period (Y+Rc), s	* 4.2	0.9	0.9	* 5.7	0.9	9 *	* 4.2	0.9				
Max Green Setting (Gmax), s	* 13	71.6	8.2	* 37	48.4	* 36	* 9.2	36.0				
Max Q Clear Time (g_c+I1), s	14.6	48.8	10.2	39.3	50.4	28.6	11.2	26.8				
Green Ext Time (p_c), s	0.0	13.8	0.0	0.0	0.0	3.0	0.0	2.8				
Intersection Summary												
HCM 2010 Ctrl Delay			82.7									
HCM 2010 LOS			ш									
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Notes												

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HCM 2010 Signalized Intersection Summary 17: El Camino Real & Town Garden Rd.

Long-Term + Project (PAL 2) PM 0824/2017

Long-Term + Project (PAL 2) PM 08/24/2017

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190 30 140 320 50 191 80 1442 210 281 1822 190 30 140 320 50 191 80 1442 210 281 1822 190 30 140 320 50 191 80 1442 210 281 1822 100 0 0 0 0 0 0 0 0	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
190 30 140 320 50 191 80 1442 210 281 182 190 30 140 320 50 191 80 1442 210 281 182 1 4 140 320 50 190 100 0 <t< td=""><td>Lane Configurations</td><td></td><td>₩</td><td>*</td><td><u>, </u></td><td>æ</td><td></td><td>je-</td><td>444</td><td>¥C.</td><td>r</td><td>444</td><td>*</td></t<>	Lane Configurations		₩	*	<u>, </u>	æ		je-	444	¥C.	r	444	*
190 30 140 320 50 191 80 142 210 281 182 7 4 14 3 8 18 5 2 12 1 6 0	Traffic Volume (veh/h)	190	30	140	320	20	191	8	1442	210	281	1822	09
7 4 14 3 8 18 5 2 1 6 0	Future Volume (veh/h)	190	30	140	320	20	191	8	1442	210	281	1822	09
1.00	Number	7	4	14	က	∞ (18	2	2	12	-	9	16
1,00	Initial Q (Qb), veh	0 6	0	0 2	0 6	0	0 2	0 6	0	0	0 0	0	0
1,00	Ped-Bike Adj(A_pb1)	9.6	5	0.70	9.5	5	0.70	9. 6	5	0.98	00.1	00	1.00
196 141 142 144 145 144 145 144 144 144 144 144 144 144 144 144 144 <td>Parking Bus, Adj</td> <td>1000</td> <td>18.4F</td> <td>1845</td> <td>184F</td> <td>1845</td> <td>1000</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1845</td> <td>1845</td>	Parking Bus, Adj	1000	18.4F	1845	184F	1845	1000	1845	1845	1845	1845	1845	1845
0 1 1 1 0 1 1 1 3 1 1 3	Adj Flow Rate, veh/h	196	3.1	144	330	52	197	8	1487	216	290	1878	69
0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97	Adj No. of Lanes	0	-	-	-	—	0	—	co	-	-	က	_
3 3	Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
250 40 246 378 71 268 70 1195 364 425 2287 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.16 0.04 0.24 0.24 0.24 0.04 0.24 0.04	Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
1,0 0,16 0,16 0,16 0,16 0,16 0,16 0,16 0,16 0,16 0,16 0,16 0,16 0,16 0,16 0,16 0,16 0,16 0,16 0,17 0	Cap, veh/h	250	40	246	378	71	268	70	1195	364	425	2287	707
1527	Arrive On Green	0.16	0.16	0.16	0.22	0.22	0.22	0.04	0.24	0.24	0.24	0.45	0.45
1227 0 144 330 0 249 82 1487 216 290 1878 1768 0 1500 1757 0 1571 1679 1679 1679 1679 1679 1679 187 1679 187 1679 187 1679 1679 188 1679 187 1679 1679 187 1679 187 1679 187 1679 187 1679 187 1679 187 1679 187 1679 187 1679 187 1679 187 1679 187 1679 187	Sat Flow, veh/h	1527	241	1500	1757	328	1243	1757	5036	1535	1757	5036	1558
1768 0 1500 1757 0 1571 1757 1679 1535 1757 1679 183 175 1679 183 175 1679 187 1679 1679 1679 1679 1679 1679 1679 1679 1679 1679 1679 1679 1679 1679 1679 1679 1679 1679 1679 1670	Grp Volume(v), veh/h	227	0	144	330	0	249	82	1487	216	290	1878	62
185 0.0 13.3 27.2 0.0 22.2 6.0 35.6 18.7 22.5 48.7 185 0.0 13.3 27.2 0.0 22.2 6.0 35.6 18.7 22.5 48.7 0.86 0.246 378 0 32.2 6.0 35.6 18.7 22.5 48.7 0.78 0.00 0.246 378 0 1195 36.4 42.5 2287 0.78 0.00 0.59 0.87 0.00 0.7 1100 1.00 1.00 0.78 1.00 <td>Grp Sat Flow(s),veh/h/ln</td> <td>1768</td> <td>0</td> <td>1500</td> <td>1757</td> <td>0</td> <td>1571</td> <td>1757</td> <td>1679</td> <td>1535</td> <td>1757</td> <td>1679</td> <td>1558</td>	Grp Sat Flow(s),veh/h/ln	1768	0	1500	1757	0	1571	1757	1679	1535	1757	1679	1558
185 0.0 133 27.2 0.0 22.2 6.0 35.6 18.7 22.5 48.7 28.6 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Q Serve(g_s), s	18.5	0.0	13.3	27.2	0.0	22.2	0.9	35.6	18.7	22.5	48.7	3.4
0.86		18.5	0.0	13.3	27.2	0.0	22.2	0.9	35.6	18.7	22.5	48.7	3.4
289 0 246 378 0 338 70 1195 384 425 2287 0.78 0.00 0.59 0.68 0.082 0.00 0.74 1.17 1.29 0.68 0.82 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 1.	Prop In Lane	0.86		1.00	1.00		0.79	1.00		1.00	1.00		1.00
0.78 0.00 0.59 0.87 0.00 0.74 117 124 0.59 0.68 0.82 448 0 0 419 70 1195 364 425 2887 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Grp Cap(c), veh/h	290	0	246	378	0	338	02	1195	364	425	2287	707
448 0 380 468 0 419 70 1195 384 425 2287 1.00	V/C Ratio(X)	0.78	0.00	0.59	0.87	0.00	0.74	1.17	1.24	0.59	89.0	0.82	0.09
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	448	0	380	468	0	419	2	1195	364	425	2287	707
1100 0.00 1.00 1.00 0.00 1.00 1.00 1.00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
601 0.0 580 56.9 0.0 54.9 72.0 57.2 50.8 51.6 35.6 2.0 0.0 0.8 17.2 0.0 3.7 159.4 177.1 6.9 3.7 3.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
20 0.0 0.8 122 0.0 3.7 159.4 117.1 6.9 3.7 3.5 5.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	60.1	0.0	28.0	26.9	0.0	54.9	72.0	57.2	20.8	51.6	35.6	23.3
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	2.0	0.0	0.8	12.2	0.0	3.7	159.4	117.1	6.9	3.7	3.5	0.2
9.2 0.0 5.6 14.5 0.0 10.0 6.0 29,4 8.6 11.3 23.3 (6.2 2.0 5.8 69.1 0.0 58.5 231.5 1743 57.7 55.3 39.1 (6.0 2.9 6.4 5.1 1.3 2.3 3.4 5.1 6.1 7.8 6.1 1.2 3 4 5.1 6.1 7.8 6.1 6.1 7.2 (7.4 2.0 2.8 10.2 74.5 3.6 5.1 6.1 7.8 (7.4 2.0 2.8 10.2 74.5 36.5 6.1 7 40.0 6.1 1.3 6.1 7 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1 6.1	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
622 0.0 58.8 69.1 0.0 58.5 2315 174.3 57.7 55.3 39.1 18.2 60.9 64.5 64.5 162.8 40.8 60.9 64.5 67.9 162.8 40.8 60.9 64.5 67.9 162.8 40.8 67.7 42.0 28.8 10.2 74.5 36.5 6.7 88 10.2 74.5 36.5 6.7 40.0 6.9 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.3 88.9 88.9	%ile BackOfQ(50%),veh/ln	9.5	0.0	2.6	14.5	0.0	10.0	0.9	29.4	9.8	11.3	23.3	1.5
1785 1785 1785 1785 1785 1785 1785 1785 1785 1828 182 1828 182 1828 182 1828 182 1828 182 1828 182 1828 182 183	LnGrp Delay(d),s/veh	62.2	0.0	28.8	69.1	0.0	58.5	231.5	174.3	57.7	55.3	39.1	23.5
371 579 1785 579 1785 560 645 162.8 E E E F F F F 6 7 8 8 102 74.5 56.4 4.2 4.2 4.2 6.4 4.2 6.4 4.2 6.4 5.6 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6.4 6	LnGrp LOS	ш		ш	ш		ш	-	-	ш	ш		ال
60.9 64.5 162.8 E 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 42.7 42.0 28.8 10.2 74.5 36.5 6.4 6.4 4.2 4.2 6.4 4.2 1.17 3.6 2.9 6.0 5.0 1.3 88.9 F F	Approach Vol, veh/h		371			279			1785			2230	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 427 420 288 102 745 64 64 64 42 42 42 64 717 36 38 6 47 245 376 205 80 50.7 00 0.0 0.9 0.0 0.0	Approach Delay, s/veh		6.09			64.5			162.8			40.8	
1 2 3 4 5 6 7 1 2 4 5 6 7 42.7 42.0 28 102 74.5 • 17 *36 *38 *6 *47 24.5 37.6 20.5 8.0 50.7 0.0 0.0 0.9 0.0 0.0	Approach LOS		ш			ш			ш.			Ω	
1 2 4 5 6 427 420 288 102 745 64 64 42 42 64 17 36 78 6 47 245 37.6 20.5 80 50.7 0.0 0.0 0.9 0.0 0.0	Timer		2	က	4	2	9	7	00				
42.7 42.0 28.8 10.2 74.5	Assigned Phs	-	2		4	2	9		∞				
64 '64 '42 '42 '64 '17 '36 '38 '6 '47 20 0.0 0.0 0.9 0.0 0.0 88.9 F	Phs Duration (G+Y+Rc), s	42.7	42.0		28.8	10.2	74.5		36.5				
245 376 *38 *6 *47 245 376 205 80 507 00 00 0.9 0.0 0.0 88.9 F	Change Period (Y+Rc), s	* 6.4	* 6.4		* 4.2	* 4.2	* 6.4		4.2				
24.5 37.6 20.5 8.0 50.7 0.0 0.0 0.9 0.0 0.0 88.9 F	Max Green Setting (Gmax), s	* 17	* 36		* 38	9 *	* 47		40.0				
0.0 0.0 0.9 0.0 0.0 88.9 F	Max Q Clear Time (g_c+I1), s	24.5	37.6		20.5	8.0	20.7		29.2				
ımary Delay	Green Ext Time (p_c), s	0.0	0.0		6:0	0.0	0.0		1.3				
Jelay	Intersection Summary												
, can	HCM 2010 Ctd Delay			0 88									
-	HCM 2010 Cult Delay			. H									
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10 Report	Page 30
Synchro	

Movement FB FB FB WB1 WB		,											
10 10 10 10 10 10 10 10	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
310 20 520 20 20 20 40 1912 10 10 20 20 20 1482 20 40 1912 10 20 20 20 20 1482 20 40 1912 10 20 20 20 20 20 20	Lane Configurations	F	4	¥C.		4		F	‡	*-	×	444	
100 100	Traffic Volume (veh/h)	310	20	520	20	20	20	200	1482	20	40	1912	110
100	Future Volume (veh/h)	310	20	270	20	70	20	200	1482	20	40	1912	110
1,00	Number	7	4	14	3	∞	18	2	2	12	_	9	16
1,00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
100 100 100 100 100 100 100 100 100 100	Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.93	1.00		0.99	1.00		0.98
1845 1845	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
hth 220 0 657 21 21 20 1528 21 41 1971 1 0 0 2 0 1 0 0 2 2 2 1 41 1971 1 0 0 22 0 0 1 0 0 7 2 2 0 1 1 3 1 0 0 22 50 50 50 50 0 97 0 97 0 97 0 97 1 0 0 0 22 50 50 50 50 0 97 0 97 0 97 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj Sat Flow, veh/h/ln	1845	1845	1845	1900	1845	1900	1845	1845	1845	1845	1845	1900
Heigh September 1	Adj Flow Rate, veh/h	220	0	657	21	21	21	206	1528	21	41	1971	113
097 097 <td>Adj No. of Lanes</td> <td></td> <td>0</td> <td>2</td> <td>0</td> <td>-</td> <td>0</td> <td>2</td> <td>2</td> <td></td> <td>-</td> <td>3</td> <td>0</td>	Adj No. of Lanes		0	2	0	-	0	2	2		-	3	0
3 3	Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
418 0 722 50 50 120 1768 783 47 2413 024 0 0.09 0.09 0.09 0.09 0.03 <	Percent Heavy Veh, %	3	3	3	3	3	3	3	က	3	3	3	3
1757 0.024 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 0.050 1.557 1.657 0.050 0.050 1.555 1.557 1.657 0.050 1.050 1.050 0.033 0.00 0.00 1.05 1.057 1.057 1.059 1.050 0.033 0.033 1.00 0.033 1.00 0.33 1.00 0.033 1.00 1.00 1.00 0.033 1.00 1.00 1.00 0.033 1.00 </td <td>Cap, veh/h</td> <td>418</td> <td>0</td> <td>722</td> <td>20</td> <td>20</td> <td>20</td> <td>120</td> <td>1768</td> <td>783</td> <td>47</td> <td>2413</td> <td>138</td>	Cap, veh/h	418	0	722	20	20	20	120	1768	783	47	2413	138
1757 0 3031 557 557 3408 3505 1557 4867 220 0 657 63 0 0 1704 152 157 4867 1757 0 657 63 0 0 1704 152 157 1679 164 0.0 31.6 5.4 0.0 0 170 152 1757 1679 164 0.0 31.6 5.4 0.0 0 100 100 158 51.3 11.9 35 51.3 1100 0.31 5.4 0.0 0.0 5.3 57.5 10 35 51.3 1100 0.0 1.00 0.0 0.0 1.00	Arrive On Green	0.24	0.00	0.24	0.09	0.09	0.09	0.04	0.50	0.50	0.03	0.50	0.50
220 6 45 7 63 0 206 1528 14 1357 1757 0 1515 1670 0 0 53 575 167 167 164 0.0 31.6 5.4 0.0 0 5.3 57.5 1.0 3.5 51.3 164 0.0 31.6 5.4 0.0 0.0 5.3 57.5 1.0 3.5 51.3 100 1.00 0.33 0.0 0.0 1.0 1.0 1.0 1.0 0.00 0.00 0.3 0.0 1.0	Sat Flow, veh/h	1757	0	3031	557	227	557	3408	3505	1552	1757	4867	278
1757 0 1515 1670 0 1704 1752 155 1757 169 164 0.0 31.6 5.4 0.0 0.0 5.3 57.5 1.0 3.5 51.3 164 0.0 31.6 5.4 0.0 0.0 5.3 57.5 1.0 3.5 51.3 100 1.00 0.33 0.03 0.0 1.0 1.00	Grp Volume(v), veh/h	220	0	657	63	0	0	206	1528	21	41	1357	727
16.4 0.0 31.6 5.4 0.0 0.0 5.3 57.5 1.0 3.5 51.3 16.4 0.0 31.6 5.4 0.0 0.0 5.3 57.5 1.0 3.5 51.3 1.00 0.33 0.0 0.33 1.00 1.00 1.00 418 0 722 149 0 0 0 120 1768 783 47 1664 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00 0.00 0.00 0.00 0.00 8.1 0.0 14.7 2.5 0.0 0.0 0.0 0.0 8.1 0.0 14.7 2.5 0.0 0.0 0.0 0.0 8.1 0.0 1.47 2.5 0.0 0.0 0.0 8.1 0.0 1.3 0.0 0.0 0.0 9.2 8.3 8.4 8.5 8.5 9.3 9.3 9.3 9.3 9.3 1.00 1.3 0.0 1.3 1.00 1.3 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 1.00 0.0 0.0 0.0 1.00 0.0 0.0 0.0 1.00 0.0 0.0 1.00 0.0 0.0 0.0 1.00 0.0 0.	Grp Sat Flow(s),veh/h/ln	1757	0	1515	1670	0	0	1704	1752	1552	1757	1679	1788
16.4 0.0 31.6 5.4 0.0 0.0 5.3 57.5 1.0 3.5 51.3 10.6 1.00 0.33 1.00 1.00 1.00 1.00 1.00 0.33 1.00 1.00 1.00 1.00 1.00 0.01 0.42 0.00 0.00 1.71 0.86 0.03 0.88 0.82 445 0.0 7.68 445 0.0 0.0 1.70 1.00 1.00 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 8.1 0.0 14.7 2.5 0.0 0.0 0.0 0.0 0.0 8.1 0.0 14.7 2.5 0.0 0.0 0.0 0.0 0.0 8.1 0.0 1.47 2.5 0.0 0.0 0.0 0.0 0.0 8.1 0.0 1.47 2.5 0.0 0.0 0.0 0.0 9.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 9.9 0.0 0.0 0.0 0.0 0.0 0.0 1.00 1.00 1.00 0.0 0.0 0.0 0.0 1.00 1.00 1.00 0.0 0.0 0.0 0.0 1.00 1.00 1.00 0.0 0.0 0.0 0.0 1.00 1.00 1.00 1.00 0.0 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.0 1.00 0.0 1.00 0.0 1.00 0.0 1.00 0.0 1.00 0.0 1.00 0.0 0.0 0.0 1.00 0.0 0.0 0.0 1.00 0.0 0.0 0.0 1.00 0.0 0.0 1.	Q Serve(g_s), s	16.4	0.0	31.6	5.4	0.0	0.0	5.3	57.5	1.0	3.5	51.3	51.8
100	Cycle Q Clear(g_c), s	16.4	0.0	31.6	5.4	0.0	0.0	5.3	57.5	1.0	3.5	51.3	51.8
418 0 722 149 0 0 0 120 1768 783 47 1664 6153 000 0.991 0.42 0.00 0.00 1.71 0.86 0.03 0.88 0.82 445 0 100 1.00 1.00 1.00 1.00 1.00 1.00 1.	Prop In Lane	1.00		1.00	0.33		0.33	1.00		1.00	1.00		0.16
0.53 0.00 0.91 0.42 0.00 0.00 1.71 0.86 0.03 0.88 0.82 0.445 0.0 768 445 0.0 0.0 1.20 1.768 783 47 1664 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Grp Cap(c), veh/h	418	0	722	149	0	0	120	1768	783	47	1664	886
445 0 768 445 0 0 1768 788 47 1664 100	V/C Ratio(X)	0.53	0.00	0.91	0.42	0.00	0.00	1.71	98.0	0.03	0.88	0.82	0.82
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Avail Cap(c_a), veh/h	445	0	768	445	0	0	120	1768	783	47	1664	888
1,00 0,00 1,00 1,00 0,00 0,00 1,00 1,00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
498 0.0 55.6 64.6 0.0 0.0 72.3 32.7 18.7 72.8 32.0 1.0 0.0 0.0 14.4 1.9 0.0 0.0 35.2 5.9 0.1 85.7 4.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Upstream Filter(I)	1:00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1:00	1.00	1.00	1:00
1.0 0.0 144 1.9 0.0 0.0 3524 5.9 0.1 85.7 4.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	49.8	0.0	92.9	9.49	0.0	0.0	72.3	32.7	18.7	72.8	32.0	32.1
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	1:0	0.0	14.4	1.9	0.0	0.0	352.4	2.9	0.1	85.7	4.5	8.4
8.1 0.0 14.7 2.5 0.0 0.0 8.4 29.3 0.5 2.8 24.8 50.8 0.0 70.0 66.5 0.0 0.0 424.8 38.6 18.7 188.5 34.5 0.0 87.7 E 63 1755 27.125 26.5 0.0 1.2 2 3 4 5 6 7 8 1.0 1.0 81.7 2 3 4 5 6 8 1.0 1.0 81.7 2 3 4 5 6 8 1.0 1.0 81.7 2 3 4 5 6 8 1.0 1.0 81.7 2 4 5 6 0 6.0 4.2 2 1.0 1.0 81.7 2 3 4 5 6 0 6.0 4.2 2 1.0 1.0 1.0 81.7 1.3 80.4 17.6 1.0 1.0 1.6 0.0 0.0 1.6 0.0 0.0 0.3 1.0 1.6 0.0 0.0 0.0 1.6 0.0 0.0 0.0 0.0 1.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
908 0.0 0.0 0.0 0.0 0.0 4448 380 18.7 138.3 50.5 50.5 50.5 50.5 50.5 50.5 50.5 50	%ile BackUrU(50%),ven/iin	- c	0.0	14.7	7.2	0.0	0.0	4.0	29.3	0.5	7.0	24.8	27.5
STT C C C C C C C C C	Lingip Delay(u),s/ven	20.00	0.0	0.0/	000.0	0.0	0.0	424.8	38.0	1 <u>8</u> ./	138.3	30.5	40.5
677 665 173 173 174 174 174 174 174 174 174 174 174 174	Approach Vol wokik		7.7.0			67			1755	۵		21.75	
1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 10.0 81.7 40.7 11.3 80.4 17.6 6.0 6.0 *5 6.0 6.0 4.2 6.0 6.0 *5 6.0 6.0 4.2 5.5 59.5 33.6 7.3 53.8 7.4 0.0 0.0 1.6 0.0 0.0 0.3	Approach Dolay skigh		65.1			66.5			83.7			40.3	
1 2 3 4 5 6 7 10.0 81.7 40.7 11.3 80.4 6.0 6.0 *5 6.0 6.0 4.0 46.8 *3 6.3 45.5 5.5 59.5 13.6 7.3 53.8 60.9 E	Approach LOS		- ш			В.			- 1			0	
1 2 3 4 5 6 7 1 1 1 2 4 5 6 6 1 1 1 2 4 5 6 6 6 1 1 1 2 1 1 2 1 2 1 2 1 2 1 2 1 2		4	c	c		L	,	r	c				
10.0 81.7 40.7 11.3 80.4 6.0 6.0 ** 5 6.0 6.0 4.0 46.8 ** 38 5.3 45.5 5.5 59.5 33.6 7.3 53.8 0.0 0.0 1.6 0.0 0.0	IIImer	- ,	7	n	4	2	٥ .	_	∞				
0.0 81.7 40.7 11.3 80.4 4.0 46.8 *38 5.3 45.5 5.5 59.5 33.6 7.3 53.8 0.0 0.0 1.6 0.0 0.0 60.9	Assigned Phs	- 0	7 1		4 1	2,0	0		σ,				
6.0 6.0 "5 6.0 6.0 5.5 59.5 33.6 7.3 53.8 60.9 E	Pns Duration (G+Y+RC), s	0.01	81.7		40.7	5.1.	80.4		0.7				
4.0 46.8 7.3 5.3 45.5 5.5 59.5 0.0 0.0 0.0 0.0 1.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Change Period (Y+Rc), s	0.9	0.9		5.5	0.9	0.9		4.2				
60.9 E	Max Green Setting (Gmax), s	4.0 7.7	46.8 50.5		38 38	5.3	45.5 5.3 g		40.0				
	Green Ext Time (p_c), s	0:0	0.0		1.6	0.0	0.0		0.3				
	Intersection Summary												
	medacenon odminary												
HCM 2010 LOS	HCM 2010 Ctrl Delay			60.9									
	HCM 2010 LOS			ш									

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Long-Term + Project (PAL 2) PM 08/24/2017

HCM 2010 Signalized Intersection Summary 19: El Camino Real & Poinsettia Ln.

Part	4	†	1	/	ļ	1	•	—	4	۶	→	*	
10 10 10 10 10 10 10 10	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
30 30 30 320 70 141 50 1501 540 251 100 100 100 100 100 100 100 100 100 1	Lane Configurations	F	(F	(F	#	¥L	F	₹	
30 30 30 70 141 50 1501 540 7 4 14 3 8 18 5 2 150 0 0 0 0 0 0 0 0 0 0 0 0 1.00 1.00 1.	Traffic Volume (veh/h)	30	30	30	320	70	141	20	1501	540	251	2201	20
7 4 14 3 8 18 5 2 12 12 11 100 0 0 0 0 0 0 0 0 0 0 0 0	Future Volume (veh/h)	8	8	8	320	2	141	20	1501	240	251	2201	20
100	Number	7	4	14	m	∞ (18	2	2	12	-	9	16
1.00 100 1094 1000 1090 1090 1091 100 100 100 100 100	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
100	Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		96:0	1.00		0.99	1.00		0.98
1845 1845 1900 1845	Parking Bus, Adj	1:00	1.00	1:00	1.00	1:00	1.00	1:00	1:00	1.00	1.00	1.00	1.00
32 32 34 75 152 54 1614 561 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93	Adj Sat Flow, veh/h/In	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1900
2 2 0 0 2 0 3 0 3 0 3 0 3 0 3 0 3 0 3 0	Adj Flow Rate, veh/h	32	32	32	344	75	152	24	1614	281	270	2367	54
0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93	Adj No. of Lanes	2	2	0	2	2	0	2	m	-	2	33	0
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
67 205 171 388 375 323 584 245 850 3002 0.12 0.11 0.21 0.21 0.21 0.21 0.21 0	Percent Heavy Veh, %	3	33	co	က	33	3	3	3	3	က	33	3
1002 0.12 0.11 0.21 0.21 0.17 0.15	Cap, veh/h	19	205	171	388	375	323	584	2745	820	314	2299	52
3408 1768 1468 3408 1752 1512 3408 6305 1559 3 32 32 34 475 152 54 1614 581 1740 47 1752 1512 1704 1679 1679 1679 1704 1707 1752 188 175 1704 1679 1679 1679 1704 1707 1707 1707 1707 1707 1707 1707	Arrive On Green	0.02	0.12	0.12	0.11	0.21	0.21	0.17	0.55	0.55	0.09	0.45	0.45
32 32 34 75 152 54 1614 581 1704 1752 1484 1704 1752 1512 1704 1679 1559 1.4 2.4 3.0 14.9 5.3 13.2 2.0 32.2 23.8 1.4 2.4 3.0 14.9 5.3 13.2 2.0 32.2 23.8 1.0 0.04 0.09 0.09 0.09 0.05 1.0 0.04 0.10 0.09 0.05 0.06 1.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Sat Flow, veh/h	3408	1768	1468	3408	1752	1512	3408	5036	1559	3408	5063	115
1704 1752 1484 1704 1752 1512 1704 1679 1559 1	Grp Volume(v), veh/h	32	32	32	344	75	152	54	1614	581	270	1567	854
14	Grp Sat Flow(s),veh/h/ln	1704	1752	1484	1704	1752	1512	1704	1679	1559	1704	1679	1821
14	Q Serve(g_s), s	1.4	2.4	3.0	14.9	5.3	13.2	2.0	32.2	23.8	11.7	68.1	68.1
1,00	Cycle Q Clear(g_c), s	1.4	2.4	3.0	14.9	5.3	13.2	2.0	32.2	23.8	11.7	68.1	68.1
67 204 172 388 375 333 564 2745 860 0.48 0.16 0.19 0.89 0.20 0.47 0.09 0.59 0.68 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Prop In Lane	1.00		0.99	1.00		1.00	1.00		1.00	1.00		90.0
0.48 0.16 0.19 0.89 0.20 0.47 0.09 0.59 0.68 0.91 0.456 3.86 4.27 6.25 5.39 5.84 2.745 8.50 0.100 1.00 1.00 1.00 1.00 1.00 1.00	Lane Grp Cap(c), veh/h	19	204	172	388	375	323	584	2745	820	314	1524	827
91 456 388 427 625 539 584 2745 850 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	V/C Ratio(X)	0.48	0.16	0.19	0.89	0.20	0.47	0.09	0.59	89.0	0.86	1.03	1.03
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	91	456	386	427	625	539	584	2745	820	357	1524	827
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
728 597 599 665 484 516 523 228 8.6 20 0.1 0.2 174 0.1 0.4 0.1 0.9 4.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.7 12 12 8.0 26 56 1.0 152 11.2 14.7 598 60.1 829 48.5 519 525 238 13.0 E E F D D D C B 96 571	Upstream Filter(I)	1:00	1.00	1:00	1.00	1:00	1.00	1:00	1.00	1.00	1.00	1.00	1.00
20 0.1 0.2 774 0.1 0.4 0.1 0.9 4.4 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	72.8	26.7	59.9	65.5	48.4	51.6	52.3	22.8	9.8	67.1	41.0	41.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	2.0	0.1	0.2	17.4	0.1	0.4	0.1	6.0	4.4	15.5	30.4	40.2
0.7 1.2 1.2 8.0 2.6 5.6 1.0 15.2 11.2 8.0 2.6 5.1 0.1 5.2 11.2 8.0 2.6 5.6 1.0 15.2 11.2 8.0 2.6 5.1 0.2 249 8.5 5.1 0.2 249 8.5 1.0 2.2 49 8.5 5.1 0.2 2.4 0.1 0.1 0.2 2.4 0.1 0.1 0.2 2.4 0.1 0.1 0.1 0.2 0.2 0.0 0.0 0.0 0.0 1.0 1.0 1.0 1.0 1.0 1.0	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147 598 601 829 485 519 525 238 130 E	%ile BackOfQ(50%),veh/ln	0.7	1.2	1.2	8.0	2.6	9.6	1.0	15.2	11.2	6.2	38.0	43.5
F F F D D C B 96 571 2249 649 701 217 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 10 878 221 22.1 23.1 31.7 31.1 142 60 '5 '47 60 '6 '4.2 '5 5 74 719 50 40 70.1 34 15.2 137 342 169 50 40 70.1 34 15.2 153 53 53 54 55 55 16 17 18 18 18 18 17 18 18 18 18 18 18 18	LnGrp Delay(d),s/veh	74.7	59.8	60.1	82.9	48.5	51.9	52.5	23.8	13.0	82.6	71.4	81.2
96 571 2 64.9 70.1 E E E E 6 7 180 87.8 22.1 22.1 31.7 74.1 71.1 3 8 '16 574 '19 '39 5.0 '68 '4.2 3 5 13.7 34.2 16.9 5.0 4.0 70.1 3.4 1 0.1 210 0.2 0.2 0.0 0.0 0.0 0.0	LnGrp LOS	ш	ш	ш	띡				ပ	В	ᅵ	ᅵ	۲
64.9 70.1 E E E E 6 7 7 18.0 87.8 22.1 22.1 31.7 74.1 7.1 5 8 7.6 6 7 8 7 18.0 87.8 22.1 22.1 31.7 74.1 7.1 5 8 7.16 57.4 19 7.9 5.0 68 7.4 5 13.7 74.1 7.1 5 8 7.16 57.4 19 7.9 5.0 68 7.4 5 13.7 74.1 7.1 5 8 7.16 5.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Approach Vol, veh/h		96			571			2249			2691	
1 2 3 4 5 6 7 180 878 221 221 31.7 741 71 3 *42 60 *5 *47 60 *6 *4.2 s *16 57.4 *19 *39 5.0 *68 *4 s 13.7 34.2 16.9 5.0 4.0 70.1 3.4 1 0.1 210 0.2 0.2 0.0 0.0 0.0	Approach Delay, s/veh		64.9			70.1			21.7			75.6	
1 2 3 4 5 6 7 1 8 22 3 4 5 6 7 1 8 20 878 22 3 4 5 6 7 1 4 2 60 *5 *47 60 *6 *42 5 *16 574 *19 *39 50 *68 *4 5 137 342 16.9 5.0 4.0 70.1 34 0.1 210 0.2 0.2 0.0 0.0 0.0	Approach LOS		ш			ш			O			ш	
18.0 878 22.1 22.1 31.7 74.1 71.1 31.4 74.2 60 °5 °4.7 6.0 °6 °4.2 8.16.5 74 °19 °39 60 °6 °4.2 8.13.7 34.2 16.9 °5.0 4.0 70.1 34.1 21.0 0.2 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Timer		2	3	4	2	9	7	00				
180 878 221 221 317 74.1 71 3 3 4.2 60 '5 '47 60 '6 '4.2 7 13.1 34.2 16.9 5.0 4.0 70.1 34.2 13.7 34.2 16.9 5.0 4.0 70.1 3.4 1.2 10 0.2 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Assigned Phs	1	2	3	4	2	9	7	8				
3.42 6.0 *5 *4.7 6.0 *6 *4.2 5 *16 57.4 *19 *39 5.0 *68 *4 5 13.7 34.2 16.9 5.0 4.0 70.1 3.4 1 0.1 21.0 0.2 0.2 0.0 0.0 0.0 53.2 D	Phs Duration (G+Y+Rc), s	18.0	87.8	22.1	22.1	31.7	74.1	7.1	37.1				
s '16 57.4 '19 '39 5.0 '68 '4 s 13.7 34.2 16.9 5.0 4.0 70.1 3.4 0.1 21.0 0.2 0.2 0.0 0.0 0.0 53.2 D	Change Period (Y+Rc), s	* 4.2	0.9	* 5	* 4.7	0.9	9 *	* 4.2	* 5				
C+II), s 137 342 169 50 40 70.1 34 s 0.1 21.0 0.2 0.2 0.0 0.0 0.0 53.2 D		* 16	57.4	* 19	* 39	2.0	89 *	* 4	* 54				
s 0.1 21.0 0.2 0.2 0.0 0.0 0.0 2.0 2.0 0.0 0.0 0		13.7	34.2	16.9	2.0	4.0	70.1	3.4	15.2				
ction Summary 0010 Ctrl Delay 2010 LOS		0.1	21.0	0.2	0.2	0.0	0.0	0.0	1.0				
2010 Cirl Delay 2010 LOS	Intersection Summary												
2010 LOS	HCM 2010 Ctrl Delay			53.2									
Notice	HCM 2010 LOS			Ω									
	Notes												

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HCM 2010 Signalized Intersection Summary 1: Faraday Ave. & Canon Rd.

Long-Term + Project (PAL1) AM 0824/2017

Jan Hall		
orginalized intersection ouriniary	ilvd. & El Camino Real	
Olymanzea	3lvd. & EI C	

Long-Term + Project (PAL1) AM 08/24/2017

		i.					-	-	_		۰	
Novement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
-ane Configurations	*	₩.		F	₩.		F	4			4	
raffic Volume (veh/h)	20	250	621	81	1010	20	191	20	30	20	20	20
Future Volume (veh/h)	20	250	621	8	1010	20	191	20	30	20	20	20
Number	വ	2	12	- (9	91	က	∞ α	9	7	4	14
nitial Q (Qb), veh	0 6	0	0 0	0 6	0	0 8	0 6	0	0 10	0 0	0	0 0
Ped-Bike Adj(A_pb))	9.5	5	0.78	9.5	5	0.70	9.1	5	1.00	0.1	00	1001
Jarking Bus, Adj	00.1	00.1	000	1.00	1.00	00.1	00.1	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, vervrim Adj Flow Rate veh/h	22	278	0061	00	1122	33	134	137	33	1900	22	22
Adi No. of Lanes	-	2	C	· -	2	0	-	-	0	0	-	0
Peak Hour Factor	06:0	0.90	0.90	0.90	0.90	0.90	06:0	06:0	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	c	c	3
Cap, veh/h	420	910	796	114	1211	24	256	205	21	28	28	28
Arrive On Green	0.24	0.52	0.52	0.06	0.34	0.34	0.15	0.15	0.15	0.05	0.05	0.05
Sat Flow, verifi	/6/1	76/1	1334	/6/1	2100	60 2	107	1410	302	- 00	- 66	000
Sip volulie(v), velvii	1757	1750	1524	1767	1752	10.00	1757	0	176.2	1452	0	0 0
Serve(n.s).s	10	9.1	39.3	5.0	30.8	30.8	7.1	0.0	8 8 8	4.0	0.0	0.0
Cycle O Clear(a_c). s	1.0	9.1	39.3	2.0	30.8	30.8	7.1	0.0	80	4.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.20	0.33		0.33
ane Grp Cap(c), veh/h	420	910	796	114	604	930	256	0	256	83	0	0
//C Ratio(X)	0.02	0.31	0.87	0.79	0.93	0.93	0.52	0.00	0.64	0.79	0.00	0.00
Avail Cap(c_a), veh/h	420	910	196	141	613	640	280	0	281	66	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Jpstream Filter(I)	00.1	13.7	0.1	1.00	1.00	1.00	1.00 1.00	0.00	1.00 40.7	1.00	0.00	0.00
minim Delay (d), siveri	27.3	2.0	17.7	17.1		5 5	0.4.0	0.0	5.04	0.74	0.0	0.0
nd Delay (uz), s/ven	0.0	0.0	7.7	0.0	0.0	0.12	7 0	0.0	0.0	73.1	0.0	0.0
Kile BackOfO(50%) veh/ln	0.0	4.5	19.2	3.0	18.5	19.2	2.5	0.0	4.5	2.0	0.0	0.0
nGro Delav(d).s/veh	29.3	14.6	33.2	63.2	53.9	53.3	40.8	0.0	42.3	72.0	0.0	0.0
nGrp LOS	ပ	В	O	ш	D	D	D		О	ш		
Approach Vol, veh/h		066			1234			299			99	
Approach Delay, s/veh		27.9			54.3			41.6			72.0	
Approach LOS		ပ			D			D			ш	
imer	-	2	3	4	2	9	7	∞				
Assigned Phs	-	2		4	2	9		8				
Phs Duration (G+Y+Rc), s	12.5	57.9		10.0	29.9	40.5		19.6				
Change Period (Y+Rc), s	0.9	0.9		5.0	0.9	0.9		5.0				
Max Green Setting (Gmax), s	0.5	31.0		0.9	4.0	35.0		33.0				
Max Q Clear Time (g_c+I1), s Green Ext Time (p_c), s	0.0	0.0		0.0	3.0	32.8		10.8				
ntersection Summary												
HCM 2010 Ctrl Delay			43.2									
HCM 2010 LOS			Ω									
VOIES												

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Synchro 10 Report Page 1

Movement Lane Configurations Traffic Volume (veh/h) 2 Number Number (veh/h) 2 Number (veh/h) 2 Number (veh/h) 11-11-11-11-11-11-11-11-11-11-11-11-11-	EBL 210 210	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
	1	444	×	¥	444	þ	į	*		£	44	
		E	_		1	_	E	-			₹	
	210	2249	700	200	949	210	130	220	20	420	390	410
-		2249	700	200	949	210	130	220	20	420	390	410
	ഗ	7 0	12	- -	9 0	91	m c	∞ ⊂	8 0	<u>_</u> 0	4 0	4 0
-	1.00	>	1.00	1.00		1.00	1.00		0.97	1.00		0.97
,	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
%		1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1900
h, %		2445	0	217	702	228	141	239	22	457	424	446
با' % ابان	_	c	-	-	3	-	2	2	0	2	2	0
	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
		3	3	3	3	3	3	3	3	3	3	3
		2072	645	470	3265	1012	105	991	06	105	536	466
_	0.04	0.41	0.00	0.27	0.65	0.65	0.03	0.31	0.31	0.03	0.31	0.31
Sat Flow, veh/h 17		5036	1568	1757	5036	1561	3408	3239	295	3408	1752	1523
	228	2445	0	217	702	228	141	128	133	457	424	446
.veh/h/ln 1		1679	1568	1757	1679	1561	1704	1752	1782	1704	1752	1523
	5.0	53.5	0.0	13.4	7.4	7.8	4.0	7.1	7.3	4.0	28.8	37.4
r(g_c), s	2.0	53.5	0.0	13.4	7.4	7.8	4.0	7.1	7.3	4.0	28.8	37.4
_	00.1		1.00	1.00		1.00	1.00		0.17	1.00		1.00
p(c), veh/h	89	2072	645	470	3265	1012	105	236	545	105	236	466
	3.37	1.18	0.00	0.46	0.22	0.23	1.34	0.24	0.24	4.36	0.79	0.96
£	89	2072	645	470	3265	1012	105	239	248	105	239	469
0	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	0.0	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
eh	62.5	38.3	0.0	39.8	9.3	9.4	63.0	33.8	33.8	63.0	41.3	44.3
1	5.0	86.2	0.0	0.3	0.2	0.5	205.6	0.1	0.1	1533.0	7.2	30.6
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
eh/ln	- 1	41.3	0.0	6.5	3.5	3.5	4.9	3.5	3.6	24.2	15.0	19.7
LnGrp Delay(d),s/veh 1167.5		124.5	0.0	40.0	9.5	6.6	268.6	33.9	33.9	1596.0	48.5	74.9
LnGrp LOS	<u>.</u>	-			⋖	⋖	-	ပ	ပ	-		ا۳
Approach Vol, veh/h		2673			1147			402			1327	
Approach Delay, s/veh	. 4	213.5			15.4			116.2			590.3	
Approach LOS		ш			œ			ш.			ш.	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	-	2	m	4	2	9	7	∞				
	41.5	59.5	0.6	46.3	10.0	91.0	0.6	46.3				
	0.9	9 *	2.0	6.5	2.0	0.9	2.0	6.5				
Max Green Setting (Gmax), s 10	10.0	* 54	4.0	40.0	2.0	28.2	4.0	40.0				
	t:0	0.00	0.0	99.4	0.0	3.1	0.0	1.0				
	2	5	5	5	2	5	5	2				
Intersection Summary												
HCM 2010 Ctrl Delay			255.6									
HCM 2010 LOS			_									
Notes												

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HCM 2010 Signalized Intersection Summary 3: College Blvd. & Faraday Ave.

Long-Term + Project (PAL1) AM 08/24/2017

909 0.33 2789 368 1752 1752 15.1 571 0.64 647 1.00 1.00 24.2 264 0.08 3408 283 283 283 1704 6.5 6.5 1.00 264 1.00 1.00 1.00 1.00 38.7 76.1 0.0 0.0 0 1.00 1.00 845 283 390 390 112 0 0 0.97 1.00 1900 0 0 0.92 497 0.33 424 424 424 1524 21.8 21.8 21.0 0.0 1.00 26.4 11.1 0.0 0.0 10.7 30.5 5.0 36.8 13.2 3.2 1.00 1845 337 2 0.92 3 571 0.33 1752 1752 1752 13.5 571 0.59 647 1.00 1.00 1.1 0.0 6.6 6.6 9.1 4.5 5.7 5.6 0.0 90 90 00 00 98 98 00 00 00 00 111.2 111.2 111.2 111.2 111.2 111.2 111.2 111.2 111.2 111.2 111.0 111.0 111.0 111.0 111.0 111.0 10.0 33.4 6.0 31.0 17.1 3.4 1.00 1845 457 867 0.30 2860 279 1752 11.11 532 0.52 768 1.00 1.00 24.2 0.8 0.0 5.5 25.0 4.5 6.5 8.5 0.0 228 6.5 6.5 6.5 1.00 1.00 1.00 1.00 38.7 334.4 0.0 3 0 1.00 1.00 228 1 3 136 0.08 1757 28.6 5.0 36.0 16.5 3.8 4.5 6.5 8.5 0.0 0.99 683 0.28 2428 336 1752 14.3 1.00 1845 467 2 0.92 493 0.68 751 1.00 1.00 26.8 1.7 0.0 7.1 28.5 430 33.4 6.0 31.0 23.8 2.6 Ť 1.00 1.00 1845 76 0.92 97 0.06 1757 76 3.6 3.6 3.6 1.00 97 0.78 1.00 1.00 1.00 1.00 2.4 2.3 62.5 4.5 6.5 8.5 0.0 Assigned Phs
Phs Duration (G+Y+Rc), s
Change Period (Y+Rc), s
Max Green Setting (Gmax), s
Max Q Clear Time (g_C+I1), s Percent Heavy Veh, %
Cap, veh/h
Arrive On Green
Sat Flow, veh/h
Grp Volume(v), veh/h
Grp Sat Flow(s), veh/h
O'D Sarve(g_s), s Upstream Filter(I) Uniform Delay (d), s/veh Incr Delay (d2), s/veh %ile BackOfQ(50%),veh/ln LnGrp LOS Approach Vol, veh/h Approach Delay, s/veh Approach LOS Lane Grp Cap(c), veh/h V/C Ratio(X) Initial Q Delay(d3),s/veh Parking Bus, Adj Adj Sat Flow, veh/h/In Adj Flow Rate, veh/h Adj No. of Lanes Peak Hour Factor Green Ext Time (p_c), s Intersection Summary HCM 2010 Ctrl Delay HCM 2010 LOS Cycle Q Clear(g_c), s Prop In Lane Lane Configurations Traffic Volume (veh/h) Avail Cap(c_a), veh/h HCM Platoon Ratio Future Volume (veh/h) Ped-Bike Adj(A_pbT) LnGrp Delay(d),s/veh Number Initial Q (Qb), veh

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Synchro 10 Report Page 5

HCM 2010 Signalized Intersection Summary 4: El Camino Real & Faraday Ave.

Long-Term + Project (PAL1) AM

08/24/2017

Movement EBL EBL WBL WBL WBR WBR WBR WBR Tariffic Volume (vehich) 60 350 190 223 860 200 890 Mumber 7 4 14 3 8 18 5 190 Educardor (vehich) 60 350 190 223 860 200 890 Mumber 7 4 14 3 8 18 5 190 Educardor (vehich) 7 4 14 3 8 18 5 190 Educardor (vehich) 7 4 14 3 8 18 5 190 Educardor (vehich) 7 4 14 3 8 18 5 190 Educardor (vehich) 7 4 14 3 8 18 5 190 Educardor (vehich) 7 4 14 3 8 18 5 190 Educardor (vehich) 7 7 7 7 7 7 7 7 7				
6 350 190 223 860 200 60 350 190 223 860 200 7 4 14 3 86 200 7 4 14 3 8 18 100 0 0 0 0 0 100 1.00 1.00 1.00 1.00 1.00 130 1.00 1.00 1.00 1.00 1.00 1445 1845 1845 1845 1845 1845 1845 1845 1845 1845 110 1.00		NBR SBL	SBT	SBR
60 350 190 223 860 200 60 350 190 223 860 200 60 350 190 223 860 200 100 0 0 0 0 0 0 1100 0 0 0 0 0 0 1100 0 0 0	4413		444	*
60 350 190 223 860 200 7 4 14 3 8 18 0 0 0 0 0 0 1.00 0 0 0 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 <td>716</td> <td>152 500</td> <td>17.79</td> <td>250</td>	716	152 500	17.79	250
7 4 14 3 8 18 0 0 0 0 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 <t< td=""><td>71</td><td>152 500</td><td>1779</td><td>250</td></t<>	71	152 500	1779	250
100	2	12 1	9	16
100	0		0	0
100 100				0.99
1845 1845	1.00	1.00 1.00	1.00	1.00
65 380 207 242 935 217 1002 092 092 092 092 092 093 093 093 093 093 093 093 093 093 093	1845		1845	1845
1 2 1 1 2 1 0.92 0.92 0.92 0.92 0.92 0.92 3 3 3 3 3 3 3 0.10 0.35 0.85 105 1084 471 2 0.10 0.35 0.85 0.06 0.31 0.31 0.31 1.757 3505 1523 3	778	165 543	1934	272
092 092 092 092 092 092 093 093 093 093 093 093 103 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 12 10	က		3	_
3 3 3 3 3 3 3 3 3 3	0.92	0.92 0.92	0.92	0.92
173 1740 550 105 1084 471 2 0.10 0.35 0.35 0.36 0.35 0.05 0.31 0.31 6.5 380 207 242 935 217 1752 1523 1757 1552 1523 1757 1552 1552 1757 1552 1523 17 1752 1555 1757 1552 1523 17 1752 1555 1757 1752 1523 17 1752 1555 1757 1752 1523 17 1700 1.00 1.00 1.00 1.00 1.00 1.00 1	က	3 3	co	3
0.10 0.35 0.35 0.06 0.31 0.31 0.31 0.31 0.31 0.31 0.35 0.05 1.55 1.00	3267		1522	469
1757 3506 1555 1757 3505 1523 3 1757 3506 1523 1757 3506 1523 1757 3506 1523 1757 3506 1523 1757 3506 1523 1757 1752 1523 1757 1752 1523 1757 1752 1523 1757 1752 1523 1757 1752 1523 1 1700 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0.79		0.30	0.30
65 380 207 242 935 217 45 102 185 1757 1752 1823 1 45 102 88 7.8 32.7 20.9 1 45 102 88 7.8 32.7 20.9 1 100 100 100 100 100 100 1 1173 1240 550 105 1286 559 2 1100 100 100 100 100 100 1 1100 100 100 100 100 100 1 1100 100 100 100 100 1 0 1 1100 100 100 100 100 100 <	4156	873 3408	5036	1552
1757 1752 1555 1757 1752 1523 145 10.2 88 7.8 32.7 20.9 1.00	627	316 543	1934	272
45 10.2 8.8 7.8 32.7 20.9 1.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.03 1.04 1.00	1679	1671 1704	1679	1552
45 10.2 8.8 7.8 32.7 20.9 1.00 170 1.00 1.00 1.00 1.00 1.00 1.00 173 1.240 550 105 1286 559 2 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 54,9 30,4 14,6 61.1 42.3 71.2 7 61 0.6 0.0 0.0 0.0 0.0 0.0 0.0 2.5 5.1 4.1 21.7 16.6 8.8 8 610 31.1 16.5 673.0 4.7 7.15 1 E C B F D E 6 520 1.0 1.0 0.0 0.0 0.0 0.0 2.94 F D E 6 6 2.0 1.29	6.4	6.5 15.8	39.3	19.3
1100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	6.4	6.5 15.8	39.3	19.3
173 1240 550 105 1084 471 2 173 1240 550 105 1286 559 2 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00		0.52 1.00		1.00
0.38 0.31 0.38 2.30 0.86 0.46 0.46 0.47 0.20 1.00 1.00 1.00 1.00 1.00 1.00 1.00	2639		1522	469
173 1240 556 105 1286 559 2 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0.24		1.27	0.58
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	7639		1522	469
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	1.00		1.00	1.00
54,9 30.4 14.6 61.1 42.3 71.2 7 0.1 0.6 2.0 611.9 48 0.3 0.2 5 5.1 4.1 27.7 16.6 8.8 610 31.1 16.5 673.0 47.1 71.5 1 E C B F D E 652 1394 1596 7 1 2 3 4 5 6 200 110.0 12.0 51.0 84.7 45.3 1 1 2 3 4 5 6 200 110.0 12.0 51.0 84.7 45.3 1 1 4 5 6 2 5 17.8 8.5 9.8 12.2 20.2 41.3 1 5 17.8 8.5 9.8 12.2 20.2 41.3 1 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.70	0.70 1.00	1.00	1.00
61 06 20 611.9 48 0.3 2.5 5.1 4.1 21.7 166 8.8 61.0 31.1 16.5 673.0 47.1 71.5 1 E C B F D E 652 13.94 7.94 7.95 7.95 7.95 7.95 7.95 7.95 7.95 7.95	3.7		45.3	38.4
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		~	127.0	2.1
2.5 5.1 4.1 21.7 16.6 8.8 6.0 6.0 29.4 15.0 29.4 15.0 6.0 2.0 110.0 12.0 51.0 84.7 45.3 1.8 6.0 4.8 17.8 17.8 17.8 17.8 17.8 17.8 17.8 17	0.0		0.0	0.0
610 31.1 16.5 673.0 47.1 71.5 1 652			36.1	9.0
662 1394 662 1394 662 7394	C.	4.0 213.4	172.3	43.5
29.4 159.6 29.4 159.6 C C F F 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	⋖	A	ᅵ	ᅦ
29.4 159.6 C	1813		2749	
1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 200 110.0 12.0 51.0 84.7 5 6.0 .6 .5 .16 41.0 .7.8 .46 17.5 .39 .6 .5 17.8 8.5 9.8 12.2 20.2 41.3 .0 4.8 0.0 2.1 0.0 0.0	0.6		167.7	
1 2 3 4 5 6 200 110.0 12.0 51.0 84.7 45.3 1 3.4 6.0 4.2 5 6.0 84.7 85 1 5. 17.8 8.5 9.8 12.2 20.2 41.3 0.0 4.8 0.0 2.1 0.0 0.0	A		ш	
200 110.0 12.0 81.7 45.3 1 *4.2 6.0 *4.2 *5 6.0 *4.3 *7 8.5 1.0 *1.0 *1.0 *1.0 *1.0 *1.0 *1.0 *1.0	00			
200 110.0 12.0 51.0 84.7 45.3 1 *4.2 6.0 *4.2 °5 60 *6 .s 16 41.0 778 *46 175 39 °5 .s 178 8.5 9.8 12.2 20.2 41.3 0.0 4.8 0.0 2.1 0.0 0.0	8			
. 4.2 6.0 '4.2 '5 6.0 '6 '6 '8 '8 '16 '11.0 '7.8 '46 '17.5 '39 '8 '17.8 '18 '8.5 9.8 '12.2 20.2 41.3 '8.5 9.8 '12.8 '8.5 9.8 '12.8 '8.5 9.8 '13.8 '8.5 9.8 '8.5	4			
, s 16 41.0 °7.8 °46 17.5 °39 ° , s 17.8 8.5 9.8 12.2 20.2 41.3 0.0 4.8 0.0 2.1 0.0 0.0	* 2			
c+l1), s 17,8 8.5 9.8 12.2 20.2 41.3 s 0.0 4.8 0.0 2.1 0.0 0.0	* 48			
s 0.0 4.8 0.0 2.1 0.0 0.0	3			
	4.3			
Intersection Summary				
HCM 2010 Ctrl Delay 108.8				
HCM 2010 LOS F				

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HCM 2010 Signalized Intersection Summary 5: I-5 South On-Ramp/I-5 SB Ramps & Palomar Airport Rd.

Long-Term + Project (PAL1) AM	08/24/2017
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Maintenant		1	†	<u> </u>	-	Ļ	1	•	←	•	۶	→	*
↑↑↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑	Aovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1.00 611 90 97 770 357 0 0 0 1320 0 0 1320 0 0 1320 0 0 1320 0 0 1320 0 0 1320 0 0 1320 0 0 1320 0 0 1320 0 0 0 1320 0 0 0 0 0 0 0 0 0	ane Configurations		4413			*	¥C.				F		¥c.
1,00	raffic Volume (veh/h)	0	611	06	0	770	357	0	0	0	1320	0	450
100	uture Volume (veh/h)	0	611	8	0	770	357	0	0	0	1320	0	450
10	Number	2	2	12		9	16				7	4	14
bf) 100 100 100 100 hn 100 100 100 100 100 hn 100 100 100 100 100 100 hn 0 679 100 0 856 0 1467 0 hn 0 679 100 0 856 0 1467 0 hn 0 679 100 0 856 0 1467 0 hn 0 679 100 0.32 3 3 3 0	nitial Q (Qb), veh	0	0	0	0	0	0				0	0	0
1,00 1,00	Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
high 0 1845 1900 0 1845 1845 1845 0 1845 1940 0 1845 1845 0 1841 0 1845 1940 0 1845 1845 1845 0 1841 0 1841 0 1845 1845 0 1845 1845 0 1841 0 1841 0 1845 0 1	arking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
hy	dj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1845				1845	0	1845
1, % 0 0 0 0 0 0 0 0 0	dj Flow Rate, veh/h	0	629	100	0	826	0				1467	0	200
h, % 0, 00 0	dj No. of Lanes	0	c	0	0	2	-				2	0	
0 3 3 3 3 3 3 9 0 3 3 3 9 0	eak Hour Factor	0.90	0.90	0.90	0.90	0.00	0.90				0.90	0.90	0.90
0.00 1371 200 0 1082 484 1566 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ercent Heavy Veh, %	0	c	c .	0	c و	_د د				ς, ·	0	C 1
0.00 0.31 0.31 0.31 0.00 0.00 0.04 0.00 0.04 0.00 0.04 0.00 0.04 0.00 0.04 0.00 0.04 0.00 0.04 0.00 0.04 0.00 0.04 0.00 <th< td=""><td>ap, veh/h</td><td>0 0</td><td>1371</td><td>700</td><td>0 0</td><td>7087 200</td><td>484</td><td></td><td></td><td></td><td>1566</td><td>0 0</td><td>721</td></th<>	ap, veh/h	0 0	1371	700	0 0	7087 200	484				1566	0 0	721
0 4006 647 0 3597 1568 3408 0 0 1679 1730 0 1752 1568 1704 0 0.0 56 57 0.0 10.1 0.0 185 0.0 0.00 5.6 5.7 0.0 10.1 0.0 185 0.0 0.00 5.7 0.0 10.1 0.0 185 0.0 0.00 1.37 0.00 1.00 1.00 1.00 1.00 1.00 0.00 1.03 0.00 1.082 484 1.566 0 0.0 <td>rrive On Green</td> <td>0.00</td> <td>0.31</td> <td>0.31</td> <td>0.00</td> <td>0.31</td> <td>0.00</td> <td></td> <td></td> <td></td> <td>0.46</td> <td>0.00</td> <td>0.46</td>	rrive On Green	0.00	0.31	0.31	0.00	0.31	0.00				0.46	0.00	0.46
0 1572 267 0 856 0 1467 0 0 100 0 1467 10 0 0 156 51 2 1568 0 1467 0 1 1704 0 0 1 1704 0 0 1 1704 0 1	at Flow, veh/h	0	4606	64/	0	3297	1568				3408	0	1568
0 1679 1730 0 1752 1568 1704 0 1 0.0 56 57 0.0 10.1 0.0 18.5 0.0 0.00 56 57 0.0 10.1 0.0 1.00 1.00 0.00 0.49 620 0.00 0.79 0.00 0.94 0.00 0.00 0.00 0.49 620 0.0 0.79 0.00	3rp Volume(v), veh/h	0	512	267	0	826	0				1467	0	200
0.0 56 57 0.0 10.1 0.0 18.5 0.0 0.00 5.4 0.0 10.1 0.0 1.00 1.00 0.00 0.37 0.00 1.00 1.00 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 0.0 0.0 0.00 1.	3rp Sat Flow(s),veh/h/ln	0	1679	1730	0	1752	1568				1704	0	1568
0.00 5.6 5.7 0.0 10.1 0.0 185 0.0 1 0.00 0.49 0.50 0.00 0.79 0.00 0.94 0.00 0 0.00 0.49 0.50 0.00 0.79 0.00 0.94 0.00 0 0.00 0.49 0.50 0.00 0.79 0.00 0.94 0.00 0 0.01 0.100 1.00 1.00 1.00 1.00 1	2 Serve(g_s), s	0.0	9.6	2.7	0.0	10.1	0.0				18.5	0.0	11.5
0.00 0.37 0.00 100 100 1100 0.00 0.00 0.49 0.52 484 1566 0.00 0.49 0.50 0.00 0.79 0.00 0.79 0.00 0.00 0.49 0.50 0.00 0.79 0.00 0.00 0.79 0.00 0.00 0.0	ycle Q Clear(g_c), s	0.0	9.6	5.7	0.0	10.1	0.0				18.5	0.0	11.5
0 1037 534 0 1082 484 1566 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Prop In Lane	0.00		0.37	0.00		1.00				1.00		1.00
0.00 0.49 0.50 0.00 0.79 0.00 0.994 0.00 0.00 1.00 1.00 1.00 1.00 1.00 1.0	ane Grp Cap(c), veh/h	0	1037	534	0	1082	484				1566	0	721
1.00 1788 920 0 1864 834 1910 0 1 1786 920 0 1864 834 1910 0 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0	/C Ratio(X)	0.00	0.49	0.50	0.00	0.79	0.00				0.94	0.00	69.0
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	\tvail Cap(c_a), \text{veh/h}	0	1785	920	0	1864	834				1910	0	879
0.00 1.00 1.00 0.00 1.00 0.00 1.00 0	ICM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
00 128 128 00 143 00 1116 0.0 01 03 00 00 00 00 00 00 00 00 26 27 00 49 00 102 00 00 129 131 00 148 00 103 00 129 131 0 148 0 0 193 0.0 130 856 86 193 0.0 130 856 148 172 8 187 172 172 172 172 172 172 172 172 172 17	pstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
00 01 03 00 05 00 77 00 00 00 00 00 00 00 00 00 00 00	Iniform Delay (d), s/veh	0.0	12.8	12.8	0.0	14.3	0.0				11.6	0.0	9.7
00 00 00 00 00 00 00 00 00 00 00 00 00	ncr Delay (d2), s/veh	0.0	0.1	0.3	0.0	0.5	0.0				7.7	0.0	1.2
0.0 26 2.7 0.0 4.9 0.0 10.2 0.0 10.2 0.0 10.2 13.1 0.0 14.8 0.0 19.3 0.0 19.3 0.0 19.3 0.0 19.3 0.0 19.3 0.0 19.3 0.0 19.3 0.0 19.3 0.0 19.3 0.0 19.3 0.0 19.3 0.0 19.3 0.0 19.3 0.0 19.3 0.0 19.3 0.0 19.3 1.2 19.4 19.4 19.4 19.4 19.4 19.4 19.4 19.4	nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
00 129 131 00 148 00 19.3 0.0	6ile BackOfQ(50%),veh/ln	0.0	5.6	2.7	0.0	4.9	0.0				10.2	0.0	5.1
B B B B B B B B B B B B B B B B B B B	nGrp Delay(d),s/veh	0.0	12.9	13.1	0.0	14.8	0.0				19.3	0.0	10.9
779 856 130 148 B B B 1 2 3 4 5 6 7 8 2 4 6 7 8 194 25.9 19.4 5.4 5.1 5.4 7.7 205 12.1 1.0 0.3 1.2 B	nGrp LOS		В	В		В					В		В
13.0 14.8 B B B B B B B B B B B B B B B B B B B	pproach Vol, veh/h		779			856						1967	
1 2 3 4 5 6 7 8 2 4 6 7 8 19.4 25.9 19.4 5.4 5.1 5.4 7.7 20.5 12.1 1.0 0.3 1.2 B	Approach Delay, s/veh		13.0			14.8						17.2	
1 2 3 4 5 6 7 2 4 6 7 19,4 25,9 19,4 5,4 5,1 5,4 7,7 20,5 12,1 1,0 0.3 1,2 B	pproach LOS		В			В						В	
2 4 194 25.9 5.4 5.1 24.1 25.4 77 20.5 1.0 0.3	imer		2	က	4	2	9	7	∞				
19.4 25.9 5.4 25.4 24.1 25.4 7.7 20.5 1.0 0.3 15.7 B	ssigned Phs		2		4		9						
5.4 5.1 24.1 25.4 7.7 20.5 1.0 0.3 15.7 B	Phs Duration (G+Y+Rc), s		19.4		25.9		19.4						
24.1 25.4 7.7 20.5 1.0 0.3 15.7 B	Change Period (Y+Rc), s		5.4		5.1		5.4						
7.7 20.5 1.0 0.3 15.7 B	lax Green Setting (Gmax), s		24.1		25.4		24.1						
1.0 0.3 15.7 B	Max Q Clear Time (g_c+I1), s		7.7		20.5		12.1						
15	reen Ext Time (p_c), s		1.0		0.3		1.2						
15	ntersection Summary												
	HCM 2010 Ctrl Delay			15.7									
	CM 2010 LOS			В									

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HCM 2010 Signalized Intersection Summary 6: I-5 NB Ramps & Palomar Airport Rd.

Long-Term + Project (PAL1) AM 0824/2017

Movement EB1 EB1 EB1 WB1				۰									
bors	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
hethy 90 1851 0 0 997 507 80 0 1330 0 0 0 0 4 1851 0 0 0 987 507 80 0 1330 0 0 0 0 0 1 1 1 0 0 1 0 0 0 0 0	Lane Configurations	*	444			444	N.N.		4	K.K.			
wethyly 90 1851 0 0 997 507 80 0 1330 0 0 0 h 0 0 0 0 0 0 0 0 0 0 0 0 0 pb 1 100 100 100 100 100 100 100 100 pb 1 100 100 100 100 100 100 100 100 h 1945 1845 1960 1945 1945 1900 1945 1845 1900 h 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Traffic Volume (veh/h)	8	1851	0	0	787	203	80	0	1330	0	0	0
h h h 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Future Volume (veh/h)	06	1851	0	0	787	207	80	0	1330	0	0	0
hth 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	2	2	12		9	16	3	∞	18			
ppT) 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
hthlin 1845 140 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Ped-Bike Adj(A_pbT)	1.00	0	1.00	1.00	9	0.95	1.00	,	0.98			
highlin 1845 1845 0 0 1845 1845 1900 1845 1845 1900 1845 1845 1900 1845 1845 1900 1845 1845 1900 1845 1845 1900 1845 1900 1900 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1	Parking Bus, Adj	00!	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Feb. 7. Sept. 1. Sept	Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Feb. % 19 1 3 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Adj Flow Rate, veh/h	.53	1908	0 (0 (8101	523	85	0	13/1			
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	Adj No. of Lanes	700	200	0 0	0 0	200	2 0 0	0 0	- 100	2 0 0			
Height 1757 5.059 0 0 1564 816 907 0 1 100 100 100 100 100 100 100 100 1	Peak Houli Facioi	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
1757 500 0.10 0.10 0.50 0.00 0.10 0.10 0.50 0.00 0.10 0.10 0.50 0.00 0.10 0.10 0.50 0.00 0.10 0.10 0.50 0.00 0.10 0.10 0.50 0.00 0.10 0.10 0.50 0.00 0.10 0.10 0.50 0.00 0.00 0.10 0.10 0.00 0	Can veh/h	114	2059	0 0	0 0	1564	816	206	0 0	1393			
1757 5202 0 5202 2628 1757 0	Arrive On Green	90 0	0.41	000	000	0.10	0.10	0.52	000	0.52			
cetr/h 93 1908 0 0 1018 523 82 0 0 c vetr/h 1757 1679 0 0 1679 1314 1757 0 0 0 0 1679 1314 1757 0 0 0 0 1679 1314 1757 0 0 0 0 1772 268 3.3 0.0 0 0 277.2 268 3.3 0.0 0 0 0 277.2 268 3.3 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Sat Flow, veh/h	1757	5202	0	0	5202	2628	1757	0	2699			
1757 1679 0 1679 1314 1757 0 1758	Grp Volume(v). veh/h	93	1908	0	0	1018	523	82	0	1371			
7.3 50.5 0.0 0.0 27.2 26.8 3.3 0.0 1.00 0.00 0.00 1.00 1.00 1.00 1.14 2059 0.0 0.05 1.00 1.00 0.82 0.93 0.00 0.00 0.65 0.64 0.09 0.00 0.16 0.56 0.56 0.00 0.00 0.33 0.00 0.56 0.56 0.00 0.00 0.03 0.78 1.00 0.00 0.64 0.39 4 0.0 0.0 0.78 0.78 1.00 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1314	1757	0	1350			
1.00	Q Serve(g_s), s	7.3	50.5	0.0	0.0	27.2	26.8	3.3	0.0	6.69			
1100 000 000 1100 000 000 000 000 000 0	Cycle Q Clear(g_c), s	7.3	50.5	0.0	0.0	27.2	26.8	3.3	0.0	6.69			
114 2059 0 0 1564 816 907 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
082 093 000 000 065 064 009 000 000 065 064 009 000 000 000 01564 816 926 0 0 0 056 064 010 000 000 01564 816 926 0 0 056 056 056 056 050 000 033 100 100 000 055 055 553 172 00 000 00 00 00 00 00 00 00 00 00 00 0	Lane Grp Cap(c), veh/h	114	2059	0	0	1564	816	406	0	1393			
161 2059 0 0 1564 816 926 0 0 1500 1.00 1.00 1.00 1.00 1.00 1.00	V/C Ratio(X)	0.82	0.93	0.00	0.00	0.65	0.64	0.09	0.00	0.98			
Ratio 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Avail Cap(c_a), veh/h	161	2059	0	0	1564	816	956	0	1423			
(d)	HCM Platoon Ratio	1.00	1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
(d), siveh (4,6, 39,4, 0.0, 0.0, 555, 553, 172, 0.0, 0.0), siveh (4,6, 39,4, 0.0, 0.0, 0.0, 555, 553, 172, 0.0, 0.0), siveh (30), siveh (3.6, 2.4, 3.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0	Upstream Filter(I)	0.56	0.56	0.00	0.00	0.78	0.78	1.00	0.00	1.00			
(35) Syveh 82 5.4 0.0 0.0 1.7 3.0 0.0 0.0 (35) Syveh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Uniform Delay (d), s/veh	9.49	39.4	0.0	0.0	22.5	55.3	17.2	0.0	33.3			
GO/Sycheln 38 4.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Incr Delay (d2), s/veh	8.2	5.4	0.0	0.0	1.7	3.0	0.0	0.0	19.9			
Verbit 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
vehh	Mile BackOlQ(50%), ven/in	20.00	24.3	0.0	0.0	6.71	10.1	0.1	0.0	1.67			
veh/h 2001 154 L 1453 y, skeh 46.0 57.6 51.1 1 2 3 4 5 6 7 8 G-Y-Rc), s 6.7 5 6 7 8 7 8 8 77.3 8 77.3 13 8 77.3 8 8 77.3 13 8 17.9 9 77.3 13 8 17.9	Lingip Delay(u),s/veii	0.21 F	7.	0.0	0.0	3/.2 F	00.0	7.7 B	0.0	23.2			
1 2 3 4 5 6 7 G-Y-RC), S 6.2.7 138 48.9 If (Reb., S 5.7 138 48.9 If (Gmax), S 55.7 138 38.2 Ime (g_C+II), S 52.5 9.3 29.2 Immany S 10 10 10 49.9 S 10 10 10 10 10 10 10 10 10 10 10 10 10	Annroach Vol. veh/h	1	2001			1541	1	٥	1453	٥			
E B C C C C C C C C C C C C C C C C C C	Approach Delay, s/veh		46.0			57.6			51.1				
1 2 3 4 5 6 7 2 5 6 6-Y-Rc), s 62.7 138 48.9 14(17-Re), s 5.4 .4.7 5.4 14(10) (Gmax), s 55.7 .13 38.2 14(10) (g.c+ll), s 52.5 9.3 29.2 16(1.0.5), s 1.6 0.0 1.6 1Delay 51.1 S	Approach LOS		O			ш			O				
G-Y-RC), s 62.7 138 48.9 13.8 48.9 14.0 (Gmax), s 5.4 .4.7 5.4 11.0 (Gmax), s 55.7 .13 38.2 (G.C.), s 55.7 1.6 0.0 1.6	Timer		2	က	4	2	9	7	00				
G+Y-RO, s 62.7 13.8 48.9 (4.4 RO, s 62.7 13.8 48.9 (4.4 RO, s 5.4 *4.7 5.4 thing (Gmax), s 55.7 *1.3 38.2 thing (gH), s 52.5 9.3 29.2 (gC), s 1.6 0.0 1.6 thing ay 51.1 S S S S S S S S S S S S S S S S S S	Assigned Phs		2			2	9		∞				
5.4 * 4.7 5.4 55.7 * 13 38.2 52.5 9.3 29.2 1.6 0.0 1.6 51.1 D	Phs Duration (G+Y+Rc), s		62.7			13.8	48.9		77.3				
55.7 * 13 38.2 52.5 * 9.3 29.2 1.6 0.0 1.6 51.1 D	Change Period (Y+Rc), s		5.4			* 4.7	5.4		2.1				
52.5 9.3 29.2 1.6 0.0 1.6 51.1 D	Max Green Setting (Gmax), s		55.7			* 13	38.2		73.8				
1.6 0.0 1.6 0.0 51.1 D	Max Q Clear Time (g_c+I1), s		52.5			9.3	29.5		71.9				
	Green Ext Time (p_c), s		1.6			0.0	1.6		0.3				
	Intersection Summary												
	HCM 2010 Ctrl Delay			51.1									
	HCM 2010 LOS			٥									

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HCM 2010 Signalized Intersection Summary 7: Paseo Del Norte & Palomar Airport Rd.

Long-Term + Project (PAL1) AM 08/24/2017

HCM 2010 Signalized Intersection Summary 8: Armada Dr. & Palomar Airport Rd.

Long-Term + Project (PAL1) AM 0824/2017

Jovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	F	4413		1	Ш	* _	1	4₽		1	4₽	
raffic Volume (veh/h)	150	2891	150	111	1234	220	150	20	111	101	20	90
-uture Volume (veh/h)	120	2891	120	11	1234	220	120	20	11	101	20	90
Number	2	2	12	<u> </u>	9	16	က	00	18	7	4	14
nitial Q (Qb), veh	0 0	0	0 0	0 5	0	0 0	0 5	0	0	0 0	0	0 0
ed-Bike Adj(A_pb1)	00.1	,	0.98	00.1		0.99	1.00		0.96	1.00	0	0.95
Jarking Bus, Adj	00.1	00.1	00.1	00.1	00.1	00.1	00.1	00.1	1.00	1.00	1.00	1.00
Adj Sat Flow, vervivin	140	2076	140	110	1212	224	140	1845	110	107	1845	1900
Adj No of Lanes	9	30/0	9 0	0 6	2.5	467	9	S C	0	2	CC C	0,0
Reak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	c	3	3	3	c
Cap, veh/h	1287	3085	158	122	1743	484	207	279	238	127	228	193
Arrive On Green	0.12	0.21	0.21	0.01	0.09	0.09	90:0	0.16	0.16	0.04	0.13	0.13
sat Flow, veh/h	3408	4902	250	3408	6346	1551	3408	1752	1499	3408	1752	1488
Grp Volume(v), veh/h	160	2088	1148	118	1313	234	160	23	118	107	53	96
3rp Sat Flow(s),veh/h/In	1704	1679	1794	1704	1586	1551	1704	1752	1499	1704	1752	1488
	2.8	8.98	88.1	4.8	28.3	12.7	6.5	3.7	10.1	4.4	3.8	8.4
Cycle O Clear(g_c), s	2.8	8.98	88.1	8. 4	28.3	12.7	6.5	3.7	10.1	4.4		8.4
Prop In Lane	1.00		0.14	1.00		1.00	1.00		1.00	1.00		1.00
-ane Grp Cap(c), veh/h	128/	2113	1130	7.72	1/43	484	207	2/9	238	127	228	193
//C Katio(X)	1001	0.99	11.30	133	0.75	0.48	777	0. I 9	0.49	10.85	0.23	0.50
AVAII CAD(C_A), VEII/III	120/	0.33	0 33	0.33	0 33	0.33	100	100	100	100	100	100
Instream Eilter(I)	0.33	0.33	0.33	0.53	0.53	0.33	8.6	00.1	100	100	100	100
Juiform Delay (d). s/veh	40.7	54.9	55.5	69.1	59.0	33.5	64.8	51.0	53.7	67.0	54.7	56.7
ncr Delay (d2), s/veh	0.0	8.9	16.6	57.8	2.1	2.3	10.9	0.1	9.0	36.5	0.2	0.7
nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	42.4	49.1	3.3	12.7	2.8	3.4	1.8	4.2	2.7	1.9	3.5
nGrp Delay(d),s/veh	40.7	61.7	72.1	126.9	61.1	35.9	75.7	51.2	54.3	103.5	54.8	57.4
-nGrp LOS		ш	ᅵ	띡	ш		ш			띡		۳
Approach Vol, veh/h		3396			1665			331			256	
Approach Delay, s/veh		64.3			62.2			64.2			76.1	
Approach LUS		ш			ш			ш			ш	
imer	1	2	3	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	9.5	94.1	13.5	23.2	58.9	44.5	9.4	27.3				
Change Period (Y+Rc), s	* 4.2	0.9	5.0	, s	0.9	9 :	* 4.2	5.0				
Max Green Setting (Gmax), s	ç ،	71.4	9.7	35	0.01	99 .	5.5	39.0				
wax c clear time (g_c+rr), s Green Ext Time (n_c), s	0.0	0.0	0.0	9.0	0.7	8.7 8.7	0.0	0.7				
				2	;	;		;				
Hersection Summary			C 1/4									
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Votes												

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Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	444	¥L.	F	444	¥C	ř.	æ	¥	ř.	*	¥C_
Traffic Volume (veh/h)	190	2643	210	130	1225	230	130	40	190	131	40	06
Future Volume (veh/h)	190	2643	210	130	1225	230	130	40	190	131	40	8
Number	2	2	12	—	9	16	3	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.95	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	202	2812	223	138	1303	245	138	0	231	139	43	%
Adj No. of Lanes	2	3	-	-	3	-	2	0	2	2	-	_
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	m	m	co	3	3	m	3	3	3	3	3	c
Cap, veh/h	1260	3207	1054	118	1618	222	136	0	320	122	213	171
Arrive On Green	0.74	1.00	1.00	0.02	0.11	0.11	0.04	0.00	0.12	0.04	0.12	0.12
Sat Flow, veh/h	3408	5036	1561	1757	5036	1553	3514	0	2964	3408	1845	1480
Grp Volume(v), veh/h	202	2812	223	138	1303	245	138	0	231	139	43	96
Grp Sat Flow(s),veh/h/ln	1704	1679	1561	1757	1679	1553	1757	0	1482	1704	1845	1480
Q Serve(g_s), s	2.5	0.0	0.0	9.4	35.4	15.5	5.4	0.0	8.9	2.0	3.0	4.2
Cycle Q Clear(g_c), s	2.5	0.0	0.0	9.4	35.4	15.5	5.4	0.0	8.9	2.0	3.0	4.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1260	3207	1054	118	1618	222	136	0	320	122	213	171
V/C Ratio(X)	0.16	0.88	0.21	1.17	0.81	0.44	1.02	0.00	99.0	1.14	0.20	0.56
Avail Cap(c_a), veh/h	1260	3207	1054	118	2266	755	136	0	980	122	230	425
HCM Platoon Ratio	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.70	0.70	0.70	1.00	0.00	1.00	1.00	1:00	1.00
Uniform Delay (d), s/veh	11.8	0.0	0.0	68.4	58.3	47.1	67.3	0.0	42.8	67.5	56.1	14.2
Incr Delay (d2), s/veh	0.0	0.4	0.0	122.3	3.1	1.8	82.2	0:0	0.8	124.8	0.2	- -
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	Ξ:	0.1	0.0	9.8	17.0	7.0	4.2	0.0	3.7	4.5	1.5	-8.
LnGrp Delay(d),s/veh	11.8	0.4	0.0	190.7	61.4	48.8	149.7	0.0	43.6	192.3	56.3	15.3
LnGrp LOS	8	⋖	⋖	니	ш		니			니	ш	۳ ا
Approach Vol, veh/h		3237			1686			369			278	
Approach Delay, s/veh		1.1			70.2			83.3			110.1	
Approach LOS		⋖			ш			ш.			ш.	
Timer	-	2	3	4	2	9	7	8				
Assigned Phs	1	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	13.6	95.1	10.1	21.2	27.8	51.0	10.0	21.3				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.7	* 5	0.9	9 *	* 5	4.7				
Max Green Setting (Gmax), s	* 9.4	65.1	* 5.4	* 40	11.5	* 63	* 5	40.6				
Max Q Clear Time (g_c+I1), s	11.4	2.0	7.4	6.2	4.5	37.4	7.0	10.9				
Green Ext Time (p_c), s	0.0	29.5	0.0	0.3	0.2	7.6	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			32.9									
HCM 2010 LOS			ပ									
Notes												

HCM 2010 Signalized Intersection Summary 9: Hidden Valley Rd. & Palomar Airport Rd.

Long-Term + Project (PAL1) AM 08/24/2017

HCM 2010 Signalized Intersection Summary 10: College Blvd. & Palomar Airport Rd.

Long-Term + Project (PAL1) AM 0824/2017

	EBT CHA	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
	1	×	4	A.A.D.					•	ŀ	
		-	-	_		F	æ		_	•	*
2 -		110	8	1475	160	80	30	110	70	20	80
	273	110	8	1475	160	8	8	110	70	50	8
	2	12	. .	9 0	16	က	∞ (38	_	4 0	14
_		0 8	0 6	0	0 2	0 6	0	0 10	0 6	0	0 10
	2	1.00	8.6	8	1.30	8.6	8	1.00	0.1	100	100
		1845	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adi Flow Rate, veh/h 172		118	98	1586	172	98	32	118	75	22	98
				33	0	-		0	—	-	_
Peak Hour Factor 0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, % 3	3	3	3	3	3	3	3	3	3	3	3
		819	300	2528	274	76	4	161	94	569	218
_		96:0	0.34	1.00	1.00	0.05	0.13	0.13	0.05	0.15	0.15
Sat Flow, veh/h 1757		1552	1757	4595	497	1757	331	1221	1757	1845	1494
		118	98	1158	009	98	0	150	75	22	86
.veh/h/ln		1552	1757	1679	1735	1757	0	1553	1757	1845	1494
O Serve(g_s), s 13.3	67.5	0.2	2.0	0.0	0.0	6.3	0.0	13.0	5.9	1.4	7.3
r(g_c), s		0.7	2.0	0.0	0.0	6.3	0.0	13.0	5.9	4.	7.3
		1.00	1.00		0.29	00.1	•	0.79	1.00		1.00
p(c), veh/h		819	300	184/	955	6/ 1	0 8	204	94	500	218
V/C Katio(X) U.89		0.14	0.29	0.03	0.03	.09 .E	0.00	0.73	0.80	0.08	0.39
=	2478	8 19	300	184/	422	6 6	0 5	402	100	214	416
HOW PIRE THE 2.00		2.00	2.00	2.00	2.00	8 5	00.1	00.1	00.1	00.1	00.1
Upstream Filter(I) 0.09		0.09	30.0	70.0	0.02	00.1	0.00	1.00	1.00 65 5	1.00	1.00
		0.0	0.7	100	2.0	127.2	0.0	1 0	23.1	0.00	0.4.6
eh		0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0.0	0.0
e.	7	0.1	2.4	0.3	0.5	2.8	0.0	5.7	3.5	0.7	3.0
מ		0.4	40.0	1.0	2.0	194.6	0.0	60.3	9.88	51.7	54.6
	ш.	Α	D	Α	Α	ч		Е	ч	D	
Approach Vol, veh/h	3230			1844			236			183	
Approach Delay, s/veh	92.0			3.1			109.3			68.2	
Approach LOS	_			∢			_			ш	
Timer 1	2	3	4	2	9	7	8				
		3	4	5	9	7	8				
2	7	10.5	26.1	20.4	83.0	12.5	24.1				
		* 4.2	5.7	5.0	0.9	2.0	* 5.7				
Max O Clear Time (a c+l1) s 7.0	90 2	0.0	0.95	15.3	24.8	0.7	15.0				
		0.0	0.2	0.1	12.5	0:0	0.5				
Intersection Summary											
HCM 2010 Ctrl Delav		62.1									
HCM 2010 LOS		ш									
Notor											
MOLCO											

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Synchro 10 Report	Page 15

	1	†	*	-	Ļ	4	•	—	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	444	¥.	K.	444	¥C	F	‡	¥	<u>, </u>	*	* _
Traffic Volume (veh/h)	0//	1884	180	171	1185	61	210	520	291	62	230	200
Future Volume (veh/h)	770	1884	180	171	1185	61	210	520	291	62	230	200
Number	2	2	12	-	9	16	e .	∞ (18	7	4	14
Initial O (Ob), veh	0 0	0	0 0	0 0	0	0 0	0 0	0	0 0	0 6	0	0 0
Ped-Bike Adj(A_pb1)	8.6	100	00.1	00.1	100	1.00	00.1	100	1.00	9.6	5	1 00
Adi Sat Flow veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	828	2026	194	184	1274	99	226	559	313	67	247	215
Adj No. of Lanes	2	3	-	2	n		2	2		-		_
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	က	33	က	3	3	3	33	33	က	က	3	co
Cap, veh/h	1018	2504	780	214	1241	382	293	826	380	82	329	497
Arrive On Green	09.0	0.99	0.99	90.0	0.25	0.25	60:0	0.25	0.25	0.05	0.19	0.19
Sat Flow, veh/h	3408	5036	1568	3408	5036	1549	3408	3505	1549	1757	1845	1544
Grp Volume(v), veh/h	828	2026	194	184	1274	99	226	226	313	19	247	215
Grp Sat Flow(s),veh/h/ln	1704	1679	1568	1704	1679	1549	1704	1752	1549	1757	1845	1544
Q Serve(g_s), s	26.6	1.6	0.1	7.5	34.5	3.9	9.1	20.1	26.8	5.3	17.4	0.0
Cycle Q Clear(g_c), s	26.6	1.6	0.1	7.5	34.5	3.9	9.1	20.1	26.8	5.3	17.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1018	2504	780	214	1241	385	293	826	380	82	326	769
V/C Ratio(X)	0.81	0.81	0.25	0.86	1.03	0.17	0.77	0.65	0.82	0.79	69.0	0.28
Avail Cap(c_a), veh/h	1018	2504	780	214	1241	382	293	1054	466	114	540	920
HCM Platoon Katio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	00.1	00.1	00.1
Upstream Filter(I)	0.21	0.21	0.21	00.1	00.1	1.00	00.1	00.1	00.1	00.1	00.1	00.1
Uniform Delay (d), siven	72.1	7.0	- 0	02.0	27.8	1.67	97.0	47.4	20.0	62.4	52.4	20.8
Incr Delay (dz), swen	0.0	0.0	0.7	7.07	32.0	0.9	8.0	0.5	0.0	10.4	6.0	- 0
milial Q Delay(d3), S/ven	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%lle BackOrU(50%),ven/in	2.3	0.3	- 0	2.4.5	19.7	× 5	4.7	8.6	12.3	3.0	0.6	4.9
LnGrp Delay(d),s/ven	7.07	0.8	0.7	71./	85.3	30.0	73.4	48.0	28.0	82.3	53.3	70.9
Lucrp LOS	اد	∢ !	∢	-	-	اد	ш		4	-		اد
Approach Vol, veh/h		3048			1524			1098			529	
Approach Delay, swen		- <			83.7			.00. L			43.8	
Applicacii EOS		τ			_			٦			۵	
Timer	—	2	3	4	2	9	7	∞				
Assigned Phs	-	2	3	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	13.0	75.9	17.8	33.2	48.1	40.8	11.0	40.1				
Change Period (Y+Rc), s	7.4.7	6.3	2.8	9	6.3	6.3	4.7	2.8				
Max Green Setting (Gmax), s	* &	9,	* 10	* 41	* 34	* 35	* 9.1	42.1				
Max U Clear Time (g_c+I1), s	9.5	3.6		19.4	78.6	36.5	7.3	28.8				
Green Ext Time (p_c), s	0.0	13.8	0.0		0.9	0.0	0.0	2.3				
Intersection Summary												
HCM 2010 Ctrl Delay			38.0									
HCM 2010 LOS			٥									
Notes												

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HCM 2010 Signalized Intersection Summary 11: Camino Vida Roble & Palomar Airport Rd.

Long-Term + Project (PAL1) AM 0824/2017

Long-Term + Project (PAL1) AM 08/24/2017

Movement EBL EBI EBR WBL WBT WBR Lane Configurations ↑ ↑↑↑ ↑ ↑↑ ↑ ↑↑↑						
↑ ↑↑↑ ↑ ↑↑↑ ↑ ↑↑↑ ↑ ↑↑↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑	WBR	NBL N	NBT NE	NBR S	SBL SBT	T SBR
173 1654 410 210 1198 370 173 1654 410 210 1198 370 173 1654 410 210 1198 370 100 0.0 0 0 0 100 1.00 1.00 1.00 1.00 1845 1845 1900 1845 1845 1900 188 1798 446 228 1302 402 1		K.	2		<u>,</u>	*
173 1644 410 210 1198 370 1	370	150	100	70	70 4	40 69
1.00	370	150	100	70	70 4	40 69
100	16	23	∞ (18	7	4 14
1.00	0	0			0	
1.00 1.00	96:0					
1845 1845 1900 1845 1845 1900 1846 1846 1900 1846 1846 1900 1846 1847 1949 40	1:00					
188 1798 446 228 132 402 449 2042 3 3 3 3 3 3 3 3 3	1900				38	5 1845
1	402		109	9/	76 4	43 /5
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	0 0					
3 3 3 3 3 3 3 3 3 3 4 449 429 424 1434 449 0.26 0.51 0.51 0.14 0.38 0.38 1757 4019 966 1757 3775 1161 51757 1679 1639 1228 1157 547 1757 1679 1639 1228 1157 547 1757 1679 1239 1230 1239 1157 679 134 58.9 62.7 192 48.9 492 134 58.9 62.7 192 48.9 492 100 0.42 0.87 0.99 0.92 0.91 0.91 0.04 0.92 0.91 0.91 0.00 1.00 1.00 1.00 1.00 1.00	0.92		0.92 0.		0.92 0.92	2 0.92
449 2048 494 247 1334 441 10.2 0.26 0.51 0.14 0.38 1.48 1.49 1.757 10.79 1.657 0.14 0.38 1.48 1.49 1.757 10.79 1.657 0.14 0.38 1.49 1.757 10.79 1.657 0.157 1.757 10.79 1.34 1.49 1.757 10.79 1.34 1.49 1.71 18.31 2.47 1.419 6.67 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	3					
1757 4019 750 718 0.38 0.38 1757 4019 750 228 1157 547 1157 1679 1530 1757 1679 1534 1534 1534 1549 1534 1549	441					
1757 4019 969 1757 3775 1161 : 188 1494 750 228 1157 547 1757 1679 1530 1757 1679 1530 1757 1679 1534 1534 1536 1757 1679 1534 1534 1536 1757 1679 1534 1534 1534 1536 1700 100 0.042 0.87 0.99 0.92 0.91 0.91 0.91 0.00 1.00 1.00 1.00 1.00	0.38					
188 1494 750 228 1157 547 134 589 62.7 19.2 48.9 49.2 134 58.9 62.7 19.2 48.9 49.2 134 58.9 62.7 19.2 48.9 49.2 100 0.59 1.00 0.74 449 1711 831 247 1275 600 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 46.5 22.5 33.4 63.6 44.0 44.1 0.5 28.5 33.4 63.6 44.0 44.1 0.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1161	3408	993 6	693 17	1757 1845	5 1500
1757 1649 1630 1757 1679 1579 134 58.9 62.7 192 48.9 49.2 13.4 58.9 62.7 192 48.9 49.2 13.4 58.9 62.7 192 48.9 49.2 13.4 60.0 0.42 0.87 0.92 0.91 0.91 449 1711 831 247 1419 667 1.00 1	547	163	0 1			
134 58.9 62.7 19.2 48.9 49.2 100	1579	1704			1757 1845	5 1500
13.4 58.9 62.7 19.2 48.9 49.2 1.00 0.74 44.9 17.11 83.1 2.47 1275 600 0.42 0.87 0.90 0.92 0.91 0.91 0.91 0.91 0.91 0.91 0.92 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0.91	49.2					
1,000 1,000	49.2					3.0 4.0
449 1711 831 247 1275 600 449 1711 831 247 1419 667 1.00 1.00 1.00 1.00 1.00 1.00 446 325 325 440 140 1.00 65 28.7 440 1.00 1.00 0.00 65 28.7 410 20.4 441 60 0.0 0.0 0.0 0.0 0.0 0.0 65 28.7 410 20.4 441 65 28.7 410 20.4 40.1 65 28.7 410 20.4 40.1 65 28.7 410 20.4 40.1 65 28.7 410 40.1 65 28.7 410 20.4 40.1 65 28.7 410 20.4 40.1 65 28.7 410 40.1 65 68.5 10.0 1 20.0 66 28.8 39.0 48.5 100.1 55.0 64.5 1 67 24.3 10 1 2 3 4 5 6 68 20.0 1 2 3 4 5 6 68 20.0 1 2 3 4 5 6 69 25.3 82.8 12 42 5 64 69 25.3 82.8 12 63.0 63.1 60 20 00 00 00 00 15.4 51.2 60 20 00 00 00 15.7	0.74	1.00	0.		1.00	
0.42 0.87 0.90 0.92 0.91 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	009					
449 1711 831 247 1419 667 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	0.91	0.87	Ŭ		_	Ŭ
1.00 1.00 1.00 1.00 1.00 1.00 46.5 32.5 33.4 63.6 44.0 44.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	199					
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00					
465 325 33.4 63.6 44.0 44.1 0.0 5.5 15.0 36.4 11.0 20.4 0.0 0.0 0.0 0.0 0.0 0.0 6.5 28.7 31.6 11.8 24.6 24.8 46.8 39.0 48.5 100.1 55.0 64.5 1 D D D F D E 242.5 63.0 1 2 3 4 5 6 25.3 82.8 12.4 29.5 44.8 63.4 4.2 6.4 42 5 6.4 64.3 1.5 21. 64.7 9.1 6.0 15.4 63.4 3.5 21. 64.7 9.1 6.0 15.4 51.2 0.0 0.0 0.0 0.0 0.1 5.7	1.00					
0.2 6.5 15.0 36.4 11.0 20.4 6.5 15.0 36.4 11.0 20.4 6.5 28.7 31.6 11.8 24.6 24.8 10.0 1 55.0 64.5 10.0 24.2 24.8 24.2 24.8 24.2 24.8 24.2 24.8 24.2 24.8 24.2 24.8 24.2 24.8 24.2 24.8 24.2 24.8 24.2 25.3 82.8 12.8 24.2 25.3 82.8 12.8 24.2 25.3 82.8 12.8 24.2 25.3 82.8 12.8 24.3 25.3 82.8 24.3 25.3 82.8 24.3 25.3 82.8 24.3 25.3 82.8 24.3 25.3 82.8 24.3 25.3 82.8 24.3 25.3 82.8 24.3 25.3 82.8 24.3 25.3 82.8 24.3 25.3 82.8 24.3 25.3 82.8 24.3 25.3 82.8 24.3 25.3 82.3 25.3 82.3 25.3 82.3 25.3 82.3 25.3 82.3 25.3 82.3 25.3 82.3 25.3 82.3 25.3 82.3 25.3 82.3 25.3 82.3 25.3 82.3 25.3 82.3 25.3 82.3 25.3 82.3 25.3 82.3 25.3 82.3 25.3 82.3 82.3 25.3 82.3 25.3 82.3 82.3 25.3 82.3 82.3 82.3 82.3 82.3 82.3 82.3 82	44.1	70.4	വ		Δ,	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	20.4					
6.5 28.7 31.6 11.8 24.6 24.8 46.8 39.0 48.5 100.1 55.0 64.5 10 E 24.3 42.5 63.0 E 24.5 10.1 55.0 64.5 1 9.2 42.5 63.0 E 24.5 10.2 5.0 44.5 1 9.2 5.3 82.8 12.4 29.5 44.8 63.4 42.5 64.4 42.5 64.8 63.4 64.2 64.8 64.8 64.8 64.8 64.8 64.8 64.8 64.8	0:0					
468 390 485 100.1 55.0 64.5 1 D D D F D E 42.5 63.0 D D D F D E 1922 63.0 1 2 3 4 5 6 25.3 828 12.4 29.5 44.8 63.4 1.5 21. 64.7 9.1 6.0 15.4 61.2 5.5 21.2 64.7 9.1 6.0 15.4 51.2 5.0 0.0 0.0 0.0 0.0 15.7		4.2				
2432 1932 2432 1932 2432 63.0 E 1 2 3 4 5 6 6 25.3 828 12.4 29.5 448 64 6.4 1.5 21 64.7 9.1 6.0 15.4 51.2 0.0 0.0 0.0 0.0 0.1 5.7		103.2	0.0	59.9 10	07.6 53.9	.9 20.4
25.3 828 12.4 25 63.0 1 2 3 4 5 6 25.3 828 12.4 29.5 44.8 63.4 1.5 *21 *63 *82 *38 *21 *63 9,5 21,2 64.7 9.1 6.0 15.4 51.2 0.0 0.0 0.0 0.0 5.7	ш	u		ш	ᆈ	
1 2 3 4 5 6 630 1 2 3 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6			348		194	14
1 2 3 4 5 6 1 2 3 4 5 6 253 828 124 29,5 448 63.4 1,5 21 64,7 9,1 60 15,4 51.2 0,0 0,0 0,0 0,0 0,1 5,7		ω	80.2		62.0	0
1 2 3 4 5 6 1 2 3 4 5 6 25.3 828 124 29.5 448 6.4 1,8 21 6.4 42 .5 6.4 6.4 1,8 21 6.4 9.1 6.0 15.4 51.2 0.0 0.0 0.0 0.0 0.1 5.7			ш			ш
1 2 3 4 5 6 6 25.3 82.8 12.4 29.5 44.8 63.4 42.5 6.4 42.7 5 6.4 64.7 5 7.5 21.2 64.7 9.1 6.0 15.4 51.2 6.0 0.0 0.0 0.0 15.7	9	7	00			
25.3 82.8 12.4 29.5 44.8 63.4 "42 64 42 5 64 64 64 1,5 21 63 82 38 21 63),5 21.2 64.7 9.1 6.0 15.4 51.2 0.0 0.0 0.0 0.1 5.7	9	7	8			
, s 42 64 42 5 64 64 64 nax), s 71 63 82 38 72 63 65 5+1, s 21 647 9.1 60 15.4 51.2 s 00 00 00 02 0.1 5.7	63.4	12.2	29.7			
nax), s '21 '63 '82 '38 '21 '63 FHI), s 21.2 64.7 9.1 6.0 15.4 51.2 s 0.0 0.0 0.0 0.2 0.1 5.7	* 6.4		* 5			
s+11), s 21.2 64.7 9.1 6.0 15.4 s 0.0 0.0 0.0 0.2 0.1	* 63		* 38			
s 0.0 0.0 0.0 0.2 0.1	51.2		17.5			
Interception Summary	2.7	0.0	0.7			
III(e) Section Samilially						
Jelay 54						
HCM 2010 LUS						

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Synchro 10 Report Page 19

Movement Lane Configurations Traffic Volume (veh/h) Future Volume (veh/h) Number Minia (O.D.), veh Ped-Bike Adji(A_DT) Parking Bus, Adj Adj Sal Flow, veh/h Anno Green Cap, veh/h Arrive On Gre	BH ■ 84	EBT	EBR	MDI	FC/V	M/DD	NBI	NRT	NBR	SBL	SBT	CDD
	84			WDL	WBI	WDR		-				SDN
	84	+ +		r	4413		۳	*	¥C.		4	
	84	1360	190	290	1570	165	09	25	80	74	24	38
	,	1360	190	290	1570	165	09	25	80	74	24	33
	2	2	12	_	9	16	7	4	14	c	∞	18
	0	0	0	0	0	0	0	0	0	0	0	0
	1.00		96.0	1.00		0.98	0.99		96:0	0.99		0.96
	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	1845	1845	1900	1845	1845	1900	1845	1845	1845	1900	1845	1900
	94	1528	213	326	1764	185	. 67	78	06	83	27	43
	-	e	0	_	2	0	-	_	-	0	-	0
	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
	. ·	2,7,7	20 1	2 0	2000	2 2	200	200	2 2	, L	χ [,
7-	4 5	1031	177	610	3081	322	717	309	727	154	25	00 07
	1757	4442	618	1757	4623	483	1297	1845	1502	0.17 695	310	303
	94	1154	587	326	1279	029	67	28	06	153	0	
s	1757	1679	1703	1757	1679	1748	1297	1845	1502	1397	0	0
S	7.9	49.7	49.9	22.1	30.8	31.1	0.0	1.9	8.0	13.3	0.0	0.0
	7.9	49.7	49.9	22.1	30.8	31.1	8.7	1.9	8.0	15.3	0.0	0.0
	1.00		0.36	1.00		0.28	1.00		1.00	0.54		0.28
p(c), veh/h	114	1233	625	619	2238	1165	238	306	252	271	0	0
	0.82	0.94	0.94	0.53	0.57	0.57	0.28	60:0	0.36	0.56	0.00	0.00
ج	120	1276	647	619	2238	1165	326	481	391	400	0 8	0 5
0	00.1	00.1	00.1	00.1	00.1	00.1	00.1	00.1	00.1	00.1	00.1	9.1
Upstream Filter(I) 1 Iniform Delay (d) slyeh	1.00	1.00 45 a	1.00 A5 8	00.T	1.00	13.5	1.00	1.00	75.3	1.00	0.00	0.00
	18.6	14.3	23.7	0.0	1.5	2.2	0.00	0.0	0.3	0.7	0.0	0
u-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-l	4.5	25.5	27.6	10.8	14.5	15.6	2.5	1.0	3.3	0.9	0.0	0:0
y(d),s/veh	87.9	60.1	9.69	39.0	14.5	15.6	55.8	52.8	55.6	58.9	0.0	0.0
LnGrp LOS	-	ш ;	الد		2	20	ш		الا		į	
Approach Vol, veh/h		1835			22/5			185			153	
Approach LOS		о .			10.4 B			33.Z			30.9 E	
Timer	<u>-</u>	0	~	Ψ	יכ	4	7	α				
Assigned Phs		, ,	>	4	0 10	9		α				
G+Y+Rc), s	58.9	61.1		30.1	14.0	106.0		30.1				
Change Period (Y+Rc), s	0.9	9 *		4.9	* 4.2	0.9		4.9				
	38.8	* 57		39.1	* 13	83.0		39.1				
·I1), s 2	24.1	51.9			6.6	33.1		17.3				
Green Ext Time (p_c), s	0.4	3.1		0.4	0.0	10.6		9.0				
Intersection Summary												
HCM 2010 Ctrl Delay			40.3									
HCM 2010 LOS			O									
Notes												

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HCM 2010 Signalized Intersection Summary 13: El Camino Real & Palomar Airport Rd.

Long-Term + Project (PAL1) AM 08/24/2017

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	444	¥	F	444	N. N.	F	444	N.	F	444	X _
Traffic Volume (veh/h)	198	1038	348	800	1781	710	302	790	460	540	1150	392
Future Volume (veh/h)	198	1038	348	800	1781	710	302	790	460	540	1150	392
Number	2	7	12	- (9	16	က	∞ (18	7	4	14
Initial Q (Qb), veh	0 6	0	0 0	0 6	0	0 8	0 5	0	0 0	0 0	0	0 00
Ped-Bike Adj(A_pb1)	9.6	6	0.99	0.1	5	0.99	1.00	6	1.00	1.00	6	0.99
Parking Bus, Adj	1000	1000	1000	1000	1000	100E	100E	100	1045	1045	1045	100
Adj Sat Flow, veryring Adj Flow Pata yab/h	215	11.28	378	870	1036	773	3.78	042	500	1845	1250	1845
Adi No of Lanes	617	3	2,0	0.0	8	7//	250	8	000	6	33	120
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	co	co	co	co
Cap, veh/h	551	1317	405	454	1175	929	377	1544	1214	472	1685	773
Arrive On Green	0.16	0.26	0.26	0.09	0.16	0.16	0.11	0.31	0.31	0.14	0.33	0.33
Sat Flow, veh/h	3408	5036	1550	3408	5036	2724	3408	5036	2760	3408	5036	1554
Grp Volume(v), veh/h	215	1128	378	870	1936	772	328	826	200	287	1250	426
Grp Sat Flow(s),veh/h/ln	1704	1679	1550	1704	1679	1362	1704	1679	1380	1704	1679	1554
Q Serve(g_s), s	8.5	32.0	35.7	20.0	35.0	35.0	14.2	21.4	10.0	20.8	33.0	8.5
Cycle Q Clear(g_c), s	8.5	32.0	35.7	20.0	35.0	35.0	14.2	21.4	10.0	20.8	33.0	8.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	551	1317	405	424	1175	989	377	1544	1214	472	1685	773
V/C Ratio(X)	0.39	0.86	0.93	1.91	1.65	1.21	0.87	0.56	0.41	1.24	0.74	0.55
Avail Cap(c_a), veh/h	268	1343	413	454	1175	989	545	1544	1214	472	1685	773
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1:00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	56.3	52.7	54.1	68.3	63.3	63.3	65.7	43.5	11.2	9.49	44.2	10.0
Incr Delay (d2), s/veh	0.2	5.3	27.2	412.3	291.8	0.86	9.7	1.5	1.0	111.7	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	15.5	18.4	35.4	48.0	21.8	7.1	10.1	3.9	17.1	15.3	9.9
LnGrp Delay(d),s/veh	56.4	28.0	81.3	480.6	355.0	161.2	73.2	44.9	12.3	176.3	44.5	10.3
LnGrp LOS	ш	ш	니	니	ᅵ	ᅵ	ш		8	띡		<u>ه</u>
Approach Vol, veh/h		1721			3578			1687			2263	
Approach Delay, s/veh		65.9			343.7			40.8			72.2	
Approach LOS		Ш			ш			O			ш	
Timer		2	က	4	വ	9	7	∞				
Assigned Phs	1	2	3	4	2	9	7	80				
Phs Duration (G+Y+Rc), s	26.0	45.2	22.6	56.2	30.2	41.0	26.8	52.0				
	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9				
Max Green Setting (Gmax), s	20.0	40.0	24.0	42.0	70.6	35.0	70.0	46.0				
Green Ext Time (p_c), s	0.0	1.3	0.4	4.1	0.3	0.0	0.0	4.6				
Intersection Summary												
HCM 2010 Ctrl Delay			169.8									
HCM 2010 LOS			ш									

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Synchro 10 Report Page 23

HCM 2010 Signalized Intersection Summary 14: Innovation Way/Loker Ave. & Palomar Airport Rd.

Long-Term + Project (PAL1) AM 0824/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	-	444	×.	۴	443		۴	*	*	r	*	*
Traffic Volume (veh/h)	300	1428	330	390	2890	170	161	80	110	20	40	140
Future Volume (veh/h)	300	1428	330	390	2890	170	161	80	110	20	40	140
Number	2	2	12	-	9	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.99	1.00		96.0	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	326	1552	326	424	3141	182	175	87	120	24	43	152
Adj No. of Lanes	-	က	-	-	က	0	-	-	-	-	-	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	m	m	3	c	3	3	m	c	3	3
Cap, veh/h	344	1681	581	561	2284	132	91	311	253	69	287	233
Arrive On Green	0.39	0.67	0.67	0.64	0.94	0.94	0.05	0.17	0.17	0.04	0.16	0.16
Sat Flow, veh/h	1757	5036	1496	1757	4868	281	1757	1845	1502	1757	1845	1498
Grp Volume(v), veh/h	326	1552	326	424	2147	1179	175	87	120	54	43	152
Grp Sat Flow(s),veh/h/ln	1757	1679	1496	1757	1679	1792	1757	1845	1502	1757	1845	1498
Q Serve(g_s), s	26.9	40.1	6.5	25.3	70.4	70.4	7.8	6.2	2.7	4.6	3.0	14.3
Cycle Q Clear(g_c), s	26.9	40.1	6.5	25.3	70.4	70.4	7.8	6.2	2.7	4.6	3.0	14.3
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	344	1681	281	261	1575	841	91	311	253	69	287	233
V/C Ratio(X)	0.95	0.92	0.62	0.76	1.36	1.40	1.92	0.28	0.47	0.78	0.15	0.65
Avail Cap(c_a), veh/h	747	2192	733	261	1575	841	91	443	360	91	443	326
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.36	0.36	0.36	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1:00
Uniform Delay (d), s/veh	44.9	23.3	7.1	23.1	4.6	4.6	71.1	54.4	15.9	71.4	54.7	59.5
Incr Delay (d2), s/veh	2.5	4.1	<u>~</u>	0.5	163.6	182.1	449.8	0.2	0.5	19.6	0.1	Ξ
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.3	18.7	3.2	12.1	9.19	70.0	15.2	3.2	2.4	5.6	1.5	9.0
LnGrp Delay(d),s/veh	47.4	27.4	8.8	23.6	168.2	186.7	520.9	54.6	16.4	91.0	54.8	9.09
LnGrp LOS		ပ	⋖	ပ	니	니	니		В	니		۳
Approach Vol, veh/h		2237			3750			382			249	
Approach Delay, s/veh		27.3			157.7			256.2			66.2	
Approach LOS		ပ			ш			ш			ш	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	53.9	26.1	12.0	28.1	33.5	76.4	10.1	30.0				
Change Period (Y+Rc), s	0.9	9 *	* 4.2	* 4.7	* 4.2	0.9	* 4.2	* 4.7				
Max Green Setting (Gmax), s	21.8	_* 65	* 7.8	* 36	* 64	23.3	* 7.8	* 36				
Max Q Clear Time (g_c+I1), s	27.3	42.1	8.6	16.3	28.9	72.4	9.9	8.2				
Green Ext Time (p_c), s	0.0	8.0	0.0	0.4	0.4	0.0	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			115.9 F									
LOIN 2010 LOO			-									

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HCM 2010 Signalized Intersection Summary 15: El Fuerte St. & Palomar Airport Rd.

Long-Term + Project (PAL1) AM 08/24/2017

HCM 2010 Signalized Intersection Summary 16: Melrose Dr. & Palomar Airport Rd.

Long-Term + Project (PAL1) AM 08/24/2017

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	r.	444	¥C	K.	444		<u> </u>	₩		F	4₽	
Traffic Volume (veh/h)	131	1216	201	380	3218	210	161	140	140	120	200	101
Future Volume (veh/h)	131	1216	201	380	3218	210	161	140	140	120	200	101
Number	2	2	12	-	9	16	က	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	9	0.99	1.00	4	0.98	1.00		0.96	1.00	9	0.98
Parking Bus, Adj	1000	1001	100	1.00	1000	00.1	100	100	0001	100	1000	1.00
Adj Elow Data vah/h	1/12	1322	218	1040 A12	3708	228	175	152	152	130	217	110
Adi No. of Lanes	2	33	- 6	2	5 6	0	2	201	0	2	7 7	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	c	3	3	3	3	c	c	co
Cap, veh/h	320	2742	849	460	2770	176	132	274	234	120	347	169
Arrive On Green	0.19	1.00	1.00	0.27	1.00	1.00	0.04	0.16	0.16	0.04	0.15	0.15
Sat Flow, veh/h	3408	2036	1559	3408	4832	308	3408	1752	1498	3408	2272	1105
Grp Volume(v), veh/h	142	1322	218	413	2405	1321	175	152	152	130	165	162
Grp Sat Flow(s),veh/h/ln	1704	1679	1559	1704	1679	1783	1704	1752	1498	1704	1752	1624
Q Serve(g_s), s	5.5	0.0	0.0	17.5	0.0	84.2	5.8	12.0	14.3	5.3	13.2	14.1
Cycle Q Clear(g_c), s	5.5	0.0	0.0	17.5	0.0	84.2	5.8	12.0	14.3	5.3	13.2	14.1
Prop In Lane	1.00		1.00	1.00		0.17	1.00		1.00	1.00		89.0
Lane Grp Cap(c), veh/h	320	2742	849	460	1925	1022	132	274	234	120	268	248
V/C Ratio(X)	0.44	0.48	0.26	0.00	1.25	1.29	1.33	0.56	0.65	1.08	0.62	0.65
Avail Cap(c_a), veh/h	320	2742	849	1518	1925	1022	132	403	345	120	397	368
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	99.0	99.0	99:0	0.09	0.0	0.09	1:00	1:00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.4	0.0	0.0	53.8	0.0	0.0	72.1	58.5	59.4	72.3	59.4	59.8
Incr Delay (d2), s/veh	0.2	0.4	0.5	0.2	112.7	132.5	190.4	0.7	Ξ.	105.0	0.9	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.1	0.1	8.3	30.1	37.6	6.2	5.9	0.9	4.2	6.5	6.4
LnGrp Delay(d),s/veh	27.7	0.4	0.5	54.0	112.7	132.5	262.5	59.1	9.09	177.3	60.3	6.09
LnGrp LOS	ш	A	⋖		띡	띡	ᅵ	ш	ш	ᅵ	ш	۳
Approach Vol, veh/h		1682			4139			479			457	
Approach Delay, s/veh		5.2			113.1			133.9			93.8	
Approach LOS		A			ш.			ı			ш.	
Timer	_	2	3	4	5	9	7	8				
Assigned Phs	1	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	24.4	87.7	10.0	27.9	20.1	92.0	9.5	28.4				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	2.0	0.9	9 *	* 4.2	2.0				
Max Green Setting (Gmax), s	. e7	24.0	* 5.8	34.0	4.8	98 _*	* 5.3	34.5				
Max Q Clear Time (g_c+I1), s	19.5	2.0	7.8	16.1	7.5	86.2	7.3	16.3				
Green Ext Time (p_c), s	0.7	6.1	0.0	1.0	0.0	0.0	0.0	1.0				
Intersection Summary												
HCM 2010 Ctrl Delay			86.4									
HCM 2010 LOS			ш									
Notes												

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Secondaria Fig. F		4	†	<u> </u>	-	ţ	1	✓	—	4	۶	→	*
Mart	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
501 964 181 130 1866 100 601 870 240 90 1030 501 964 181 130 1866 100 601 870 240 90 1030 100 0 <td< td=""><td>Lane Configurations</td><td>F</td><td>444</td><td>¥</td><td>F</td><td>444</td><td>¥</td><td>F</td><td>Ħ</td><td>*-</td><td>F</td><td>*</td><td>¥.</td></td<>	Lane Configurations	F	444	¥	F	444	¥	F	Ħ	*-	F	*	¥.
501 964 181 130 1866 100 601 870 240 90 103 5 2 12 1 6 16 3 8 18 7 4 100 0 0 0 0 0 0 0 0 0 1100 100 <td>Traffic Volume (veh/h)</td> <td>201</td> <td>964</td> <td>181</td> <td>130</td> <td>1866</td> <td>100</td> <td>109</td> <td>870</td> <td>240</td> <td>06</td> <td>1030</td> <td>1431</td>	Traffic Volume (veh/h)	201	964	181	130	1866	100	109	870	240	06	1030	1431
5 2 12 1 6 16 3 8 18 7 4 100 0 <td>Future Volume (veh/h)</td> <td>201</td> <td>964</td> <td>181</td> <td>130</td> <td>1866</td> <td>100</td> <td>601</td> <td>870</td> <td>240</td> <td>06</td> <td>1030</td> <td>1431</td>	Future Volume (veh/h)	201	964	181	130	1866	100	601	870	240	06	1030	1431
100	Number	2	2	12	-	9	16	3	∞	18	7	4	14
1,00	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
1445 1445	Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
1845 1845 <td< td=""><td>Parking Bus, Adj</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td></td<>	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
516 994 187 134 1924 103 620 897 241 93 1062 2 3 <td>Adj Sat Flow, veh/h/ln</td> <td>1845</td>	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
2 3 1 2 3 1 2 3 1 2 3	Adj Flow Rate, veh/h	216	994	187	134	1924	103	620	897	247	93	1062	1475
097 098 098 098 098 098 098 098 098 098 098 098 098 098 <td>Adj No. of Lanes</td> <td>2</td> <td>3</td> <td>-</td> <td>2</td> <td>က</td> <td>_</td> <td>2</td> <td>4</td> <td>-</td> <td>2</td> <td>2</td> <td>2</td>	Adj No. of Lanes	2	3	-	2	က	_	2	4	-	2	2	2
3 3	Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
585 2206 682 178 1544 476 495 2207 623 135 848 0.34 6.038 6.088 0.08 0.05 6.31 6.15 2.95 0.34 156 194 187 134 1924 103 6.20 6.94 155 3.08 6.38 6.38 6.38 6.38 6.38 6.38 6.38 6.38 6.38 6.36 154 170 4.09 4.09 155 170 1.00	Percent Heavy Veh, %	3	33	co	co	က	က	co	co	3	33	က	3
0.34 0.88 0.88 0.05 0.31 0.31 0.15 0.35 0.35 0.34 0.05 34.08 56.36 1557 3.408 50.46 156.4 176.2	Cap, veh/h	282	2206	682	178	1544	476	495	2207	622	135	848	1133
3408 5636 1557 3408 5036 1553 3408 6346 1554 3408 3505 1704 61 29 187 134 1824 103 820 897 247 93 1062 2174 6.1 2.9 5.8 46.0 6.4 218 16.1 17.0 40 36.3 214 6.1 2.9 5.8 46.0 6.4 21.8 16.1 17.0 40 36.3 210 1.00 1.00 1.00 1.00 1.00 1.00 36.3 288 2.20 68.2 178 1.44 476 495 2.207 62.2 135 848 288 2.06 68.2 178 1544 476 495 2.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Arrive On Green	0.34	0.88	0.88	0.05	0.31	0.31	0.15	0.35	0.35	0.04	0.24	0.24
1704 187 134 1924 103 620 887 247 93 1062 1704 187 134 1924 103 620 887 247 93 1062 1704 187 134 1924 103 620 887 247 91 175 1705 129 58 46.0 64 218 161 170 4.0 36.3 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 200 200 200 100 100 100 100 100 100 200 200 100 100 100 100 100 100 100 200 200 200 100 100 100 100 100 110 2.7 1.3 2.9 2.8 64.1 37.2 32.1 32.1 120 2.5 2.8 4.0 6.4 2.8 6.4 2.8 120 2.5 2.8 4.0 6.0 2.0 2.0 2.0 120 2.5 2.8 4.0 2.0 2.0 2.0 2.0 120 2.5 2.8 4.1 6.2 1.0 1.0 1.0 1.0 120 2.7 1.3 2.9 3.8 4.1 3.7 3.2 3.2 120 2.5 2.8 4.1 2.0 2.0 2.0 2.0 2.0 120 2.5 2.8 4.1 2.0 2.0 2.0 2.0 2.0 120 2.5 2.8 4.1 2.0 2.0 2.0 2.0 2.0 120 2.5 2.8 4.1 2.0 2.0 2.0 2.0 120 2.7 1.3 2.9 3.8 2.9 4.1 3.7 3.2 3.2 120 2.5 2.8 4.0 2.0 2.0 2.0 2.0 120 2.7 2.8 4.8 5.0 5.0 2.0 120 2.7 2.8 4.8 5.0 5.0 2.0 120 2.7 2.8 4.8 5.0 5.0 2.0 120 2.7 2.8 2.8 4.0 4.0 2.0 120 2.8 2.8 4.0 2.0 4.1 12 3 4 5 6 7 8 13 2.8 3.8 2.3 3.3 4.8 6.0 6.0 4.1 18.7 2.8 3.8	Sat Flow, veh/h	3408	5036	1557	3408	5036	1553	3408	6346	1554	3408	3505	2725
1704 1679 1557 1704 1679 1553 1704 1586 1554 1704 1752 1704 1679 1557 1704 1679 1557 1704 1679 1557 1704 1679 1557 1704 1705 4.0 84.3 1.00 1	Grp Volume(v), veh/h	516	964	187	134	1924	103	620	897	247	93	1062	1475
21.4 6.1 2.9 5.8 46.0 6.4 21.8 16.1 17.0 4.0 36.3 1.00	Grp Sat Flow(s),veh/h/ln	1704	1679	1557	1704	1679	1553	1704	1586	1554	1704	1752	1363
10	Q Serve(g_s), s	21.4	6.1	5.9	2.8	46.0	6.4	21.8	16.1	17.0	4.0	36.3	29.2
100	Cycle Q Clear(g_c), s	21.4	6.1	5.9	2.8	46.0	6.4	21.8	16.1	17.0	4.0	36.3	29.2
585 2206 682 178 1544 476 495 2207 622 135 848 088 2045 0.27 178 174 476 495 2207 622 148 200 200 200 100 100 100 100 100 100 081 082 218 1544 476 495 2207 622 148 848 200 200 100 <td>Prop In Lane</td> <td>1.00</td> <td></td> <td>1.00</td> <td>1.00</td> <td></td> <td>1.00</td> <td>1.00</td> <td></td> <td>1.00</td> <td>1.00</td> <td></td> <td>1.00</td>	Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
0.88 0.45 0.27 0.75 1.25 0.22 1.25 0.41 0.40 0.69 1.25 586 2206 682 218 1544 476 495 2207 622 164 848 2200 2.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Grp Cap(c), veh/h	282	2206	682	178	1544	476	495	2207	622	135	848	1133
586 2206 682 218 1544 476 495 2207 622 164 848 200 200 100 <td>V/C Ratio(X)</td> <td>0.88</td> <td>0.45</td> <td>0.27</td> <td>0.75</td> <td>1.25</td> <td>0.22</td> <td>1.25</td> <td>0.41</td> <td>0.40</td> <td>69:0</td> <td>1.25</td> <td>1.30</td>	V/C Ratio(X)	0.88	0.45	0.27	0.75	1.25	0.22	1.25	0.41	0.40	69:0	1.25	1.30
200 200 200 1.00 1.00 1.00 1.00 1.00 1.0	Avail Cap(c_a), veh/h	286	2206	682	218	1544	476	495	2207	622	164	848	1133
081 081 081 1.00 1.00 1.00 1.00 1.00 1.0	HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
478 56 54 70.1 52.0 28.9 64.1 37.2 32.1 71.1 56.9 12.0 0.5 0.8 8.4 116.2 1.0 129.1 0.0 <t< td=""><td>Upstream Filter(I)</td><td>0.81</td><td>0.81</td><td>0.81</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td></t<>	Upstream Filter(I)	0.81	0.81	0.81	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
120 0.5 0.8 8.4 116.2 1.0 129.1 0.0 0.2 59 123.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	47.8	9.9	5.4	70.1	52.0	28.9	64.1	37.2	32.1	71.1	6.99	23.6
100	Incr Delay (d2), s/veh	12.0	0.5	8.0	8.4	116.2	1.0	129.1	0.0	0.2	5.9	123.2	142.4
11.0 2.7 1.3 2.9 37.9 2.9 19.1 7.0 7.3 2.0 32.1 59.8 6.1 6.2 78.5 68.2 29.9 193.2 37.2 32.3 7.0 80.0 E	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0:0	0.0	0.0
598 6.1 6.2 78.5 168.2 29.9 193.2 37.2 32.3 77.0 18.00 E A A A E F C F D C E F 1657 22.5 156.1 1764 26.30 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 3 12 71.7 26.0 42.3 31.7 52.0 10.1 58.2 2 4 5 6 0 6 4.2 6.0 2 5 8.0 2.2 3.6 25.8 46 7.2 50.6 2 8 8 1 23.8 38.3 23.4 48.0 6.0 19.0 2 9 6 3.0 0.2 3.6 25.8 46 7.2 50.6 2 18 12.8 38.3 23.4 48.0 6.0 19.0 2 18.7 18.7 1 18.7	%ile BackOfQ(50%),veh/ln	11.0	2.7	1.3	2.9	37.9	2.9	19.1	7.0	7.3	2.0	32.1	33.3
F	LnGrp Delay(d),s/veh	29.8	6.1	6.2	78.5	168.2	29.9	193.2	37.2	32.3	77.0	180.0	166.0
22.5 1561 1764 22.5 156.1 91.3 C	LnGrp LOS	u	⋖	⋖	ш	-	ပ	4		O	ш	-	"
22.5 156.1 91.3 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 12.0 71.7 26.0 42.3 31.7 520 10.1 58.2 9.6 6.0 72 36 6 6 7 86 9.8 8.1 23.8 38.3 23.4 48.0 60 19.0 0.0 4.4 0.0 0.0 0.3 0.0 0.0 4.1 118.7	Approach Vol, veh/h		1697			2161			1764			2630	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 12.0 71.7 26.0 42.3 31.7 52.0 10.1 E *4.2 6.0 *4.2 *6 6.0 *6 *4.2 *9.6 36.0 *22 *36 25.8 *46 *7.2 E 7.8 8.1 23.8 38.3 23.4 48.0 6.0 1 0.0 4.4 0.0 0.0 0.3 0.0 0.0 0.0	Approach Delay, s/veh		22.5			156.1			91.3			168.5	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 120 71.7 260 42 6 0 6 42 96 360 22 36 258 46 77.2 6 78 81 238 38.3 23.4 48.0 6.0 1 0.0 4.4 0.0 0.0 0.3 0.0 0.0	Approach LOS		ပ			ш.			ш.			ш.	
12.0 71.7 26.0 42.3 31.7 52.0 10.1 12.0 71.7 26.0 42.3 31.7 52.0 10.1 12.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Timer	_	2	3	4	2	9	7	∞				
112.0 71.7 26.0 42.3 31.7 52.0 10.1 5 4.2 6.0 6.0 6 7.2 7.4 7.6 6.0 7.6 7.2 7.8 8.1 23.8 38.3 23.4 48.0 6.0 10.0 4.4 0.0 0.0 0.3 0.0 0.0 118.7 F	Assigned Phs	-	2	က	4	2	9	7	∞				
74.2 6.0 74.2 76 6.0 76 74.2 76.5 36.0 72 73.6 25.8 74.6 77.2 17.8 81.1 23.8 38.3 23.4 48.0 6.0 1 70.0 4.4 0.0 0.0 0.3 0.0 0.0 118.7	Phs Duration (G+Y+Rc), s	12.0	71.7	26.0	42.3	31.7	52.0	10.1	58.2				
7.96 36.0 *22 *36 25.8 *46 *7.2 7.8 8.1 23.8 38.3 23.4 48.0 6.0 0.0 4.4 0.0 0.0 0.3 0.0 0.0 118.7	Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	9 *	0.9	9 *	* 4.2	0.9				
7.8 8.1 23.8 38.3 23.4 48.0 6.0 0.0 4.4 0.0 0.0 0.3 0.0 0.0 0.0 118.7 F	Max Green Setting (Gmax), s	9.6 _*	36.0	* 22	* 36	25.8	* 46	* 7.2	9.09				
, s 0.0 4.4 0.0 0.0 0.3 0.0 0.0 118.7 F	Max Q Clear Time (g_c+I1), s	7.8	8.1	23.8	38.3	23.4	48.0	0.9	19.0				
	Green Ext Time (p_c), s	0.0	4.4	0.0	0.0	0.3	0.0	0.0	4.1				
	Intersection Summary												
	HCM 2010 Ctrl Delay			118.7									
Metro	HCM 2010 LOS			ш									
	Notes												

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HCM 2010 Signalized Intersection Summary 17: El Camino Real & Town Garden Rd.

Long-Term + Project (PAL1) AM 08/24/2017

HCM 2010 Signalized Intersection Summary 18: El Camino Real & Camino Vida Roble

Long-Term + Project (PAL1) AM 0824/2017

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		₩	*	<u>, </u>	£,		je-	444	¥	<i>y</i> -	444	*
Traffic Volume (veh/h)	70	30	09	150	09	80	180	1662	160	320	1588	100
Future Volume (veh/h)	20	30	09	120	99	8	180	1662	160	320	1588	100
Number	7	4	14	က	∞	18	2	2	12	_	9	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1900	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	74	32	64	160	99	82	191	1768	170	372	1689	106
Adj No. of Lanes	0	—	-	-	_	0	-	m	-	_	m	_
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	က	3	3	3	3	က
Cap, veh/h	133	28	158	240	95	127	162	1289	394	631	2707	838
Arrive On Green	0.11	0.11	0.11	0.14	0.14	0.14	0.0	0.26	0.26	0.36	0.54	0.54
Sat Flow, veh/h	1244	538	1475	1757	869	927	1757	5036	1537	1757	5036	1559
Grp Volume(v), veh/h	106	0	64	160	0	149	191	1768	170	372	1689	106
Grp Sat Flow(s),veh/h/ln	1782	0	1475	1757	0	1625	1757	1679	1537	1757	1679	1559
Q Serve(g_s), s	8.5	0.0	6.1	13.0	0.0	13.1	13.8	38.4	13.9	25.8	35.0	5.1
Cycle Q Clear(g_c), s	8.5	0.0	6.1	13.0	0.0	13.1	13.8	38.4	13.9	25.8	35.0	5.1
Prop In Lane	0.70		1.00	1.00		0.57	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	191	0	158	240	0	222	162	1289	394	631	2707	838
V/C Ratio(X)	0.55	0.00	0.40	0.67	0.00	0.67	1.18	1.37	0.43	0.59	0.62	0.13
Avail Cap(c_a), veh/h	452	0	374	468	0	433	162	1289	394	631	2707	838
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.29	0.0	62.5	61.5	0.0	9.19	68.1	55.8	46.7	39.1	24.1	17.2
Incr Delay (d2), s/veh	6.0	0.0	9.0	1.2	0.0	1.3	128.0	172.1	3.4	1.0	1.	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	2.5	6.4	0.0	0.9	12.4	38.3	6.3	12.7	16.4	2.3
LnGrp Delay(d),s/veh	64.5	0.0	63.1	62.7	0.0	62.9	196.1	227.9	50.1	40.1	25.2	17.5
LnGrp LOS	ш		ш	ш		ш	-	-			ပ	m
Approach Vol, veh/h		170			309			2129			2167	
Approach Delay, s/veh		64.0			62.8			210.9			27.4	
Approach LOS		ш			ш			ш.			ပ	
Timer	-	2	33	4	2	9	7	8				
Assigned Phs	7	2		4	2	9		8				
Phs Duration (G+Y+Rc), s	60.2	44.8		20.3	18.0	87.0		24.7				
Change Period (Y+Rc), s	* 6.4	* 6.4		* 4.2	* 4.2	* 6.4		4.2				
Max Green Setting (Gmax), s	* 15	* 38		* 38	* 14	* 39		40.0				
Max Q Clear Time (g_c+I1), s	27.8	40.4		10.5	15.8	37.0		15.1				
Green Ext Time (p_c), s	0.0	0.0		0.4	0.0	1.7		0.8				
Intersection Summary												
HCM 2010 Ctrl Delay			112.8									
HCM 2010 LOS			ш									
Notes						ı					ı	

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	r	4	¥.		4		F	‡	*-	×	**	
Traffic Volume (veh/h)	70	20	104	20	20	20	475	1602	20	30	1528	290
Future Volume (veh/h)	70	20	104	20	20	20	475	1602	20	30	1528	290
Number	7	4	14	n	∞	18	2	2	12	-	9	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.93	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1845	1845	1845	1900	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	26	0	141	21	21	21	495	1669	21	31	1592	302
Adj No. of Lanes	_	0	2	0	-	0	2	2	-	-	3	0
Peak Hour Factor	96.0	96.0	96.0	96.0	96.0	96:0	96:0	96:0	96:0	96:0	96:0	0.96
Percent Heavy Veh, %	က	က	co	3	က	3	33	co	3	3	33	3
Cap, veh/h	175	0	293	20	20	20	282	1094	481	628	2489	469
Arrive On Green	0.10	0.00	0.10	0.09	0.00	0.09	0.08	0.31	0.31	0.36	0.59	0.59
Sat Flow, veh/h	1757	0	2939	222	222	222	3408	3205	1543	1757	4241	800
Grp Volume(v), veh/h	26	0	141	63	0	0	495	1669	21	31	1258	636
Grp Sat Flow(s),veh/h/ln	1757	0	1470	1670	0	0	1704	1752	1543	1757	1679	1684
2 Serve(g_s), s	4.4	0.0	8.9	5.4	0.0	0.0	12.4	46.8	1.4	1.7	37.1	37.6
Cycle Q Clear(g_c), s	4.4	0.0	8.9	5.4	0.0	0.0	12.4	46.8	1.4	1.7	37.1	37.6
Prop In Lane	1.00		1.00	0.33		0.33	1.00		1.00	1.00		0.47
-ane Grp Cap(c), veh/h	175	0	293	149	0	0	282	1094	481	628	1970	988
//C Ratio(X)	0.32	0.00	0.48	0.42	0.00	0.00	1.76	1.53	0.04	0.05	0.64	0.64
Avail Cap(c_a), veh/h	445	0	745	445	0	0	282	1094	481	628	1970	988
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Jpstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Jniform Delay (d), s/veh	62.8	0.0	63.9	9.49	0.0	0.0	68.8	51.6	36.0	31.5	20.5	20.6
ncr Delay (d2), s/veh	1.0	0.0	1.2	1.9	0.0	0.0	354.8	241.5	0.2	0.0	1.6	3.2
nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	2.8	2.5	0.0	0.0	19.7	59.3	9.0	0.8	17.6	18.4
LnGrp Delay(d),s/veh	63.8	0.0	65.1	999	0.0	0.0	423.6	293.1	36.2	31.5	22.1	23.8
LnGrp LOS	ш		ш	ш			띡	۳		ပ	ပ	
Approach Vol, veh/h		197			63			2185			1925	
Approach Delay, síveh		64.7			99.5			320.2			22.8	
Approach LOS		ш			Ш			ш			O	
Timer	_	2	က	4	2	9	7	00				
Assigned Phs	1	2		4	2	9		8				
Phs Duration (G+Y+Rc), s	9.69	52.8		20.0	18.4	94.0		17.6				
Change Period (Y+Rc), s	0.9	0.9		* 5	0.9	0.9		4.2				
Max Green Setting (Gmax), s	4.0	46.8		* 38	12.4	38.4		40.0				
Max Q Clear Time (g_c+I1), s	3.7	48.8		8.8	14.4	39.6		7.4				
Green Ext Time (p_c), s	0.0	0.0		0.7	0.0	0.0		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			174.0									
HCM 2010 LOS			ш.									

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HCM 2010 Signalized Intersection Summary Long-Term + Project (PAL1) AM 19: El Camino Real & Poinsettia Ln.

Movement FB EFT EFR WEI			١	۰	٠			-	-			•	
	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
70 50 30 410 30 181 70 1556 20 131 1401 70 56 30 410 30 181 70 1556 290 131 1401 1 4 14 3 8 18 5 2 1 1 6 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00<	Lane Configurations	F	₩.		F	4₽		<u> </u>	444	% _	K.	444	
70 50 30 410 30 181 70 1526 290 131 1401 7 4 4 4 4 4 3 8 18 5 2 1 6 1.00 0 <td>Traffic Volume (veh/h)</td> <td>70</td> <td>20</td> <td>30</td> <td>410</td> <td>30</td> <td>181</td> <td>70</td> <td>1526</td> <td>290</td> <td>131</td> <td>1401</td> <td>20</td>	Traffic Volume (veh/h)	70	20	30	410	30	181	70	1526	290	131	1401	20
7 4 14 3 8 18 5 2 1 6 100 0 <td>Future Volume (veh/h)</td> <td>20</td> <td>20</td> <td>30</td> <td>410</td> <td>30</td> <td>181</td> <td>20</td> <td>1526</td> <td>290</td> <td>131</td> <td>1401</td> <td>20</td>	Future Volume (veh/h)	20	20	30	410	30	181	20	1526	290	131	1401	20
1.00	Number	7	4 (4	က	∞ (<u> </u>	വ	2	12	- (9	16
1,000	Initial Q (Qb), veh	0 6	0	0 80	0 6	0	0 0	0 6	0	0	0 0	0	0
1.00 1.00	Ped-bike Adj(A_pb1)	8.5	8	1.00	9.6	00	100	9.6	5	1.00	00.1	00	1.00
18 56 70 70 70 70 70 70 70 7	Parking bus, Auj	18.4E	18.4E	1000	18.4F	1845	1000	1845	184F	1845	1845	1845	1000
2 2 0 2 3 1 2 3 99 0.90 </td <td>Adj Flow Rate veh/h</td> <td>78</td> <td>256</td> <td>33</td> <td>456</td> <td>33</td> <td>201</td> <td>78</td> <td>1696</td> <td>322</td> <td>146</td> <td>1557</td> <td>56</td>	Adj Flow Rate veh/h	78	256	33	456	33	201	78	1696	322	146	1557	56
0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90	Adj No. of Lanes	2	2	3 0	2	2	0	2	e cc	-	2	· ·	90
3 4 4 4 4 4 4 4 4	Peak Hour Factor	06:0	0.90	0.00	0.90	0.90	0.90	06:0	0.90	06:0	06:0	0.90	06:0
91 254 134 502 423 366 114 1902 588 726 2839 0.003 2.0.1	Percent Heavy Veh, %	3	3	3	3	3	3	3	c	c	3	c	c
0.03 0.12 0.15 0.15 0.24 0.24 0.03 0.38 0.38 0.31 0.57 0.57 0.54 0.24 0.24 0.03 0.38 0.38 0.021 0.57 0.57 0.58 146 146 3.48 4.54 5.6 176 1.55 1704 1679 136 1048 2.2 146 1679 1479 1479 1679 1679 1479 1679<	Cap, veh/h	16	254	134	502	423	366	114	1902	288	726	2839	102
3408 2166 1148 3408 1752 1516 3408 5036 1556 3408 4986 78 44 45 456 33 201 78 1666 322 146 1048 34 34 39 198 22 174 34 47.4 24.4 5.3 29.3 29.3 1.00 0.73 1.00	Arrive On Green	0.03	0.12	0.12	0.15	0.24	0.24	0.03	0.38	0.38	0.21	0.57	0.57
78 44 45 45 33 201 78 1696 322 146 1048 1704 1752 1563 1704 1752 1563 1704 174 167 1679 1679 1679 1679 1679 39 34 34 34 474 244 53 293 33 34 34 34 474 244 53 293 36 100	Sat Flow, veh/h	3408	2168	1148	3408	1752	1516	3408	5036	1556	3408	4986	179
1704 1752 1563 1704 1752 1516 1704 1679 1556 1704 1679 1533 1704 1752 1516 1704 1679 1556 1704 1679 1533 34 34 34 34 34 34 34	Grp Volume(v), veh/h	78	44	45	456	33	201	78	1696	322	146	1048	265
3.4 3.4 3.9 19.8 2.2 17.4 3.4 47.4 5.3 29.3 3.4 3.4 3.4 3.9 19.8 2.2 17.4 3.4 47.4 5.3 29.3 1.00 2.3 1.00 1.00 1.00 1.00 1.00 1.00 91 2.05 1.83 50.2 42.3 3.6 114 1902 588 726 1912 9.8 0.51 0.25 0.91 0.08 0.55 0.40 0.89 0.55 2.0 0.55 1912 2.0	Grp Sat Flow(s),veh/h/ln	1704	1752	1563	1704	1752	1516	1704	1679	1556	1704	1679	1808
3.4 3.4 3.9 198 2.2 17.4 3.4 47.4 5.3 29.3 1.00 0.73 1.00 1.00 1.00 1.00 1.00 91 2.05 1.33 1.00 1.00 1.00 1.00 1.00 9.86 0.21 0.25 0.91 0.08 0.55 0.69 0.89 0.55 0.20 0.55 1.00 <t< td=""><td>Q Serve(g_s), s</td><td>3.4</td><td>3.4</td><td>3.9</td><td>19.8</td><td>2.2</td><td>17.4</td><td>3.4</td><td>47.4</td><td>24.4</td><td>5.3</td><td>29.3</td><td>29.3</td></t<>	Q Serve(g_s), s	3.4	3.4	3.9	19.8	2.2	17.4	3.4	47.4	24.4	5.3	29.3	29.3
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	Cycle Q Clear(g_c), s	3.4	3.4	3.9	19.8	2.2	17.4	3.4	47.4	24.4	5.3	29.3	29.3
91 205 183 552 423 366 114 1902 588 726 1912 708 0.25 0.91 0.08 0.25 0.69 0.89 0.55 0.05 0.05 0.05 0.05 0.05 0.05 0.0	Prop In Lane	1.00		0.73	1.00		1.00	1.00		1.00	1.00		0.10
0.86 0.21 0.25 0.91 0.08 0.55 0.69 0.89 0.55 0.20 0.55 0.10 0.10 0.100 1.00 1.00 1.00 1.	Lane Grp Cap(c), veh/h	91	205	183	205	423	366	114	1902	288	726	1912	1030
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	V/C Ratio(X)	98.0	0.21	0.25	0.91	0.08	0.55	69.0	0.89	0.55	0.20	0.55	0.55
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	6	426	406	298	432	374	114	1917	592	726	1912	1030
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
72.7 60.0 60.2 62.9 44.0 49.8 71.7 43.8 36.6 48.5 20.2 49.8 0.2 0.3 16.1 0.0 0.9 20.1 6.8 3.6 0.1 1.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00
49.8 0.2 0.3 16.1 0.0 0.9 20.1 6.8 3.6 0.1 1.1 1.1 0.0 0.0 1.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	72.7	0.09	60.2	65.9	44.0	49.8	71.7	43.8	36.6	48.5	20.2	20.2
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	49.8	0.2	0.3	16.1	0.0	0.9	20.1	8.9	3.6	0.1	- -	2.1
22 1.7 1.7 10.4 1.1 7.4 1.9 23.2 11.1 2.5 13.8 12.5 6.0.4 79.1 44.0 50.7 91.9 50.6 40.3 48.6 21.4 1.5 1.6 690 2.0.4 79.1 44.0 50.7 91.9 50.6 40.3 48.6 21.4 1.4 1.5 1.5 1.4 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1725 662 664 79,1 440 567 919 506 40,3 486 21,4 167 690 690 2096 1759 691 691 691 691 691 692 691 692	%ile BackOfQ(50%),veh/ln	2.2	1.7	1.7	10.4	=======================================	7.4	1.9	23.2	11.1	2.5	13.8	15.2
F E E E D D F D D D D D D D D D D D D D	LnGrp Delay(d),s/veh	122.5	60.2	60.4	79.1	44.0	20.7	91.9	9.09	40.3	48.6	21.4	22.3
167 690 2096 2096 89.3 69.1 50.6 89.3 69.1 50.6 69.1 50.6 69.1 50.6 69.1 50.6 69.1 50.6 69.1 50.6 69.1 50.6 69.1 50.6 69.1 50.6 69.1 50.6 69.1 50.6 69.1 50.6 69.1 50.6 69.1 50.6 69.1 50.6 69.1 50.6 69.1 50.6 69.1 69	LnGrp LOS	니	ш	ш	ш			띡				ပ	
893 691 506 F E E D D 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 379 627 27.1 22.3 92 914 82 41.2 60 6 5 47 42 60 4.2 5 98 57 25 39 5 619 4 37 7.3 49,4 21.8 5.9 5.4 31.3 5.4 19.4 0.1 7.3 0.4 0.3 0.0 9.6 0.0 0.9	Approach Vol, veh/h		167			069			2096			1759	
1 2 3 4 5 6 7 8 37.9 6.27 27.1 22.3 9.2 91.4 8.2 41.2 6.0 6 5 4.7 4.2 6.0 4.2 5 9.8 57 2.5 39 5 61.9 4 37 7.3 49,4 21.8 5.9 5.4 31.3 5.4 19.4 0.1 7.3 0.4 0.3 0.0 9.6 0.0 0.9	Approach Delay, s/veh		89.3			69.1			9.09			23.9	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 3.79 62.7 27.1 22.3 9.2 914 82.2 6.0 6 6 7 7.7 22.3 9.2 914 82.2 9.8 57 25 39 5 61.9 4.4 7.3 49.4 21.8 5.9 5.4 31.3 5.4 0.1 7.3 0.4 0.3 0.0 9.6 0.0	Approach LOS		ı			ш			Ω			O	
1 2 3 4 5 6 7 33.9 627 27.1 22.3 92 914 82.2 60 6 6 75 4.7 4.2 60 4.2 9.8 57 25 39 5 61.9 4 7.3 49.4 21.8 5.9 5.4 31.3 5.4 0.1 7.3 0.4 0.3 0.0 9.6 0.0 D	Timer	_	2	3	4	2	9	7	00				
37.9 62.7 27.1 22.3 9.2 91.4 8.2 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Assigned Phs	_	2	3	4	2	9	7	8				
60 6 7 47 42 60 42 98 57 25 39 5 619 4 7.3 49.4 218 5.9 5.4 313 5.4 1 0.1 7.3 0.4 0.3 0.0 9.6 0.0 D	Phs Duration (G+Y+Rc), s	37.9	62.7	27.1	22.3	9.2	91.4	8.2	41.2				
98 '57 '25 '39 '5 619 '4 7.3 49.4 21.8 5.9 5.4 31.3 5.4 0.1 7.3 0.4 0.3 0.0 9.6 0.0 44.7	Change Period (Y+Rc), s	0.9	9 *	* 5	* 4.7	* 4.2	0.9	* 4.2	, 5				
7.3 49.4 21.8 5.9 5.4 31.3 5.4 0.1 7.3 0.4 0.3 0.0 9.6 0.0 44.7 D	Max Green Setting (Gmax), s	8.6	* 57	* 25	* 39	* 5	61.9	* 4	* 37				
0.1 7.3 0.4 0.3 0.0 9.6 0.0 44.7 D	Max Q Clear Time (g_c+I1), s	7.3	49.4	21.8	5.9	5.4	31.3	5.4	19.4				
ımary Jelay	Green Ext Time (p_c), s	0.1	7.3	0.4	0.3	0.0	9.6	0.0	6:0				
Jelay	Intersection Summary												
	HCM 2010 Ctrl Delay			44.7									
	HCM 2010 LOS			٥									

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HCM 2010 Signalized Intersection Summary 1: Faraday Ave. & Canon Rd.

Long-Term + Project (PAL1) PM 08/24/2017

HCM 2010 Signalized Intersection Summary 2: College Blvd. & El Camino Real

Movement Lane Configurations Traffic Volume (vields)	EBL	EBT	EBR	WBL	WBT	WBR	NRI	NRT	NBR	CBI	SBT	CRD
Lane Configurations	,						ייטר	ION		JUC)	200
Traffic Volume (veh/h)	-	4₽		je-	4₽		je-	4			4	
Hallic voluing (volvin)	99	1200	251	31	540	20	681	20	111	20	20	20
Future Volume (veh/h)	9	1200	251	31	540	70	681	20	11	20	20	20
Number	ഹ	7	12	- -	9 0	91	m	∞ α	18	_	4 0	14
Ped-Rike Adi(A. nhT)	100	>	0 88	100	>	0.00	100	>	100	100	>	0 91
Parking Bus. Adi	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1900	1845	1900
Adj Flow Rate, veh/h	92	1290	270	33	581	22	826	0	0	22	22	22
Adj No. of Lanes	_	2	0	-	2	0	2		0	0	-	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	m	3	3	c,	3	m	3	3	co
Cap, veh/h	83	1184	244	70	1388	25	616	514	0	28	28	28
Arrive On Green	0.02	0.41	0.41	0.04	0.40	0.40	0.28	0.00	0.00	0.02	0.05	0.05
Sat Flow, veh/h	1757	2881	594	1757	3438	130	3514	1845	0	551	551	551
Grp Volume(v), veh/h	92	777	783	33	296	307	826	0	0	99	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1722	1757	1752	1815	1757	1845	0	1652	0	0
Q Serve(g_s), s	3.7	41.1	41.1	1.8	12.1	12.1	23.3	0.0	0.0	4.0	0.0	0.0
Cycle Q Clear(g_c), s	3.7	41.1	41.1	1.8	12.1	12.1	23.3	0.0	0.0	4.0	0.0	0.0
Prop In Lane	1.00		0.34	1.00		0.07	1.00		0.00	0.33		0.33
Lane Grp Cap(c), veh/h	83	720	708	20	707	733	616	514	0	83	0	0
V/C Ratio(X)	0.78	1.08	1.1	0.47	0.42	0.42	0.88	0.00	0.00	0.79	0.00	0.00
Avail Cap(c_a), veh/h	123	1.50	80/	0	/0/	/33	1160	609	0	66	0	0
HCM Platoon Ratio	1.00	1:00	1:00	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	99 ;	90.	00 ;	8.	8 ;	90 ;	8:	0.00	0.00	00.1	0.00	0.00
Uniform Delay (d), s/veh	47.1	29.4	29.4	47.0	21.4	21.4	34.4	0.0	0.0	47.0	0.0	0.0
Incr Delay (d2), s/veh	9.4	26.9	9.99	20.9	9.	— %	9.9	0.0	0.0	25.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	31.2	32.6	1.3	6.2	6.4	12.2	0.0	0.0	2.4	0.0	0.0
LnGrp Delay(d),s/veh	29.9	86.4	0.96	8.79	23.2	23.2	41.1	0.0	0.0	72.0	0.0	0.0
LnGrp LOS	ш	ᆈ	ᆈ	ш	ပ	ပ				ш		
Approach Vol, veh/h		1625			989			826			99	
Approach Delay, s/veh		83.8			25.5			41.1			72.0	
Approach LOS		ш			O			D			ш	
Timer	-	2	က	4	2	9	7	00				
Assigned Phs	1	2		4	2	9		8				
Phs Duration (G+Y+Rc), s	10.0	47.1		10.0	10.7	46.4		32.9				
Change Period (Y+Rc), s	0.9	0.9		2.0	0.9	0.9		2.0				
Max Green Setting (Gmax), s	4.0	35.0		0.9	7.0	32.0		33.0				
Max Q Clear Time (g_c+I1), s	3.8	43.1		0.9	2.7	14.1		25.3				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	4.8		1.7				
Intersection Summary												
HCM 2010 Ctrl Delay			63.5									
HCM 2010 LOS			ш									
Notos												

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Synchro 10 Report Page 1

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100 100	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Si0 1i69 160 50 2269 370 710 440 50 270 170 Si0 1169 160 50 2269 370 710 440 50 270 170 Si0 1169 160 50 2269 370 710 440 50 270 170 Si2 121 100 100 100 100 100 100 100 100 100 Si2 1245 12	Lane Configurations	*	444	¥L.	۴	444	¥L.	F	₩		K.	₩	
100 1169 160 50 2269 370 710 440 50 270 710	Traffic Volume (veh/h)	510	1169	160	20	2269	370	710	440	20	270	170	460
100	Future Volume (veh/h)	510	1169	160	20	2269	370	710	440	20	270	170	460
100	Number	2	2	12	-	9	16	0	ω (18	7	4	14
1.00	Initial Q (Qb), veh	0 6	0	0 0	0 0	0	0	0 0	0	0 20	0 6	0	0 0
1450 150	Ped-Bike Adj(A_pb1)	9.1	100	00.1	1.00	00	1.00	1.00	00	100	00.1	6	100
17 17 17 17 17 17 17 17	Adi Sat Flow vob/b/lb	1845	1845	1845	1845	1845	1845	1845	1845	1000	1845	18.4F	1000
1 3 1 1 3 1 2 2 2 0 0 2 2 2 2 2	Adj Flow Rate, veh/h	537	1231	0+0	53	7388	380	747	463	53	784	179	484
Color Colo	Adi No. of Lanes	-	· ~	· -	-	~	-	2	2	0	2	2	0
Ceh, % 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
1757 1679 184 1801 556 446 652 74 751 539 1757 5036 1568 1757 1679 1553 1764 1752 1021 0.21 0.31 1757 1679 1568 1757 1679 1555 1704 1752 1765 1764 1752 1767 1767 1679 1568 1757 1679 1568 1757 1679 1568 1757 1679 1568 1757 1769 1752 1764 1752 1765 1704 1752 1765 1704 1752 1765 1704 1752 1765 1704 1752 1765 1704 1752 1765 1704 1752 1705 1706 1700	Percent Heavy Veh, %	3	3	c	3	3	c	3	3	3	3	c	3
103 0.28 0.00 0.10 0.36 0.35 0.13 0.21 0.22 0.31	Cap, veh/h	24	1390	433	184	1801	226	446	652	74	751	239	469
1757 5036 1568 1757 5036 1555 3408 3158 360 3408 1752 1799	Arrive On Green	0.03	0.28	0.00	0.10	0.36	0.36	0.13	0.21	0.21	0.22	0.31	0.31
withfuln 537 1231 0 53 238B 389 747 256 260 284 179 volvfuln 1757 1679 1568 1757 1679 1568 177 168 170 1752 170	Sat Flow, veh/h	1757	5036	1568	1757	5036	1555	3408	3158	360	3408	1752	1523
verbinin 1757 1679 1568 1757 1679 1555 1704 1752 1765 1704 1752 1 40 30.4 0.0 3.6 46.5 14.1 17.0 17.6 17.8 92 10.2 -	Grp Volume(v), veh/h	537	1231	0	53	2388	386	747	256	260	284	179	484
C), S	Grp Sat Flow(s),veh/h/ln	1757	1679	1568	1757	1679	1555	1704	1752	1765	1704	1752	1523
4.0 30.4 0.0 3.6 46.5 14.1 17.0 17.6 17.8 92 10.2 10.0	Q Serve(g_s), s	4.0	30.4	0.0	3.6	46.5	14.1	17.0	17.6	17.8	9.2	10.2	40.0
1,00	Cycle Q Clear(g_c), s	4.0	30.4	0.0	3.6	46.5	14.1	17.0	17.6	17.8	9.2	10.2	40.0
54 1390 433 184 1801 556 446 362 365 751 539 993 0099 0020 0.29 1.33 0.70 1.68 0.71 0.31 539 41 1588 495 184 1801 556 446 607 611 751 539 100 100 100 100 100 100 100 100 100 630 41 100 100 100 100 100 100 100 100 630 60 00 03 180.5 7.2 313.9 1.0 1.0 1.0 1.0 1.0 60 00 00 00 00 00 00 00 00 00 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 <t< td=""><td>Prop In Lane</td><td>1.00</td><td></td><td>1.00</td><td>1.00</td><td></td><td>1.00</td><td>1.00</td><td></td><td>0.20</td><td>1.00</td><td></td><td>1.00</td></t<>	Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		1.00
993 089 0.00 0.29 1.33 0.70 1.68 0.71 0.71 0.38 0.33 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Grp Cap(c), veh/h	24	1390	433	184	1801	226	446	362	365	751	239	469
54 1588 495 184 1801 556 446 607 611 751 539 1.00	V/C Ratio(X)	9.93	0.89	0.00	0.29	1.33	0.70	1.68	0.71	0.71	0.38	0.33	1.03
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Avail Cap(c_a), veh/h	24	1588	495	184	1801	226	446	209	611	751	239	469
1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00	1.00	1.00
0530 45.1 0.0 53.7 41.8 97.2 56.5 47.9 48.0 43.1 34.7 48.0 0.0 0.0 0.0 0.3 150.5 7.2 313.9 1.0 1.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
405/0 8.6 0.0 0.3 190.5 7.2 31.39 1.0 1.0 0.1 0.1 0.1 0.1 0.2 0.2 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Uniform Delay (d), s/veh	63.0	45.1	0.0	53.7	41.8	7.5	56.5	47.9	48.0	43.1	34.7	45.0
1288	Incr Delay (dz), s/ven	405/.0	9.0	0.0	0.3	150.5	7.7	313.9	0.1	0.1	0.0	0.0	50.3
02.9 15.2 0.0 1.8 46.6 1.1 21.4 8.6 8.8 4.4 5.0 4120 53.7 0.0 540 192.3 16.4 8.6 8.8 4.4 5.0 706 5.7 1.6 1.6 7 8 4.4 5.0 0 </td <td>Initial Q Delay(d3),s/veh</td> <td>0.0</td>	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1288 165 164 3704 489 490 432 348 488 489 490 432 448 48	%ile BackOfQ(50%),veh/ln	62.9	15.2	0.0	8. 5	46.6	1.7	27.4	9.6	χ χ	4.4	2.0	23.3
1768 2830 1263 1263 1264 1265 1265 1265 1266 1267	LnGrp Delay(d),s/veh	4120.0	53.7	0.0	54.0	192.3	16.4	370.4	48.9	49.0	43.2	34.8	95.3
1768 2830 1763 128.8 165.5 239.1 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 19.6 41.9 22.0 46.5 90 52.5 35.1 33.4 6.0 1 5 6.0 52.5 35.1 33.4 6.0 1 40.0 40.0 40.0 45.5 12.0 45.5 5.6 32.4 19.0 42.0 6.0 48.5 11.2 19.8 0.0 3.4 0.0 0.0 0.0 0.0 2.1 457.3 7	LnGrp LOS	ᅵ				니		ᅵ				ပ	4
1288.8 165.5 239.1 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 19.6 41.9 22.0 46.5 9.0 52.5 35.1 33.4 6.0 6 5 0 6.5 5.0 6.5 6.5 6.5 6.5 5.6 32.4 19.0 42.0 6.0 48.5 11.2 19.8 0.0 3.4 0.0 0.0 0.0 0.0 0.0 2.1 457.3	Approach Vol, veh/h		1768			2830			1263			947	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 19.6 41.9 22.0 46.5 9.0 52.5 35.1 6.0 *6 5.0 6.5 5.0 6.0 6.5 9.5 *41 17.0 40.0 4.0 46.5 112 0.0 3.4 0.0 0.0 0.0 0.0 0.0 457.3	Approach Delay, s/veh		1288.8			165.5			239.1			68.2	
1 2 3 4 5 6 7 19.6 41.9 22.0 46.5 9.0 52.5 35.1 6.0 *6 5.0 6.5 5.0 6.0 6.5 5.6 32.4 19.0 42.0 6.0 48.5 11.2 0.0 3.4 0.0 0.0 0.0 0.0 0.0	Approach LOS		ш			Œ.			Œ.			ш	
19.6 41.9 22.0 46.5 9.0 52.5 35.1 60. *6 5.0 6.5 5.0 6.0 6.5 9.5 *41 17.0 40.0 4.0 46.5 11.2 0.0 3.4 0.0 0.0 0.0 0.0 0.0 457.3	Timer	-	2	က	4	2	9	7	∞				
196 41.9 22.0 46.5 9.0 52.5 35.1 6.0 '6 5.0 6.5 5.0 6.0 6.5 9.5 '41 17.0 40.0 4.0 46.5 12.0 5.6 32.4 19.0 42.0 6.0 48.5 11.2 0.0 3.4 0.0 0.0 0.0 0.0 0.0 457.3	Assigned Phs	—	2	3	4	2	9	7	8				
6.0 *6 5.0 6.5 5.0 6.5 12.0 6.0 6.5 5.0 6.5 3.4 17.0 40.0 4.0 46.5 17.2 0.0 3.4 19.0 42.0 6.0 48.5 11.2 0.0 3.4 0.0 0.0 0.0 0.0 0.0 0.0 45.7 3.4 15	Phs Duration (G+Y+Rc), s	19.6	41.9	22.0	46.5	0.6	52.5	35.1	33.4				
95 *41 170 400 4.0 465 120 5.6 32.4 19.0 42.0 6.0 485 11.2 0.0 3.4 0.0 0.0 0.0 0.0 0.0 457.3	Change Period (Y+Rc), s	0.9	9 *	2.0	6.5	2.0	0.9	6.5	* 6.5				
56 32.4 19.0 42.0 6.0 48.5 11.2 0.0 3.4 0.0 0.0 0.0 0.0 0.0 0.0 457.3	Max Green Setting (Gmax), s		* 41	17.0	40.0	4.0	46.5	12.0	* 45				
s 0.0 3.4 0.0 0.0 0.0 0.0 0.0 0.0 457.3 F	Max O Clear Time (g_c+I1), 3		32.4	19.0	45.0	0.9	48.5	11.2	19.8				
	Green Ext Time (p_c), s	0.0	3.4	0.0	0.0	0.0	0.0	0.0	2.1				
	Intersection Summary												
HCM 2010 LOS F	HCM 2010 Ctrl Delay			457.3									
Notice	HCM 2010 LOS			ш									
	Noton												

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HCM 2010 Signalized Intersection Summary 3: College Blvd. & Faraday Ave.

Long-Term + Project (PAL1) PM 08/24/2017

Long-Term + Project (PAL1) PM 0824/2017

HCM 2010 Signalized Intersection Summary 4: El Camino Real & Faraday Ave.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	F	41		je-	₩\$		K-	4₽		F	₩.	
raffic Volume (veh/h)	%	540	312	340	510	240	192	510	160	30	330	90
uture Volume (veh/h)	8	240	312	340	210	240	192	210	160	30	330	8
Number nitial O (Ob) yeb	- 0	4 0	4 0	m c	∞ ⊂	<u> </u>	ഹ	7	12	—	9 0	16
Ped-Bike Adi(A pbT)	1.00	0	0.97	1.00	>	0.98	1.00	0	0.97	1.00	>	0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	112	675	390	425	638	300	240	638	200	38	412	112
Adj No. of Lanes	-	2	0	-	2	0	2	2	0	2	2	0
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Sap, veh/h	139	719	415	287	974	458	186	730	228	87	089	183
Arrive On Green	0.08	0.34	0.34	0.16	0.42	0.45	0.02	0.28	0.28	0.03	0.25	0.25
sat Flow, veh/h	1757	2118	1223	1757	22%	1079	3408	2607	816	3408	2711	728
3rp Volume(v), veh/h	112	228	203	425	487	451	240	459	409	38	265	259
3rp Sat Flow(s),veh/h/ln	1757	1752	1589	1757	1752	1623	1704	1752	1671	1704	1752	1687
2 Serve(g_s), s	9.9	32.3	32.3	17.1	23.2	23.2	2.7	24.4	24.4	1.1	13.9	14.2
Cycle Q Clear(g_c), s	9.9	32.3	32.3	17.1	23.2	23.2	5.7	24.4	24.4	1.	13.9	14.2
Prop In Lane	1.00		0.77	1.00		19.0	1.00		0.49	1.00		0.43
ane Grp Cap(c), veh/h	139	262	239	287	743	889	186	491	468	87	440	424
//C Ratio(X)	0.81	0.94	0.94	1.48	99.0	99.0	1.29	0.87	0.88	0.44	09.0	0.61
Avail Cap(c_a), veh/h	160	604	547	287	743	889	186	225	526	130	523	504
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Jpstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Iniform Delay (d), s/veh	47.4	33.5	33.5	43.7	24.0	24.0	49.4	35.9	35.9	50.2	34.5	34.6
ncr Delay (d2), s/veh	23.0	22.5	24.2	233.1	2.1	2.2	165.0	13.4	14.1	3.4	1.4	1.6
nitial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	19.2	17.7	26.8	11.5	10.7	6.9	13.6	13.1	9.0	6.9	6.8
nGrp Delay(d),s/veh	70.3	55.9	57.7	276.8	26.1	26.2	214.4	49.2	20.0	53.6	35.9	36.2
nGrp LOS	ш	ш	ш	ш	ပ	ပ	ш	۵	۵	۵	۵	٥
Approach Vol, veh/h		1177			1363			1078			295	
Approach Delay, s/veh		58.1			104.3			86.3			37.3	
Approach LOS		ш			ட			ш.			O	
imer	-	2	က	4	2	9	7	∞				
Assigned Phs		2	m	4	2	9	7	8				
hs Duration (G+Y+Rc), s	7.2	35.3	21.6	40.5	10.2	32.2	12.7	49.3				
Change Period (Y+Rc), s	4.5	0.9	4.5	2.0	4.5	0.9	4.5	2.0				
Max Green Setting (Gmax), s	4.0	32.9	17.1	36.0	5.7	31.2	9.5	43.6				
Max Q Clear Time (g_c+I1), s	3.1	26.4	19.1	34.3	7.7	16.2	9.8	25.2				
Green Ext Time (p_c), s	0.0	5.6	0.0	Ξ	0.0	2.4	0.0	2.7				
ntersection Summary												
HCM 2010 Ctrl Delay			77.6									

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10 Report	Page 5
Synchro	

		ŀ										
Movement	EBL	EBI	EBK	WBL	WBI	WBK	NBL	NBI	NBK	SBL	JOC	SDR
Lane Configurations	F	\$	*	F	‡	¥	F	₩		F	#	Ψ
Traffic Volume (veh/h)	300	800	006	223	300	470	190	1749	153	310	1129	ය
Future Volume (veh/h)	300	800	006	223	300	470	190	1749	153	310	1129	22
Number	7	4	14	3	∞	18	2	2	12	-	9	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.97	1.00		86.0	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	323	860	896	240	323	202	204	1881	165	333	1214	24
Adj No. of Lanes	-	2	-	~	2		2	က	0	2	3	_
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	က	3	33	က	33	co	co	33	3	3	(.,
Cap, veh/h	208	1240	220	186	1219	531	1043	2448	214	252	1380	425
Arrive On Green	0.12	0.35	0.35	0.11	0.35	0.35	0.31	0.52	0.52	0.07	0.27	0.27
Sat Flow, veh/h	1757	3505	1555	1757	3505	1526	3408	4708	411	3408	5036	1551
Grp Volume(v), veh/h	323	098	896	240	323	202	204	1339	707	333	1214	54
Grp Sat Flow(s),veh/h/ln	1757	1752	1555	1757	1752	1526	1704	1679	1761	1704	1679	1551
O Serve(g_s), s	15.4	27.3	46.0	13.8	9.8	41.9	2.7	41.4	41.9	9.6	30.0	3.5
Cycle Q Clear(g_c), s	15.4	27.3	46.0	13.8	8.6	41.9	2.7	41.4	41.9	9.6	30.0	33
Prop In Lane	1.00		1.00	1.00		1.00	1.00	į	0.23	1.00		1.00
Lane Grp Cap(c), veh/h	708	1240	220	186	1219	531	1043	1/46	916	252	1380	425
V/C Ratio(X)	1.55	1040	1./6	1.29	1010	0.95	0.20	1747	0.77	1.32	0.88	0.13
Avail Cap(c_a), venin	700	1 00	220	1 00	100	100	1043	1 00	916	707	13.19	408
I Instream Filter(I)	00.1	100	1.00	100	1.00	1.00	0.47	0.47	0.47	00.1	8.6	8.6
Uniform Delay (d), s/veh	57.3	36.0	42.0	58.1	30.5	41.3	33.3	24.9	25.0	60.2	45.1	36.7
Incr Delay (d2), s/veh	270.7	1.4	349.3	163.3	0.0	27.1	0.0	1.6	3.0	170.4	8.3	9.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.1	13.4	73.1	15.1	4.2	21.6	2.7	19.5	21.0	10.5	15.0	1.6
LnGrp Delay(d),s/veh	328.0	37.4	391.3	221.4	30.5	68.5	33.3	26.5	28.1	230.6	53.4	37.3
LnGrp LOS	니		띡	띡	ပ	ш	ပ	ပ	ပ	띡		\Box
Approach Vol, veh/h		2151			1068			2250			1601	
Approach Delay, s/veh		240.3			91.4			27.6			89.7	
Approach LOS		ш			ш			S			ш	
Timer	_	2	က	4	2	9	7	00				
Assigned Phs	-	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	13.8	74.4	9.8	51.0	46.6	41.6	19.6	50.2				
		0.0	2	ر د	0.0	9	4.7	ر ا				
Max Green Setting (Gmax), s		41.2	1, 14	. 46	11.6	* 39	17.	444				
Groen Ext Time (n. c) s	0. 0	6.5.9	0.0	0.04	7.7	3.6	4.7	43.9				
GIEGII EVI IIIIIG (P_C), S	0.0	0.0	0.0	0.0		3.0	0.0	7.0				
Intersection Summary												
HCM 2010 Ctrl Delay			116.0									
HCM 2010 LOS			4									

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HCM 2010 Signalized Intersection Summary 5: I-5 SB Ramps & Palomar Airport Rd.

Long-Term + Project (PAL1) PM 08/24/2017

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Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4413			ŧ	*				K.		¥C
Traffic Volume (veh/h)	0	1011	290	0	891	1220	0	0	0	0/9	0	200
Future Volume (veh/h)	0	1011	290	0	891	1220	0	0	0	0/9	0	200
Number	2	2	12	_	9	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1:00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, ven/h/ln	0 0	1845	1900	0	1845	1845				1845	0 0	1845
Adj Flow Kate, venyn	0 0	1064	305	0	738	O 7				702	0 0	7
Auj IVO. UI L'AITIES Deak Hour Factor	0 05	ر د م	0 05	0 05	2 0 05	- G				700	0 05	0.05
Percent Heavy Veh. %	0.70		5. 6.	0.00	5 65	5 65					0.70	6.7
Cap. veh/h	0	1461	419	0	1316	289				903	0	415
Arrive On Green	0.00	0.38	0.38	0.00	0.38	0.00				0.26	0.00	0.26
Sat Flow, veh/h	0	4056	1115	0	3597	1568				3408	0	1568
Grp Volume(v), veh/h	0	918	451	0	938	0				705	0	211
Grp Sat Flow(s),veh/h/In	0	1679	1648	0	1752	1568				1704	0	1568
O Serve(g_s), s	0.0	6.9	6.9	0.0	6.7	0.0				9.9	0.0	3.3
Cycle Q Clear(g_c), s	0.0	6.9	6.9	0.0	6.7	0.0				2.6	0.0	3.3
Prop In Lane	0.00		0.68	0.00		1.00				1.00	•	1.00
Lane Grp Cap(c), veh/h	0	1261	619	0	1316	286				903	0	415
V/C Ratio(X)	0.00	0.73	0.73	0.00	0.71	0.00				0.78	0.00	0.51
4vail Cap(c_a), veh/h	0	3450	1693	0	3601	1611				1693	0	779
HCM Platoon Katio	00.1	9.7	90.1	00.1	00.1	00.1				1.00	00.1	1.00
upstream Filler(I)	0.00	9.5	9.5	0.00	9.5	0.00				00.1	0.00	1.00
Unillorin Delay (d), s/ven	0.0	0.7	ρ	0.0	, c	0.0				4.4	0.0	
Incr Delay (dz), swen	0:0	0.3	0.0	0.0	0.3	0.0				0.0	0.0	4.0
Inilial Q Delay(d3),Swen	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
Alle BackOlo(30 %), velylli Por Dolay(4) skop	0.0	. o	- u	0.0	2.5	0.0				70 E	0.0	4. C
Lingip Delay(u), s/veii Lingip LOS	0.0	- o	C:0	0.0	0.0 V	0.0				2 2 2	0.0	5. A
Approach Vol, veh/h		1369			938						916	
Approach Delay, s/veh		8.2			8.0						10.3	
Approach LOS		A			A						В	
Timer	-	2	က	4	2	9	7	∞				
Assigned Phs		2		4		9						
Phs Duration (G+Y+Rc), s		16.4		12.8		16.4						
Change Period (Y+Rc), s		5.4		5.1		5.4						
Max Green Setting (Gmax), s		30.0		14.5		30.0						
Max Q Clear Time (g_c+l1), s		8.0		7.6		8.7						
oleen Ext IIIIe (p_c), s		7.7		0		C:-						
Intersection Summary												
HCM 2010 Ctrl Delay			œ. •									
HCM 2010 LOS			⋖									

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Synchro 10 Report Page 8

HCM 2010 Signalized Intersection Summary 6: I-5 NB Ramps & Palomar Airport Rd.

Long-Term + Project (PAL1) PM 0824/2017

Movement Fell Est Fell		1	†	1	>	Ļ	1	•	←	•	۶	→	*
	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
256 1431 0 0 2011 1110 100 0 610 0 670 0 670 1250 1431 0 0 0 2011 1110 1100 0 610 0 610 0 610 0 0 0 0	Lane Configurations	r	444			444	N. W.		₩	N.			
256 1431 0 0 2011 1110 100 0 610 0 0 0 0 0 0 0 0 0 0 0	Traffic Volume (veh/h)	250	1431	0	0	2011	1110	100	0	610	0	0	0
5	Future Volume (veh/h)	250	1431	0	0	2011	1110	100	0	610	0	0	0
100 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	വ	2	12	- •	9	16	က	∞ (18			
1.00	Initial Q (Qb), veh	0 0	0	0 0	0 0	0	0 00	0 0	0	0 00			
1845 1845 0 0 1845 1846 1900 1845 1845 1846 0 0 0 0 0 0 0 0 0 0	Parking Bus. Adi	00.1	1.00	1.00	1.00	1.00	1.00	00.1	1.00	1.00			
255 1460 0 0 2652 1133 102 0 1 1 3 0 0 8 0.98 0.98 0.98 0.98 0.98 0.98 0.9	Adi Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
1	Adj Flow Rate, veh/h	255	1460	0	0	2052	1133	102	0	622			
0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98	Adj No. of Lanes	-	က	0	0	က	2	0	-	2			
3 3 3 3 9 0 0 232 143 31 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	86.0	86.0	0.98			
275 3676 0 0 2729 1442 351 0 0 1 1757 1442 351 0 0 1 1757 1440 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1757 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
1757 5202 0.00 0.36 0.36 0.20 0.00 0.36 0.35 0.20 0.00 0.36	Cap, veh/h	275	3676	0	0	2729	1442	351	0	531			
1757 5202 0 5202 2661 1757 0 1757	Arrive On Green	0.16	0.73	0.00	0.00	0.36	0.36	0.20	0.00	0.20			
1555 1460 0 2652 1133 102 0 1757 1679 0 0 1679 1330 1757 0 1757 1679 0 0 1679 1330 1757 0 0 1679 1330 1757 0 0 100	Sat Flow, veh/h	1757	5202	0	0	5202	2661	1757	0	2656			
1757 1679 0 0 1679 1330 1757 0 0 1757 1679 0 0 1679 1330 1757 0 0 1 1679 1330 1757 0 0 1 1675 1 16.5 0.00 0.0 53.5 669 74 0.00 1.00 0.00 0.00 1.00 1.00 1.00 1.0	Grp Volume(v), veh/h	255	1460	0	0	2052	1133	102	0	622			
215 165 0.0 0.0 535 569 7.4 0.0 1.00 0.00 0.00 53.5 669 7.4 0.0 1.00 0.00 0.00 0.00 1.00 1.00 0.93 0.40 0.00 0.00 0.75 0.79 0.29 0.00 0.93 0.40 0.00 0.00 0.75 0.79 0.29 0.00 0.76 0.76 0.00 0.00 0.75 0.79 1442 351 0 0.76 0.76 0.00 0.00 0.75 0.79 1402 0.00 0.76 0.76 0.00 0.00 0.67 0.00 0.00 0.76 0.76 0.00 0.00 0.67 0.00 0.00 0.77 0.00 0.00 0.00 0.00 0.0	Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1330	1757	0	1328			
215 165 0.0 0.0 53.5 56.9 7.4 0.0 1.00 0.00 0.00 1.00 0.00 0.00 0.0	Q Serve(g_s), s	21.5	16.5	0.0	0.0	53.5	6.99	7.4	0.0	30.0			
h 100 0.00 0.00 1.00 1.00 1.00 0.00 0.00		21.5	16.5	0.0	0.0	53.5	56.9	7.4	0.0	30.0			
hh 275 3476 0 0 2729 1442 351 0 0 0 373 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
093 040 000 075 079 029 000 351 3676 0 0 0 2729 1442 351 0 100 100 100 067 067 100 100 076 076 0.00 0.00 053 053 100 0.00 eh 02.4 7.7 0.0 0.0 0.3 8.9 40.0 51.0 0.0 eh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 eh 11.9 7.7 0.0 0.0 25.2 21.4 3.6 0.0 eh 17 0.0 0.0 0.0 0.0 0.0 0.0 0.0 eh 18.9 0.0 0.0 42.4 51.1 0.0 1 1 2 3 4 5 6 8 8 (c), s 114.9 2 3 4 5 6 8 8 (c), s 114.9 2 3.3 5.4 35.1 1 2 3 4 5 6 7 8 8 (c), s 119.5 3.0 0.0 4.5 0.0 6 (d), s 2.7 0.0 0.0 4.5 0.0	Lane Grp Cap(c), veh/h	275	3676	0	0	2729	1442	351	0	531			
351 3676 0 0 2729 1442 351 0 100 100 100 0.67 067 100 100 076 076 076 070 053 063 100 0.00 eh 624 7.7 0.0 0.0 389 40.0 51.0 0.0 eh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 eh 19.3 0.2 0.0 0.0 1.0 24 0.2 0.0 eh 0.0 0.0 0.0 0.0 25.2 14 36 0.0 F A A 0.0 0.0 25.2 14 36 0.0 F A A 0.0 0.0 25.2 14 36 0.0 F A A 0.0 0.0 25.2 14 36 0.0 F A A 0.0 0.0 25.2 14 36 0.0 F A A 0.0 0.0 25.2 14 36 0.0 F A A 0.0 0.0 25.2 14 36 0.0 F A A 0.0 0.0 25.2 14 36 0.0 F A A 0.0 0.0 25.2 14 36 0.0 F A A 0.0 0.0 25.2 14 36 0.0 F A A 0.0 0.0 25.2 14 36 0.0 F A A 0.0 0.0 0.0 40.0 40.0 40.0 F A 18.9 28.2 86.7 85.1 F A 5.0 0.0 Cell), S 18.5 23.5 58.9 32.0 Cell), S 2.7 0.0 4.5 0.0 F A 5.0 0.0 F A 5.0 0.0 4.5 0.0	V/C Ratio(X)	0.93	0.40	0.00	0.00	0.75	0.79	0.29	0.00	1.17			
eh 62.4 7.7 0.0 0.0 6.5 0.67 1.00 1.00 0.00 0.05 0.05 0.05 0.00 0.00	Avail Cap(c_a), veh/h	351	3676	0	0	2729	1442	351	0	531			
eh 624 7.7 0.0 0.0 0.53 0.53 1.00 0.00 eh 624 7.7 0.0 0.0 0.889 40.0 51.0 0.0 0.0 eh 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	HCM Platoon Ratio	1.00	1.00	1.00	1.00	19.0	19.0	1.00	1.00	1.00			
eh 62.4 7.7 0.0 0.0 38.9 40.0 51.0 0.0 eh 19.3 0.2 0.0 0.0 1.0 2.4 0.2 0.0 0.0 eh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 eh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Upstream Filter(I)	0.76	0.76	0.00	0.00	0.53	0.53	1.00	0.00	1.00			
eth 19,3 0,2 0,0 0,0 1,0 2,4 0,2 0,0 eth 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,	Uniform Delay (d), s/veh	62.4	7.7	0.0	0.0	38.9	40.0	51.0	0.0	0.09			
eth 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Incr Delay (d2), s/veh	19.3	0.2	0.0	0.0	1.0	2.4	0.2	0.0	92.6			
h 11.9 7.7 0.0 0.0 25.2 21.4 3.6 0.0 1.2 2.0 1.4 3.6 0.0 1.2 2.0 0.0 42.4 51.1 0.0 1.2 1.2 3 4 5 6 7 8 8 (2), \$\$ 114.9 \$\$ 2.82 86.7 35.1 1.0 3.8 \$\$ 5.5 \$\$ 1.40.9 \$\$ \$\$ 5.5 \$\$ 1.40.9 \$\$ \$\$ 5.5 \$\$ 1.40.9 \$\$ \$\$ 5.5 \$\$ \$\$ 5.5 \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
H 175 0.0 0.0 40.0 424 511 0.0 1 175 3185 724 140.9 18.9 40.8 140.9 140.9 17.5 17.5 17.5 17.5 17.5 17.5 17.5 17.5	%ile BackOfQ(50%),veh/ln	11.9	7.7	0.0	0.0	25.2	21.4	3.6	0.0	18.0			
h 1715 3185 D D D D D D D D D D D D D D D D D D D	LnGrp Delay(d),s/veh	81.7	7.9	0.0	0.0	40.0	42.4	51.1	0.0	155.6			
1715 3185 1879 408 189 408 189 408 18 D D 5 6 7 5 6 7 5 114.9 28.2 86.7 15.4 .47 54 185 58.9 5 23.5 58.9 5 2.7 0.0 4.5	LnGrp LOS	4	⋖							4			
h 18.9 40.8 B 0.8 1 2 3 4 5 6 7 2 2 5 6 5 6 7 5 5 4 5 6 7 6 7 8 7 6 7 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 8 8 7 7 9 9 7 7 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Approach Vol, veh/h		1715			3185			724				
1 2 3 4 5 6 7 2 2 5 6 7 3 144,9 282 86.7 3, s 5,4 *4.7 5,4 *4.7 5,4 *4.7 5,4 *4.7 5,4 *4.7 5,4 *4.7 5,4 *4.7 5,4 *4.7 5,4 *4.7 5,4 *4.7 5,4 *4.7 5,4 *4.7 5,4 *4.5 5,	Approach Delay, sweh		18.9			40.8			140.9				
1 2 3 4 5 6 7 2 5 6 7 3 114.9 28.2 86.7 3,5 5 4 *3.0 74.8 6.41), s 18.5 2.3 58.9 5.5 2.7 0.0 4.5 D 47.0	Approach LOS		В			Ω			ш.				
2 5 6 6 7 14.9 28.2 86.7 3.5 4 6.7 5.4 47.0 47.0	Timer		2	က	4	2	9	7	∞				
(c), s 114.9 28.2 86.7 (c), s 5.4 4.7 5.4 (c), s 109.5 30 74.8 (c), s 2.7 (c), s	Assigned Phs		2			2	9		8				
), s 5.4 *4.7 5.4 max), s 109.5 *30 74.8 -(-11), s 18.5 23.5 58.9 -(-11), s 2.7 0.0 4.5 D D	Phs Duration (G+Y+Rc), s		114.9			28.2	86.7		35.1				
may, s 109.5 * 30 74.8 c+11), s 18.5 58.9 c+11), s 2.7 0.0 4.5 ft. d 47.0 d b	Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
C+ff), s 18.5 23.5 58.9 7.5 2.7 0.0 4.5 47.0 D	Max Green Setting (Gmax), s		109.5			* 30	74.8		30.0				
, s 2.7 0.0 4.5 47.0 D	Max Q Clear Time (g_c+I1), s		18.5			23.5	58.9		32.0				
	Green Ext Time (p_c), s		2.7			0.0	4.5		0.0				
	Intersection Summary												
2010 LOS	HCM 2010 Ctrl Delay			47.0									
Notes	HCM 2010 LOS			Q									
	Notes												

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HCM 2010 Signalized Intersection Summary 7: Paseo Del Norte & Palomar Airport Rd.

Long-Term + Project (PAL1) PM 08/24/2017

HCM 2010 Signalized Intersection Summary	8: Armada Dr. & Palomar Airport Rd.	-
PM (24/2017	

Long-Term + Project (PAL1) PM 08/24/2017

	4	†	>	/	↓	4	•	←	•	٠	→	*	
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	F	4413		F	≣	¥.	ř.	₩₽		F	₩₽		
Traffic Volume (veh/h)	300	1401	200	271	2371	351	250	140	221	291	150	310	
Future Volume (veh/h)	300	1401	200	271	2371	351	250	140	221	291	150	310	
Number	2	2	12	—	9	16	m	∞	18	7	4	14	
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		96.0	1.00		0.97	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/In	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900	
Adj Flow Rate, veh/h	312	1459	208	282	2470	366	260	146	230	303	156	323	
Adj No. of Lanes	2	c	0	2	4	_	2	2	0	2	2	0	
Peak Hour Factor	96:0	96:0	96:0	96.0	96:0	96:0	96:0	96.0	96.0	96.0	96.0	96.0	
Percent Heavy Veh, %	3	2	3	m	3	m	m	3	m	m	c	c	
Cap, veh/h	355	1611	229	009	2835	877	304	349	300	394	404	349	
Arrive On Green	0.07	0.24	0.24	0.35	0.89	0.89	0.09	0.20	0.20	0.12	0.23	0.23	
Sat Flow, veh/h	3408	4438	632	3408	6346	1557	3408	1752	1509	3408	1752	1514	
Grp Volume(v), veh/h	312	1103	564	282	2470	366	260	146	230	303	156	323	
Grp Sat Flow(s),veh/h/ln	1704	1679	1713	1704	1586	1557	1704	1752	1509	1704	1752	1514	
Q Serve(g_s), s	13.6	47.8	47.9	9.6	28.1	1.7	11.3	10.9	21.6	12.9	11.3	31.3	
Cycle Q Clear(g_c), s	13.6	47.8	47.9	9.6	28.1	1.7	11.3	10.9	21.6	12.9	11.3	31.3	
Prop In Lane	1.00		0.37	1.00		1.00	1.00		1.00	1.00		1.00	
Lane Grp Cap(c), veh/h	355	1218	622	009	2835	877	304	349	300	394	404	349	
V/C Ratio(X)	0.88	0.91	0.91	0.47	0.87	0.42	0.85	0.42	0.77	0.77	0.39	0.93	
Avail Cap(c_a), veh/h	359	1298	662	009	2835	877	348	456	392	394	473	409	
HCM Platoon Ratio	0.67	0.67	0.67	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(I)	0.80	0.80	0.80	0.17	0.17	0.17	1.00	1.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	8.89	54.3	54.3	43.2	2.9	1.	67.3	52.5	26.8	64.4	48.7	56.4	
Incr Delay (d2), s/veh	17.0	9.3	16.2	0.0	0.7	0.7	15.1	0.3	4.5	8.2	0.2	23.2	
Initial Q Delay(d3),sweh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	7.3	23.8	25.6	4.5	= :	0.7	5.9	2.3	9.4	6.5	5.5	15.3	
LnGrp Delay(d),s/veh	82.8	63.5	70.5	43.2	9.9	7.3	82.5	52.8	61.3	72.6	49.0	79.6	
LnGrp LOS	ш	ш	ш		⋖	⋖	ш		ш	ш		ш	
Approach Vol, veh/h		1979			3118			636			782		
Approach Delay, s/veh		0.69			9.3			0.89			8.0/		
Approach LOS		ш			∢			ш			ш		
Timer	1	2	3	4	2	9	7	8					
Assigned Phs		2	m	4	2	9	7	8					
Phs Duration (G+Y+Rc), s	32.4	60.4	17.6	39.6	19.8	73.0	22.3	34.9					
	0.9	9 .	* 4.2	2.0	* 4.2	0.9	2.0	. 2					
Max Green Setting (Gmax), s	10.8	2,28	12.2	40.5	15.6	59.0	16.8 0.8	72.6					
Max Q cleal IIIIIe (g_c+II), s		44.4	0.0	23.3	0.0	10.7	4.4	23.0					
Green Ext Time (p_c), s	0.3	4.3	0.1	5.1	0.0	7.61	0.1	4.					
Intersection Summary													
HCM 2010 Ctrl Delay			40.6										
HCM 2010 LOS			O										
Notes													
***************************************	-	-	,	0						(-		
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Synchro	

EBL EBT 1444	NBI NBT 400 70 400 70 400 70 400 70 100 100 100 100 100 100 101 0.17 3514 1845 16.3 19.1 16.3 19.1 10.9 0.78 382 508 10.0 100 10.0	NBR SBL SBI 290 261 90 290 261 90 18 7 4 18 7 4 19 7 4 19 7 4 19 7 4 19 7 4 19 7 7 100 1.00 1.00 11.01 1.02 11.23 11.7 6.8 11.23 11.7 6.8 11.23 11.7 6.8 11.23 11.7 6.8 11.23 11.7 6.8 11.24 1845 11.25 11.7 6.8 11.25 11.7 6.8 11.25 11.7 6.8 11.26 11.7 6.8 11.27 0.01 11.00 1.00 11.00 1.00 11.00 1.00 11.00 1.00 11.00 1.00 12.00 1.00 13.5 13.5 14.4 341 341 341 341 14.5 14.6 15.6 15.6 15.6 16.8 15.8 16.
194 195 196	400 70 400 70 400 70 400 70 3 8 3 8 417 245 2 1 600,11 0,17 3514 1845 7 1417 245 1153 1941 163 1941 163 1941 163 1941 163 1941 163 1941 164 109 0,78 382 508 100 1,00	261 261 261 261 261 272 272 272 272 272 272 272 170 1.00 1.00 335 0.10 1.17 1.00 1.00 1.00 1.00 1.00 1.00
230 1553 180 350 2473 181 230 1553 180 350 2473 181 5 2 12 0 0 0 0 100 100 100 100 0 0 0 100 100 100 100 100 0 0 100 100 100 100 0 0 0 1100 100 100 100 0 0 0 240 1618 188 365 2576 189 2 240 1618 188 365 2576 189 2 353 2014 793 349 2159 821 1 40 1618 188 365 2576 189 1 1 100 20 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	400 70 3 8 8 0 0 0 100 1.00 1845 1845 - 417 245 417 245 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	261 7 7 0 1.00 1.00 1.00 1.00 1.00 3.35 3.35 3.35 3.35 1.00 6.3 6.3 1.00 6.3 1.00 6.3 1.00 6.3 1.00 6.3 1.00 6.3 1.00 6.3 1.00 6.3 1.00 6.3 1.00 6.3 1.00 6.3 1.00 6.3 1.00 6.3 1.00 6.3 1.00 6.3 1.00 6.3 1.00 6.3 1.00 6.3 6.3 1.00 6.00 6
153 155 180 350 2473 181 5	400 70 3 8 8 0 0 0 100 100 1845 1845 417 245 2 1 1 0.96 0.96 3 3 3 3 382 314 417 1845 16.3 19.1 10.0 0.78 382 314 10.0 0.78 382 314 10.0 0.78 382 314 10.0 0.78 10.0 0.0 10.0 0.0 10.0 0.0 10.0 0.0 10.0 0.0 11.8 9.9 140 6.1 16.3 19.1 17.1 16.0 18.2 19.1 18.3 19.1 19.3 19.1 10.0 0.0 10.0 0.0 10.0 0.0 11.8 9.9 14.0 0.0 14.0 0.0 17.0 0.0 18.0 0.0 18.0 0.0 19.0 0.0 10.0 0.0 10.	261 7 0 1.00 1.00 1.00 1.00 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3
5	3 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	7 7 7 7 1.00 1.00 1.00 1.00 1.00 1.00 1.
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2. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.	0.06 0.96 0.96 0.96 0.96 0.96 0.96 0.96	0.09 335 335 335 3408 3408 11.7 11.7 11.00 66.3 12.7 11.00 66.3 12.7 11.00 66.3 12.7 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17
0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	0.96 0.96 0.96 0.97 0.17 0.17 0.17 0.17 0.17 0.17 0.17 0.1	0.96 3.335 3.408 3.408 11.77 1.00 0.81 3.35 0.81 1.00 1.00 1.00 1.00 1.00 1.00 1.00
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538 2014 793 349 2159 821 0.21 0.23 0.28 0.28 0.86 0.86 3408 5036 1556 1757 5036 1557 168 240 1618 188 365 2576 189 1 92 39,4 83 29,8 64,3 0.0 1 100 1.00 1.00 1.00 1.00 1 1 1 104 1.00 1.00 1.00 1.00 1.00 1 0 2 3 1 1 0 2 3 1 1 0	382 314 311 0.17 3514 1845 417 245 1157 1845 16.3 19.1 10.0 0.78 382 314 10.0 1.00 10.0 1.00 6.8 59.5 73.1 16 0.0 0.0 11.8 9.9 140.0 61.1 F E E 850 850 872 873 873 874 875 875 875 875 875 875 875 875	335 0.10 3408 272 1704 11.7 11.7 11.0 66.3 12.7 12.7 12.7 12.7 12.7
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3408 5036 1556 1757 5036 1557 5 240 1618 188 365 2576 189 1704 1679 1556 1757 1679 1679 92 39.4 8.3 29.8 64.3 0.0 100 1.00 1.00 1.00 1.00 538 2014 793 349 2159 821 133 1.33 1.33 200 2.00 2.00 0.54 0.54 0.54 0.09 0.09 0.09 0.54 0.54 0.54 0.00 0.0 0.00 0.55 30.3 15.7 45.2 10.7 4.3 0.1 19 0.4 28.3 87.4 0.1 0.0 0.0 0.0 0.0 0.0 0.0 53.6 32.2 16.1 73.5 98.1 4.4 1 2 0.4 28.3 87.4 0.1 2 0.4 28.3 87.4 0.1 2 0.5 8.7 10.1 2 8 6 3 3.0 66.0 21.0 29.0 29.7 70.3 4 4 1.4 18.3 19.4 11.2 66.3 5 8 31.8 41.4 18.3 19.4 11.2 66.3 5 8 18 41.4 18.3 19.4 11.2 66.3	3514 1845	3408 777 1704 11.7 1.00 335 0.81 341 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.
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1704 1679 1556 1757 1679 1557 1704 1679 1557 1704 1679 1557 1707 1009 1000	1157 1845	1704 11.7 11.7 11.7 11.7 11.7 11.7 11.0 0.8 1.34 11.00 11.00 11.00 11.7 11.7 11.7 11.7 1
92 39.4 8.3 29.8 64.3 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	16.3 19.1 10.0 382 314 10.9 0.78 382 508 1.00 1.00 1.00 1.00 6.8 59.5 73.1 1.6 0.0 0.0 11.8 9.9 1400 61.1 F F F F	11.7 1.00 0.81 0.81 1.00 1.00 1.00 66.3 66.3 67 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0
92 39.4 83 29.8 64.3 0.0 1.00 1.00 1.00 5.38 2014 79.3 349 2159 821 0.45 0.80 0.24 1.05 1.19 0.23 0.54 0.54 0.54 0.09 0.09 0.09 0.51 1.33 1.33 1.33 0.00 0.00 0.00 0.19 0.04 28.3 87.4 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.3 32 16.1 73.5 98.1 4.4 1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	16.3 19.1 100 382 314 100 0.78 382 508 100 1.00 1.00 1.00 56.8 59.5 66.8 59.5 66.8 59.5 140 0.0 11.8 9.9 140 61.1 F E E E 850 850 850 870 870 870 870 870 870 870 870 870 87	11.7 1.00 33.5 0.81 0.81 1.00 1.00 1.27 0.0 6.1 E
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538 2014 793 349 2159 821 6045 6080 024 105 119 023 504 133 133 200 200 200 505 505 505 505 505 505 505	382 314 109 0.78 382 508 1.00 1.00 1.00 1.00 6.8 8.95 73.1 16 0.0 0.0 140 61.1 F E E 850 92.8	335 0.81 341 1.00 1.00 66.3 12.7 0.0 6.1 79.0
0.45 0.89 0.24 1.05 1.19 0.23 5.88 2014 79.3 3.49 215.9 82.1 1.13 1.33 1.33 2.00 2.00 2.00 0.54 0.54 0.54 0.09 0.09 0.09 0.09 0.09 0.0 0.0 0.0 0.	109 078 382 508 100 1,00 1,00 1,00 668 595 73.1 1.6 0.0 0.0 11.8 9.9 1400 61.1 F F F	0.81 3.41 1.00 1.00 6.3 6.1 79.0 E
538 2014 793 349 2159 821 1.33 1.33 2.00 200 200 0.54 0.54 0.54 0.54 0.054 0.009 0.09 0.01 1.9 0.4 283 814 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 4.3 18.4 3.6 17.1 44.7 1.0 53.6 32.2 16.1 73.5 99.1 4.4 1.0 C B F F A 2046 33.3 4 5 6 C C T 1 2 3 4 5 6 34.0 660 21.0 290 297 703 42 660 21.0 290 297 703 43 84.0 18 0.0 0.0 0.0 0.0 1.8 0.0 0.8 0.0 0.0 0.0 1.8 0.0 0.8 0.0 0.0	382 568 100 100 100 100 66.8 59.5 73.1 1.6 00 11.8 9.9 140.0 61.1 F E 850 92.8 7 8	341 1.00 1.00 66.3 12.7 0.0 6.1 79.0 E
1.33 1.33 2.00 2.00 2.00 2.00 5.55 5.05 5.054 0.54 0.59 0.09 0.09 0.09 0.09 0.09 0.09 0.09	100 100 100 100 668 595 73.1 1.6 0.0 0.0 1118 9.9 140.0 61.1 F E E 850 72.8 72.8 7 8 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 7 8 8 8 8 7 8 8 8 7 8 8 8 7 8 8 8 8 7 8 8 8 8 7 8 8 8 8 7 8 8 8 8 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	1.00 66.3 12.7 0.0 6.1 79.0 E
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335 30.3 15.7 45.2 10.7 4.3 0.0 1 1.9 0.4 28.3 81.4 0.1 0.0 4.3 81.4 3.6 17.1 44.7 1.0 83.6 32.2 16.1 73.5 98.1 4.4 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	668 595 73.1 1.6 0.0 0.0 11.8 9.9 140.0 61.1 F E E 880 92.8 7 8	66.3 12.7 0.0 6.1 79.0 E
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13.5 3.2 16.1 73.5 98.1 44 20.0 16.2 16.1 73.5 98.1 44 4.1 16.2 17.3 4 5 6 6 6.1 16.1 16.1 16.1 16.1 16.1 16.1	140.0 61.1 F E E 850 92.8 7 8	79.0 E
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C F F 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	7	
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nax), s *30 44.0 *16 *40 9.5 *64 >+1), s 318 41.4 18.3 19.4 11.2 66.3 s 0.0 1.8 0.0 0.8 0.0 0.0	* 5	
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HCM 2010 Ctrl Delav 72.7		
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HCM 2010 Signalized Intersection Summary 9: Hidden Valley Rd. & Palomar Airport Rd.

Long-Term + Project (PAL1) PM 0824/2017

HCM 2010 Signalized Intersection Summary 10: College Blvd. & Palomar Airport Rd.

Long-Term + Project (PAL1) PM 0824/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
-ane Configurations	F	444	¥C	<u>,-</u>	444		je-	æ		y -	*	*-
raffic Volume (veh/h)	8	2214	150	130	2854	8	180	20	100	220	09	240
uture Volume (veh/h)	8	2214	120	130	2854	8	180	20	100	220	09	240
Number	2	2	12	-	9	16	co	∞	18	7	4	14
nitial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
ed-Bike Adj(A_pb1)	00.1	,	0.99	00.1	,	0.96	1.00		0.96	1.00	0	0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veryhin	1845	1845	1845	1845	1845	0061	1845	1845	1900	1845	1845	1845
4dj Flow Rate, venvn	۶ ۶	7222	90 7	282	30.36	9 9	5 7	23	90	734	04	722
Adj No. or Lanes	- 6	٥ م	- 800	- 80	200	0 0	- 80	- 60	0 0	- 800	- 00	- 00
Person Howay Voh 92	0.74	6.74	4,0	6.74	6.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
ercell reavy vell, 76	٥ ٢	7277	0 0	105	1777	2 70	150	o c	144	211	241	205
July, Veliviii	0 00	0.31	030	0.22	100	9 6	000	0.16	0.16	0.12	000	0.20
sat Flow, veh/h	1757	5036	1551	1757	5011	156	1757	533	1065	1757	1845	1508
Gro Volume(v), veh/h	96	2355	160	138	2021	1111	191	C	159	234	64	255
3rp Sat Flow(s),veh/h/ln	1757	1679	1551	1757	1679	1810	1757	0	1598	1757	1845	1508
2 Serve(g_s), s	4.0	69.3	2.0	10.9	0.0	9.9/	12.8	0.0	14.0	18.0	4.3	24.5
Sycle Q Clear(g_c), s	4.0	69.3	2.0	10.9	0.0	9.9/	12.8	0.0	14.0	18.0	4.3	24.5
Prop In Lane	1.00		1.00	1.00		0.09	1.00		0.67	1.00		1.00
ane Grp Cap(c), veh/h	47	2327	820	195	1856	1001	120	0	249	211	361	295
//C Ratio(X)	2.05	1.01	0.19	0.71	1.09	1.1	1.27	0.00	0.64	1.11	0.18	0.86
4vail Cap(c_a), veh/h	47	2327	820	195	1856	1001	120	0 0	362	211	480	392
HCM Platoon Ratio	0.6/	/9.0	/9.0	2.00	2.00	2.00	00.1	1.00	1.00	1.00	1.00	1.00
Jpstream Filter(I)	0.41	0.41	0.41	0.00	0.00	0.09	1.00	0.00	1.00	1.00	1.00	1.00
Jillollii Delay (u), siveri nar Dolay (d2), siyob	13.7	15.1	0.0	- 00	0.0	0.0	165.0	0.0	1.0	0.00	20.7	11.6
ų,	4.100	0.0	0.0	6:0	- 0	6.00	0.00	0.0	0.0	0.4.0	- 0	0.0
%ile BackOfO(50%) veh/ln	0 00	35.4	2.2	7 0	10.6	14.2	13.1	0.0	6.3	14.3	2.0	11.2
	575.1	699	8.7	57.1	41.1	50.9	233.6	0.0	40.4	160.6	50.3	70.07
	ш	ш	A	ш	ш	ш	ш		ш	ш	٥	ш
Approach Vol, veh/h		2611			3270			320			553	
Approach Delay, s/veh		82.0			45.1			154.9			106.0	
Approach LOS		ш.			٥			ш.			ı	
imer	-	2	3	4	2	9	7	8				
Assigned Phs	—	2	m	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	22.6	75.3	17.0	35.1	0.6	88.9	23.0	29.1				
	0.9	9 *	* 4.2	2.7	5.0	0.9	2.0	* 5.7				
Max Green Setting (Gmax), s	ω c ∞ c	69 ,	140	39.0	4.0	73.3	18.0	* 34				
Green Ext Time (p. c+11), s	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5				
otorooction Summary												
HCM 2010 Ctrl Delay			0.07									
HCM 2010 LOS			ш									
Votes												

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Comparison Com				٠									
Particular September 197 1444 17 17 17 14 17 17	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Part	Lane Configurations	F	444	¥	F	444	¥	F	*	¥	je-	*	*
hethy 200 1504 330 311 1894 112 220 220 181 52 500 pethy) 200 1504 330 311 1894 112 220 220 181 52 500 peth) 1 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Traffic Volume (veh/h)	200	1504	330	311	1894	112	220	290	181	52	200	630
h bhild by both the first of th	Future Volume (veh/h)	200	1504	330	311	1894	112	220	290	181	52	200	630
h h b b b b b b b b b b b b b b b b b b	Number	2	2	12	-	9	16	က	∞	18	7	4	14
ppf) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
1.00 1.00	Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		0.99
Part	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Feth, 225 1690 371 349 2128 126 247 326 203 58 562 647 867 868 868 868 868 868 868 868 868 86	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
1	Adj Flow Rate, veh/h	225	1690	371	349	2128	126	247	326	203	28	299	708
Color	Adj No. of Lanes	2	3	-	2	3	-	2	2		-	-	-
(eh, % 3 <td>Peak Hour Factor</td> <td>0.89</td>	Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
389 1989 619 401 1937 598 223 1082 479 74 504 3408 5034 6179 6112 638 6038 6	Percent Heavy Veh, %	m	c	m	m	m	m	3	m	m	m	m	m
10,23 0,79 0,79 0,12 0,38 0,38 0,31 0,31 0,31 0,31 0,31 0,31 0,31 0,31 0,32 0,32 0,33 0,33 0,34 0,35 0,34 0,35 0,34 0,35 0,34 0,35 0,34 0,35 0,34 0,35 0,34 0,35 0,34 0,35 0,34 0,35 0,34 0,35 0,34 0,35 0,34 0,35 0,34 0,35 0,34	Cap, veh/h	386	1989	619	401	1937	268	223	1082	479	74	204	603
3408 5036 1568 3408 5036 1556 3408 3905 1553 1757 1845 1845 1754 1754	Arrive On Green	0.23	0.79	0.79	0.12	0.38	0.38	0.07	0.31	0.31	0.04	0.27	0.27
celulu	Sat Flow, veh/h	3408	5036	1568	3408	5036	1556	3408	3505	1553	1757	1845	1551
verbinin 1704 1679 1568 1704 1679 1556 1704 1752 1553 1757 1845 1767 88 8 32.2 10.7 15.1 57.7 6.7 98 10.6 15.6 4.9 41.0 4.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	Grp Volume(v), veh/h	225	1690	371	349	2128	126	247	326	203	28	299	708
C), S 88 32.2 10.7 15.1 57.7 6.7 9.8 10.6 15.6 4.9 410 4.0 1.00 1.00 1.00 1.00 1.00 1.00 1	Grp Sat Flow(s),veh/h/ln	1704	1679	1568	1704	1679	1556	1704	1752	1553	1757	1845	1551
8.8 32.2 10.7 15.1 57.7 6.7 9.8 10.6 15.6 4.9 41.0 4.100 1.00 1.00 1.00 1.00 1.00 1.0	Q Serve(g_s), s	89.	32.2	10.7	15.1	57.7	6.7	8.6	10.6	15.6	4.9	41.0	41.0
1,00	Cycle Q Clear(g_c), s	8.8	32.2	10.7	15.1	57.7	6.7	9.8	10.6	15.6	4.9	41.0	41.0
389 1989 619 401 1937 598 223 1082 479 74 504 466 1989 619 920 111 030 042 0.79 1.11 6260 200 200 100 100 100 100 100 100 1.00 628 0.38 0.38 0.38 1.00 1.00 1.00 1.00 1.00 1.00 628 0.38 0.38 0.38 1.00 1.00 1.00 1.00 1.00 1.00 629 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
0.88 0.85 0.60 0.87 1.10 0.21 1.11 0.30 0.42 0.79 1.11 4.66 2.00 2.00 2.00 1.00 1.00 1.00 1.00 1.00	Lane Grp Cap(c), veh/h	386	1989	619	401	1937	268	223	1082	479	74	204	603
466 1989 619 920 1937 598 223 1082 479 85 564 200 200 100 <td>V/C Ratio(X)</td> <td>0.58</td> <td>0.85</td> <td>09:0</td> <td>0.87</td> <td>1.10</td> <td>0.21</td> <td>1.11</td> <td>0.30</td> <td>0.42</td> <td>0.79</td> <td>1.1</td> <td>1.17</td>	V/C Ratio(X)	0.58	0.85	09:0	0.87	1.10	0.21	1.11	0.30	0.42	0.79	1.1	1.17
200 200 100 100 100 100 100 100 100 100	Avail Cap(c_a), veh/h	466	1989	619	920	1937	268	223	1082	479	82	504	603
0.38 0.38 0.38 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
84.7 12.9 6.3 65.0 46.2 20.7 70.1 395 41.2 71.2 54.5 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	0.38	0.38	0.38	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
02 1.9 1.7 2.3 53.0 0.8 92.7 0.1 0.2 28.4 75.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	54.7	12.9	6.3	0.59	46.2	20.7	70.1	39.5	41.2	71.2	54.5	45.9
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	0.2	1.9	1.7	2.3	53.0	0.8	92.7	0.1	0.2	28.4	75.3	95.3
4.1 14.4 4.6 7.3 36.2 3.0 7.5 5.2 6.7 3.0 31.4 54.9 148 8.0 67.3 96.2 21.5 16.28 976 41.5 99.6 1298 1 2286 A F F D D D F F F 2286 2603 C 776 1328 17.7 91.1 2 3 4 5 6 7 8 21.9 66.5 15.6 47.0 23.4 64.0 10.5 52.1 21.9 66.5 18.6 47.0 23.4 64.0 10.5 52.1 21.1 3.2 18 4.3 10.8 59.7 6.9 17.6 22.1 3 6.5 18.6 47.0 23.4 64.0 10.5 52.1 23 6.5 18.6 47.0 23.4 64.0 10.5 52.1 24.1 2.1 5.8 7.3 43.7 24.1 3.2 11.8 43.0 10.8 59.7 6.9 17.6 25.1 2 2 3 6 7 8 7 8 7 8 7 8 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54.9 148 8.0 673 99.2 215 16.28 39.6 415 99.6 129.8 2286 2603 776 17.7 17.7 17.2 28.6 17.2 2603 776 17.8 134.6 27.9 65.5 15.6 47.0 23.4 640 10.5 52.1 21.9 65.5 15.6 47.0 23.4 640 10.5 52.1 21.9 65.5 15.6 47.0 23.4 640 10.5 52.1 21.9 65.5 15.6 47.0 23.4 640 10.5 52.1 21.9 65.5 15.6 47.0 23.4 640 10.5 52.1 25.8 21.9 21.9 21.9 21.9 21.9 21.9 21.9 21.9	%ile BackOfQ(50%),veh/ln	4.1	14.4	4.6	7.3	36.2	3.0	7.5	5.2	6.7	3.0	31.4	33.4
D B A E F C F D D F 2286	LnGrp Delay(d),s/veh	54.9	14.8	8.0	67.3	99.2	21.5	162.8	39.6	41.5	9.66	129.8	141.2
2286 2603 7776 17.7 91.1 79.3 1 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 21.9 65.5 15.6 47.0 23.4 64.0 10.5 52.1 *4.2 6.3 *5.8 *6 *6.3 *6.3 *4.2 5.8 17.1 34.2 11.8 43.0 10.8 59.7 6.9 17.5 0.6 2.7 0.0 0.0 0.3 0.0 0.0 1.5	LnGrp LOS	۵	В	A	ш	ഥ	ပ	띡			ш	ഥ	۳
17.7 91.1 79.3 B F F F F F F F F F F F F F F F F F F	Approach Vol, veh/h		2286			2603			776			1328	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 219 655 156 7 6 3 64 0 105 8 *4.2 63 518 6 6.6 3 63 42 *41 38 98 *41 21 58 73 4 17.1 34.2 11.8 43.0 10.8 59.7 6.9 1 0.6 2.7 0.0 0.0 0.3 0.0 0.0	Approach Delay, síveh		17.7			91.1			79.3			134.6	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 21.9 65.5 15.6 47.0 23.4 64.0 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10	Approach LOS		В			ı			ш			ı	
1 2 3 4 5 6 7 7 8 17 8 15 6 47.0 23.4 64.0 10.5 15 6 47.0 23.4 64.0 10.5 15 6 47.0 23.4 64.0 10.5 15 6 17 1 34.2 11.8 43.0 10.8 59.7 6.9 10.6 2.7 0.0 0.0 0.3 0.0 0.0 174.0 E	Timer	-	2	3	4	2	9	7	00				
21.9 65.5 15.6 47.0 23.4 64.0 10.5 5.4.2 6.3 5.8 6.6 6.3 6.3 4.2 4.2 4.3 9.9 9.9 6.6 5.8 7.3 4.2 4.2 4.2 17.3 9.2 11.8 43.0 10.8 59.7 6.9 10.6 2.7 0.0 0.0 0.3 0.0 0.0 174.0 E.	Assigned Phs	-	2	3	4	2	9	7	∞				
742 63 58 6 63 63 42 741 38 98 41 21 73 73 67 06 2.7 0.0 0.0 0.3 0.0 0.0 740 E	Phs Duration (G+Y+Rc), s	21.9	65.5	15.6	47.0	23.4	64.0	10.5	52.1				
741 *38 *9.8 *41 *21 *58 *7.3 17.1 34.2 11.8 43.0 10.8 59.7 6.9 0.6 2.7 0.0 0.0 0.3 0.0 0.0 74.0	Change Period (Y+Rc), s	* 4.2	* 6.3	* 5.8	9 *	* 6.3	* 6.3	* 4.2	5.8				
17.1 34.2 11.8 43.0 10.8 59.7 6.9 0.6 2.7 0.0 0.0 0.3 0.0 0.0 0.0 174.0 E	Max Green Setting (Gmax), s	* 41	* 38	* 9.8	* 41	* 21	* 58	* 7.3	43.7				
0.6 2.7 0.0 0.0 0.3 0.0 0.0 1. 74.0 E	Max Q Clear Time (g_c+I1), s	17.1	34.2	11.8	43.0	10.8	26.7	6.9	17.6				
	Green Ext Time (p_c), s	9:0	2.7	0.0	0.0	0.3	0.0	0.0	1.5				
	Intersection Summary												
	HCM 2010 Ctrl Delay			74.0									
	HCM 2010 LOS			ш									

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HCM 2010 Signalized Intersection Summary 11: Camino Vida Roble & Palomar Airport Rd.

Long-Term + Project (PAL1) PM 08/24/2017

	4	†	~	>	Ļ	4	•	—	•	٠	→	•
Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	r	4413		*	4413		K.	2		r	*	Mr.
Traffic Volume (veh/h)	63	1824	290	99	1604	09	420	20	200	430	150	233
Future Volume (veh/h)	63	1824	290	09	1604	09	420	20	200	430	150	233
Number	2	2	12	_	9	16	3	00	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		96:0	1.00		96.0	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1845
Adj Flow Rate, veh/h	89	1983	315	92	1743	92	457	24	217	467	163	253
Adj No. of Lanes	-	3	0	-	3	0	2		0			_
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	m	3	m	m	3	3	3	m	m	m	m	3
Cap, veh/h	106	17.78	277	61	1824	89	203	64	259	377	514	424
Arrive On Green	90.0	0.41	0.41	0.03	0.37	0.37	0.15	0.21	0.21	0.21	0.28	0.28
Sat Flow, veh/h	1757	4369	679	1757	4974	185	3408	312	1255	1757	1845	1520
Grp Volume(v), veh/h	89	1514	784	99	1176	632	457	0	271	467	163	253
Grp Sat Flow(s),veh/h/ln	1757	1679	1691	1757	1679	1802	1704	0	1567	1757	1845	1520
Q Serve(g_s), s	2.7	61.1	61.1	5.2	51.2	51.3	19.8	0.0	24.9	32.2	10.5	17.5
Cycle Q Clear(g_c), s	5.7	61.1	61.1	5.2	51.2	51.3	19.8	0.0	24.9	32.2	10.5	17.5
Prop In Lane	1.00		0.40	1.00		0.10	1.00		0.80	1.00		1.00
Lane Grp Cap(c), veh/h	106	1367	889	61	1231	199	203	0	323	377	514	424
V/C Ratio(X)	0.64	1.1	1.14	1.07	96.0	0.96	0.91	0.00	0.84	1.24	0.32	0.60
Avail Cap(c_a), veh/h	106	1367	889	19	1247	699	263	0	387	377	246	420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1:00	1.00	1.00	1:00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.9	44.5	44.5	72.4	46.3	46.3	67.9	0.0	57.1	28.9	47.8	30.8
Incr Delay (d2), s/veh	9.6	59.5	79.5	135.2	17.0	25.9	16.5	0.0	11.3	128.0	0.1	1.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	39.6	43.7	4.8	26.6	30.2	10.5	0.0	1.8	29.0	5.4	7.5
LnGrp Delay(d),s/veh	78.5	104.0	123.9	209.5	63.3	72.2	79.5	0.0	68.4	186.9	42.9	32.0
LnGrp LOS	삐	ᅵ	ᅵ	ᅵ	삐	ш	ᆈ		ш	ᅵ		
Approach Vol, veh/h		2366			1873			728			883	
Approach Delay, s/veh		109.9			71.4			75.4			115.9	
Approach LOS		ш			Ш			ш			ш	
Timer		2	က	4	2	9	7	∞				
Assigned Phs	—	2	33	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	9.4	67.5	26.3	46.8	15.5	61.4	37.2	35.9				
Change Period (Y+Rc), s	* 4.2	* 6.4	* 4.2	* 5	* 6.4	* 6.4	* 5	* 5				
Max Green Setting (Gmax), s	* 5.2	* 56	* 25	* 44	* 5.3	* 56	* 32	* 37				
Max Q Clear Time (g_c+I1), s	7.2	63.1	21.8	19.5	7.7	53.3	34.2	56.9				
Green Ext Time (p_c), s	0.0	0.0	0.3	1.0	0.0	1.7	0.0	0.8				
Intersection Summary												
HCM 2010 Ctrl Delay			94.2									
HCM 2010 LOS			ш									
Notes												

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HCM 2010 Signalized Intersection Summary 12: Yarrow Dr./McClellan & Palomar Airport Rd.

Long-Term + Project (PAL1) PM 0824/2017

		t	•	•		,	-	-		k	•	,
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	4413		۴	4413		۴	+	*-		4	
Traffic Volume (veh/h)	99	2010	80	130	1510	115	170	35	330	145	32	84
Future Volume (veh/h)	99	2010	80	130	1510	115	170	35	330	145	32	84
Number	2	2	12	-	9	16	7	4	14	က	ω (18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	60	0.96	1.00	7	0.98	1.00	7	0.97	0.99	6	0.97
Parking Bus, Adj	1845	1845	1000	1845	1845	1000	1845	1845	1845	1900	1845	1000
Adj Flow Rate, veh/h	12	2233	89	144	1678	128	189	39	367	161	39	93
Adj No. of Lanes	-	co	0	-	co	0	-	-	-	0	-	0
Peak Hour Factor	06:0	06:0	0.90	06:0	06:0	06:0	06:0	06:0	06:0	06:0	0.90	0.90
Percent Heavy Veh, %	co	3	c	3	3	3	3	3	3	3	3	S
Cap, veh/h	8	2425	96	219	2738	209	329	202	416	203	43	76
Arrive On Green	0.02	0.49	0.49	0.12	0.57	0.57	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1757	4962	197	1757	4766	363	1240	1845	1520	209	158	356
Grp Volume(v), veh/h	71	1507	815	144	1181	625	189	39	367	293	0	0
Grp Sat Flow(s),veh/h/In	1757	1679	1801	1757	1679	1771	1240	1845	1520	1121	0	0
Q Serve(g_s), s	0.9	62.4	63.4	11.7	34.6	34.8	0.0	2.4	34.7	36.4	0.0	0.0
Cycle Q Clear(g_c), s	0.9	62.4	63.4	11.7	34.6	34.8	25.0	2.4	34.7	38.7	0.0	0.0
Prop In Lane	8.6	17.41	0.1.1	1.00	0007	0.20	00.T	L	1.00 41,	0.55	c	0.32
Latte GIP Cap(c), verifit V//C Ratio(X)	07.0	0.97	000	0.66	0.61	01010	0.57	200	0 88	0.85	000	000
Avail Cap(c a), veh/h	712	1746	936	219	1929	1018	346	530	437	360	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	70.4	35.6	35.8	62.6	20.9	21.0	48.6	40.4	52.2	54.5	0.0	0.0
Incr Delay (d2), s/veh	2.8	9.7	16.9	2.6	7.5	7.8	1.2	0.0	17.3	16.0	0:0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	31.1	35.6	0.9	16.5	17.8	1.7	1.2	16.6	13.5	0.0	0.0
LnGrp Delay(d),s/veh	76.2	45.3	52.7	68.2	22.4	23.1	49.8	40.4	69.4	70.4	0.0	0.0
LnGrp LOS	ال			4	اد	اد			الا	ш		
Approach Vol, veh/h		2393			1950			595			293	
Approach Delay, swen		48.7			7.97			61.3			/0.4 F	
Apploacii ECO		٥)			_			_	
Timer	-	2	3	4	2	9	7	∞				
Assigned Phs	-	2		4	2	9		∞				
Phs Duration (G+Y+Rc), s	24.7	79.3		46.0	11.9	92.2		46.0				
	0.9	9 *		4.9	* 4.2	0.9		4.9				
Max Green Setting (Gmax), s	13.8	. 78		43.1	. 61	31.0		43.1				
Max U Clear Time (g_c+IT), s	13.7	65.4		36.7	8.0	36.8		40.7				
Green Ext Time (p_c), s	0.0	6.7		8.0	0.1	0.0		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay HCM 2010 LOS			43.0 D									

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HCM 2010 Signalized Intersection Summary 13: El Camino Real & Palomar Airport Rd.

Long-Term + Project (PAL1) PM 08/24/2017

Long-Term + Project (PAL1) PM 08/24/2017

	١	t	•	•		,	_	-	_		•	
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	444	*	F	444	N. N.	K	444	N. W	F	444	*C_
Traffic Volume (veh/h)	432	1791	252	280	1161	200	392	1130	099	760	1060	262
Future Volume (veh/h)	432	1791	252	280	1161	200	392	1130	099	760	1060	262
Number	2	2	12		9	16	3	∞	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	460	1905	268	617	1235	628	417	1202	702	809	1128	279
Adj No. of Lanes	2	3	-	2	3	2	2	3	2	2	3	_
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	m	m	m	3	2	3	3	m	m	m	n
Cap, veh/h	202	1343	413	386	1165	630	409	1369	1063	641	1712	762
Arrive On Green	0.15	0.27	0.27	0.04	0.08	0.08	0.12	0.27	0.27	0.19	0.34	0.34
Sat Flow, veh/h	3408	2036	1550	3408	2036	2724	3408	5036	2760	3408	5036	1554
Grp Volume(v), veh/h	460	1905	268	617	1235	628	417	1202	702	800	1128	279
Grp Sat Flow(s),veh/h/ln	1704	1679	1550	1704	1679	1362	1704	1679	1380	1704	1679	1554
Q Serve(g_s), s	19.9	40.0	16.7	17.0	34.7	22.5	18.0	34.2	14.5	28.2	28.6	16.8
Cycle Q Clear(g_c), s	19.9	40.0	16.7	17.0	34.7	22.5	18.0	34.2	14.5	28.2	28.6	16.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	207	1343	413	386	1165	630	409	1369	1063	641	1712	762
V/C Ratio(X)	0.91	1.42	0.65	1.60	1.06	1.00	1.02	0.88	99.0	1.26	99.0	0.37
Avail Cap(c_a), veh/h	291	1343	413	386	1165	630	409	1511	1141	641	1712	762
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1:00	1.00	1.00	0.27	0.27	0.27	1:00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	62.8	22.0	25.8	72.2	69.3	29.4	0.99	52.2	38.0	6.09	42.1	23.9
Incr Delay (d2), s/veh	12.1	192.8	2.8	272.1	33.1	17.8	49.6	8.2	3.2	119.0	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	42.5	7.5	22.6	19.7	10.1	11.3	17.0	0.9	23.9	13.3	7.2
LnGrp Delay(d),s/veh	78.0	247.8	28.6	344.3	102.4	47.1	115.6	60.5	41.2	179.9	42.3	24.0
LnGrp LOS	ш	ᅵ	ပ	ᅵ	ᅵ		ᅵ	삐		ᅵ		ျ
Approach Vol, veh/h		2633			2480			2321			2216	
Approach Delay, s/veh		195.8			148.6			64.5			90.2	
Approach LOS		Œ.			ш			ш			Œ.	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	-	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	23.0	46.0	24.0	57.0	28.3	40.7	34.2	46.8				
Change Period (Y+Rc), s		0.9	0.9	0.9	0.9	0.9	0.9	0.9				
Max Green Setting (Gmax), s		40.0	18.0	51.0	26.0	31.0	24.0	45.0				
Max U Clear Time (g_c+11), s	0.61	47.0	70.0	30.6	6.12	30.7	30.2	30.2				
green ext nine (p_c), s	0.0	0.0	0.0	9.0	4:0	0:0	0.0	4.3				
Intersection Summary												
HCM 2010 Ctrl Delay			127.9									

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Synchro	

Movement Lane Configurations Traffic Volume (veh/h) Future Volume (veh/h) Number Initial Q (Ob), weh	FB	TOJ	ב	WBI	TOW	WRD	2	NBT	NBR	SBL	TOS	
Lane Configurations Traffic Volume (vehVh) Future Volume (vehVh) Number Initial Q (Qb), veh	באר	EBI	EBK	102	WBI	Š	NBL				JOC	SBK
Traffic Volume (veh/h) Future Volume (veh/h) Number Initial Q (Ob), veh	F	444	¥.	r	4413		r	*	*	<i>y</i> -	*	¥c_
Future Volume (veh/h) Number Initial Q (Qb), veh	140	2820	321	130	1810	70	261	20	300	130	70	370
Number Initial Q (Qb), veh	140	2820	321	130	1810	70	261	20	300	130	70	370
Initial Q (Qb), veh	2	2	12	_	9	16	က	∞	18	7	4	14
	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		96.0	1.00		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1:00	1.00	1.00	1.00	1.00	1:00	1.00	1.00	1.00	1:00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	146	2938	334	135	1885	73	272	25	312	135	73	382
Adj No. of Lanes	_	m	-	-	m	0	_	_	-	-	-	-
Peak Hour Factor	96.0	96:0	96.0	96.0	96:0	96:0	96:0	96:0	96:0	96:0	96:0	0.96
Percent Heavy Veh, %	m	3	က	3	3	co	3	co	က	3	3	3
Cap, veh/h	170	2595	881	744	4249	164	115	453	372	141	480	395
Arrive On Green	90:0	0.35	0.35	0.85	1.00	1.00	0.07	0.25	0.25	0.08	0.26	0.26
Sat Flow, veh/h	1757	5036	1511	1757	4974	192	1757	1845	1516	1757	1845	1518
Grp Volume(v), veh/h	146	2938	334	135	1271	289	272	52	312	135	73	385
Grp Sat Flow(s),veh/h/ln	1757	1679	1511	1757	1679	1809	1757	1845	1516	1757	1845	1518
Q Serve(g_s), s	12.3	77.3	31.2	2.1	0.0	0.0	8.6	3.3	25.8	11.5	4.6	37.7
Cycle Q Clear(g_c), s	12.3	77.3	31.2	2.1	0.0	0.0	8.6	3.3	25.8	11.5	4.6	37.7
Prop In Lane	1.00		1.00	1.00		0.11	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	170	2595	881	744	2868	1546	115	453	372	141	480	395
V/C Ratio(X)	98.0	1.13	0.38	0.18	0.44	0.44	2.37	0.11	0.84	96.0	0.15	0.98
Avail Cap(c_a), veh/h	704	2595	881	744	2868	1546	112	453	372	141	480	395
HCM Platoon Ratio	0.67	0.67	0.67	2.00	2.00	2.00	1.00	1.00	1.00	1:00	1:00	1.00
Upstream Filter(I)	0.00	0.00	0.09	0.48	0.48	0.48	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d.), siven	09.1	44.1	03.7	0.0	0.0	0.0	1.07	0.0	147	0.00	42.0	0000
Incl Delay (uz.), sveri	0.0	0.00		0.0	7.0	4 0	042.4	0.0	7.4	03:3		0.00
Wile BackOfO(50%) veh/ln	0.0	50.3	13.1	0.0	0.0	0.0	25.2	1.7	12.3	0.0	2.3	20.0
LnGrp Delay(d),s/veh	9.69	109.1	65.8	8.9	0.2	0.4	712.5	44.0	56.3	132.1	42.8	93.5
LnGrp LOS	ш	ш	Ш	A	A	A	ш	О	Ш	ш	D	ш
Approach Vol, veh/h		3418			2093			989			593	
Approach Delay, s/veh		103.2			0.7			335.9			96.1	
Approach LOS		ட			V			ш			ı	
Timer	_	2	က	4	2	9	7	∞				
Assigned Phs	7	2	3	4	2	9	7	00				
Phs Duration (G+Y+Rc), s	9.07	83.3	14.0	43.7	18.7	135.2	16.2	41.5				
Change Period (Y+Rc), s	0.9	9 *	* 4.2	* 4.7	* 4.2	0.9	* 4.2	* 4.7				
Max Green Setting (Gmax), s	4.8	* 77	* 9.8	* 39	, 40	22.0	* 12	* 37				
Max Q Clear Time (g_c+I1), s	4.1	79.3	1.8	39.7	14.3		13.5	27.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.5	œ. 3	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			92.7									
HCM 2010 LOS			ш									
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HCM 2010 Signalized Intersection Summary 15: El Fuerte St. & Palomar Airport Rd.

Long-Term + Project (PAL1) PM 08/24/2017

HCM 2010 Signalized Intersection Summary 16: Melrose Dr. & Palomar Airport Rd.

Long-Term + Project (PAL1) PM 0824/2017

Movement Lane Configurations	FB	EBT	EBR	WBI	FOR	9	NRI	TON	NBR	SB	SBT	CBD
Lane Configurations				7	WBI	WBK	TOL.	INDI		1)	SDI
	F	₩₩	¥	F	441		F	₹		F	₩	
Traffic Volume (veh/h)	131	2618	251	530	1658	100	201	210	410	310	170	91
Future Volume (veh/h)	131	2618	251	230	1658	100	201	210	410	310	170	91
Number	ഹ	2	12	- -	9 0	91	m	∞ α	ω α	_ 0	4 0	14
milai U (Ub), ven	5	>	0 0	0 6	0	0 0	0 6	0	0 0	0 6	0	
Ped-bike Adj(A_pur) Parking Birs Adj	8 8	9	1.00	8.6	100	1.00	9.1	9	100	00.1	100	1.00
nl/d/n	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
	135	2699	259	546	1709	103	207	216	423	320	175	94
Adj No. of Lanes	2	33	-	2	33	0	2	2	0	2	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	e :	e 6	e 6	e (200	2	e 6	S 1	e :	2	e 6	3
Cap, veh/h	449	1903	288	609	2002	121	232	397	343	2/9	550	781
	2408	0.30	1556	3408	0. I4	202	3408	1752	1514	3,408	223	11/13
veh/h	135	2696	259	546	1182	630	707	216	423	320	135	134
-	1704	1679	1556	1704	1679	1785	1704	1752	1514	1704	1752	1626
	5.2	56.7	16.0	23.9	51.6	51.7	0.6	16.3	34.0	12.3	9.5	10.1
Cycle Q Clear(g_c), s	5.2	26.7	16.0	23.9	51.6	51.7	0.6	16.3	34.0	12.3	9.5	10.1
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		0.70
Lane Grp Cap(c), veh/h	449	1903	288	609	1386	737	232	397	343	279	431	400
V/C Ratio(X)	0.30	1.42	0.44	0.00	0.85	0.85	0.89	0.54	1.23	1.15	0.31	0.33
Avail Cap(c_a), veh/h	449	1903	288	1370	1775	943	232	397	343	279	431	400
HCM Platoon Ratio	1.33	1.33	1.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.14	0.14	0.14	0.41	0.41	0.41	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.8	37.3	27.2	69.2	60.3	60.4	69.4	51.2	58.0	8.89	46.2	46.5
Incr Delay (d2), s/veh	0.0	188.7	0.3	0.8	3.0	5.4	31.5	0.9	127.6	8.8	0.5	0.2
Initial Q Delay(d3),swen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOtQ(50%),ven/in	7.7	59.4	6.9	4.11.4	24.6	7.97	5.3	0.8	26.4	9.6	4.6	4.6
LnGrp Delay(d),s/ven	55.9	7.70	27.5	0.0/	63.3	8.09	6:001	27.0	185.6	/'/91	40.4	46.6
Approach Vol suchth	اا	2002	اد		32E0			046			200	
Approach Delay, siveh		202.0			65.5			130.7			112.3	
Approach LOS		ш			ш			ш			ட	
Timer		2	3	4	2	9	7	00				
Assigned Phs	-	2	m	4	2	9	7	∞				
Phs Duration (G+Y+Rc), s	31.0	62.7	14.4	41.9	25.8	67.9	17.3	39.0				
Change Period (Y+Rc), s	* 4.2	0.9	* 4.2	2.0	0.9	9 *	2.0	* 5				
Max Green Setting (Gmax), s	09 *	24.0	* 10	36.1	5.0	¢ 79	12.3	* 34				
Max Q Clear Time (g_c+I1), s	25.9	28.7	11.0	12.1	7.2	53.7	14.3	36.0				
Green Ext Time (p_c), s	6.0	0.0	0.0	0.9	0.0	8.2	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			138.8									
HCM 2010 LOS			ш									
Notes												

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Movement EBI EBI WBI		4	†	1	-	Ļ	1	•	—	•	۶	→	*
18	Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1181 2156 551 270 1046 90 261 790 290 210 1150 181 2156 551 270 1046 90 261 790 290 210 1150 100 100 100 100 0 0 0 0	Lane Configurations	K	444	*	F	444	*	K.	Ħ	¥.	F	‡	K.
118 2156 551 270 1046 90 261 790 290 210 1150 100	Traffic Volume (veh/h)	1181	2156	551	270	1046	06	261	790	290	210	1150	821
100	Future Volume (veh/h)	1181	2156	551	270	1046	06	261	790	290	210	1150	821
100 100 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Number	2	2	12	-	9	16	m	∞ (18	7	4	14
100 100 100 100 100 100 100 100 100 100	Initial Q (Qb), veh	0 6	0	0 0	0 0	0	0	0 0	0	0 0	0 6	0	0 8
1266 2294 586 287 1113 96 278 846 845 84	Ped-Bike Adj(A_pb)	1.00	6	1.00	1.00	6	0.99	1.00	00	1.00	00.1	5	0.99
1845 1845	Parking Bus, Adj	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1:00
1256 2294 586 287 1113 96 278 840 309 223 123 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845
h., % 3 3 1 2 3 1 2 2 2 4 1 2 2 2 4 1 1 2 2 2 4 1 1 2 2 2 4 1 1 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Adj Flow Rate, veh/h	1256	2294	286	287	1113	96	278	840	306	223	1223	873
094 094 <td>Adj No. of Lanes</td> <td>2</td> <td>m</td> <td>_</td> <td>2</td> <td>3</td> <td>-</td> <td>2</td> <td>4</td> <td></td> <td>2</td> <td>2</td> <td>2</td>	Adj No. of Lanes	2	m	_	2	3	-	2	4		2	2	2
3 3	Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
1100 3141 973 291 1886 582 186 1599 524 209 872 032 032 062 062 062 062 062 062 062 062 062 06	Percent Heavy Veh, %	3	m	m	m	m	3	m	m	m	3	m	n
0.82 0.62 <td< td=""><td>Cap, veh/h</td><td>1100</td><td>3141</td><td>973</td><td>291</td><td>1886</td><td>582</td><td>186</td><td>1599</td><td>524</td><td>500</td><td>872</td><td>1568</td></td<>	Cap, veh/h	1100	3141	973	291	1886	582	186	1599	524	500	872	1568
3408 5036 1560 3408 5036 1555 3408 6446 1549 3408 3505 1256 287 186 287 1155 173 86 152 3408 1523 3408 3505 351 123 3408 3505 351 1223 3408 350 351 351 126 266 65 82 17.1 248 92 373 484 47.2 36.1 126 266 65 82 17.1 248 92 373 484 47.2 36.1 126 266 65 82 17.1 248 92 373 488 48 170 100	Arrive On Green	0.32	0.62	0.62	0.09	0.37	0.37	0.05	0.25	0.25	90.0	0.25	0.25
1256 2294 586 287 1113 96 278 840 309 223 1223 1704 1679 1560 1704 1679 1556 171 248 92 373 484 47.2 36.1 12.6 26.6 6.5 82 171 248 92 373 484 47.2 36.1 12.6 26.6 6.5 82 171 248 92 373 100	Sat Flow, veh/h	3408	5036	1560	3408	5036	1555	3408	6346	1549	3408	3505	2726
1704 1679 1560 1704 1679 1555 1704 1586 1549 1704 1752 48.4 47.2 36.1 12.6 26.6 6.5 82 17.1 24.8 9.2 37.3 100 1.00 1.00 1.00 1.00 1.00 1.00 37.3 1100 3141 973 291 1886 582 17.1 24.8 9.2 37.3 1100 3141 973 291 1886 582 186 1599 524 209 872 1100 3141 973 291 1886 582 186 1599 524 209 872 1100 3141 973 291 1886 582 186 189 52 373 1100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	Grp Volume(v), veh/h	1256	2294	286	287	1113	96	278	840	309	223	1223	873
48.4 41.2 36.1 12.6 26.6 6.5 8.2 17.1 24.8 9.2 37.3 48.4 47.2 36.1 12.6 26.6 6.5 8.2 17.1 24.8 9.2 37.3 1.00 31.41 97.3 29.1 1886 58.2 17.1 24.8 9.2 37.3 1.10 31.41 97.3 29.1 1886 58.2 186 1599 52.4 20.9 87.2 1.11 30.73 0.60 0.99 0.59 0.16 1.40 1.40 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.09 0.09 0.10 1.00 1.00 1.00 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Grp Sat Flow(s),veh/h/ln	1704	1679	1560	1704	1679	1555	1704	1586	1549	1704	1752	1363
48.4 47.2 36.1 12.6 26.6 6.5 8.2 17.1 24.8 9.2 37.3 100	O Serve(g_s), s	48.4	47.2	36.1	12.6	26.6	6.5	8.2	17.1	24.8	9.5	37.3	0.0
100	Cycle Q Clear(g_c), s	48.4	47.2	36.1	12.6	26.6	6.5	8.2	17.1	24.8	9.5	37.3	0.0
1100 3141 973 291 1886 582 186 1599 524 209 872 1100 3141 973 291 1886 582 186 149 653 659 107 140 1100 130 130 10	Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
114 0,73 0,60 0,99 0,59 0,16 0,14 0,15 0,10 0	Lane Grp Cap(c), veh/h	1100	3141	973	291	1886	582	186	1599	524	500	872	1568
1100 3141 973 291 1886 582 186 1599 524 209 872 1100 1100 100 1100 1100 1100 1100 110	V/C Ratio(X)	1.14	0.73	09.0	0.99	0.59	0.16	1.49	0.53	0.59	1.07	1.40	0.56
100 100 100 100 100 100 100 100 100 100	Avail Cap(c_a), veh/h	1100	3141	973	291	1886	582	186	1599	524	500	872	1568
0.09 0.09 0.09 1.00 1.00 1.00 1.00 1.00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
508 19.5 19.2 68.5 37.7 34.3 70.9 48.4 41.1 70.4 56.3 5 65.1 0.1 0.3 48.9 0.2 247.6 0.2 1.2 81.1 1884 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
65.1 0.1 0.3 48.9 0.3 0.0 2476 0.2 12 81.1 188.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	20.8	19.5	19.2	68.5	37.7	34.3	70.9	48.4	41.1	70.4	56.3	20.2
00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Incr Delay (d2), s/veh	65.1	0.1	0.3	48.9	0.3	0:0	247.6	0.2	1.2	81.1	188.4	0.3
32.7 21.7 15.5 7.9 12.4 2.8 10.3 7.5 10.8 6.7 40.8 115.9 19.6 19.5 117.4 38.0 34.3 318.5 48.5 42.3 151.5 244.7 F B B F D C T D D D F F F F F F F F F F F F F F F F	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115.9 19.6 19.5 117.4 38.0 34.3 318.5 48.5 42.3 151.5 244.7 1	%ile BackOfQ(50%),veh/ln	32.7	21.7	15.5	7.9	12.4	2.8	10.3	7.5	10.8	6.7	40.8	11.3
F B B F D C F D D F 4136 4136 4136 4136 4136 4136 4140 4140 41 2 3 4 5 6 7 8 74 998 74 998 75 998 76 998 77 89 77 89 78 998 78 998 78 998 78 998 78 998 78 998 78 998 78 998 78 998 78 998 78 98 998 78 98 988 78 98 988 78 98 98 988 78 98 98 98 98 78 98 98 98 78 98 98 98 78 98 98 98 78 98 98 98 78 98 98 98 78 98 98 98 78 98 98 98 78 98 98 98 78	LnGrp Delay(d),s/veh	115.9	19.6	19.5	117.4	38.0	34.3	318.5	48.5	42.3	151.5	244.7	20.4
4136 1496 1427 48.8 53.0 99.8 142.1 2 3 4 5 6 7 8 142 17.0 99.6 142 43.0 54.4 62.2 13.4 43.8 17.0 99.6 142 43.0 54.4 62.2 13.4 43.8 17.0 99.6 142 33.5 50.4 28.6 17.2 26.8 17.6 82 37 48 36.0 17.6 82 37 48 36.0 17.6 82 37 48 36.0 17.5 88.6 17.5 88	LnGrp LOS	띡	В	В	ш	۵	ပ	띡	۵		ш	띡	٥
48.8 53.0 99.8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 1 2 3 8 8 8 1 1 2 3 8 8 8 8 1 1 2 26 8 1 2 2 8 1 3 2 8 8 1 3 3 8 8 8 1 3 4 8 8 1 4 2 6 0 1 5 8 8 1 5 8 8 1 6 8 8 1 7 8 8 1 8 8 8 1 8 8 8 1 9 9 9 8 1 1 1 2 26 8 1 1 1 2 2 2 8 1 1 1 2 2 8 1 1 2 2 8 1 1 2 2 8 1 1 2 2 8 1 1 2 8	Approach Vol, veh/h		4136			1496			1427			2319	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 17.0 99.6 142 8.2 54 6.2 13.4 *4.2 6.0 6.0 5.7 6.0 6.42 13 71.6 8.2 37 48.4 36 9.2 146 49.2 10.2 39.3 50.4 28.6 11.2 0.0 13.6 0.0 0.0 0.0 2.9 0.0	Approach Delay, s/veh		48.8			53.0			8.66			151.3	
1 2 3 4 5 6 7 1 2 3 4 5 6 7 170 99.6 142 8.3 544 6.2 13.4 *42 6.0 6.0 *5.7 6.0 *6 *4.2 113 71.6 8.2 *37 48.4 *36 *9.2 14.6 49.2 10.2 39.3 50.4 28.6 11.2 0.0 13.6 0.0 0.0 0.0 2.9 0.0 82.6	Approach LOS		D			٥			ш			ш.	
17.0 99.6 14.2 43.0 54.4 6.2 13.4 17.0 99.6 14.2 43.0 54.4 6.2 13.4 13.7 71.6 82 37 48.4 36 9.2 14.6 49.2 10.2 39.3 50.4 28.6 11.2 0.0 13.6 0.0 0.0 0.0 2.9 0.0 82.6	Timer	-	2	က	4	2	9	7	∞				
17.0 99.6 14.2 43.0 54.4 62.2 13.4 14.2 60 6.0 5.7 6.0 '6 '4.2 13.7 71.6 8.2 '3.7 48.4 '36 '9.2 14.6 49.2 10.2 39.3 50.4 28.6 11.2 0.0 13.6 0.0 0.0 0.0 2.9 0.0 82.6	Assigned Phs	τ-	2	3	4	2	9	7	8				
. 42 6.0 6.0 .5.7 6.0 .6 .4.2 14.6 49.2 10.2 39.3 50.4 28.6 11.2 0.0 13.6 0.0 0.0 0.0 2.9 0.0 82.6	Phs Duration (G+Y+Rc), s	17.0	9.66	14.2	43.0	54.4	62.2	13.4	43.8				
13 716 82 37 484 36 9.2 14,6 49.2 10.2 39.3 50.4 28.6 11.2 0.0 13.6 0.0 0.0 0.0 2.9 0.0 82.6 F	Change Period (Y+Rc), s	* 4.2	0.9	0.9	* 5.7	0.9	9 *	* 4.2	0.9				
14.6 49.2 10.2 39.3 50.4 28.6 11.2 0.0 13.6 0.0 0.0 0.0 2.9 0.0 82.6 F	Max Green Setting (Gmax), s	* 13	71.6	8.2	* 37	48.4	* 36	* 9.2	36.0				
0.0 13.6 0.0 0.0 0.0 2.9 0.0 82.6 F	Max Q Clear Time (g_c+I1), s	14.6	49.2	10.2	39.3	50.4	28.6	11.2	26.8				
85	Green Ext Time (p_c), s	0.0	13.6	0.0	0.0	0.0	2.9	0.0	2.8				
82	Intersection Summary												
HCM 2010 LOS F	HCM 2010 Ctrl Delay			82.6									
Makan	HCM 2010 LOS			ш									
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HCM 2010 Signalized Intersection Summary 17: El Camino Real & Town Garden Rd.

Long-Term + Project (PAL1) PM 08/24/2017

HCM 2010 Signalized Intersection Summary 18: El Camino Real & Camino Vida Roble

Long-Term + Project (PAL1) PM 0824/2017

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	*-	F	2		F	444	*	r	444	*
Traffic Volume (veh/h)	190	30	140	320	20	190	8	1432	210	280	1812	09
Future Volume (veh/h)	190	30	140	320	20	190	80	1432	210	280	1812	09
Number	_	4	14	က	ω (18	വ	2	12	-	9	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	9	0.96	1.00	6	0.96	1.00	9	0.98	1.00		0.99
Parking Bus, Adj	00.1	00.1	00.1	00:1	00.1	00.1	00.1	00.1	00.1	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845	330	1845	1900	1845	1845	1845	1845	1845	1845
Adj No of Lanes	2 0	- C	<u> </u>	220	25 -	0 0	70 -	3 6	7	1 1	33	7 1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	c	3	co	3	3	3
Cap, veh/h	250	40	246	378	11	267	70	1188	362	428	2287	707
Arrive On Green	0.16	0.16	0.16	0.22	0.22	0.22	0.04	0.24	0.24	0.24	0.45	0.45
Sat Flow, veh/h	1527	241	1500	1757	329	1242	1757	5036	1535	1757	5036	1558
Grp Volume(v), veh/h	227	0	144	330	0	248	82	1476	216	289	1868	62
Grp Sat Flow(s),veh/h/ln	1768	0	1500	1757	0	1571	1757	1679	1535	1757	1679	1558
Q Serve(g_s), s	18.5	0.0	13.3	27.2	0.0	22.1	0.9	35.4	18.8	22.3	48.3	3.4
Cycle Q Clear(g_c), s	18.5	0.0	13.3	27.2	0.0	22.1	0.9	35.4	18.8	22.3	48.3	3.4
Prop In Lane	98.0		1.00	1.00		0.79	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	290	0	246	378	0	338	70	1188	362	428	2287	707
V/C Ratio(X)	0.78	0.00	0.59	0.87	0.00	0.73	1.17	1.24	09.0	89.0	0.82	60.0
Avail Cap(c_a), veh/h	448	0	380	468	0	419	70	1188	362	428	2287	707
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1:00	1:00	0.00	1.00	1.00	1:00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.1	0.0	28.0	26.9	0.0	54.8	72.0	57.3	50.9	51.4	35.5	23.3
Incr Delay (d2), s/veh	2.0	0.0	0.8	12.2	0.0	3.5	159.4	116.2	7.1	3.5	3.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.2	0.0	2.6	14.5	0.0	6.6	0.9	29.2	8.7	11.2	23.0	1.5
LnGrp Delay(d),s/veh	62.2	0.0	28.8	69.1	0.0	58.4	231.5	173.5	28.0	54.8	38.9	23.5
LnGrp LOS	ш		ш	ш		ш	띡	ш	ш			ပ
Approach Vol, veh/h		371			218			1774			2219	
Approach Delay, s/veh		6.09			64.5			162.1			40.6	
Approach LOS		ш			ш			ш			D	
Timer		2	3	4	2	9	7	00				
Assigned Phs	1	2		4	2	9		8				
Phs Duration (G+Y+Rc), s	42.9	41.8		28.8	10.2	74.5		36.5				
Change Period (Y+Rc), s	* 6.4	* 6.4		* 4.2	* 4.2	* 6.4		4.2				
Max Green Setting (Gmax), s	* 18	* 35		* 38	9 *	* 47		40.0				
Max Q Clear Time (g_c+I1), s	24.3	37.4		20.5	8.0	50.3		29.2				
Green Ext Time (p_c), s	0.0	0.0		6.0	0.0	0.0		1.3				
Intersection Summary												
HCM 2010 Ctrl Delay			88.5									
HCM 2010 LOS			ш.									
No.												

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10 Report	Page 30
Synchro	

Marco Configurations		1	†	<u> </u>	-	ļ	1	•	—	•	۶	→	*
10 10 10 10 10 10 10 10	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
310 20 515 20 20 195 1472 20 40 1902 310 20 515 20 20 20 195 1472 20 40 1902 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 1845 1845 1845 1900 1845 1900 1845 1845 1845 1845 220 0 622 21 21 21 21 21 21 1845 3 3 3 3 3 3 3 3 3	Lane Configurations	F	4	X _		4		1	₩	K _	je-	444	
310 20 515 20 20 195 1472 20 40 1902 100	Traffic Volume (veh/h)	310	20	515	20	20	20	195	1472	20	40	1902	110
7 4 14 3 8 18 5 2 12 12 1 6 100 0 0 0 0 0 0 0 0 0 0 1100 100 1100 1100 1100 1100 1100 1100 1100 1100 100	Future Volume (veh/h)	310	20	515	20	20	20	195	1472	20	40	1902	110
100	Number	7	4	14	3	∞	18	2	2	12	-	9	16
100	Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
100	Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.93	1.00		0.99	1.00		0.98
1845 1845 1845 1846 1845	Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10	Adj Sat Flow, veh/h/ln	1845	1845	1845	1900	1845	1900	1845	1845	1845	1845	1845	1900
1	Adj Flow Rate, veh/h	220	0	652	21	21	21	201	1518	21	41	1961	113
0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97	Adj No. of Lanes	-	0	2	0	-	0	2	2	-	-	3	0
3 3 3 3 3 3 3 3 3 3	Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
1757 0 719 50 50 118 1772 785 47 2421 1024 0.00 0.024 0.09 0.09 0.09 0.03 0.51 0.51 0.03 0.55	Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
1757 0 0 0 0 0 0 0 0 0	Cap, veh/h	417	0	719	20	20	20	118	1772	785	47	2421	139
1757 0 3031 557 557 3408 3505 1552 1757 4866 1220 0 662 63 0 0 201 1518 221 1751 1415 1757	Arrive On Green	0.24	0.00	0.24	0.09	0.09	0.09	0.03	0.51	0.51	0.03	0.50	0.50
1757 220	Sat Flow, veh/h	1757	0	3031	557	557	557	3408	3505	1552	1757	4866	279
1757 0 1515 1670 0 1704 1752 1552 1757 1679 1640 164 0.0 31.4 5.4 0.0 0.0 5.2 56.7 1.0 3.5 50.7 16.4 0.0 31.4 5.4 0.0 0.0 5.2 56.7 1.0 3.5 50.7 1.0 0.33 1.00 0.33 1.00 1	Grp Volume(v), veh/h	220	0	652	63	0	0	201	1518	21	41	1351	723
164 0.0 314 54 0.0 0.0 52 567 1.0 35 507 164 0.0 314 54 0.0 0.0 52 567 1.0 35 507 1.00 0.33 0.0 0.0 0.33 1.00 0.00 417 0 719 149 0 0 0 118 1772 785 47 1670 445 0.0 0.91 0.42 0.00 0.00 1.70 0.86 0.03 0.88 0.81 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 0.0 1.00 0.0 0.0 0.0 1.00 0.0 0.0 0.0 1.00 0.0 0.0 0.0 1.00 0.0 0.0 0.0 1.00 0.0 0.0 0.0 1.00 0.0 0.0 0.0 1.00 0.0 0.0 0.0 1.0	Grp Sat Flow(s),veh/h/ln	1757	0	1515	1670	0	0	1704	1752	1552	1757	1679	1788
164	Q Serve(g_s), s	16.4	0.0	31.4	5.4	0.0	0.0	5.2	29.7	1.0	3.5	20.7	51.2
100		16.4	0.0	31.4	5.4	0.0	0.0	5.2	29.7	1.0	3.5	50.7	51.2
17	Prop In Lane	1.00		1.00	0.33		0.33	1.00		1.00	1.00		0.16
0.653 0.00 0.91 0.42 0.00 0.00 1.70 0.86 0.03 0.88 0.81 445 0 768 445 0 0 118 1.72 785 785 47 1670 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	Lane Grp Cap(c), veh/h	417	0	719	149	0	0	118	1772	785	47	1670	889
445	V/C Ratio(X)	0.53	0.00	0.91	0.42	0.00	0.00	1.70	0.86	0.03	0.88	0.81	0.81
100 100 100 100 100 100 100 100 100 100	Avail Cap(c_a), veh/h	445	0	298	445	0	0	118	1772	785	47	1670	886
1.00 0.00 1.00 1.00 0.00 0.00 1.00 1.00	HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
10	Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
10 0.0 14.0 1.9 0.0 0.0 349.0 56 0.1 85.7 4.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Uniform Delay (d), s/veh	49.9	0.0	92.6	64.6	0.0	0.0	72.4	32.4	18.6	72.8	31.7	31.8
00 00 00 00 00 00 00 00 00 00 00 00 00	Incr Delay (d2), s/veh	1:0	0.0	14.0	1.9	0.0	0.0	349.0	2.6	0.1	85.7	4.3	0.8
1	Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
509 0.0 696 665 0.0 0.0 421.4 380 187 1885 36.0 D	%ile BackOfQ(50%),veh/ln	8.1	0.0	14.6	2.5	0.0	0.0	8.2	28.8	0.5	2.8	24.5	27.1
0 E E 63 F D B F F 64.9 66.5 84.9 66.5 E F F D B F F 64.9 66.5 82.0 E F F F D B F F F D B F F F D B F F F D B F F F D B F F F D B F F F D B F F F D B F F D B F D	LnGrp Delay(d),s/veh	50.9	0.0	9.69	999	0.0	0.0	421.4	38.0	18.7	158.5	36.0	39.8
1740 872 63 1740 64.9 66.5 82.0 64.9 66.5 82.0 65.5 82.0 65.5 82.0 65.5 65.	LnGrp LOS			ш	ᆈ			4		۵	-		۵
64.9 66.5 82.0 E	Approach Vol, veh/h		872			63			1740			2115	
1 2 3 4 5 6 7 8 1 1 1 2 3 4 5 6 7 8 1 1 1 2 3 4 5 6 7 8 1 8 1 1 1 1 2 1 3 4 5 6 7 8 1 8 1 1 1 1 2 1 3 4 5 6 7 8 1 8 1 1 1 1 2 1 3 4 5 6 7 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Approach Delay, sweh		64.9			66.5			82.0			39.7	
1 2 3 4 5 6 7 1 2 4 5 6 7 1 0 2 4 5 6 10.0 81.8 4.6 11.2 80.6 1.5 4.0 46.8 *38 5.2 45.6 1.5 5.5 58.7 33.4 7.2 53.2 1.6 0.0 0.0 1.6 0.0 1.7 60.0	Approach LOS		ш			ш			ш.			٥	
10 8 6 6 6 6 6 71.2 80.6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Timer	_	2	3	4	2	9	7	8				
10.0 81.8 40.6 11.2 80.6 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Assigned Phs	-	2		4	2	9		8				
5, s 6.0 6.0 5 6.0 6.0 5 6.0 6.0 5 6.0 6.0 5 6.0 6.0 5 6.0 6.0 5 6.0 6.0 5 6.0 6.0 6 6.0 6 6.0 6 6.0 6 6.0 6 6.0 6 6.0 E	Phs Duration (G+Y+Rc), s	10.0	81.8		40.6	11.2	90.6		17.6				
may,s 4.0 46.8 ° 38 5.2 45.6 c+11),s 5.5 58.7 33.4 7.2 53.2 7.5 0.0 0.0 1.6 0.0 0.0 60.0	Change Period (Y+Rc), s	0.9	0.9		. 2	0.9	0.9		4.2				
c+ll), s 5,5 98.7 33.4 7.2 53.2 , s 0.0 0.0 1.6 0.0 0.0 / 60.0 E	Max Green Setting (Gmax), s	4.0	46.8		* 38	5.2	45.6		40.0				
60.0 1.6 0.0 0.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	Max Q Clear Time (g_c+I1), s	2.5	28.7		33.4	7.2	53.2		7.4				
	Green Ext Time (p_c), s	0.0	0.0		1.6	0.0	0.0		0.3				
	Intersection Summary												
HCM 2010 LOS E	HCM 2010 Ctrl Delay			0.09									
Notice	HCM 2010 LOS			ш									
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HCM 2010 Signalized Intersection Summary Long-Term + Project (PAL1) PM 19: El Camino Real & Poinsettia Ln.

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Movement	EBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	₩₽		F	₩		K.	444	¥.	F	4413	1
Traffic Volume (veh/h)	30	30	30	320	20	141	20	1486	540	251	2186	20
Future Volume (veh/h)	30	30	30	320	70	141	20	1486	540	251	2186	20
Number	7	4	14	3	∞	18	2	2	12	-	9	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		96:0	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/In	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	32	32	32	344	75	152	24	1598	281	270	2351	54
Adj No. of Lanes	2	2	0	2	2	0	2	3	-	2	3	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	c	3	3	m	m	m	3	m	m	m	c	m
Cap, veh/h	19	205	171	388	375	323	584	2745	820	314	2298	53
Arrive On Green	0.02	0.12	0.12	0.11	0.21	0.21	0.17	0.55	0.55	0.09	0.45	0.45
Sat Flow, veh/h	3408	1768	1468	3408	1752	1512	3408	5036	1559	3408	5062	116
Grp Volume(v), veh/h	32	32	32	344	75	152	54	1598	581	270	1556	849
Grp Sat Flow(s),veh/h/ln	1704	1752	1484	1704	1752	1512	1704	1679	1559	1704	1679	1821
Q Serve(g_s), s	1.4	2.4	3.0	14.9	5.3	13.2	2.0	31.7	23.8	11.7	68.1	68.1
Cycle Q Clear(g_c), s	1.4	2.4	3.0	14.9	5.3	13.2	2.0	31.7	23.8	11.7	68.1	68.1
Prop In Lane	1.00		0.99	1.00		1.00	1.00		1.00	1.00		90.0
Lane Grp Cap(c), veh/h	19	204	172	388	375	323	584	2745	820	314	1524	827
V/C Ratio(X)	0.48	0.16	0.19	0.89	0.20	0.47	0.09	0.58	89.0	98.0	1.02	1.03
Avail Cap(c_a), veh/h	16	456	386	427	625	539	584	2745	820	357	1524	827
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1:00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	72.8	29.7	59.9	65.5	48.4	51.6	52.3	22.7	9.8	67.1	41.0	41.0
Incr Delay (d2), s/veh	2.0	0.1	0.2	17.4	0.1	0.4	0.1	0.9	4.4	15.5	28.5	38.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.2	1.2	8.0	5.6	2.6	1.0	14.9	11.2	6.2	37.6	43.0
LnGrp Delay(d),s/veh	74.7	29.8	60.1	82.9	48.5	51.9	52.5	23.6	13.0	82.6	69.5	79.2
LnGrp LOS	ш	ш	ш	니				٥	В	ᅵ	니	۲
Approach Vol, veh/h		%			571			2233			2675	
Approach Delay, s/veh		64.9			70.1			21.6			73.9	
Approach LOS		ш			ш			ပ			ш	
Timer	_	2	3	4	2	9	7	8				
Assigned Phs	_	2	3	4	2	9	7	8				
Phs Duration (G+Y+Rc), s	18.0	87.8	22.1	22.1	31.7	74.1	7.1	37.1				
Change Period (Y+Rc), s	* 4.2	0.9	* 5	* 4.7	0.9	9 *	* 4.2	* 5				
Max Green Setting (Gmax), s	* 16	57.4	* 19	* 39	2.0	89 *	* 4	* 54				
Max Q Clear Time (g_c+I1), s	13.7	33.7	16.9	2.0	4.0	70.1	3.4	15.2				
Green Ext Time (p_c), s	0.1	21.3	0.2	0.2	0.0	0.0	0.0	1.0				
Intersection Summary												
HCM 2010 Ctrl Delay			52.4									
HCM 2010 LOS			Ω									
Notes												

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	Appendix G
	MITIGATION MEASURE PHASING INFORMATION
	·
LINSCOTT, LAW & GREENSPAN, engineers	LLG Ref. 3-17-2772 McClellan-Palomar Airport Master Plan Update

Phasing / Impact Calculations

Total Project (PAL2) ADT = 4,206 Total Project (PAL2) Enplanements = 1575 enplanements

Impacted Intersection	Horizon with Pro	out	Horizon + Pro (PA)	oject	Delta	LOS D or 2.0 sec.	Allowable increase in delay before	Project ADT before	% of project that can be built before	# of daily enplanements
	Delay	LOS	Delay	LOS		threshold	impact	impact	impact occurs	before impact
11. Palomar Airport Road / Camino Vida Roble	92.9	F	95.4	F	2.5	94.9	2.0	3,365	80%	1,260
13. Palomar Airport Road / El Camino Real	126.2	F	130.9	F	4.7	128.2	2.0	1,790	43%	670

	APPENDIX H
	FAIR SHARE CALCULATIONS
SCOTT, LAW & GREENSPAN, engineers	LLG Ref. 3-17-2772

McClellan-Palomar Airport Master Plan FAIR SHARE CALCULATIONS August 2017

FAIR SHARE FORMULA:

<u>Project Traffic Volumes</u> Horizon Year Traffic Volumes – Existing Traffic Volumes

FAIR SHARE CALCULATIONS:

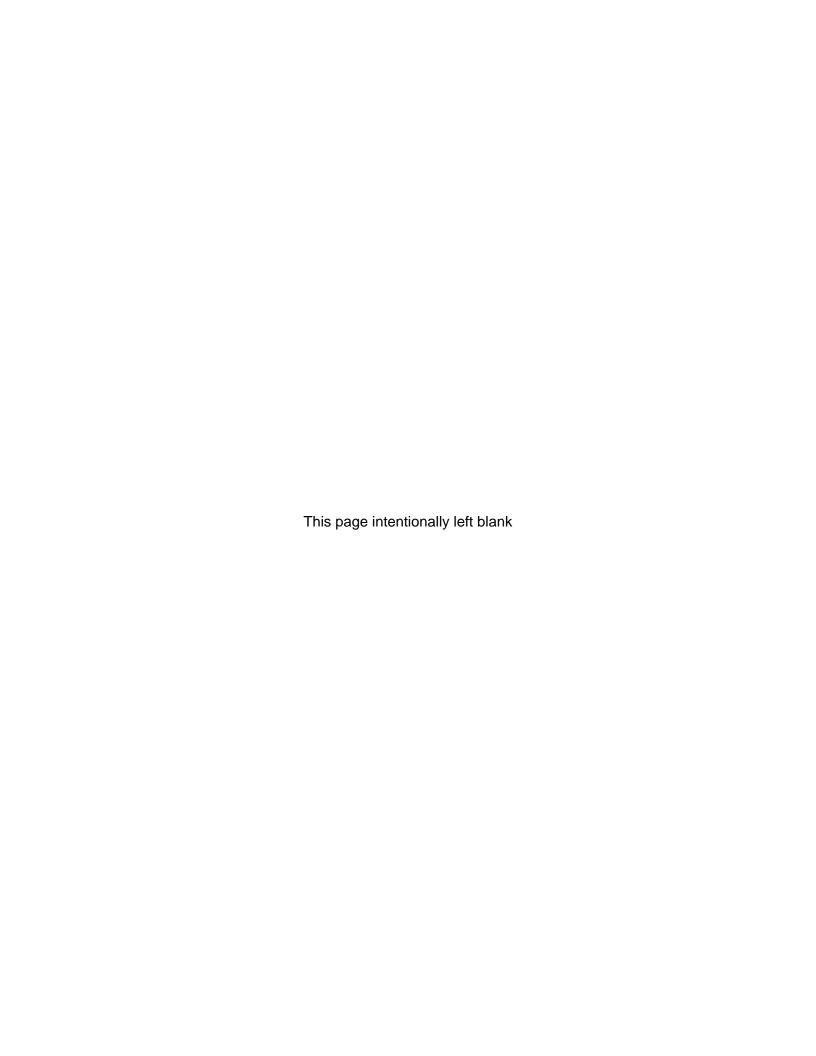
a) Palomar Airport Road / Camino Vida Roble

$$\frac{99 \text{ PM peak hour entering volume}}{5,429 - 4,507} = 10.7\%$$

b) Palomar Airport Road / El Camino Real

Supplement to PEIR Appendix E

Correspondence with Caltrans and County of San Diego



DEPARTMENT OF TRANSPORTATION

DISTRICT 11 4050 TAYLOR STREET, MS-240 SAN DIEGO, CA 92110 PHONE (619) 688-6960 FAX (619) 688-4299 TTY 711 www.dot.ca.gov

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MAY 2 2 2018

County of San Diego ENVIRONMENTAL SERVICES

May 16, 2018

11-SD-5 PM R47.03

McClellan-Palomar Airport Master Plan Update DEIR SCH#2016021105

Ms. Cynthia Curtis County of San Diego, Department of Public works 5510 Overland Avenue, Suite 410 San Diego, CA 92123

Dear Ms. Cynthia Curtis:

Thank you for the letter dated May 1, 2018 following the meetings between Caltrans and the County of San Diego on April 16th and April 19th, 2018 regarding the McClellan-Palomar Airport Master Plan Update.

Based on the information provided in the letter, the previous comments from Caltrans are no longer applicable and we concur with the traffic analysis. We have no futher comments.

If you have any questions, please contact Kimberly Dodson, of the Caltrans Development Review Branch, at (619) 688-2510 or by e-mail sent to Kimberly.dodson@dot.ca.gov.

Sincerely,

JACOB ARMS RONG, Branch Chief

Local Development and Intergovernmental Review Branch



RICHARD E. CROMPTON

DEPARTMENT OF PUBLIC WORKS
COUNTY AIRPORTS

1960 JOE CROSSON DRIVE, EL CAJON, CA 92020
(619) 956-4800 FAX: (619) 956-4801
Web Site: www.sdcountyairports.com

May 1, 2018

Mr. Jacob Armstrong, Branch Chief CALTRANS 4050 Taylor Street San Diego, CA 92110

MCCLELLAN-PALOMAR AIRPORT MASTER PLAN TRAFFIC STUDY

Dear Mr. Armstrong:

Thank you for having your staff meet with the County of San Diego Department of Public Works (County) team on April 16th and 19, 2018 regarding Caltrans' comment letter dated March 15, 2018 submitted during the CEQA public review period for the McClellan-Palomar Airport Master Plan Draft Program EIR Traffic Study dated December 7, 2017. The two items raised in the Caltrans letter discussed with your staff were: 1) peak hour methodology for the traffic counts at the Palomar Airport Road/I-5 northbound ramps intersection; and 2) intersection Synchro analysis at this location.

Peak Hour Methodology

Caltrans commented that the peak hour traffic volumes analyzed in the traffic study varied from the Caltrans published volumes. Selection of the peak hour in the analysis was consistent with City of Carlsbad & San Diego Traffic Engineers' Council (SANTEC) methodology, and with the "common rules" as set forth in Attachment A, Caltrans' December 2002 published guidance: Caltrans Guide for the Preparation of Traffic Impact Studies. The traffic study methodology follows the Caltrans guidelines. Traffic counts were conducted and collected on the City of Carlsbad's transportation network as part of the City's annual Traffic Monitoring Program (TMP), which provided 2016 traffic data. In discussions with the City of Carlsbad regarding this project's traffic study methodology, County staff confirmed that existing weekday AM and PM peak hour (7:00-9:00 AM and 4:00-6:00PM) traffic volumes should be used from the TMP, and are most relevant to the project impact area. The City of Carlsbad uses SANTEC criteria for peak hour analysis. In accordance with this regional approach to peak hour analysis, this approach yields the most useful information for how traffic performs across jurisdictions. In the airport master plan project's traffic study, use of SANTEC guidance provides consistency in analyzing the traffic flow from the I-5 interchange onto Carlsbad's segments and intersections. Consistency of peak hour timeframes is important to identify where delays occur regardless of roadway ownership.

Mr. Armstrong May 1, 2018 Page 2

Caltrans' published traffic counts demonstrate peak hour times of 11:00AM - 12:00PM and 1:00PM - 2:00PM for the I-5 mainline and northbound off ramp; whereas the airport master plan traffic study used the City's peak hours on Palomar Airport Road, which is within the City's jurisdiction. As clarified at the April 16 and 19 meetings, the reason the counts were different is the peak hours were different. Specifically, the traffic study counts represented the highest hours between 7-9 AM (AM peak hour) and 4-6 PM (PM peak hour) while the Caltrans peak hour volumes occur between 11AM-12 PM and 1-2 PM. It therefore it is reasonable that the counts would not be consistent with each other. According to the City's TMP data (Final Report 2016; Appendix A- Mid-block Roadway Segment Summary) Palomar Airport Road, which directly receives the northbound I-5 off ramp traffic, lists 5-6PM as the highest traffic counts during the day. Comparison of Caltrans peak hour to the project's peak hour analysis are not equivalent since each agency applied different peak hour timeframes based on the roadways within their jurisdiction. The City's peak hour analysis, particularly in the 5-6PM timeframe, is most relevant to this project, as it demonstrates the movement of traffic from all directions from the I-5 facility onto the City's roadways and towards the airport. As stated in the airport master plan project's study and on PEIR Table 2.5-3 Existing + Project Street Segment Operations, during peak hours all street segments and intersections are calculated to operate at acceptable LOS at locations adjacent to the I-5/Palomar Airport Road interchange.

In consideration of Caltrans' comment regarding the airport master plan project's traffic impact at these alternate peak hour timeframes, County staff agreed at the April 19 meeting to augment our CEQA analysis by also looking at the same traffic volumes in the 11AM-12PM and 1-2PM time frames. County staff asked our traffic consultant, LLG Engineers, to study the Caltrans ramp data and City of Carlsbad 24-hour data on Palomar Airport Road to calculate existing turn volumes for the 11AM-12PM and 1-2 PM time frames. These existing volumes were then extrapolated (using the same methodology as the airport master plan project's traffic study) to estimate long term and project-related traffic volumes for these times frames. A Synchro analysis was performed for these scenarios and the results are shown attached to this letter (Table 1, Attachment A). At the Caltrans-designated peak hours (11AM-12PM and 1-2PM), the levels of service would not cause a significant impact to traffic at the Caltrans facility.

Intersection Synchro Analysis

The Caltrans public review comment letter also discusses the airport master plan project study's approach to analyzing the function of the Palomar Airport Road / I-5 northbound ramps intersection. As discussed at the April 16 and 19 meetings, the airport master plan traffic study's intersection analysis methodology is consistent with the common rules as set forth in the currently utilized Caltrans January 2001 published guidance: Caltrans Guide for the Preparation of Traffic Impact Studies, which does not require a "per leg" analysis. Similarly, SANTEC guidance, City of Carlsbad standards, and other major public and private traffic impact studies in the region are not conducted with a "per leg" analysis. Both Caltrans and County staff concurred at the April 16 and 19 meetings that the County's approach to the analysis of the intersection was valid and consistent with regional standards which require that significance is determined by assessing the function of the entire intersection and not based on the level of service for the individual legs ("per leg") of an intersection.

In consideration of Caltrans' comment, County staff agreed at the meeting to augment our CEQA analysis by also looking at the airport master plan project impacts on a per-leg basis incorporating optimized traffic signal phasing incorporating optimized traffic signal phasing in a manner consistent with how Caltrans times signals. County staff asked our traffic

Mr. Armstrong May 1, 2018 Page 3

consultant, LLG Engineers, to re-run the intersection's Synchro analysis with this approach. As an attachment to this letter, Table 2 shows the reanalysis results of the Palomar Airport Road/I-5 northbound ramps intersection during the AM and PM commuter peak hours on a per-leg basis and shows no significant impact would occur. The Synchro data sheets in Attachment B show LOS D or better operations at the off-ramp leg of the intersection. It was further discussed that Caltrans controls the signal timing and can adjust the timing to minimize backups onto I-5.

Thank you again for meeting with us to discuss and resolve the Caltrans public review comments. County staff implemented the recommendations from our April 16 and 19 meetings and conducted the additional analysis as discussed above. The data reconfirms that the project would not create a significant impact to Caltrans' facility. We would appreciate your review and concurrence of the information in this letter, and if you concur, then it would be extremely helpful to our airport master plan efforts if you would indicate your concurrence with your signature in the space below and by returning the signed letter to me or by providing a separate concurrence letter to my attention. Providing your concurrence within two weeks of this memo by May 15, 2018, will allow us to continue with our project schedule. Conversely, if you have any questions, please do not hesitate to contact me immediately to discuss.

The McClellan-Palomar Airport Master Plan proposes safety and efficiency improvements to the airport as a key component of the regional aviation transportation network, and we appreciate Caltrans' support of the project. Please feel free to call me with any questions at (858) 694-3906.

Sincerely,

CYNTHIA CURTIS, Environmental Planning Manager Department of Public Works

Attachment: McClellan-Palomar Airport Master Plan—Response to Caltrans Request For Additional Technical Traffic Analysis: Tables 1 & 2, and associated Synchro data tables

Date

cc: Kimberly Dodson, Caltrans Associate Transportation Planner Tan Doan, Caltrans Traffic Operations Engineer



McClellan-Palomar Airport Master Plan: Response to Caltrans Request For Additional Technical Traffic Analysis

April 30, 2018

LLG Ref. 3-17-2772

Table 1
Long-Term Intersection Operations

Intersection	Peak Hour	Project – TIA	erm w/o (PAL2) A Peak Our	0	Term + 1 2) – TIA 1		•	Peak Hour	Long-Te Project (l Caltran Ho	PAL2) – s Peak	_	-Term + 1 – Caltrar		•
		Delaya	LOSb	Delay ^a	LOSb	Δ	Sig?c		Delay ^a	LOSb	Delay ^a	LOSb	Δ	Sig?c
6. Palomar Airport Road / I-5 NB Ramps	7-9AM 4-6 PM	43.4 29.5	D C	46.2 32.0	D C	2.8 2.5	No No	11AM – 12 PM 1-2PM	41.8 44.0	D D	45.1 45.7	D D	3.3 1.7	No No

Footnotes:

a. Average delay expressed in seconds per vehicle. Attachment A contains the Caltrans peak hour Synchro worksheets.

b. Level of Service

c. Δ denotes an increase in delay due to Project.

SIGNALIZED

DELAY/LOS THR	ESHOLDS
Delay	LOS
0.0 - 10.0	

> LINSCOTT LAW & GREENSPAN

Table 2
Palomar Airport Road / I-5 NB Ramps Intersection Operations (Revised Signal Timing)

Scenario	Control	Peak	Base	eline	Baselin	e + (Project) PAL1	Baselin	e + Project	(PAL2)
Scenario	Type	Hour	Delay ^a	LOSb	Delay	LOS	Δ^{c}	Delay	LOS	Δ
Existing + Cumulative (TIA)	Signal	AM PM	44.4 39.0	D D	44.5 39.2	D D	0.1 0.2	44.6 39.4	D D	0.2 0.4
Existing + Cumulative (Revised)	Signal	AM PM	22.8 20.0	C B	22.9 20.1	C C	0.1 0.1	23.0 20.2	C C	0.2 0.2
Long-Term (TIA)	Signal	AM PM	50.4 46.0	D D	51.1 47.0	D D	0.7 1.0	51.8 48.0	D D	1.4 2.0
Long-Term (Revised)	Signal	AM PM	43.4 29.5	D C	45.3 30.8	D C	1.9 1.3	46.2 32.0	D C	2.8 2.5

Footnotes:			

a. Average delay expressed in seconds per vehicle. *Attachment B* contains the Synchro worksheets for the revised scenarios.
 b. Level of Service

c. Δ denotes an increase in delay due to Project.

SIGNALIZ	ED	UNSIGNAL	IZED
DELAY/LOS THR	ESHOLDS	DELAY/LOS THR	ESHOLDS
Delay	LOS	Delay	LOS
$0.0 \le 10.0$	A	$0.0 \le 10.0$	A
10.1 to 20.0	В	10.1 to 15.0	В
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

LINSCOTT LAW & GREENSPAN

ATTACHMENT A

	۶	→	•	•	←	•	•	†	<i>></i>	\		✓
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	ተተተ			ተተተ	77		र्स	77			
Traffic Volume (veh/h)	140	2010	0	0	1070	770	80	0	1180	0	0	0
Future Volume (veh/h)	140	2010	0	0	1070	770	80	0	1180	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	144	2072	0	0	1103	794	82	0	1216			
Adj No. of Lanes	1	3	0	0	3	2	0	1	2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	151	2267	0	0	1637	856	812	0	1247			
Arrive On Green	0.09	0.45	0.00	0.00	0.33	0.33	0.46	0.00	0.46			
Sat Flow, veh/h	1757	5202	0	0	5202	2632	1757	0	2696			
Grp Volume(v), veh/h	144	2072	0	0	1103	794	82	0	1216			
Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1316	1757	0	1348			
Q Serve(g_s), s	9.8	46.1	0.0	0.0	22.7	35.0	3.2	0.0	53.0			
Cycle Q Clear(g_c), s	9.8	46.1	0.0	0.0	22.7	35.0	3.2	0.0	53.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	151	2267	0	0	1637	856	812	0	1247			
V/C Ratio(X)	0.96	0.91	0.00	0.00	0.67	0.93	0.10	0.00	0.98			
Avail Cap(c_a), veh/h	151	2837	0	0	2207	1154	906	0	1391			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	54.6	30.8	0.0	0.0	35.0	39.1	18.2	0.0	31.6			
Incr Delay (d2), s/veh	59.2	3.9	0.0	0.0	0.2	9.0	0.0	0.0	17.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	7.2	22.1	0.0	0.0	10.5	13.8	1.5	0.0	22.6			
LnGrp Delay(d),s/veh	113.8	34.7	0.0	0.0	35.2	48.2	18.2	0.0	48.8			
LnGrp LOS	F	С			D	D	В	1000	D			
Approach Vol, veh/h		2216			1897			1298				
Approach Delay, s/veh		39.8			40.6			46.9				
Approach LOS		D			D			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		59.4			15.0	44.4		60.6				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		67.6			* 10	52.6		61.9				
Max Q Clear Time (g_c+I1), s		48.1			11.8	37.0		55.0				
Green Ext Time (p_c), s		4.3			0.0	2.0		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			41.8									
HCM 2010 LOS			D									
Notes												

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	ተተተ			^	77		र्स	77			
Traffic Volume (veh/h)	210	1200	0	0	1690	890	170	0	1020	0	0	0
Future Volume (veh/h)	210	1200	0	0	1690	890	170	0	1020	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	214	1224	0	0	1724	908	173	0	1041			
Adj No. of Lanes	1	3	0	0	3	2	0	1	2			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	188	2600	0	0	1871	981	702	0	1075			
Arrive On Green	0.11	0.52	0.00	0.00	0.37	0.37	0.40	0.00	0.40			
Sat Flow, veh/h	1757	5202	0	0	5202	2641	1757	0	2691			
Grp Volume(v), veh/h	214	1224	0	0	1724	908	173	0	1041			
Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1320	1757	0	1346			
Q Serve(g_s), s	13.3	19.3	0.0	0.0	40.7	41.0	8.2	0.0	47.1			
Cycle Q Clear(g_c), s	13.3	19.3	0.0	0.0	40.7	41.0	8.2	0.0	47.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	188	2600	0	0	1871	981	702	0	1075			
V/C Ratio(X)	1.14	0.47	0.00	0.00	0.92	0.93	0.25	0.00	0.97			
Avail Cap(c_a), veh/h	188	2939	0	0	2211	1159	945	0	1447			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	55.5	19.2	0.0	0.0	37.4	37.4	24.9	0.0	36.6			
Incr Delay (d2), s/veh	108.1	0.0	0.0	0.0	5.8	10.4	0.1	0.0	13.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	12.1	9.0	0.0	0.0	19.8	16.3	4.0	0.0	19.4			
LnGrp Delay(d),s/veh	163.6	19.3	0.0	0.0	43.1	47.9	25.0	0.0	49.6			
LnGrp LOS	F	В			D	D	С		D			
Approach Vol, veh/h		1438			2632			1214				
Approach Delay, s/veh		40.8			44.8			46.1				
Approach LOS		D			D			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		69.6			18.0	51.6		54.8				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		72.6			* 13	54.6		66.9				
Max Q Clear Time (g_c+l1), s		21.3			15.3	43.0		49.1				
Green Ext Time (p_c), s		2.2			0.0	3.3		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			44.0									
HCM 2010 LOS			D									
Notes												

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	. ነ	^ ^			ተተተ	77		4	77			
Traffic Volume (veh/h)	140	2031	0	0	1084	783	80	0	1199	0	0	0
Future Volume (veh/h)	140	2031	0	0	1084	783	80	0	1199	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	144	2094	0	0	1118	807	82	0	1236			
Adj No. of Lanes	1	3	0	0	3	2	0	1	2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	144	2256	0	0	1655	865	823	0	1264			
Arrive On Green	0.08	0.45	0.00	0.00	0.33	0.33	0.47	0.00	0.47			
Sat Flow, veh/h	1757	5202	0	0	5202	2633	1757	0	2696			
Grp Volume(v), veh/h	144	2094	0	0	1118	807	82	0	1236			
Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1316	1757	0	1348			
Q Serve(g_s), s	10.3	49.4	0.0	0.0	24.1	37.3	3.3	0.0	56.6			
Cycle Q Clear(g_c), s	10.3	49.4	0.0	0.0	24.1	37.3	3.3	0.0	56.6			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	144	2256	0	0	1655	865	823	0	1264			
V/C Ratio(X)	1.00	0.93	0.00	0.00	0.68	0.93	0.10	0.00	0.98			
Avail Cap(c_a), veh/h	144	2706	0	0	2105	1101	864	0	1326			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	57.8	32.8	0.0	0.0	36.4	40.9	18.6	0.0	32.8			
Incr Delay (d2), s/veh	75.4	5.2	0.0	0.0	0.3	10.8	0.0	0.0	19.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.0	24.0	0.0	0.0	11.2	14.9	1.6 18.7	0.0	24.3			
LnGrp Delay(d),s/veh	133.2 F	38.0	0.0	0.0	36.8	51.7	18.7 B	0.0	51.8 D			
LnGrp LOS	Г	D			100F	D	D	1210	U			
Approach Vol, veh/h		2238			1925			1318				
Approach LOS		44.2 D			43.0			49.7				
Approach LOS		D			D			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		61.8			15.0	46.8		64.1				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		67.6			* 10	52.6		61.9				
Max Q Clear Time (g_c+I1), s		51.4			12.3	39.3		58.6				
Green Ext Time (p_c), s		4.2			0.0	2.0		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			45.1									
HCM 2010 LOS			D									
Notes												

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	- ሻ	^ ^			ተተተ	77		4	77			
Traffic Volume (veh/h)	210	1091	0	0	1521	909	170	0	1039	0	0	0
Future Volume (veh/h)	210	1091	0	0	1521	909	170	0	1039	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	214	1113	0	0	1552	928	173	0	1060			
Adj No. of Lanes	1	3	0	0	3	2	0	1	2			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	180	2585	0	0	1886	989	713	0	1092			
Arrive On Green	0.10	0.51	0.00	0.00	0.37	0.37	0.41	0.00	0.41			
Sat Flow, veh/h	1757	5202	0	0	5202	2641	1757	0	2692			
Grp Volume(v), veh/h	214	1113	0	0	1552	928	173	0	1060			
Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1321	1757	0	1346			
Q Serve(g_s), s	13.3	17.9	0.0	0.0	36.1	43.9	8.4	0.0	50.1			
Cycle Q Clear(g_c), s	13.3	17.9	0.0	0.0	36.1	43.9	8.4	0.0	50.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	180	2585	0	0	1886	989	713	0	1092			
V/C Ratio(X)	1.19	0.43	0.00	0.00	0.82	0.94	0.24	0.00	0.97			
Avail Cap(c_a), veh/h	180	2819	0	0	2120	1112	906	0	1389			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	58.2	19.7	0.0	0.0	36.7	39.1	25.4	0.0	37.8			
Incr Delay (d2), s/veh	126.6	0.0	0.0	0.0	2.2	13.1	0.1	0.0	14.6			
Initial Q Delay(d3),s/veh %ile BackOfQ(50%),veh/ln	0.0 12.7	0.0 8.3	0.0	0.0	0.0 17.1	0.0 17.8	0.0 4.1	0.0	0.0			
. ,			0.0	0.0		52.2			20.8			
LnGrp Delay(d),s/veh	184.8 F	19.8 B	0.0	0.0	38.9		25.5 C	0.0	52.4 D			
LnGrp LOS	Г				D 2400	D	C	1000	U			
Approach Vol, veh/h		1327			2480			1233				
Approach LOS		46.4 D			43.8			48.6				
Approach LOS		D			D			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		72.0			18.0	54.0		57.7				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		72.6			* 13	54.6		66.9				
Max Q Clear Time (g_c+I1), s		19.9			15.3	45.9		52.1				
Green Ext Time (p_c), s		1.9			0.0	2.6		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			45.7									
HCM 2010 LOS			D									
Notes												

ATTACHMENT B

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	ተተተ			ተተተ	77		सी	77			
Traffic Volume (veh/h)	80	1630	0	0	860	450	70	0	1200	0	0	0
Future Volume (veh/h)	80	1630	0	0	860	450	70	0	1200	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	82	1680	0	0	887	464	72	0	1237			
Adj No. of Lanes	1	3	0	0	3	2	0	1	2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	105	1919	0	0	1299	674	838	0	1287			
Arrive On Green	0.06	0.38	0.00	0.00	0.26	0.26	0.48	0.00	0.48			
Sat Flow, veh/h	1757	5202	0	0	5202	2613	1757	0	2697			
Grp Volume(v), veh/h	82	1680	0	0	887	464	72	0	1237			
Grp Sat Flow(s), veh/h/ln	1757	1679	0	0	1679	1307	1757	0	1348			
Q Serve(g_s), s	3.4	23.0	0.0	0.0	11.8	11.9	1.7	0.0	32.8			
Cycle Q Clear(g_c), s	3.4	23.0	0.0	0.0	11.8	11.9	1.7	0.0	32.8			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	105	1919	0	0	1299	674	838	0	1287			
V/C Ratio(X)	0.78	0.88	0.00	0.00	0.68	0.69	0.09	0.00	0.96			
Avail Cap(c_a), veh/h	304	3786	0	0	2597	1347	1750	0	2686			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	34.4	21.3	0.0	0.0	24.8	24.8	10.6	0.0	18.7			
Incr Delay (d2), s/veh	4.7	0.5	0.0	0.0	0.2	0.5	0.0	0.0	2.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.8	10.7	0.0	0.0	5.4	4.3	0.8	0.0	12.5			
LnGrp Delay(d),s/veh	39.1	21.8	0.0	0.0	25.0	25.3	10.6	0.0	21.1			
LnGrp LOS	D	C			C	С	В	4000	С			
Approach Vol, veh/h		1762			1351			1309				
Approach Delay, s/veh		22.6			25.1			20.6				
Approach LOS		С			С			С				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		33.6			9.1	24.5		40.4				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		55.7			* 13	38.2		73.8				
Max Q Clear Time (g_c+I1), s		25.0			5.4	13.9		34.8				
Green Ext Time (p_c), s		3.3			0.0	1.5		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			22.8									-
HCM 2010 LOS			С									
Notes												

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	ተተተ			ተተተ	77		र्स	77			
Traffic Volume (veh/h)	220	1250	0	0	1770	1000	90	0	540	0	0	0
Future Volume (veh/h)	220	1250	0	0	1770	1000	90	0	540	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		0.97			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	224	1276	0	0	1806	1020	92	0	551			
Adj No. of Lanes	1	3	0	0	3	2	0	1	2			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	262	3216	0	0	2169	1141	403	0	611			
Arrive On Green	0.15	0.64	0.00	0.00	0.43	0.43	0.23	0.00	0.23			
Sat Flow, veh/h	1757	5202	0	0	5202	2650	1757	0	2665			
Grp Volume(v), veh/h	224	1276	0	0	1806	1020	92	0	551			
Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1325	1757	0	1332			
Q Serve(g_s), s	9.9	9.8	0.0	0.0	25.4	28.4	3.4	0.0	16.0			
Cycle Q Clear(g_c), s	9.9	9.8	0.0	0.0	25.4	28.4	3.4	0.0	16.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	262	3216	0	0	2169	1141	403	0	611			
V/C Ratio(X)	0.86	0.40	0.00	0.00	0.83	0.89	0.23	0.00	0.90			
Avail Cap(c_a), veh/h	757	5729	0	0	3263	1717	1079	0	1636			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	33.0	7.0	0.0	0.0	20.1	21.0	25.0	0.0	29.8			
Incr Delay (d2), s/veh	3.1	0.0	0.0	0.0	0.7	3.2	0.1	0.0	2.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	5.0	4.5	0.0	0.0	11.9	10.8	1.6	0.0	6.1			
LnGrp Delay(d),s/veh	36.2	7.0	0.0	0.0	20.9	24.1	25.1	0.0	31.9			
LnGrp LOS	D	A			С	С	С		С			
Approach Vol, veh/h		1500			2826			643				
Approach Delay, s/veh		11.3			22.0			30.9				
Approach LOS		В			С			С				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		56.3			16.6	39.7		23.4				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		90.6			* 34	51.6		48.9				
Max Q Clear Time (g_c+l1), s		11.8			11.9	30.4		18.0				
Green Ext Time (p_c), s		2.3			0.0	3.9		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			20.0									
HCM 2010 LOS			В									
Notes												

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ň	ተተተ			ተተተ	77		4	77			
Traffic Volume (veh/h)	80	1633	0	0	862	452	70	0	1202	0	0	0
Future Volume (veh/h)	80	1633	0	0	862	452	70	0	1202	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	82	1684	0	0	889	466	72	0	1239			
Adj No. of Lanes	1	3	0	0	3	2	0	1	2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	105	1921	0	0	1304	677	839	0	1289			
Arrive On Green	0.06	0.38	0.00	0.00	0.26	0.26	0.48	0.00	0.48			
Sat Flow, veh/h	1757	5202	0	0	5202	2613	1757	0	2697			
Grp Volume(v), veh/h	82	1684	0	0	889	466	72	0	1239			
Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1307	1757	0	1348			
Q Serve(g_s), s	3.4	23.2	0.0	0.0	11.9	12.0	1.7	0.0	33.1			
Cycle Q Clear(g_c), s	3.4	23.2	0.0	0.0	11.9	12.0	1.7	0.0	33.1			
Prop In Lane	1.00	1001	0.00	0.00	1001	1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	105	1921	0	0	1304	677	839	0	1289			
V/C Ratio(X)	0.78	0.88	0.00	0.00	0.68	0.69	0.09	0.00	0.96			
Avail Cap(c_a), veh/h	301	3758	0	0	2577	1338	1737	0	2666			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	34.6	21.4	0.0	0.0	24.9	24.9	10.6	0.0	18.8			
Incr Delay (d2), s/veh	4.7	0.5	0.0	0.0	0.2	0.5	0.0	0.0	2.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0 5.5	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.8	10.7	0.0	0.0		4.4	0.8	0.0	12.7			
LnGrp Delay(d),s/veh	39.3 D	22.0 C	0.0	0.0	25.1 C	25.4 C	10.6 B	0.0	21.3 C			
LnGrp LOS	D					C	D	1011	U			
Approach Vol, veh/h		1766			1355 25.2			1311				
Approach LOS		22.8 C			25.2 C			20.7 C				
Approach LOS		C			C			C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		33.9			9.2	24.7		40.8				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		55.7			* 13	38.2		73.8				
Max Q Clear Time (g_c+l1), s		25.2			5.4	14.0		35.1				
Green Ext Time (p_c), s		3.3			0.0	1.5		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			22.9									
HCM 2010 LOS			С									
Notes												

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	¥	ተተተ			ተተተ	77		ર્ન	77			
Traffic Volume (veh/h)	220	1253	0	0	1772	1003	90	0	542	0	0	0
Future Volume (veh/h)	220	1253	0	0	1772	1003	90	0	542	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		0.97			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	224	1279	0	0	1808	1023	92	0	553			
Adj No. of Lanes	1	3	0	0	3	2	0	1	2			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	262	3218	0	0	2172	1143	404	0	613			
Arrive On Green	0.15	0.64	0.00	0.00	0.43	0.43	0.23	0.00	0.23			
Sat Flow, veh/h	1757	5202	0	0	5202	2650	1757	0	2665			
Grp Volume(v), veh/h	224	1279	0	0	1808	1023	92	0	553			
Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1325	1757	0	1333			
Q Serve(g_s), s	10.0	9.9	0.0	0.0	25.5	28.7	3.4	0.0	16.2			
Cycle Q Clear(g_c), s	10.0	9.9	0.0	0.0	25.5	28.7	3.4	0.0	16.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	262	3218	0	0	2172	1143	404	0	613			
V/C Ratio(X)	0.86	0.40	0.00	0.00	0.83	0.89	0.23	0.00	0.90			
Avail Cap(c_a), veh/h	752	5692	0	0	3242	1706	1072	0	1626			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	33.3	7.0	0.0	0.0	20.2	21.1	25.1	0.0	30.0			
Incr Delay (d2), s/veh	3.1	0.0	0.0	0.0	0.8	3.3	0.1	0.0	2.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	11.9	0.0 10.9	0.0 1.7	0.0	0.0 6.1			
%ile BackOfQ(50%),veh/ln	5.1 36.4	4.5 7.0	0.0	0.0	21.0	24.4	25.2	0.0	32.0			
LnGrp Delay(d),s/veh LnGrp LOS	30.4 D	7.0 A	0.0	0.0	21.0 C	24.4 C	25.2 C	0.0	32.0 C			
	D	1503						4 A E				
Approach Vol, veh/h Approach Delay, s/veh		11.4			2831 22.2			645 31.1				
		11.4 B			22.2 C			31.1 C				
Approach LOS		D			C			C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		56.6			16.6	40.0		23.5				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		90.6			* 34	51.6		48.9				
Max Q Clear Time (g_c+l1), s		11.9			12.0	30.7		18.2				
Green Ext Time (p_c), s		2.3			0.0	3.9		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			20.1									
HCM 2010 LOS			С									
Notes												

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	J.	ተተተ			ተተተ	77		ર્ન	77			
Traffic Volume (veh/h)	80	1634	0	0	863	453	70	0	1204	0	0	0
Future Volume (veh/h)	80	1634	0	0	863	453	70	0	1204	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	82	1685	0	0	890	467	72	0	1241			
Adj No. of Lanes	1	3	0	0	3	2	0	1	2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	105	1921	0	0	1305	677	841	0	1290			
Arrive On Green	0.06	0.38	0.00	0.00	0.26	0.26	0.48	0.00	0.48			
Sat Flow, veh/h	1757	5202	0	0	5202	2614	1757	0	2697			
Grp Volume(v), veh/h	82	1685	0	0	890	467	72	0	1241			
Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1307	1757	0	1348			
Q Serve(g_s), s	3.5	23.3	0.0	0.0	11.9	12.1	1.7	0.0	33.3			
Cycle Q Clear(g_c), s	3.5	23.3	0.0	0.0	11.9	12.1	1.7	0.0	33.3			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	105	1921	0	0	1305	677	841	0	1290			
V/C Ratio(X)	0.78	0.88	0.00	0.00	0.68	0.69	0.09	0.00	0.96			
Avail Cap(c_a), veh/h	300	3741	0	0	2566	1332	1729	0	2654			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	34.8	21.6	0.0	0.0	25.0	25.1	10.6	0.0	18.9			
Incr Delay (d2), s/veh	4.7	0.5	0.0	0.0	0.2	0.5	0.0	0.0	2.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	1.8	10.9	0.0	0.0	5.5	4.4	8.0	0.0	12.7			
LnGrp Delay(d),s/veh	39.5	22.1	0.0	0.0	25.2	25.5	10.6	0.0	21.3			
LnGrp LOS	D	С			С	С	В		С			
Approach Vol, veh/h		1767			1357			1313				
Approach Delay, s/veh		22.9			25.3			20.8				
Approach LOS		С			С			С				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		34.0			9.2	24.8		41.0				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		55.7			* 13	38.2		73.8				
Max Q Clear Time (g_c+l1), s		25.3			5.5	14.1		35.3				
Green Ext Time (p_c), s		3.3			0.0	1.5		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			23.0									
HCM 2010 LOS			C									
Notes												
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	ተተተ			ተተተ	77		4	77			
Traffic Volume (veh/h)	220	1254	0	0	1774	1004	90	0	544	0	0	0
Future Volume (veh/h)	220	1254	0	0	1774	1004	90	0	544	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		0.97			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	224	1280	0	0	1810	1024	92	0	555			
Adj No. of Lanes	1	3	0	0	3	2	0	1	2			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	262	3217	0	0	2173	1144	405	0	615			
Arrive On Green	0.15	0.64	0.00	0.00	0.43	0.43	0.23	0.00	0.23			
Sat Flow, veh/h	1757	5202	0	0	5202	2650	1757	0	2665			
Grp Volume(v), veh/h	224	1280	0	0	1810	1024	92	0	555			
Grp Sat Flow(s), veh/h/ln	1757	1679	0	0	1679	1325	1757	0	1333			
Q Serve(g_s), s	10.0	9.9	0.0	0.0	25.7	28.8	3.4	0.0	16.3			
Cycle Q Clear(g_c), s	10.0	9.9	0.0	0.0	25.7	28.8	3.4	0.0	16.3			
Prop In Lane	1.00	2017	0.00	0.00	0170	1.00	1.00	0	1.00			
Lane Grp Cap(c), veh/h	262	3217	0	0	2173	1144	405	0	615			
V/C Ratio(X)	0.86	0.40	0.00	0.00	0.83	0.90	0.23	0.00	0.90			
Avail Cap(c_a), veh/h	749	5669	1.00	1.00	3229	1699	1067	1.00	1619			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	33.4	7.0	0.0	0.0	20.3	21.2	25.1	0.0	30.1 2.1			
Incr Delay (d2), s/veh		0.0	0.0	0.0	0.0	3.4 0.0	0.1	0.0	0.0			
Initial Q Delay(d3),s/veh %ile BackOfQ(50%),veh/ln	0.0 5.1	0.0 4.5	0.0	0.0	11.9	11.1	1.7	0.0	6.2			
LnGrp Delay(d),s/veh	36.5	7.1	0.0	0.0	21.1	24.6	25.2	0.0	32.2			
LnGrp LOS	30.3 D	7.1 A	0.0	0.0	21.1 C	24.0 C	23.2 C	0.0	32.2 C			
	U	1504			2834			647				
Approach Vol, veh/h Approach Delay, s/veh		11.5			2834			31.2				
Approach LOS		11.5 B			22.3 C			31.2 C				
Approach LOS		D			C			C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		56.8			16.7	40.1		23.7				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		90.6			* 34	51.6		48.9				
Max Q Clear Time (g_c+I1), s		11.9			12.0	30.8		18.3				
Green Ext Time (p_c), s		2.3			0.0	3.9		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			20.2									
HCM 2010 LOS			С									
Notes												

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	ተተተ			ተተተ	77		र्स	77			
Traffic Volume (veh/h)	90	1840	0	0	980	500	80	0	1320	0	0	0
Future Volume (veh/h)	90	1840	0	0	980	500	80	0	1320	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	93	1897	0	0	1010	515	82	0	1361			
Adj No. of Lanes	1	3	0	0	3	2	0	1	2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	115	2033	0	0	1517	791	902	0	1386			
Arrive On Green	0.07	0.40	0.00	0.00	0.30	0.30	0.51	0.00	0.51			
Sat Flow, veh/h	1757	5202	0	0	5202	2626	1757	0	2699			
Grp Volume(v), veh/h	93	1897	0	0	1010	515	82	0	1361			
Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1313	1757	0	1349			
Q Serve(g_s), s	6.6	45.8	0.0	0.0	22.3	21.7	3.0	0.0	62.9			
Cycle Q Clear(g_c), s	6.6	45.8	0.0	0.0	22.3	21.7	3.0	0.0	62.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00	_	1.00			
Lane Grp Cap(c), veh/h	115	2033	0	0	1517	791	902	0	1386			
V/C Ratio(X)	0.81	0.93	0.00	0.00	0.67	0.65	0.09	0.00	0.98			
Avail Cap(c_a), veh/h	428	2445	0	0	1517	791	937	0	1440			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	58.6	36.3	0.0	0.0	38.8	38.6	15.8	0.0	30.3			
Incr Delay (d2), s/veh	5.0	6.0	0.0	0.0	0.9	1.5	0.0	0.0	19.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.4	22.4	0.0	0.0	10.4	8.0	1.5	0.0	26.9			
LnGrp Delay(d),s/veh	63.6	42.3	0.0	0.0	39.7	40.1	15.8	0.0	49.3			
LnGrp LOS	E	D 1000			D 1505	D	В	1440	D			
Approach Vol, veh/h		1990			1525			1443				
Approach Delay, s/veh		43.3			39.9			47.4				
Approach LOS		D			D			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		56.7			13.0	43.7		70.4				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		61.7			* 31	26.0		67.8				
Max Q Clear Time (g_c+l1), s		47.8			8.6	24.3		64.9				
Green Ext Time (p_c), s		3.5			0.0	0.6		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			43.4									
HCM 2010 LOS			D									
Notes												

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	ተተተ			ተተተ	77		4	77			
Traffic Volume (veh/h)	250	1420	0	0	2000	1100	100	0	600	0	0	0
Future Volume (veh/h)	250	1420	0	0	2000	1100	100	0	600	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		0.97			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	255	1449	0	0	2041	1122	102	0	612			
Adj No. of Lanes	1	3	0	0	3	2	0	1	2			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	284	3304	0	0	2270	1195	432	0	656			
Arrive On Green	0.16	0.66	0.00	0.00	0.45	0.45	0.25	0.00	0.25			
Sat Flow, veh/h	1757	5202	0	0	5202	2652	1757	0	2669			
Grp Volume(v), veh/h	255	1449	0	0	2041	1122	102	0	612			
Grp Sat Flow(s), veh/h/ln	1757	1679	0	0	1679	1326	1757	0	1335			
Q Serve(g_s), s	15.2	14.9	0.0	0.0	40.1	43.1	5.0	0.0	24.0			
Cycle Q Clear(g_c), s	15.2	14.9	0.0	0.0	40.1	43.1	5.0	0.0	24.0			
Prop In Lane	1.00	0004	0.00	0.00	0070	1.00	1.00	0	1.00			
Lane Grp Cap(c), veh/h	284	3304	0	0	2270	1195	432	0	656			
V/C Ratio(X)	0.90	0.44	0.00	0.00	0.90	0.94	0.24	0.00	0.93			
Avail Cap(c_a), veh/h	563	4260	0	0	2426	1278	802	0	1219			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00 27.2	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	44.0 4.1	8.9 0.0	0.0	0.0	4.6	28.0 12.4	32.3 0.1	0.0	39.5 2.9			
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Initial Q Delay(d3),s/veh %ile BackOfQ(50%),veh/ln	7.7	6.9	0.0	0.0	19.5	17.8	2.4	0.0	9.1			
LnGrp Delay(d),s/veh	48.2	8.9	0.0	0.0	31.7	40.4	32.4	0.0	42.4			
LnGrp LOS	40.2 D	0.9 A	0.0	0.0	31.7 C	40.4 D	32.4 C	0.0	42.4 D			
	U	1704			3163	D		714	U			
Approach Vol, veh/h Approach Delay, s/veh		14.8			34.8			41.0				
		14.8 B			34.8 C			41.0 D				
Approach LOS		D			C			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		75.7			22.0	53.7		31.4				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		90.6			* 34	51.6		48.9				
Max Q Clear Time (g_c+I1), s		16.9			17.2	45.1		26.0				
Green Ext Time (p_c), s		2.7			0.1	3.1		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			29.5									
HCM 2010 LOS			С									
Notes												

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ተተተ			ተተተ	77		4	77			
Traffic Volume (veh/h)	90	1851	0	0	987	507	80	0	1330	0	0	0
Future Volume (veh/h)	90	1851	0	0	987	507	80	0	1330	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	93	1908	0	0	1018	523	82	0	1371			
Adj No. of Lanes	1	3	0	0	3	2	0	1	2			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	115	2036	0	0	1527	796	906	0	1392			
Arrive On Green	0.07	0.40	0.00	0.00	0.30	0.30	0.52	0.00	0.52			
Sat Flow, veh/h	1757	5202	0	0	5202	2627	1757	0	2699			
Grp Volume(v), veh/h	93	1908	0	0	1018	523	82	0	1371			
Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1313	1757	0	1349			
Q Serve(g_s), s	6.9	47.7	0.0	0.0	23.2	22.7	3.1	0.0	65.6			
Cycle Q Clear(g_c), s	6.9	47.7	0.0	0.0	23.2	22.7	3.1	0.0	65.6			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	115	2036	0	0	1527	796	906	0	1392			
V/C Ratio(X)	0.81	0.94	0.00	0.00	0.67	0.66	0.09	0.00	0.99			
Avail Cap(c_a), veh/h	415	2368	0	0	1527	796	908	0	1394			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	60.5	37.5	0.0	0.0	39.9	39.8	16.1	0.0	31.3			
Incr Delay (d2), s/veh	5.1	6.8	0.0	0.0	0.9	1.6	0.0	0.0	20.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.5	23.4	0.0	0.0	10.9	8.4	1.5	0.0	28.3			
LnGrp Delay(d),s/veh	65.6	44.3	0.0	0.0	40.8	41.4	16.2	0.0	51.8			
LnGrp LOS	E	D			D	D	В		D			
Approach Vol, veh/h		2001			1541			1453				
Approach Delay, s/veh		45.3			41.0			49.8				
Approach LOS		D			D			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		58.5			13.3	45.2		72.8				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		61.7			* 31	26.0		67.8				
Max Q Clear Time (q_c+l1), s		49.7			8.9	25.2		67.6				
Green Ext Time (p_c), s		3.4			0.0	0.3		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			45.3									
HCM 2010 LOS			D									
Notes												

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	^ ^			ተተተ	77		र्स	77			
Traffic Volume (veh/h)	250	1431	0	0	2011	1110	100	0	610	0	0	0
Future Volume (veh/h)	250	1431	0	0	2011	1110	100	0	610	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		0.97			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	255	1460	0	0	2052	1133	102	0	622			
Adj No. of Lanes	1	3	0	0	3	2	0	1	2			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	283	3299	0	0	2272	1196	438	0	665			
Arrive On Green	0.16	0.66	0.00	0.00	0.45	0.45	0.25	0.00	0.25			
Sat Flow, veh/h	1757	5202	0	0	5202	2652	1757	0	2670			
Grp Volume(v), veh/h	255	1460	0	0	2052	1133	102	0	622			
Grp Sat Flow(s),veh/h/ln	1757	1679	0	0	1679	1326	1757	0	1335			
Q Serve(g_s), s	15.6	15.4	0.0	0.0	41.4	44.9	5.1	0.0	25.0			
Cycle Q Clear(g_c), s	15.6	15.4	0.0	0.0	41.4	44.9	5.1	0.0	25.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	283	3299	0	0	2272	1196	438	0	665			
V/C Ratio(X)	0.90	0.44	0.00	0.00	0.90	0.95	0.23	0.00	0.94			
Avail Cap(c_a), veh/h	550	4161	0	0	2370	1248	784	0	1191			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	45.1	9.2	0.0	0.0	27.9	28.8	32.8	0.0	40.3			
Incr Delay (d2), s/veh	4.2	0.0	0.0	0.0	5.0	14.1	0.1	0.0	4.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	7.9	7.0	0.0	0.0	20.1	18.7	2.5	0.0	9.6			
LnGrp Delay(d),s/veh	49.4	9.2	0.0	0.0	32.9	42.9	32.9	0.0	44.4			
LnGrp LOS	D	A			C	D	С	70.4	D			
Approach Vol, veh/h		1715			3185			724				
Approach Delay, s/veh		15.2			36.4			42.8				
Approach LOS		В			D			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		77.2			22.4	54.9		32.4				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		90.6			* 34	51.6		48.9				
Max Q Clear Time (g_c+I1), s		17.4			17.6	46.9		27.0				
Green Ext Time (p_c), s		2.7			0.1	2.6		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			30.8									
HCM 2010 LOS			C									
Notes												

Movement EBL EBT Lane Configurations ↑ ↑ ↑ Traffic Volume (veh/h) 90 1861 Future Volume (veh/h) 90 1861 Number 5 2 Initial Q (Qb), veh 0 0 Ped-Bike Adj(A_pbT) 1.00 1.00 Parking Bus, Adj 1.00 1.00 Adj Sat Flow, veh/h/ln 1845 1845 Adj Flow Rate, veh/h 93 1919 Adj No. of Lanes 1 3 Peak Hour Factor 0.97 0.97 Percent Heavy Veh, % 3 3 Cap, veh/h 115 2046 Arrive On Green 0.07 0.41 Sat Flow, veh/h 1757 5202 Grp Volume(v), veh/h 93 1919 Grp Sat Flow(s),veh/h/ln 1757 5202 Grp Volume(v), veh/h 93 1919 Grp Sat Flow(s),veh/h/ln 1757 1679 Q Serve(g_s), s 6.9 48.2 Cycle Q Clear	0 0 12 0 1.00 1.00 0 0 0 0.97 0 0 0.00 0 0 0.00 0 0	WBL 0 0 1 1 0 1.00 1.00 0 0 0 0.97 0 0 0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	WBT 994 994 6 0 1.00 1845 1025 3 0.97 3 1537 0.31 5202 1025 1679 23.4 23.4	WBR 513 513 16 0 0.95 1.00 1845 529 2 0.97 3 802 0.31 2627 529 1314 23.1 1.00	80 80 3 0 1.00 1.00 1900 82 0 0.97 3 903 0.51 1757 82 1757 3.1 3.1	NBT 0 0 0 8 0 1.00 1845 0 1 0.97 3 0 0.00 0 0 0 0	NBR 1339 1339 1339 18 0 0.98 1.00 1845 1380 2 0.97 3 1388 0.51 2699 1380 1349 67.0	SBL 0 0	0 0	SBR 0 0
Traffic Volume (veh/h) 90 1861 Future Volume (veh/h) 90 1861 Number 5 2 Initial Q (Qb), veh 0 0 Ped-Bike Adj(A_pbT) 1.00 1.00 Parking Bus, Adj 1.00 1.00 Adj Sat Flow, veh/hIn 1845 1845 Adj Flow Rate, veh/h 93 1919 Adj No. of Lanes 1 3 Peak Hour Factor 0.97 0.97 Perak Hour Factor 0.97 0.97 Percent Heavy Veh, % 3 3 Cap, veh/h 115 2046 Arrive On Green 0.07 0.41 Sat Flow, veh/h 1757 5202 Grp Volume(v), veh/h 93 1919 Grp Sat Flow(s),veh/h 1757 1679 Q Serve(g_s), s 6.9 48.2 Cycle Q Clear(g_c), s 6.9 48.2 Prop In Lane 1.00 1.00 Lane Grp Cap(c), veh/h 115 2046	0 12 0 1.00 1.00 0 0 0 0.97 0 0 0.00 0 0 0.00 0	0 1 0 1.00 1.00 0 0 0 0.97 0 0 0.00 0 0 0 0.00 0	994 994 6 0 1.00 1845 1025 3 0.97 3 1537 0.31 5202 1025 1679 23.4 23.4	513 513 16 0 0.95 1.00 1845 529 2 0.97 3 802 0.31 2627 529 1314 23.1 23.1	80 3 0 1.00 1.00 1900 82 0 0.97 3 903 0.51 1757 82 1757 3.1	0 0 8 0 1.00 1845 0 1 0.97 3 0 0.00 0	1339 1339 18 0 0.98 1.00 1845 1380 2 0.97 3 1388 0.51 2699 1380 1349			
Traffic Volume (veh/h) 90 1861 Future Volume (veh/h) 90 1861 Number 5 2 Initial Q (Qb), veh 0 0 Ped-Bike Adj(A_pbT) 1.00 1.00 Parking Bus, Adj 1.00 1.00 Adj Sat Flow, veh/hIn 1845 1845 Adj Flow Rate, veh/h 93 1919 Adj No. of Lanes 1 3 Peak Hour Factor 0.97 0.97 Percent Heavy Veh, % 3 3 Cap, veh/h 115 2046 Arrive On Green 0.07 0.41 Sat Flow, veh/h 1757 5202 Grp Volume(v), veh/h 93 1919 Grp Sat Flow(s),veh/h 1757 5202 Grp Volume(v), veh/h 93 1919 Grp Sat Flow(s),veh/h 1757 1679 Q Serve(g_s), s 6.9 48.2 Cycle Q Clear(g_c), s 6.9 48.2 Prop In Lane 1.00 1.00	0 12 0 1.00 1.00 0 0 0 0.97 0 0 0.00 0 0 0.00 0	0 1 0 1.00 1.00 0 0 0 0.97 0 0 0.00 0 0 0 0.00 0	994 994 6 0 1.00 1845 1025 3 0.97 3 1537 0.31 5202 1025 1679 23.4 23.4	513 513 16 0 0.95 1.00 1845 529 2 0.97 3 802 0.31 2627 529 1314 23.1 23.1	80 3 0 1.00 1.00 1900 82 0 0.97 3 903 0.51 1757 82 1757 3.1	0 8 0 1.00 1845 0 1 0.97 3 0 0.00 0	1339 1339 18 0 0.98 1.00 1845 1380 2 0.97 3 1388 0.51 2699 1380 1349			
Number 5 2 Initial Q (Qb), veh 0 0 Ped-Bike Adj(A_pbT) 1.00 1.00 Parking Bus, Adj 1.00 1.00 Adj Sat Flow, veh/h/ln 1845 1845 Adj Flow Rate, veh/h 93 1919 Adj No. of Lanes 1 3 Peak Hour Factor 0.97 0.97 Percent Heavy Veh, % 3 3 Cap, veh/h 115 2046 Arrive On Green 0.07 0.41 Sat Flow, veh/h 1757 5202 Grp Volume(v), veh/h 93 1919 Grp Sat Flow(s),veh/h/ln 1757 1679 Q Serve(g_s), s 6.9 48.2 Cycle Q Clear(g_c), s 6.9 48.2 Prop In Lane 1.00 1.00 Lane Grp Cap(c), veh/h 115 2046 V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 <	12 0 1.00 0 0 0 0.97 0 0 0.00 0 0 0.00 0 0.00	1 0 1.00 1.00 0 0 0 0.97 0 0 0.00 0 0 0.00 0	1.00 1845 1025 3 0.97 3 1537 0.31 5202 1025 1679 23.4 23.4	16 0 0.95 1.00 1845 529 2 0.97 3 802 0.31 2627 529 1314 23.1 23.1	3 0 1.00 1.00 1900 82 0 0.97 3 903 0.51 1757 82 1757 3.1	8 0 1.00 1845 0 1 0.97 3 0 0.00 0	18 0 0.98 1.00 1845 1380 2 0.97 3 1388 0.51 2699 1380 1349	0	0	0
Initial Q (Qb), veh	0 1.00 0 0 0 0.97 0 0 0.00 0 0 0.00 0	0 1.00 1.00 0 0 0 0.97 0 0 0.00 0	1.00 1845 1025 3 0.97 3 1537 0.31 5202 1025 1679 23.4 23.4	0 0.95 1.00 1845 529 2 0.97 3 802 0.31 2627 529 1314 23.1 23.1	0 1.00 1.00 1900 82 0 0.97 3 903 0.51 1757 82 1757 3.1	0 1.00 1845 0 1 0.97 3 0 0.00 0	0 0.98 1.00 1845 1380 2 0.97 3 1388 0.51 2699 1380 1349			
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Parking Bus, Adj 1.00 1.00 Adj Sat Flow, veh/h/ln 1845 1845 Adj Flow Rate, veh/h 93 1919 Adj No. of Lanes 1 3 Peak Hour Factor 0.97 0.97 Percent Heavy Veh, % 3 3 Cap, veh/h 115 2046 Arrive On Green 0.07 0.41 Sat Flow, veh/h 1757 5202 Grp Volume(v), veh/h 93 1919 Grp Sat Flow(s),veh/h 1757 1679 Q Serve(g_s), s 6.9 48.2 Cycle Q Clear(g_c), s 6.9 48.2 Prop In Lane 1.00 1.00 Lane Grp Cap(c), veh/h 115 2046 V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0	1.00 0 0 0.97 0 0.00 0 0 0.00 0.00 0.00 0.00	1.00 0 0 0 0.97 0 0.00 0 0 0.00 0.00 0.00 0.00	1845 1025 3 0.97 3 1537 0.31 5202 1025 1679 23.4 23.4	1.00 1845 529 2 0.97 3 802 0.31 2627 529 1314 23.1 23.1	1.00 1900 82 0 0.97 3 903 0.51 1757 82 1757 3.1	1845 0 1 0.97 3 0 0.00 0 0 0	1.00 1845 1380 2 0.97 3 1388 0.51 2699 1380 1349			
Adj Sat Flow, veh/h/ln 1845 1845 Adj Flow Rate, veh/h 93 1919 Adj No. of Lanes 1 3 Peak Hour Factor 0.97 0.97 Percent Heavy Veh, % 3 3 Cap, veh/h 115 2046 Arrive On Green 0.07 0.41 Sat Flow, veh/h 1757 5202 Grp Volume(v), veh/h 93 1919 Grp Sat Flow(s), veh/h 1757 1679 Q Serve(g_s), s 6.9 48.2 Cycle Q Clear(g_c), s 6.9 48.2 Prop In Lane 1.00 1.00 Lane Grp Cap(c), veh/h 115 2046 V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 5.1 7.0 Mitial Q Delay(d3),s/veh 65.9 44.6 LnGrp Delay(d),s/veh/h 2012	0 0 0.97 0 0 0.00 0 0 0 0.00 0.00 0.00	0 0 0.97 0 0.00 0 0 0 0.00 0.00 0.00	1845 1025 3 0.97 3 1537 0.31 5202 1025 1679 23.4 23.4	1845 529 2 0.97 3 802 0.31 2627 529 1314 23.1 23.1	1900 82 0 0.97 3 903 0.51 1757 82 1757 3.1	1845 0 1 0.97 3 0 0.00 0 0 0	1845 1380 2 0.97 3 1388 0.51 2699 1380 1349			
Adj Flow Rate, veh/h 93 1919 Adj No. of Lanes 1 3 Peak Hour Factor 0.97 0.97 Percent Heavy Veh, % 3 3 Cap, veh/h 115 2046 Arrive On Green 0.07 0.41 Sat Flow, veh/h 1757 5202 Grp Volume(v), veh/h 93 1919 Grp Sat Flow(s), veh/h/ln 1757 1679 Q Serve(g_s), s 6.9 48.2 Cycle Q Clear(g_c), s 6.9 48.2 Prop In Lane 1.00 1.00 Lane Grp Cap(c), veh/h 115 2046 V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 5.1 7.0 Initial Q Delay(d),s/veh 65.9 44.6 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp Delay(d),s/veh 65.9 45.6	0 0.97 0 0 0.00 0 0 0 0 0.0 0.0 0.0 0.00	0 0.97 0 0 0.00 0 0 0 0.0 0.0 0.0 0.00	1025 3 0.97 3 1537 0.31 5202 1025 1679 23.4 23.4	529 2 0.97 3 802 0.31 2627 529 1314 23.1 23.1	82 0 0.97 3 903 0.51 1757 82 1757 3.1	0 1 0.97 3 0 0.00 0	1380 2 0.97 3 1388 0.51 2699 1380 1349			
Adj No. of Lanes 1 3 Peak Hour Factor 0.97 0.97 Percent Heavy Veh, % 3 3 Cap, veh/h 115 2046 Arrive On Green 0.07 0.41 Sat Flow, veh/h 1757 5202 Grp Volume(v), veh/h 93 1919 Grp Sat Flow(s), veh/h/In 1757 1679 Q Serve(g_s), s 6.9 48.2 Cycle Q Clear(g_c), s 6.9 48.2 Prop In Lane 1.00 1.00 Lane Grp Cap(c), veh/h 115 2046 V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp Delay(d),s/veh 65.9 44.6 </td <td>0 0.97 0 0 0.00 0 0 0 0 0.00 0.00 0.00</td> <td>0 0.97 0 0 0.00 0 0 0 0.0 0.0 0.00</td> <td>3 0.97 3 1537 0.31 5202 1025 1679 23.4 23.4</td> <td>2 0.97 3 802 0.31 2627 529 1314 23.1 23.1</td> <td>0 0.97 3 903 0.51 1757 82 1757 3.1</td> <td>1 0.97 3 0 0.00 0 0</td> <td>2 0.97 3 1388 0.51 2699 1380 1349</td> <td></td> <td></td> <td></td>	0 0.97 0 0 0.00 0 0 0 0 0.00 0.00 0.00	0 0.97 0 0 0.00 0 0 0 0.0 0.0 0.00	3 0.97 3 1537 0.31 5202 1025 1679 23.4 23.4	2 0.97 3 802 0.31 2627 529 1314 23.1 23.1	0 0.97 3 903 0.51 1757 82 1757 3.1	1 0.97 3 0 0.00 0 0	2 0.97 3 1388 0.51 2699 1380 1349			
Peak Hour Factor 0.97 0.97 Percent Heavy Veh, % 3 3 Cap, veh/h 115 2046 Arrive On Green 0.07 0.41 Sat Flow, veh/h 1757 5202 Grp Volume(v), veh/h 93 1919 Grp Sat Flow(s), veh/h/In 1757 1679 Q Serve(g_s), s 6.9 48.2 Cycle Q Clear(g_c), s 6.9 48.2 Prop In Lane 1.00 1.00 Lane Grp Cap(c), veh/h 115 2046 V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d), s/veh 60.8 37.6 Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp Delay(d),s/veh 65.9	0.97 0 0 0.00 0 0 0 0 0.0 0.0 0.0 0.00	0.97 0 0.00 0 0 0 0 0.0 0.0 0.0 0	0.97 3 1537 0.31 5202 1025 1679 23.4 23.4	0.97 3 802 0.31 2627 529 1314 23.1 23.1	0.97 3 903 0.51 1757 82 1757 3.1	0.97 3 0 0.00 0 0	0.97 3 1388 0.51 2699 1380 1349			
Percent Heavy Veh, % 3 3 Cap, veh/h 115 2046 Arrive On Green 0.07 0.41 Sat Flow, veh/h 1757 5202 Grp Volume(v), veh/h 93 1919 Grp Sat Flow(s),veh/h/ln 1757 1679 Q Serve(g_s), s 6.9 48.2 Cycle Q Clear(g_c), s 6.9 48.2 Prop In Lane 1.00 1.00 Lane Grp Cap(c), veh/h 115 2046 V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d), s/veh 60.8 37.6 Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach LOS D	0 0.00 0 0 0 0 0.0 0.0 0.0	0 0.00 0 0 0 0 0.0 0.0 0.0	3 1537 0.31 5202 1025 1679 23.4 23.4	3 802 0.31 2627 529 1314 23.1 23.1	3 903 0.51 1757 82 1757 3.1	3 0 0.00 0 0 0	3 1388 0.51 2699 1380 1349			
Cap, veh/h 115 2046 Arrive On Green 0.07 0.41 Sat Flow, veh/h 1757 5202 Grp Volume(v), veh/h 93 1919 Grp Sat Flow(s),veh/h/ln 1757 1679 Q Serve(g_s), s 6.9 48.2 Cycle Q Clear(g_c), s 6.9 48.2 Prop In Lane 1.00 1.00 Lane Grp Cap(c), veh/h 115 2046 V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d), s/veh 60.8 37.6 Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach LOS D Timer 1 2	0 0.00 0 0 0 0.0 0.0 0.00	0 0.00 0 0 0 0.0 0.0 0.0	1537 0.31 5202 1025 1679 23.4 23.4	802 0.31 2627 529 1314 23.1 23.1	903 0.51 1757 82 1757 3.1	0 0.00 0 0 0 0	1388 0.51 2699 1380 1349			
Arrive On Green 0.07 0.41 Sat Flow, veh/h 1757 5202 Grp Volume(v), veh/h 93 1919 Grp Sat Flow(s),veh/h/In 1757 1679 Q Serve(g_s), s 6.9 48.2 Cycle Q Clear(g_c), s 6.9 48.2 Prop In Lane 1.00 1.00 Lane Grp Cap(c), veh/h 115 2046 V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d), s/veh 60.8 37.6 Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach LOS D Timer 1 2	0.00 0 0 0 0.0 0.0 0.0 0.00	0.00 0 0 0 0.0 0.0 0.0 0.00	0.31 5202 1025 1679 23.4 23.4	0.31 2627 529 1314 23.1 23.1	0.51 1757 82 1757 3.1	0.00 0 0 0 0	0.51 2699 1380 1349			
Sat Flow, veh/h 1757 5202 Grp Volume(v), veh/h 93 1919 Grp Sat Flow(s),veh/h/ln 1757 1679 Q Serve(g_s), s 6.9 48.2 Cycle Q Clear(g_c), s 6.9 48.2 Prop In Lane 1.00 1.00 Lane Grp Cap(c), veh/h 115 2046 V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d), s/veh 60.8 37.6 Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach LOS D Timer 1 2	0 0 0.0 0.0 0.0 0.00	0 0 0.0 0.0 0.0 0.00	5202 1025 1679 23.4 23.4	2627 529 1314 23.1 23.1	1757 82 1757 3.1	0 0 0 0.0	2699 1380 1349			
Grp Volume(v), veh/h 93 1919 Grp Sat Flow(s), veh/h/ln 1757 1679 Q Serve(g_s), s 6.9 48.2 Cycle Q Clear(g_c), s 6.9 48.2 Prop In Lane 1.00 1.00 Lane Grp Cap(c), veh/h 115 2046 V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d), s/veh 60.8 37.6 Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2	0 0.0 0.0 0.0 0.00	0 0 0.0 0.0 0.00	1025 1679 23.4 23.4	529 1314 23.1 23.1	82 1757 3.1	0 0 0.0	1380 1349			
Grp Sat Flow(s),veh/h/ln 1757 1679 Q Serve(g_s), s 6.9 48.2 Cycle Q Clear(g_c), s 6.9 48.2 Prop In Lane 1.00 1.00 Lane Grp Cap(c), veh/h 115 2046 V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(l) 1.00 1.00 Uniform Delay (d), s/veh 60.8 37.6 Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2	0 0.0 0.0 0.00 0	0 0.0 0.0 0.00 0	1679 23.4 23.4	1314 23.1 23.1	1757 3.1	0.0	1349			
Q Serve(g_s), s 6.9 48.2 Cycle Q Clear(g_c), s 6.9 48.2 Prop In Lane 1.00 1.00 Lane Grp Cap(c), veh/h 115 2046 V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d), s/veh 60.8 37.6 Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2	0.0 0.0 0.00 0	0.0 0.0 0.00 0	23.4 23.4	23.1 23.1	3.1	0.0				
Cycle Q Clear(g_c), s 6.9 48.2 Prop In Lane 1.00 Lane Grp Cap(c), veh/h 115 2046 V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d), s/veh 60.8 37.6 Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach LOS D Timer 1 2	0.0 0.00 0	0.0 0.00 0	23.4	23.1			67.0			
Prop In Lane 1.00 Lane Grp Cap(c), veh/h 115 2046 V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d), s/veh 60.8 37.6 Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2	0.00	0.00			3.1					
Lane Grp Cap(c), veh/h 115 2046 V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d), s/veh 60.8 37.6 Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2	0	0	1507	1 00		0.0	67.0			
V/C Ratio(X) 0.81 0.94 Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d), s/veh 60.8 37.6 Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2					1.00		1.00			
Avail Cap(c_a), veh/h 413 2356 HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d), s/veh 60.8 37.6 Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2			1537	802	903	0	1388			
HCM Platoon Ratio 1.00 1.00 Upstream Filter(I) 1.00 1.00 Uniform Delay (d), s/veh 60.8 37.6 Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/In 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2	0.00	0.00	0.67	0.66	0.09	0.00	0.99			
Upstream Filter(I) 1.00 1.00 Uniform Delay (d), s/veh 60.8 37.6 Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/In 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2	0	0	1537	802	903	0	1388			
Uniform Delay (d), s/veh 60.8 37.6 Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Incr Delay (d2), s/veh 5.1 7.0 Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Initial Q Delay(d3),s/veh 0.0 0.0 %ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2	0.0	0.0	40.0	39.8	16.3	0.0	31.8			
%ile BackOfQ(50%),veh/ln 3.5 23.5 LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2	0.0	0.0	0.9	1.6	0.0	0.0	22.8			
LnGrp Delay(d),s/veh 65.9 44.6 LnGrp LOS E D Approach Vol, veh/h 2012 Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
LnGrp LOS E D Approach Vol, veh/h 2012 Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2 2	0.0	0.0	10.9	8.6	1.5	0.0	29.3			
Approach Vol, veh/h 2012 Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2 2	0.0	0.0	40.9	41.5	16.3	0.0	54.6			
Approach Delay, s/veh 45.6 Approach LOS D Timer 1 2			D	D	В	11/0	D			
Approach LOS D Timer 1 2			1554			1462				
Timer 1 2			41.1			52.5				
			D			D				
	3	4	5	6	7	8				
Assigned Phs 2			5	6		8				
Phs Duration (G+Y+Rc), s 59.0			13.3	45.7		72.9				
Change Period (Y+Rc), s 5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s 61.7			* 31	26.0		67.8				
Max Q Clear Time (g_c+I1), s 50.2			8.9	25.4		69.0				
Green Ext Time (p_c), s 3.4			0.0	0.2		0.0				
Intersection Summary										
HCM 2010 Ctrl Delay										
HCM 2010 LOS	46.2									
Notes	46.2 D									

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	ተተተ			ተተተ	77		र्स	77			
Traffic Volume (veh/h)	250	1441	0	0	2021	1119	100	0	619	0	0	0
Future Volume (veh/h)	250	1441	0	0	2021	1119	100	0	619	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.96	1.00		0.97			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	255	1470	0	0	2062	1142	102	0	632			
Adj No. of Lanes	1	3	0	0	3	2	0	1	2			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	283	3291	0	0	2270	1195	444	0	674			
Arrive On Green	0.16	0.65	0.00	0.00	0.45	0.45	0.25	0.00	0.25			
Sat Flow, veh/h	1757	5202	0	0	5202	2652	1757	0	2671			
Grp Volume(v), veh/h	255	1470	0	0	2062	1142	102	0	632			
Grp Sat Flow(s), veh/h/ln	1757	1679	0	0	1679	1326	1757	0	1335			
Q Serve(g_s), s	15.9	16.0	0.0	0.0	42.6	46.4	5.1	0.0	25.9			
Cycle Q Clear(g_c), s	15.9	16.0	0.0	0.0	42.6	46.4	5.1	0.0	25.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	283	3291	0	0	2270	1195	444	0	674			
V/C Ratio(X)	0.90	0.45	0.00	0.00	0.91	0.96	0.23	0.00	0.94			
Avail Cap(c_a), veh/h	539	4083	0	0	2325	1225	769	0	1169			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	46.0	9.5	0.0	0.0	28.5	29.6	33.1	0.0	40.9			
Incr Delay (d2), s/veh	4.3	0.0	0.0	0.0	5.5	15.8	0.1	0.0	5.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.1	7.4	0.0	0.0	20.8	19.6	2.5	0.0	10.1			
LnGrp Delay(d),s/veh	50.3	9.5	0.0	0.0	34.0	45.4	33.2	0.0	46.1			
LnGrp LOS	D	A			С	D	С	70.4	D			
Approach Vol, veh/h		1725			3204			734				
Approach Delay, s/veh		15.5			38.1			44.3				
Approach LOS		В			D			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		78.4			22.7	55.8		33.3				
Change Period (Y+Rc), s		5.4			* 4.7	5.4		5.1				
Max Green Setting (Gmax), s		90.6			* 34	51.6		48.9				
Max Q Clear Time (g_c+I1), s		18.0			17.9	48.4		27.9				
Green Ext Time (p_c), s		2.7			0.1	1.9		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			32.0									
HCM 2010 LOS			С									
Notes												

APPENDIX 4 – UPDATED ESTIMATED CONSTRUCTION COSTS AS OF 2018

Near-Term (±0-7 Years)		2018 Dollars Estimate
Relocation of Segmented Circle	Pavement Removal/Installation	\$153900
Relocation of the Lighting Vault	Building Relocation 100 SF	\$589,950
Relocation of the Glideslope Building and Antenna	Building Relocation ±360 SF	\$359,100
Relocation of Windsock Equipment	Pavement Removal ±760 SY	\$133,380
Environmental Assessment for EMAS		\$205,200
Construction of EMAS System serving RWY 24 (Includes Relocation of the Vehicle Service Road)	EMAS ±580 SY VSR ±9,100 SY	\$25,650,000
Relocation of ARFF Facility	±4,700 SF Facility	\$538,650
Environmental Assessment for EMAS		\$205,200
200' Extension of Existing Runway 06-24 and Taxiway A (Interim condition)	±11,600 SY	\$14,692,833
	\$27,835,380	
	\$42,528,213	
Intermediate-Term (±8-12 Years)		
Removal of North Apron and Taxiway N	Pavement Removal ±43,000 SY	\$701,784
Enhancement of Near-Term Auto Parking	±800 SY of pavement	\$238,032
Removal of Fuel Farm on North Apron	±25,000 GAL	\$46,170
Environmental Assessment for facility		\$205.200
Improvements		\$205,200
Preservation of area reserved for GA aircraft	±3 acres	TBD
parking	10 acres	100
Passenger/Admin/Parking Facility	±4 acres	TBD
Improvements	\$1,191,186	
Long-Term (±13-20 Years)	Phase Subtotal	\$1,191,100
800' Relocation/Extension of RWY 06-24 (if		
completed in one phase)	±81,610 SY	\$28,574,100
Remove/Reconstruct Connector Taxiways	±13,000 SY	\$1,805,760
Remove/Reconstruct TWY A	±39,070 SY	\$14,733,360
Construction of EMAS System serving RWY 06	±580 SY	\$12,476,160
Relocation of EMAS System serving RWY 24	±580 SY	\$11,532,240
Relocation of NAVAIDS (ILS, GS, MALSR, PAPI)		\$2,872,800
200' Relocation/Extension of Runway 06-24 and		
Taxiway A (if completed in 2 phases)		\$9,609,516
Additional 600' Relocation/Extension of Runway		#04.704.000
06-24 and Taxiway A (if completed in 2 phases)		\$31,764,960
Phase Subtotal (20	\$84,794,796	
	\$71,994,420	
Phased Development Total Costs		
Total Estimated Program Cost (200	\$128,514,195	
Total Estimated	\$115,713,819	
Total Estimated Program Cost (20		\$113,821,362
Total Estimate	ed Program Cost (800' Extension)	\$101,020,986



Airport Master Plan Update

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