APPENDIX G
ACOUSTICAL ANALYSIS REPORT

ACOUSTICAL ANALYSIS REPORT

Chick-fil-A – I-5 & Palomar Airport Rd
5850 Avenida Encinas
Carlsbad, California

Prepared For

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1.0 EXECUTIVE SUMMARY

The proposed project, Chick-fil-A – I-5 & Palomar Airport Rd, consists of the demolition of an existing commercial office building and the construction of a new fast-food restaurant. The project site is located at 5850 Avenida Encinas in the City of Carlsbad, California.

The City of Carlsbad requires that commercial developments demonstrate compliance with the requirements of the Carlsbad Noise Element to the General Plan and the Noise Guidelines Manual. The Noise Element requires that exterior noise levels do not exceed 65 CNEL for commercial spaces. Calculations demonstrate that noise impacts at the outdoor patio of the restaurant are anticipated to be less than 65 CNEL as currently designed.

Additionally, the City of Carlsbad Noise Element to the General Plan requires that commercial developments have interior noise levels of 50 CNEL or less. Likewise, the California Green Building Standards Code (known as CALGreen) also requires interior noise levels of 50 dBA or less during any hour of operation. Calculations show that with the proposed exterior wall assembly and standard commercial glazing, interior noise levels of 50 CNEL or less can be achieved, and therefore, the project is expected to comply with City of Carlsbad and State of California noise regulations as currently designed.

Noise from the anticipated mechanical equipment on site has been calculated to determine if specific project design features are necessary to reduce the noise impacts to be compliant with applicable limits. Noise limits specified within the City of Carlsbad Noise Element to the General Plan must be met at neighboring noise-sensitive property lines. Calculations show that noise levels from the mechanical equipment will be in compliance with the City of Carlsbad noise limits. No project design features are deemed necessary to control project-generated noise impacts from mechanical equipment. Project-generated traffic noise is also expected to be less than significant.

The City of Carlsbad does not provide noise limits for temporary construction activity at surrounding noise-sensitive property lines; however, the hours during which construction activity can take place are limited by the Municipal Code. Construction is prohibited after 6 p.m. and before 7 a.m. Monday through Friday and before 8 a.m. on Saturdays. Construction is also prohibited on Sundays and federal holidays. Though it is not required by regulations, the general good practice construction noise control methods listed herein should be followed, as a courtesy to surrounding properties. With operating hours limited to those allowable in the City of Carlsbad and standard good practice construction noise control measures followed, temporary construction noise and vibration are expected to be less than significant.

The proposed project is not expected to result in any potentially significant noise impacts by the standards of the California Environmental Quality Act (CEQA). Noise impacts are summarized in Section 5.5.

2.0 INTRODUCTION

This acoustical analysis report is submitted to satisfy the noise requirements of the City of Carlsbad and the State of California. Its purpose is to assess interior and exterior noise impacts to the project site from transportation noise sources to determine if mitigation is necessary to reduce these noise impacts to comply with the applicable noise regulations of the City of Carlsbad Noise Element to the General Plan and Noise Guidelines Manual, and the California Green Building Standards Code (CALGreen). In addition, this report assesses noise impacts from potential project-related noise sources, such as mechanical equipment and project-generated traffic, as well as temporary construction noise. This analysis aims to determine if additional project design features are necessary and feasible to reduce these impacts to comply with the applicable noise regulations of the City of Carlsbad Noise Element to the General Plan and Municipal Code. Potential impacts will also be assessed for significance per the California Environmental Quality Act (CEQA).

All noise level or sound level values presented herein are expressed in terms of decibels, with A-weighting to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ} for a specified duration. The Community Noise Equivalent Level (CNEL) is a calculated 24-hour weighted average, where sound levels during evening hours of 7 p.m. to 10 p.m. have an added 5 dB weighting, and sound levels during nighttime hours of 10 p.m. to 7 a.m. have an added 10 dB weighting. This is similar to the Day-Night sound level, L_{DN}, which is a 24-hour average with an added 10 dB weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on A-weighted decibels. These metrics are used to express noise levels for both measurement and municipal regulations, for land use guidelines, and for enforcement of noise ordinances. Further explanation can be provided upon request.

Sound pressure is the actual noise experienced by a human or registered by a sound level instrument. When sound pressure is used to describe a noise source, the distance from the noise source must be specified in order to provide complete information. Sound power, on the other hand, is a specialized analytical metric to provide information without the distance requirement, but it may be used to calculate the sound pressure at any desired distance.

2.1 Project Description

The proposed project, Chick-fil-A – I-5 & Palomar Airport Rd, consists of the demolition of an existing commercial office building and the construction of a new fast-food restaurant. The project will include a dining room, service area, kitchen, restrooms, office, and other associated spaces. It is anticipated that the hours of operation for the restaurant will be 6 a.m. to 12 a.m., Monday through Saturday. For additional project details, please refer to the project plans provided in Appendix A.

2.2 Project Location

The subject property is located at 5850 Avenida Encinas in the City of Carlsbad, California. The Assessor's Parcel Numbers are 210-170-08 and 210-170-09. The site is currently occupied by a commercial office building. For a graphical representation of the site, please refer to the Vicinity Map, Assessor's Parcel Map, Satellite Aerial Photograph, and Topographic Map, provided as Figures 1 through 4, respectively.

2.3 Applicable Noise Regulations

The City of Carlsbad requires that commercial developments demonstrate compliance with the requirements of the Carlsbad Noise Element to the General Plan and the Noise Guidelines Manual. The Noise Element requires that interior noise levels do not exceed 50 CNEL and exterior noise levels do not exceed 65 CNEL for commercial spaces. The City of Carlsbad Noise Guidelines Manual states that interior noise levels of commercial buildings must not exceed 55 dBA. As the Noise Element regulations are more stringent than those of the Noise Guidelines Manual, the Noise Element requirement for interior noise levels not exceeding 50 CNEL have been applied to this project. Pertinent sections of the Noise Element to the General Plan are provided as Appendix B.

The State of California requires that commercial developments demonstrate compliance with the requirements of the California Green Building Standards Code (known as CALGreen). CALGreen states that, if noise level readings of 65 dBA L_{EQ} or greater are documented at the proposed project site, the project must either (a) incorporate wall and roof/ceiling assemblies with a composite STC rating of at least 50 and exterior windows with an STC 40, or (b) provide an acoustical analysis documenting interior noise levels do not exceed 50 dBA in occupied areas during any hour of operation. This report provides the performance method analysis described in Item (b). Pertinent sections of the CALGreen Code are provided as Appendix B.

The City of Carlsbad Noise Element to the General Plan provides noise standards for non-transportation noise sources such as mechanical equipment. As measured from the property line of noise-sensitive receivers, non-transportation noise sources must not exceed 55 dB L_{EQ} between the hours of 7 a.m. and 10 p.m, and 45 dB L_{EQ} between the hours of 10 p.m. and 7 a.m. Currently, there are no noise-sensitive receivers within the vicinity of the project site. According to the Carlsbad Noise Element to the General Plan, noise-sensitive uses include schools, hospitals, places of worship, and residences. As all surrounding properties are zoned as either Commercial Tourist (C-T) or Planned Industrial (P-M), they are not considered to be noise-sensitive receivers, and no noise limits would apply in these locations. To determine the compatibility of the proposed project with the city noise exposure guidelines, the noise compatibility matrix was used. The City of Carlsbad Noise Element to the General Plan states that exterior noise levels at commercial uses should not exceed 70 dBA DNL. As DNL is typically used to measure transportation noise, a noise limit of 70 dBA L_{EQ} was applied to surrounding property lines.

The City of Carlsbad Municipal Code also contains general requirements for temporary construction noise impacts. The City of Carlsbad prohibits construction activity after 6 p.m. and before 7 a.m. Monday through Friday and before 8 a.m. on Saturdays. Construction is also prohibited on Sundays and federal holidays. During permissible hours of operation, the City does not have a noise limit with which construction noise must comply.

Pertinent sections of the City of Carlsbad Noise Element to the General Plan are provided as Appendix B.

3.0 ENVIRONMENTAL SETTING

3.1 Existing Noise Environment

The primary noise source in the vicinity of the project site is traffic noise from Interstate 5, Avenida Encinas, and Palomar Airport Road, and railway noise from the track system located to the west of the project site. No other noise source is considered significant.

3.1.1 Railway Noise Sources

The overall noise environment at the project site is influenced by train traffic traveling on a line located to the west of the project site. The centerline of the tracks is located approximately 630 feet from the western property line of the site. Based on the current schedules for Amtrak and Coaster, approximately 48 passenger trains pass the site each day. Scheduling information was not available for BNSF freight trains, but from prior experience with projects along this rail corridor, typical freight traffic includes approximately four to six freight trips per day. Calculations were performed using the CREATE Freight Noise and Vibration Model (see reference) to determine the noise impacts from train traffic on the project site. With the current peak volume of three passenger trains and one freight train passing the site per hour during the daytime hours, and one passenger train and one freight train passing the site per hour during the nighttime hours, the railway noise level was calculated to be approximately 58 CNEL at the center of the project site, without considering any shielding provided by intervening structures. With shielding taken into account, the noise impact at the center of the project site is expected to drop to approximately 54 CNEL.

Railway noise contours considering intervening structures were calculated for the site, and it was determined that noise impacts would range from approximately 53 CNEL to 55 CNEL at the site. Detailed calculations of railway noise have been performed for the determination of combined noise impacts at outdoor use areas and building facades, and are addressed in Section 5.1 of this report. Railway noise contours are shown graphically in Figure 5. Please refer to Appendix C for additional information.

3.1.2 Roadway Traffic Noise

Current and future traffic volumes are given based on information from the San Diego Association of Governments (SANDAG) Transportation Data, Series 12 Transportation Forecast Information Center, and Caltrans Traffic Counts. Additional information has been obtained from the Caltrans Traffic Census (see reference).

Interstate 5 is a nine-lane, two-way Freeway running north-south to the east of the project site. The posted speed limit is 65 mph. According to traffic count data, Interstate 5 carries a traffic volume of approximately 198,000 Average Daily Trips (ADT) as of the year 2016. There is also a southbound ramp that carries approximately 11,600 ADT as of the year 2017.

Avenida Encinas is a four-lane, two-way roadway running generally north-south along the west boundary of the project site. The posted speed limit is 40 mph. Traffic counts showed a volume of approximately 7,500 ADT in the year 2008.

Palomar Airport Road is a six-lane, two-way roadway running generally east-west to the south of the project site. The posted speed limit is 45 mph. Traffic counts showed a volume of approximately 28,800 ADT in the year 2008.

Vehicle mix information was provided by Caltrans for Interstate 5. Interstate 5 is expected to carry 1.9% medium trucks and 2.9% heavy trucks. Vehicle mix information was not available for Avenida Encinas or Palomar Airport Road; however, based on observations made on site, surrounding land uses, and professional experience, Avenida Encinas and Palomar Airport Road are assumed to carry approximately 2% medium trucks and 1% heavy trucks.

Traffic volumes for the roadway sections near the project site are shown in Table 1. For further roadway details and projected future ADT traffic volumes, please refer to Appendix D: Cadna Analysis Data and Results.

Table 1. Overall Roadway Traffic Information

Roadway Name	Speed Limit (mph)	Vehicle Mix (%)		Current ADT (Year)	Future ADT (2035)
		Medium Trucks	Heavy Trucks		
Interstate 5	65	1.9%	2.9%	198,000 (2016)	226,800
Interstate 5 Southbound Ramp	30	1.9%	2.9%	11,600 (2017)	8,800
Avenida Encinas	40	2.0%	1.0%	7,500 (2008)	6,700
Palomar Airport Road	45	2.0%	1.0%	28,800 (2008)	24,300

Without existing or proposed project structures, the current traffic noise contours calculated at ground level show that traffic noise impacts to the project site are between 67 and 77 CNEL. Combined railway and traffic noise levels are detailed in Section 5.0. For a graphical representation of traffic noise contours, please refer to Figure 6: Site Plan Showing Current Combined CNEL Contours and Noise Measurement Location.

3.1.3 Measured Noise Level

An on-site inspection and traffic noise measurement were made on the afternoon of Wednesday, February 20, 2019. The weather conditions were as follows: cloudy skies, high humidity, and temperature in the low 50s with winds at 13 mph. A noise measurement was made to the west of the project site, approximately 34 feet from the Avenida Encinas center median. The primary source of noise during the measurement was traffic noise. The microphone was placed at approximately five feet above the existing grade. Traffic volumes for Avenida Encinas were recorded for automobiles, medium-size trucks, and large trucks during the measurement period. After a 10-minute sound level measurement, paused for helicopter, train, and delivery truck noise, no changes in the L_{EQ} were observable and results were recorded. The measured noise level and related weather conditions are found in Table 2, and the noise measurement location is shown in Figures 6 and 7.

Table 2. On-Site Noise Measurement Conditions and Results	
Date	Wednesday, February 20, 2019
Time	1:30 p.m. – 1:48 p.m.
Conditions	Cloudy skies, wind at 13 mph, temperature in the low 50s with high humidity
Measured Noise Level	65.4 dBA L_{EQ}

3.1.4 Calculated Noise Level

Noise levels were calculated for the site using the methodology described in Section 4.1.2. The calculated noise levels (L_{EQ}) were compared with the measured traffic noise level to determine if adjustments or corrections (calibration) should be applied to the traffic noise prediction model. Adjustments are intended to account for site-specific differences, such as reflection and absorption, which may be greater or lesser than accounted for in the model.

The measured noise level of 65.4 dBA L_{EQ} at the west property line was compared to the calculated (modeled) noise level of 65.6 dBA L_{EQ} for the same anticipated traffic flow. According to the Federal Highway Administration's Highway Traffic Noise: Analysis and Abatement Guide (see reference), a traffic noise model is considered validated if the measured and calculated noise impacts differ by three decibels or less. No adjustment was deemed necessary to model peak hour noise levels for the proposed building as the difference between the measured and calculated levels was found to be less than three decibels. This information is presented in Table 3. Please refer to Appendix D for more information.

Table 3. Calculated versus Measured Traffic Noise Data				
Location	**Calculated**	**Measured**	**Difference**	**Correction**
34' from Avenida Encinas CL	65.6 dBA L_{EQ}	65.4 dBA L_{EQ}	0.2 dB	None Applied

3.2 Future Noise Environment

3.2.1 Future Transportation Noise

The future on-site noise environment will be the result of the same traffic and railway noise sources. Future train noise is not expected to change significantly, and therefore, was modeled as described above. The future (year 2035) traffic volumes for surrounding roadways were provided by SANDAG.

The traffic volumes of Interstate 5 northbound and southbound are estimated to increase to 118,500 and 108,300 ADT, respectively, by the year 2035 and include the addition of three new High-Occupancy Vehicle (HOV) lanes. The future traffic noise model reflects this addition. The traffic volume of the Interstate 5 southbound ramp is expected to decrease to 8,800 ADT by the year 2035. The traffic volumes of Avenida Encinas and Palomar Airport Road are estimated to decrease to 6,700 ADT and 24,300 ADT, respectively by the year 2035. The roadway alignment and roadbed grade elevations are expected to remain the same for these sections of roadways.

The same truck percentages from the existing traffic volumes were used for future traffic volume modeling. For further roadway details and projected future ADT traffic volumes, please refer to Appendix D: Cadna Analysis Data and Results.

Without existing or proposed project structures, the future traffic noise contours calculated at ground level show that future traffic noise impacts to the project site will increase slightly to be between 68 and 79 CNEL. Combined railway and traffic noise levels are detailed in Section 5.0. For a graphical representation of traffic noise contours, please refer to Figure 7: Site Plan Showing Future Combined CNEL Contours and Noise Measurement Location.

3.2.2 Mechanical Equipment On-Site

The primary sources of noise generated by the proposed project are anticipated to be the proposed HVAC equipment and truck deliveries.

It is anticipated that HVAC equipment will be roof-mounted on the buildings. Sound power levels have been provided by the manufacturer in octave band values and a sound rating value and are shown in Table 4. Manufacturer data sheets have been provided as Appendix G.

Table 4. Sound Power Levels of HVAC Equipment

Source	Sound Power at Octave Band Frequency (dBA)							Total (dBA)
	125	250	500	1K	2K	4K	8K	
Lennox LGH300S4B	79	84	88	89	85	82	73	94
Lennox LGH150H4B	75	81	87	85	80	74	70	90
Loren Cook 150 CPS	72	78	70	64	66	60	51	74

Truck loading and unloading activity is also anticipated to generate noise on the project site. In order to approximate noise from this source, noise levels measured for a previous study conducted by Eilar Associates were implemented into the Cadna noise model (see Section 4.1). The previous noise measurement was performed at an operational Henry's grocery store. The noise measurement was performed at a distance of 15 feet from an operational refrigerated truck (both engine and refrigeration unit running) and was one minute in duration. In order to determine worst-case noise levels at surrounding property lines, the L_{MAX} of this noise measurement was input into the noise model (rather than the average noise level, or L_{EQ}) in order to evaluate operational noise levels of the refrigerated truck maneuvering in the parking lot with its refrigeration unit running. Noise measurement data is shown in Table 5.

Table 5. Sound Pressure Level of Operational Refrigerated Truck, at 15 feet

Source	Sound Pressure Level at Octave Band Frequency (dB)								Total L_{MAX} (dBA)
	63	125	250	500	1K	2K	4K	8K	
Refrigerated Truck	90.8	84.8	79.9	81.3	80.0	76.8	71.6	66.0	84.1

Operational mechanical noise levels have been calculated for the project site using the above information. Results of this analysis are provided in Section 5.3.1.

3.2.3 Project-Generated Traffic

Project-generated traffic for this project was analyzed by Linscott, Law & Greenspan, Engineers in a Traffic Impact Analysis dated July 12, 2019. According to data obtained from the traffic study, it is estimated that worst-case peak hour traffic at the driveway will be 338 trips during the mid-day peak hour. This data was incorporated into the analysis to determine worst-case noise exposure at surrounding receivers. Please refer to Appendix H for pertinent sections of this traffic study.

3.2.4 Temporary Construction Equipment

Although the City of Carlsbad Noise Element to the General Plan does not have a specific noise limit for temporary construction activity, noise levels of this activity have been disclosed and are detailed in Section 5.4. Demolition and grading are typically the activities that generate the highest noise levels, and therefore, these activities are the focus of this brief analysis. Table 6 below shows typical construction equipment noise levels for pieces of equipment anticipated to be used on site. Construction equipment noise levels were obtained from the Department for Environment, Food & Rural Affairs (DEFRA) and duty cycles were obtained from the Federal Highway Administration (see references).

Table 6. Typical Construction Equipment Noise Levels

Noise Source	Duty Cycle (%)	Calculated Noise Level (L_{MAX}) at 50 feet (dBA)
Dozer	40	76
Excavator	40	72

4.0 METHODOLOGY AND EQUIPMENT

4.1 Methodology

4.1.1 Field Measurement

Typically, a “one-hour” equivalent sound level measurement (L_{EQ}, A-Weighted) is recorded for at least one noise-sensitive location on the site. During the on-site noise measurement, start and end times are recorded, vehicle counts are made for cars, medium trucks (double-tires/two axles), and heavy trucks (three or more axles) for the corresponding road segment(s). Supplemental sound measurements of one hour or less in duration are often made to further describe the noise environment of the site.

For measurements of less than one hour in duration, the measurement time is long enough for a representative traffic volume to occur and the noise level (L_{EQ}) to stabilize. The vehicle counts are then converted to one-hour equivalent volumes by applying an appropriate factor. Other field data gathered include measuring or estimating distances, angles-of-view, slopes, elevations, roadway

grades, and vehicle speeds. This information is subsequently verified using available maps and records.

4.1.2 Roadway Noise Calculation

The Traffic Noise Model (TNM) calculation protocol in Cadna Version 2019 (based on the methodology used in TNM Version 2.5, released in February 2004 by the U.S. Department of Transportation) was used for all traffic modeling in the preparation of this report. Using the TNM protocol, the CNEL is calculated as 0.092 times the ADT for surrounding roadways, based on the studies made by Wyle Laboratories (see reference). Future CNEL is calculated for desired receptor locations using future road alignment, elevations, lane configurations, projected traffic volumes, estimated truck mixes, and vehicle speeds. Noise attenuation methods may be analyzed, tested, and planned with TNM, as required.

In order to determine the estimated traffic volumes of roadways during the traffic noise measurement made on site for model calibration, the approximate percentage of the Average Daily Trips (ADT) value for the time period in which the measurement is made is incorporated into the traffic model. These percentages have been established in a study performed by Katz-Okitsu and Associates, Traffic Engineers (see reference). For purposes of calibrating the Cadna TNM, 6.5% of the ADT values for the current environment were used in calculations (for roadways that were not manually counted) to account for traffic between the hours of 1 p.m. and 2 p.m. in the vicinity of the project site.

4.1.3 Railway Noise Calculations

The railway noise analysis is accomplished using CREATE noise model and Cadna Version 2019 (see references). CREATE performs the evaluation of a site's exposure to railway noise by taking into account factors such as the distance from the site to the railroad track centerline, the number of diesel trains in both directions during an average 24-hour day, the fraction of trains that operate during the night, the average number of diesel locomotives, the average length of each train, the average train speed past the site, the rail types, and whether the site is nearby crossings where train whistles or horns are sounded. Results from CREATE are given at a single point, and therefore, Cadna is used in order to calculate noise impacts over the entire project site. Cadna (Computer Aided Noise Abatement) is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. Cadna assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project information such as noise source data, barriers, structures, and topography to create a detailed model and uses the most up-to-date calculation standards to predict outdoor noise impacts.

4.1.4 Exterior-to-Interior Noise Analysis

The City of Carlsbad Noise Element to the General Plan and CALGreen require commercial buildings to be designed in order to attenuate, control, and maintain average interior noise levels not greater than 50 CNEL. Contemporary exterior building construction is expected to achieve at least 15 decibels of exterior-to-interior noise attenuation with windows opened, according to the U.S. EPA (see reference). As a result, exterior noise levels of more than 65 CNEL often result in interior conditions that fail to meet the 50 CNEL requirements for occupied space.

Analysis for the interior noise levels requires consideration of:

- Number of unique assemblies in the wall (doors, window/wall mount air conditioners, sliding glass doors, and windows)
- Size, number of units, and sound transmission data for each assembly type
- Length of sound impacted wall(s)
- Depth of sound impacted room
- Height of exterior wall of sound impacted room
- Exterior noise level at wall assembly or assemblies of sound impacted room

The Composite Sound Transmission data is developed for the exterior wall(s) and the calculated noise exposure is converted to octave band sound pressure levels (SPL) for a typical traffic type noise. The reduction in room noise due to absorption is calculated and subtracted from the interior octave noise levels, and the octave band noise levels are logarithmically summed to yield the overall interior room noise level. When interior noise levels exceed 50 CNEL, the noise reduction achieved by each element is reviewed to determine which changes will achieve the most cost-effective compliance. Windows are usually the first to be reviewed, followed by exterior doors, and then exterior walls.

Modeling of wall assemblies is accomplished using INSUL Version 9.0, which is a model-based computer program, developed by Marshall Day Acoustics for predicting the sound insulation of walls, floors, ceilings and windows. It is acoustically based on theoretical models that require only minimal material information that can make reasonable estimates of the sound transmission loss (TL) and STC for use in sound insulation calculations; such as the design of common party walls and multiple family floor-ceiling assemblies, etc. INSUL can be used to quickly evaluate new materials or systems or investigate the effects of changes to existing designs. It models individual materials using the simple mass law and coincidence frequency approach and can model more complex assembly partitions. It has evolved over several versions into an easy to use tool and has refined the theoretical models by continued comparison with laboratory tests to provide acceptable accuracy for a wide range of constructions. INSUL model performance comparisons with laboratory test data show that the model generally predicts the performance of a given assembly within 3 STC points.

4.1.5 Cadna Noise Modeling Software

Modeling of the outdoor noise environment is accomplished using Cadna Version 2019, which is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. Cadna (Computer Aided Noise Abatement) assists in the calculation, presentation, assessment, and alleviation of noise exposure. It allows for the input of project information such as noise source data, barriers, structures, and topography to create a detailed model and uses the most up-to-date calculation standards to predict outdoor noise impacts. Noise standards used by Cadna that are particularly relevant to this analysis include ISO 9613 (Attenuation of sound during propagation outdoors). Cadna provides results that are in line with basic acoustical calculations for distance attenuation and barrier insertion loss.

4.1.6 Formulas and Calculations

Decibel Addition

To determine the combined logarithmic noise level of two known noise source levels, the values are converted to the base values, added together, and then converted back to the final logarithmic value, using the following formula:

$$L_C = 10\log(10^{L1/10} + 10^{L2/10} + 10^{LN/10})$$

where L_C = the combined noise level (dB), and
L_N = the individual noise sources (dB).

This procedure is also valid when used successively for each added noise source beyond the first two. The reverse procedure can be used to estimate the contribution of one source when the contribution of another concurrent source is known and the combined noise level is known. These methods can be used for L_{EQ} or other metrics (such as L_{DN} or CNEL), as long as the same metric is used for all components.

Distance Attenuation

Attenuation due to distance is calculated by the equation:

$$SPL_2 = SPL_1 - 20\log(\frac{D_2}{D_1})$$

where SPL_1 = Known sound pressure level at known distance,
SPL_2 = Calculated sound pressure level at distance,
D_1 = Distance from source to location of known sound pressure level, and
D_2 = Distance from source to location of calculated sound pressure level.

This is identical to the more commonly used reference of 6 dB reduction for every doubling of distance. This equation does not take into account reduction in noise due to atmospheric absorption.

Hourly L_{EQ} Summation

To determine the hourly average noise levels (L_{EQ}) when the noise is created for less than the full hour, convert the logarithm values to the base energy value, multiply by the percentage of the hour that the noise occurs, and then convert the sum back to a logarithmic value. This is done with the following formula:

$$L_{EQ} = 10\log(P_H \times 10^{L_P/10})$$

where P_H = the percent or fraction of the hour noise is created, and
L_P = the partial hour noise level (dB).

Project-Generated Traffic Noise Impacts

Changes in traffic noise levels can be predicted by inputting the ratio of the two scenarios into the following logarithmic equation:

$$\Delta = 10\log(V2/V1)$$

where: Δ= Change in sound energy,
V1 = original or existing traffic volume, and
V2 = future or cumulative traffic volume.

Construction Vibration Calculations

The construction vibration assessment contained herein is evaluated using calculations of peak particle velocity (PPV). PPV at receivers is calculated as follows:

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

where PPV_{equip} is the peak particle velocity (in inches per second) of the equipment, adjusted for distance,
PPV_{ref} is the reference vibration level (in inches per second) at a distance of 25 feet from the equipment, and
D is the distance from the equipment to the receiver.

4.2 Measurement Equipment

Some or all of the following equipment was used at the site to measure existing noise levels:

- Larson Davis Model LxT Type 1 Sound Level Meter, Serial # 4084
- Larson Davis Model CA250 Type 1 Calibrator, Serial # 2106

The sound level meter was field-calibrated immediately prior to the noise measurement and checked afterward, to ensure accuracy. All sound level measurements conducted and presented in this report, in accordance with the regulations, were made with a sound level meter that conforms to the American National Standards Institute specifications for sound level meters (ANSI S1.4). All instruments are maintained with National Bureau of Standards traceable calibration, per the manufacturers' standards.

5.0 IMPACTS AND MITIGATION

5.1 Exterior

Exterior noise impacts to the project site are evaluated in this section and consider a combination of rail and traffic noise. As some current traffic volumes exceed those projected for the future, the higher of the two values has been used in these cases for a "worst-case" analysis of anticipated noise levels at the proposed project site.

5.1.1 Noise Impacts to Outdoor Use Areas

The City of Carlsbad requires commercial projects to maintain noise levels of 65 CNEL or less at outdoor use areas. The project has incorporated one outdoor seating area to the west of the property. Traffic and railway noise impacts have been calculated at the outdoor use area using

Cadna to determine whether noise impacts exceed the 65 CNEL threshold. Calculations assume shielding provided by surrounding building structures. Results of this analysis are shown in Table 7 below. Additional information is provided in Appendices C and D, and a graphical representation of outdoor use receiver locations is provided as Figure 8.

Table 7. Worst-Case Combined Noise Levels at Outdoor Use Areas					
Receiver	Location	Floor	Exterior Noise Level (CNEL)		
			Railway	Traffic	Combined
OU	West	Ground	54	62	63

As shown above, worst-case combined noise impacts at the project site are not expected to exceed 65 CNEL at outdoor use areas of the project. No project design features are required for the attenuation of exterior noise impacts at the project site.

5.1.2 Noise Impacts at Building Facades

Using traffic volume data shown in Section 3.1, calculations of traffic noise at building facades have been performed for use in interior noise calculations. Worst-case combined noise impacts were calculated at the building facades and were found to range from 57 CNEL at the west facade to 74 CNEL at the east facade. A complete listing of calculated noise impacts is shown in Table 8, and a graphical representation of building facade receiver locations is shown in Figure 8. Please refer to Appendix D for detailed information.

Table 8. Worst-Case Combined Noise Levels at Building Facades				
Receiver	Facade Location	Exterior Noise Level (CNEL)		
		Traffic	Rail	Combined
F1	North Facade	68	49	68
F2	East Facade	74	39	74
F3	South Facade	67	51	68
F4	West Facade	54	54	57

5.2 Interior

The City of Carlsbad requires that commercial developments demonstrate compliance with the requirements of the Carlsbad Noise Element to the General Plan and the Noise Guidelines Manual. The Noise Element requires that interior noise levels do not exceed 50 CNEL and exterior noise levels do not exceed 65 CNEL for commercial spaces. The City of Carlsbad Noise Guidelines Manual states that interior noise levels of commercial buildings must not exceed 55 dBA. As the Noise Element regulations are more stringent than those of the Noise Guidelines Manual, the Noise Element requirement for interior noise levels not exceeding 50 CNEL have been applied to this project. Likewise, the State of California requires interior noise levels of 50 dBA or less during any hour of operation. According to the California Department of Transportation's Technical Noise Supplement to the Traffic Noise Analysis Protocol (see reference), peak hour traffic noise levels are typically found to be close to predicted CNEL values. Therefore, CNEL values calculated in the

traffic noise analysis for this project (shown in Appendix D) have been considered to be representative of peak hour noise impacts that would be experienced on-site. For this reason, compliance with the City of Carlsbad 50 CNEL interior noise limit would also be considered compliant with the CALGreen 50 dBA interior noise limit.

Contemporary exterior building construction is expected to achieve at least 15 decibels of exterior-to-interior noise attenuation with windows opened. As a result, exterior noise levels of more than 65 CNEL may potentially result in interior conditions that fail to meet the 50 CNEL requirements for commercial space.

An exterior-to-interior noise analysis was conducted for the building to evaluate the sound reduction properties of the proposed exterior wall assemblies, window, and door construction designs in the building. The roof assembly was not included in this evaluation as it is only necessary to do so when the roof will be exposed to a significant amount of noise from traffic, aircraft, or other transportation noise sources. All roadway noise sources are located at an elevation below the proposed roof height, and therefore, the roof is expected to be sufficiently shielded from transportation noise levels while walls will be exposed to significantly higher noise levels.

The exterior wall has been evaluated in calculations as stucco over plywood sheathing on the exterior with two-inch by six-inch wood framing, insulation in the cavity, and ½-inch gypsum board on the interior. This wall assembly was calculated to have a rating of STC 43. Please refer to Appendix E for more details. Proposed windows were evaluated as STC 25 glazing units and doors were evaluated as STC 20 single pane glass doors for a conservative analysis of standard commercial glazing.

The assemblies detailed above were used in calculations to determine whether the currently proposed design would be sufficient for achieving interior noise levels of 50 CNEL or less. Please refer to Table 9, showing interior noise levels with the project as currently designed, and refer to Appendix F for additional information.

Table 9. Worst-Case Interior Combined Noise Levels

Room	Maximum Exterior Facade Impact (CNEL)	Interior Noise Level (CNEL)
Dining/Serving Area	68	45
Kitchen	68	36
Office	74	39
Service Area	74	49

As shown above, with the proposed exterior wall assembly and standard commercial glazing, interior noise levels are expected to remain below 50 CNEL and therefore are considered compliant with City of Carlsbad noise regulations. As CNEL is generally considered to be equivalent to the peak hour noise impact, interior noise levels are also expected to comply with the acoustical regulations of CALGreen.

Exterior door installation should include all-around weather-tight door stop seals and an improved threshold closure system. The additional hardware will improve the doors' overall sound reduction properties. The transmission loss (TL) of an exterior door without weather-tight seals is largely a

factor of sound leakage, particularly at the bottom of the door if excessive clearance is allowed for air transfer. By equipping exterior doors with all-around weather-tight seals and an airtight threshold closure at the bottom, a loss of up to 10 STC points can be prevented.

Additionally, it is imperative to seal and caulk between the rough opening and the finished door frame for all doors by applying an acoustically resilient, non-skinning butyl caulking compound. Sealant application should be as generous as needed to ensure effective sound barrier isolation. The same recommendation applies to any other penetrations, cracks, or gaps through the assembly. The OSI Green Series and the Pecora AC-20 FTR acoustic sound sealants are products specifically designed for this purpose. For additional information on these products, please refer to Appendix K: Recommended Products.

The proposed project was analyzed for combined traffic and rail noise impacts. With proposed exterior wall assembly and standard commercial glazing, all occupied rooms are expected to comply with City of Carlsbad and CALGreen noise requirements.

5.3 Permanent Project-Related Noise Impacts

5.3.1 Mechanical Equipment Noise

Noise levels from the proposed HVAC units were calculated in Cadna at the nearest properties using data presented in Section 3.2.2. HVAC equipment and truck deliveries were evaluated for both the daytime and nighttime scenarios. The daytime scenario makes the conservative assumption that all truck deliveries would arrive in a single hour and HVAC would operate continuously. The nighttime scenario assumes only HVAC operation at a duty cycle of 50 percent, to account for cooler nighttime hours. Noise limits have been applied as detailed in Section 2.3. Calculations consider shielding that would be provided by the proposed on-site structure.

Calculations show that mechanical noise impacts at the nearest structure to the south of the project site (R1) will be 53 dBA and 50 dBA for daytime and nighttime hours, respectively. Additional information is provided in Appendix D: Cadna Analysis Data and Results. For a graphic showing mechanical equipment noise source and receiver locations, please refer to Figure 9. As noise impacts do not exceed the 70 dBA L_{EQ} limit set forth in the noise compatibility matrix, no additional project design features are deemed necessary to reduce noise impacts from on-site mechanical equipment.

5.3.2 Project-Generated Traffic Noise

As detailed in Section 2.3.3, it is estimated that worst-case peak hour traffic at the project site will be 338 trips during the mid-day peak hour. Calculations were performed to determine the approximate change in noise exposure at surrounding receivers. As all access to the project site will be via Avenida Encinas, the change in traffic volume to this roadway has been assessed for a worst-case analysis.

The project's impacts have been evaluated to determine whether a direct impact will result. A significant direct impact occurs when project traffic combines with existing traffic and causes a doubling of sound energy, which is an increase of 3 dB. Direct impacts are assessed by comparing existing traffic volumes to existing plus project traffic volumes using the calculation methodology shown in Section 4.1.6.

Project-generated traffic noise increases are shown in Table 10.

Table 10. Anticipated Traffic Noise Increases with Project-Generated Traffic			
Road Segment	Mid-Day Peak Traffic Volume		Noise Level Increase (dB)
	No Project	With Project	
NB Avenida Encinas	426	497	0.7
SB Avenida Encinas	341	409	0.8

As shown in Table 10, no noise level increase is anticipated to result from project traffic during the worst-case mid-day peak hour. For this reason, project-generated traffic noise levels are expected to be less than significant.

5.4 Temporary Construction Noise Impacts

The City of Carlsbad does not provide noise limits for temporary construction activity at surrounding noise-sensitive property lines; however, the hours during which construction activity can take place are limited by the Municipal Code. Construction is prohibited after 6 p.m. and before 7 a.m. Monday through Friday and before 8 a.m. on Saturdays. Construction is also prohibited on Sundays and federal holidays.

Estimated construction noise impacts have been calculated assuming the typical pieces of equipment shown in Table 6 would be operating on site during the site demolition/grading process. Noise levels were calculated using the methodology and formulas detailed in Section 4.1.6 at the nearest potential noise-sensitive property to the south. In order to assess average noise levels during construction activity, noise levels have been calculated considering the center of construction activity located at the center of the project site, at approximately 90 feet from the nearest property line. Based on the typical noise levels and duty cycles of construction equipment, when construction is operating in this location, average noise levels over the course of a typical eight-hour work day at the nearest potentially noise-sensitive property line will be approximately 68 dBA. This noise impact is below what the typical ambient noise levels would ordinarily be, and this noise impact would be temporary. Any other surrounding otherwise noise-sensitive receivers are located at a greater distance from proposed construction activity, and therefore will be exposed to lesser noise impacts due to additional distance attenuation and shielding provided by intervening structures. Please refer to Appendix I for additional information.

Despite the fact that there are no applicable noise limits, the following “good practice” measures should still be practiced as a courtesy to off-site receivers.

1. Turn off equipment when not in use.

2. Limit the use of enunciators or public address systems, except for emergency notifications.

3. Equipment used in construction should be maintained in proper operating condition, and all loads should be properly secured, to prevent rattling and banging.

4. Schedule work to avoid simultaneous construction activities where both are generating high noise levels.

5. Use equipment with effective mufflers.

6. Minimize the use of backup alarms.

With operating hours limited to those permitted by the City of Carlsbad and adherence to the general good practice construction noise control techniques, temporary construction noise impacts are expected to be less than significant at surrounding properties.

5.5 CEQA Significance Determination

Noise impacts from the project site are summarized below and classified per the noise portion of the CEQA Environmental Checklist form. This list summarizes conclusions made within the report and classifies the level of significance as: Potentially Significant Impact, Less than Significant with Mitigation Incorporated, Less than Significant Impact, or No Impact. *Italics* are used to denote language from the CEQA Environmental Checklist form.

XII. NOISE—Would the project result in:

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact. Operational noise impacts calculated in Section 5.3.1 are not expected to generate a substantial permanent increase in ambient noise levels in the vicinity of the project site. A substantial increase would be considered an increase of three decibels or more, which would represent a doubling of sound energy.

Average ambient noise levels were projected using the methodology detailed in Section 4.1.2 and were combined with the projected equipment noise impacts in terms of CNEL to determine the cumulative noise impact and the increase in ambient noise levels resulting from operation of the project. Results are shown in Table 11.

Table 11. Calculated Cumulative Noise Impacts at Surrounding Property Lines

Receiver Number	Receiver Location	Noise Level (CNEL)				Impact
		Ambient	Equipment	Cumulative	Ambient Increase	
R1	South Property Line	68.5	57.6	68.8	0.3	Less than Significant

The results in Table 11 demonstrate that the increase in ambient noise levels from HVAC operation and truck deliveries will be less than 3 dBA. Additionally, as demonstrated in Section 5.3.2 of this report, noise impacts from project-generated traffic are not expected to cause a significant direct increase on any surrounding roadway. This impact is also considered to be less than significant.

As shown in Section 5.4 of this report, noise from temporary construction is expected to be less than significant considering a typical construction schedule and assuming that equipment is maintained in proper operating condition and using appropriate mufflers. Additionally, no construction activity will take place during the more sensitive nighttime hours when ambient noise

levels tend to be lower, as per City of Carlsbad requirements. For these reasons, this impact is deemed to be less than significant.

As demonstrated above, the project is not expected to cause a substantial permanent or temporary increase in ambient noise levels, and therefore, this impact can be classified as less than significant.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact. The paving stage of construction has the potential to generate the highest vibration levels of any phase of construction, as paving activities would take place closest to residential receivers and may consist of the use of a vibratory roller. According to the Federal Transit Administration Transit Noise and Vibration Assessment Manual (see reference), a vibratory roller generates a peak particle velocity (PPV) of approximately 0.210 inches/second at a distance of 25 feet from equipment. The evaluation of an impact's significance can be determined by reviewing both the likelihood of annoyance to individuals as well as the potential for damage to existing structures. According to the Caltrans Transportation and Construction Vibration Guidance Manual (see reference), the appropriate threshold for damage to modern residential structures is a PPV of 0.5 inches/second. Annoyance is assessed based on levels of perception, with a PPV of 0.01 being considered "barely perceptible," 0.04 inches/second as "distinctly perceptible," 0.1 inches/second as "strongly perceptible," and 0.4 inches/second as "severe."

It is estimated that the nearest location to sensitive receptors would be approximately 50 feet from the nearest commercial structure, when the roller is used at the southern boundary of the site. At this distance, the PPV would be approximately 0.074 inches/second. This level of vibration falls well below the building damage PPV criteria of 0.5 inches/second. The impact falls between the "distinctly perceptible" and "strongly perceptible" PPV criteria for annoyance; however, vibration would be reduced to "distinctly perceptible" levels by the time the roller is located at a distance of 75 feet from receivers, and "barely perceptible" at 195 feet from receivers. As construction vibration is not anticipated to cause damage to off-site buildings and will only approach the threshold of "strongly perceptible" vibration for a short period of time when work is performed near the southern boundary of the property, it is the opinion of the undersigned that temporary construction vibration impacts would not be "excessive" and therefore are less than significant. Please refer to Appendix J for additional information.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Less Than Significant Impact. While the project site is located within two miles of the McClellan-Palomar Airport, the site is not located within the McClellan-Palomar Airport Land Use Compatibility Plan. Therefore, the proposed project would not expose people working in the project area to excessive noise levels from such uses.

6.0 CONCLUSION

The Carlsbad Noise Element to the General Plan requires exterior noise levels of 65 CNEL and interior noise levels of 50 CNEL or less for commercial projects. Likewise, the California Green Building Standards Code (known as CALGreen) also requires interior noise levels of 50 dBA or less during any hour of operation. Calculations show that the outdoor patio is anticipated to have noise levels of 65 CNEL or less as currently designed. Additionally, with the proposed exterior wall assembly and standard commercial glazing, interior noise levels of 50 CNEL or less can be achieved. The project is therefore expected to comply with applicable noise limits of both the City of Carlsbad and State of California as currently designed.

Noise from the anticipated mechanical equipment on site has been calculated to determine if specific project design features are necessary to reduce the noise impacts to be compliant with applicable limits. Noise limits specified within the City of Carlsbad Noise Element to the General Plan must be met at neighboring noise-sensitive property lines. Calculations show that noise levels from the mechanical equipment will be in compliance with the City of Carlsbad noise limits. No project design features are deemed necessary to control project-generated noise impacts from mechanical equipment. Project-generated traffic noise is also expected to be less than significant.

The City of Carlsbad does not provide noise limits for temporary construction activity at surrounding noise-sensitive property lines; however, the hours during which construction activity can take place are limited by the Municipal Code. Construction is prohibited after 6 p.m. and before 7 a.m. Monday through Friday and before 8 a.m. on Saturdays. Construction is also prohibited on Sundays and federal holidays. Though it is not required by regulations, the general good practice construction noise control methods listed herein should be followed, as a courtesy to surrounding properties. With operating hours limited to those allowable in the City of Carlsbad and standard good practice construction noise control measures followed, temporary construction noise and vibration are expected to be less than significant.

The proposed project is not expected to result in any potentially significant noise impacts by the standards of the California Environmental Quality Act (CEQA). Noise impacts are summarized in Section 5.5.

7.0 CERTIFICATION

All recommendations for noise control are based on the best information available at the time our consulting services are provided. However, as there are many factors involved in sound transmission, and Eilar Associates has no control over the construction, workmanship or materials, Eilar Associates is specifically not liable for final results of any recommendations or implementation of the recommendations.

This report is based on the related project information received and measured noise levels, and represents a true and factual analysis of the acoustical impact issues associated with the Chick-fil-A – I-5 & Palomar Airport Road project, located at 5850 Avenida Encinas in the City of Carlsbad, California. This report was prepared by Rachael Cowell and Amy Hool.

Rachael Cowell, Staff Consultant

Amy Hool, Senior Acoustical Consultant

8.0 REFERENCES

1. City of Carlsbad Noise Element to the General Plan, September 2015

2. City of Carlsbad Noise Guidelines Manual, September 1995.

3. 2016 California Green Building Code, Nonresidential Mandatory Measures.

4. Harris Miller Miller & Hanson, Inc., CREATE Freight Noise and Vibration Model, 2006.

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9. Federal Highway Administration, Highway Traffic Noise: Analysis and Abatement Guide, December 2011.

10. Traffic Distribution Study, by Katz-Okitsu and Associates Traffic Engineers, 1986.

11. U.S. Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare With an Adequate Margin of Safety, March 1974.

12. California Department of Transportation, Technical Supplement to the Traffic Noise Analysis Protocol, September 2013.

13. Marshall Day Acoustics, INSUL Version 9.0.

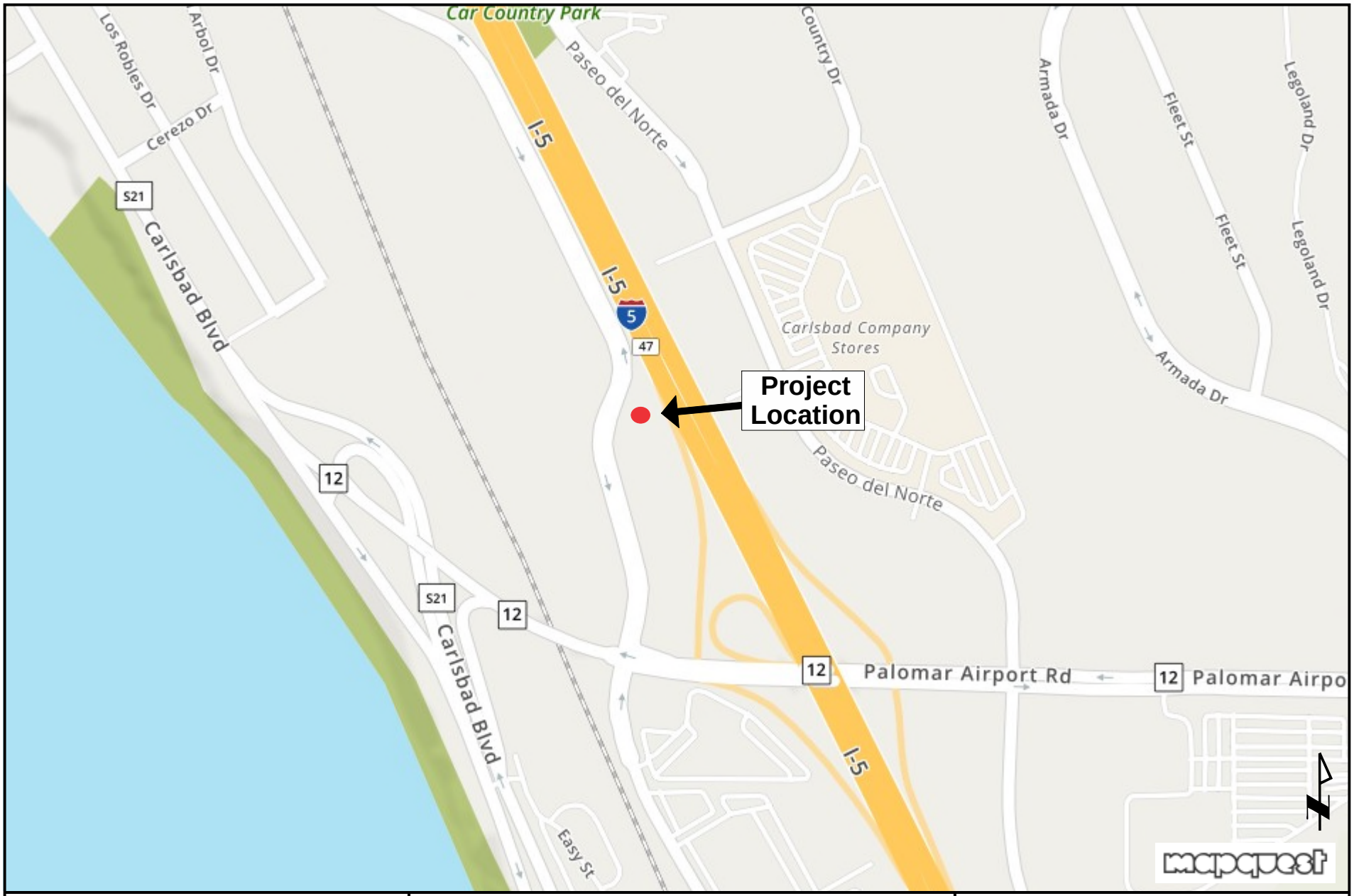
14. Department for Environment Food and Rural Affairs (DEFRA), Update of Noise Database for Prediction of Noise on Construction and Open Sites, 2005.

15. California Environmental Quality Act (CEQA), Statute and Guidelines, 2018.

16. Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment, May 2006.

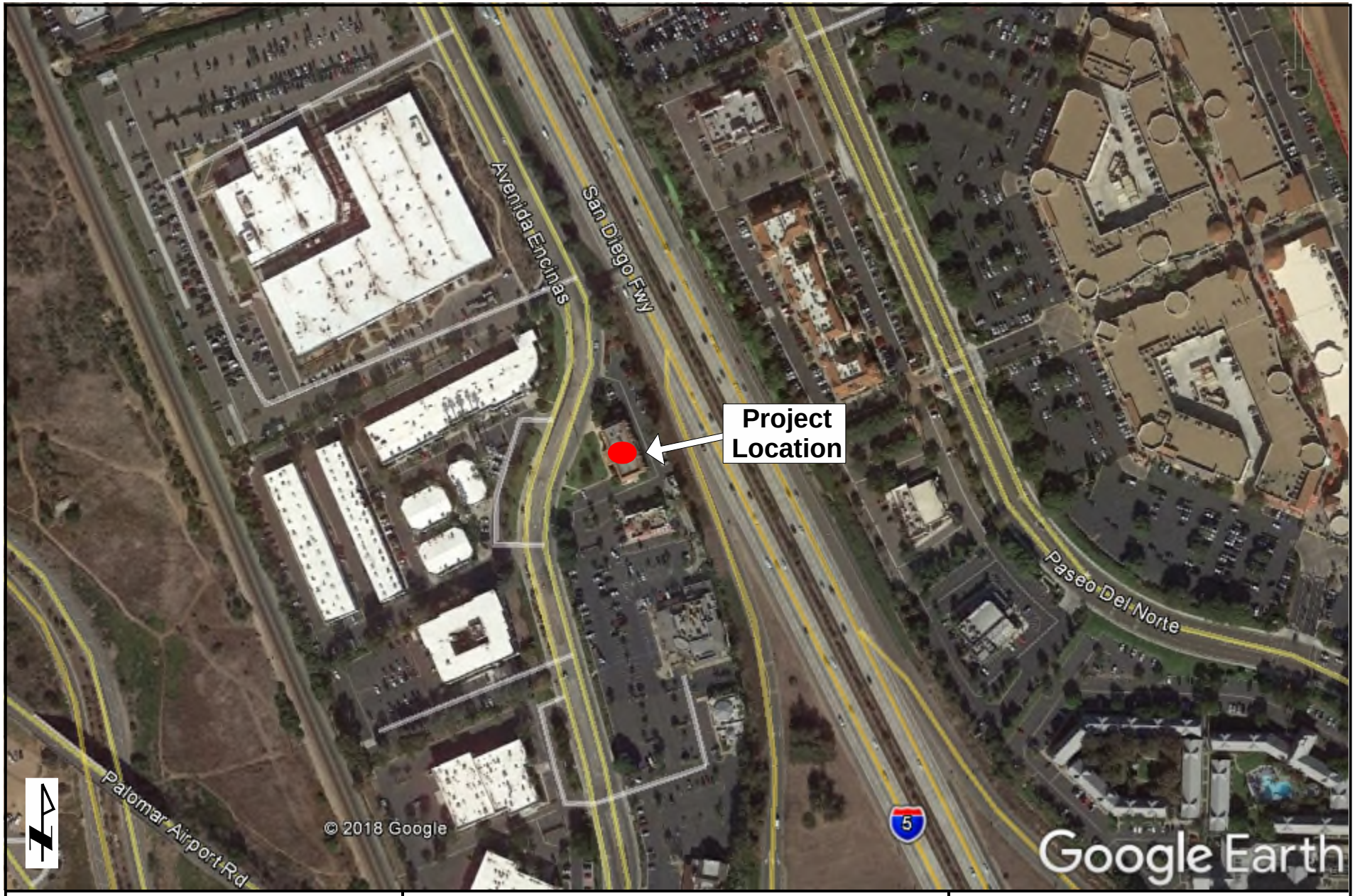
17. California Department of Transportation (Caltrans), Transportation and Construction Vibration Guidance Manual, September 2013.

FIGURES

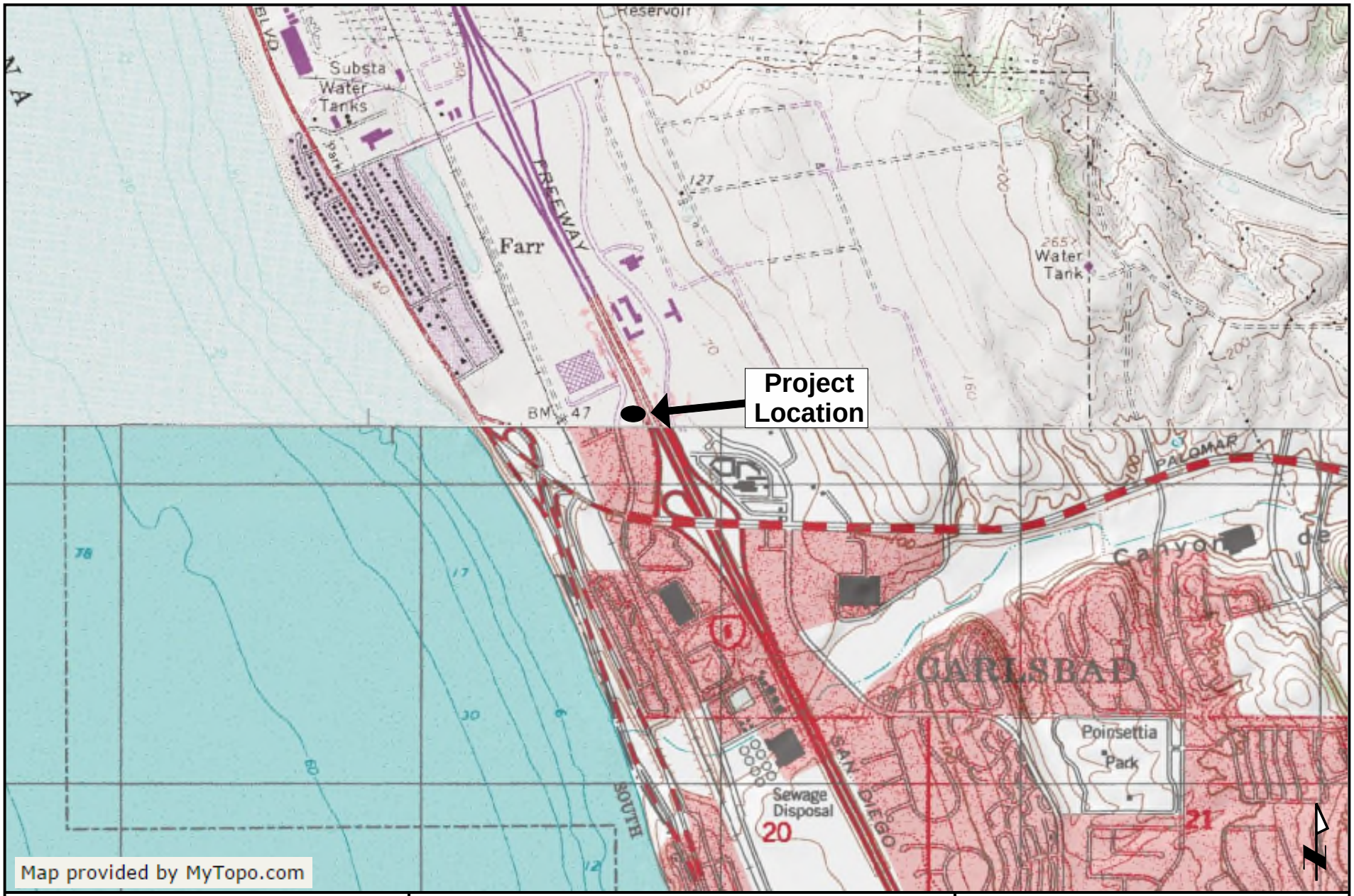


Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Vicinity Map** **Job # S190205.2**	**Figure 1**

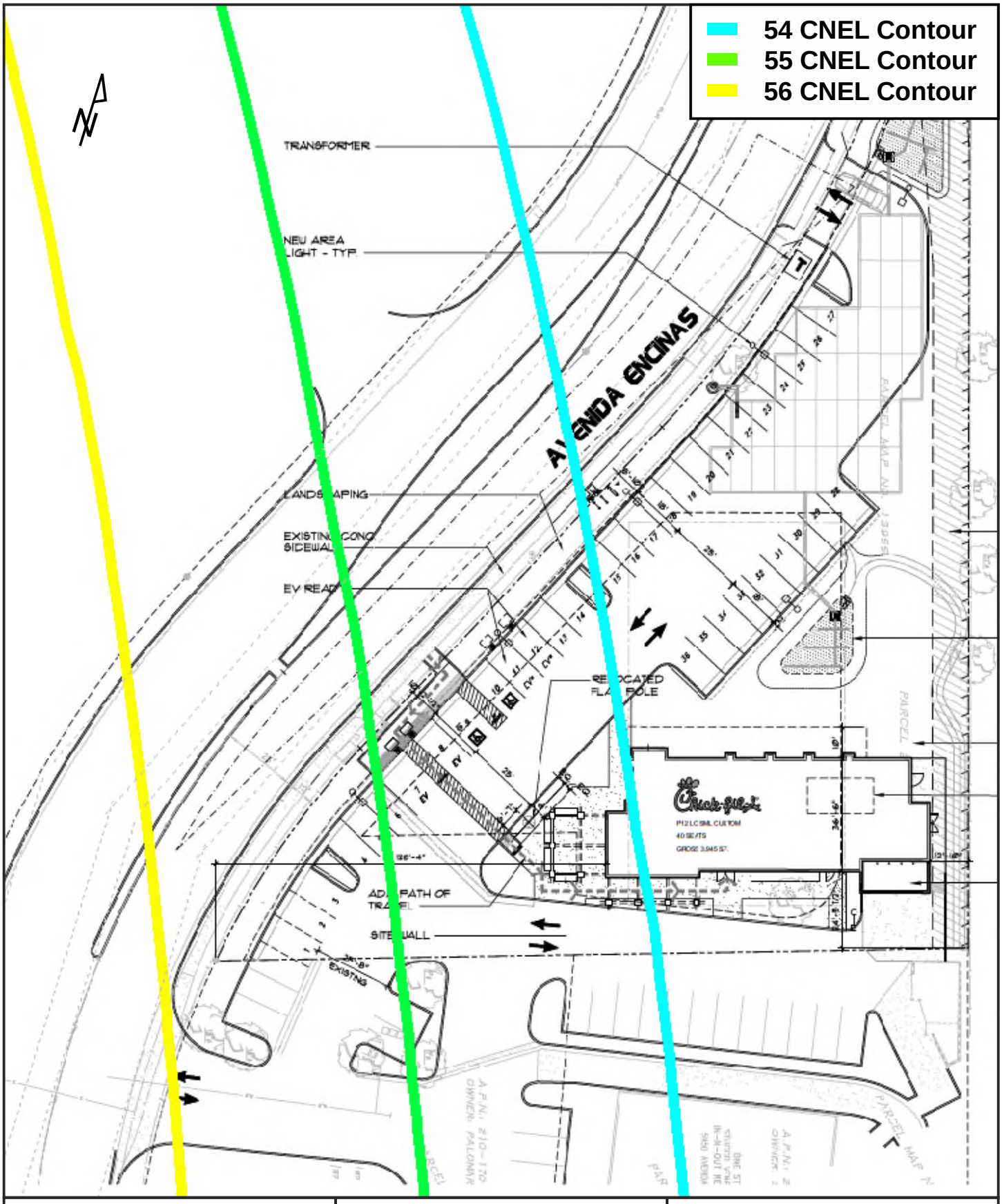
Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570	Assessor's Parcel Map Job # S190205.2	Figure 2



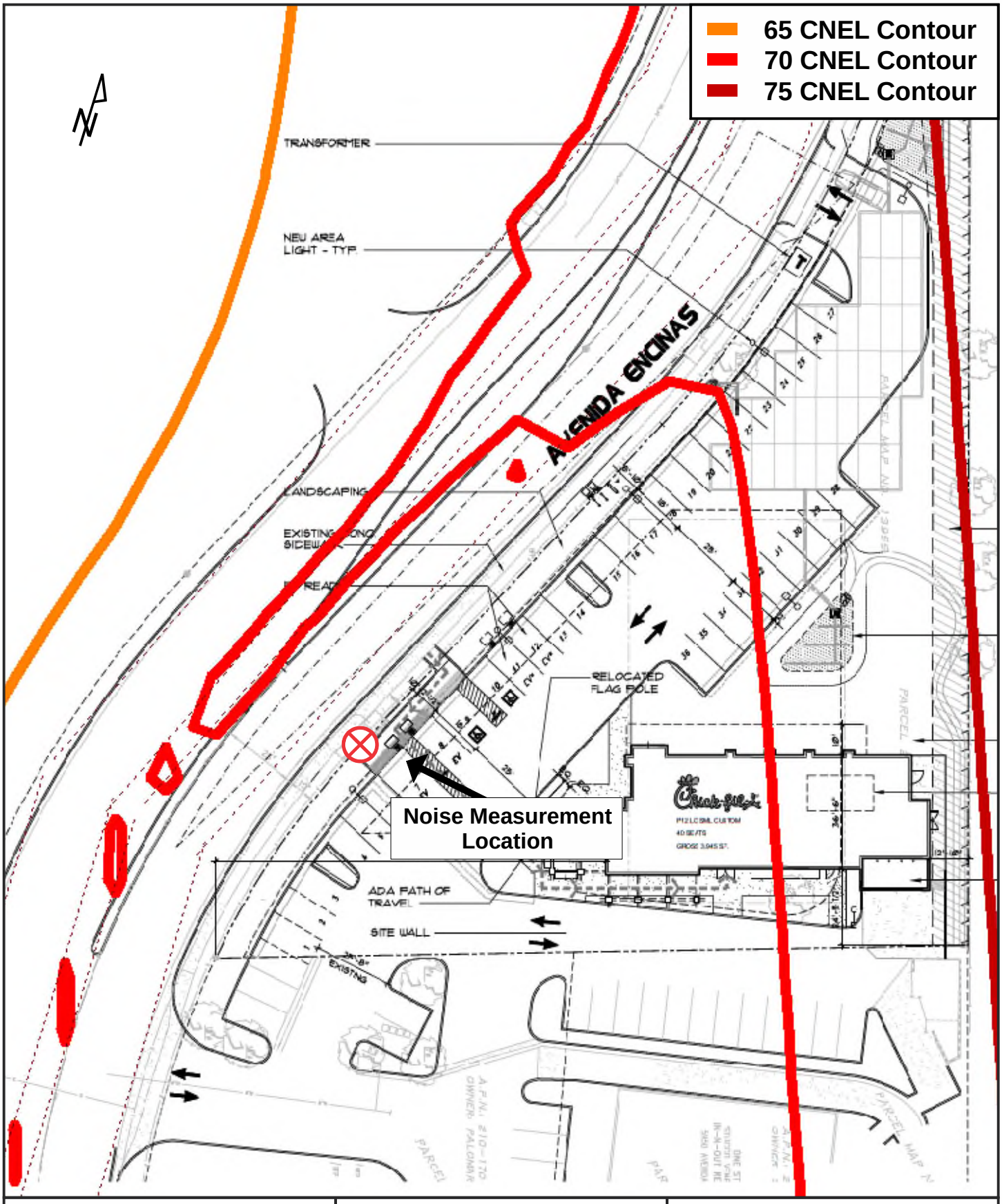
Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Satellite Aerial Photograph** **Job # S190205.2**	**Figure 3**



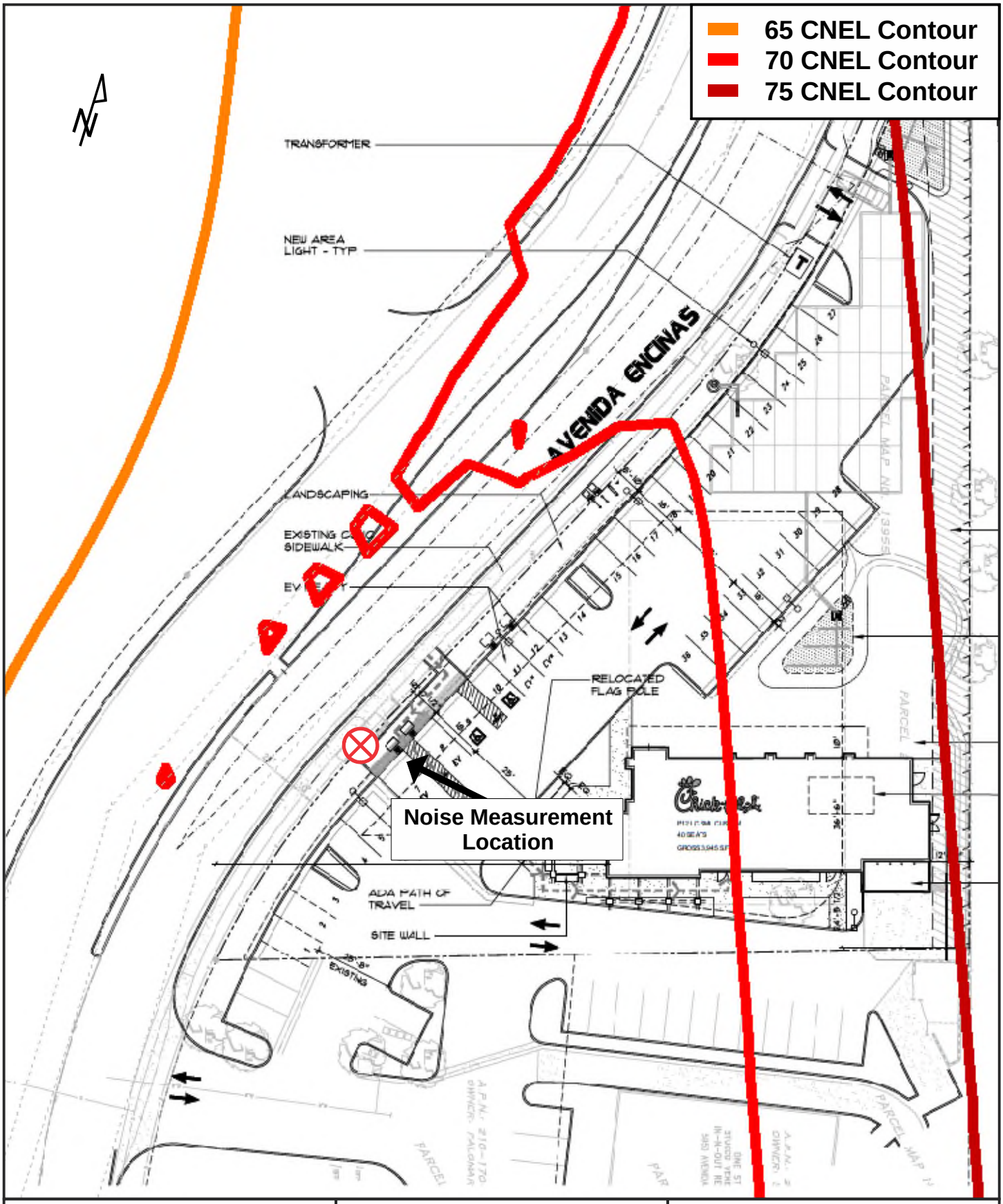
Eilar Associates, Inc. **210 South Juniper Street, Suite 100** **Escondido, California 92025** **760-738-5570**	**Topographic Map** **Job # S190205.2**	**Figure 4**



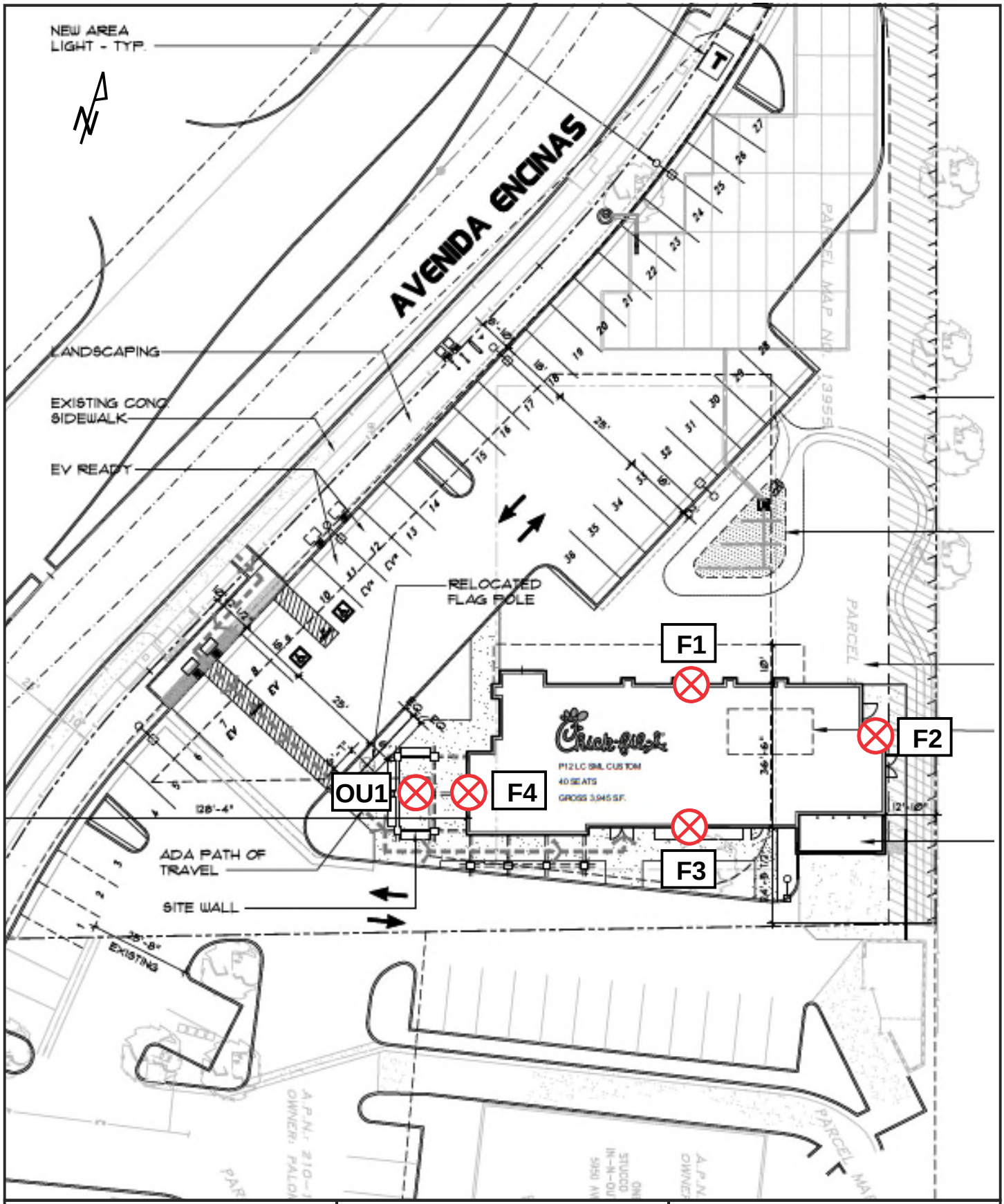
Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570	**Site Plan Showing** **Railway Noise Contours** **Job # S190205.2**	**Figure 5**



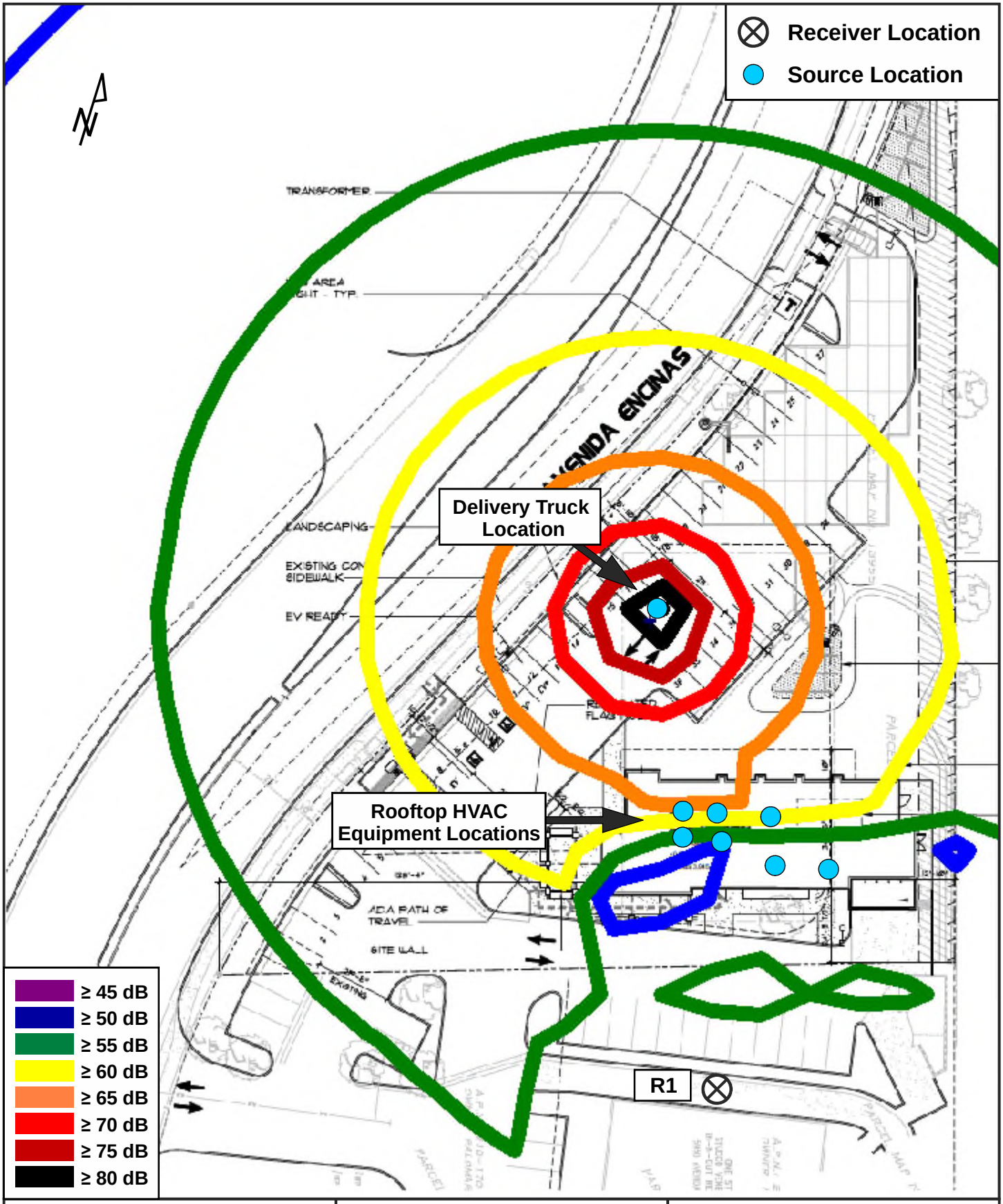
Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570	**Site Plan Showing Current Combined CNEL Contours and Noise Measurement Location** **Job # S190205.2**	**Figure 6**



Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570	**Site Plan Showing Future Combined CNEL Contours and Noise Measurement Location** **Job # S190205.2**	**Figure 7**



Eilar Associates, Inc. 210 South Juniper Street, Suite 100 Escondido, California 92025 760-738-5570	**Site Plan Showing Worst-Case Outdoor Use and Facade Receiver Locations** **Job # S190205.2**	**Figure 8**



Eilar Associates, Inc.
210 South Juniper Street, Suite 100
Escondido, California 92025
760-738-5570

Site Plan Showing Mechanical Equipment Noise Contours
Job # S190205.2

Figure 9

APPENDIX A

Project Plans

CODE INFORMATION

BUILDING CODE:	CBC 2016
PLUMBING CODE:	CPC 2016
MECHANICAL CODE:	CMC 2016
ELECTRICAL CODE:	CEC 2016
ENERGY CODE:	CEC 2016
FIRE CODE:	CFC 2016

BUILDING DATA

OCCUPANCY:	A2 (RESTAURANT)
FIRE SPRINKLERED:	YES
CONSTRUCTION TYPE:	V-B
SITE AREA:	37,391 S.F.
BUILDING AREA:	3,427 S.F.
BUILDING HEIGHT	24'-0"
FAR:	.09
ZONING:	PLANNED INDUSTRIAL
AVERAGE DAILY TRAFFIC:	979
WATER GENERATION:	1.5" METER, PEAK WATER DEMAND OF 67 GPM.
SEWER GENERATION:	1500 GDP AVERAGE, 775 GDP IS NON-GREASE WASTE AND 725 GDP IS GREASE WASTE.

PARKING

STANDARD SPACES REQUIRED:	FOR RESTAURANT LES THAN 4,000 SF IN SIZE: 1 STALL/ 100 SF OF GFA
	3,945 / 100 - 40
TOTAL SPACES REQUIRED:	40 STALLS
TOTAL SPACES PROVIDED:	36 STALLS

Architect:
C.R.H.O.
1833 E. 17TH ST. SUITE 301
SANTA ANA, CA. 92705
PHONE: (714) 832-1834
FAX: (714) 832-1910
CONTACT: RUSSELL HATFIELD
E-MAIL: RUSSELL•CRHO.COM

Property Owner:
FOURSQUARE PROPERTIES, INC.
BILL GROSSE
5850 AVENIDA ENCINAS, SUITE A
CARLSBAD, CA 92008

Civil Engineer:
TRUXAW AND ASSOCIATES
265 ANITA DRIVE
SUITE 111
ORANGE, CA. 92868
PHONE: (714) 935-0265
CONTACT: STEVE HAGER
E-MAIL: STEVEHAGER•TRUXAW.COM

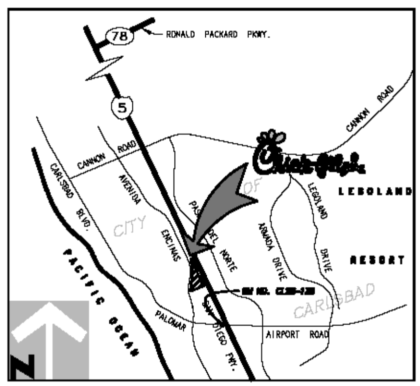
Developer:
CHICK-FIL-A
15635 ALTON PARKWAY, SUITE 350
IRVINE, CA 92618
(858) 231-0150

Landscape Architect:
JOHN HOURIAN & ASSOC.
107 AVENIDA MIRAMAR, SUITE "D"
SAN CLEMENTE, CA 92672
PHONE: (949) 489-5623
FAX: (949) 489-5632
CONTACT: JOHN HOURIAN
E-MAIL: TEAM•HOURIANASSOCIATES.COM

Chick-fil-A

5200 BUFFINGTON ROAD
ATLANTA, GEORGIA 30349-2998
PHONE: (404) 765-8000
FAX: (404) 684-8550

5850 AVENIDA ENCINAS
CARLSBAD, CA



1 VICINITY MAP
NOT TO SCALE

DRAWING INDEX

CAP COMPLIANCE

CONSISTENT WITH GENERAL LAND USE AND ZONING	YES
GHG STUDY REQUIRED:	YES
ENERGY EFFICIENCY:	YES
PHOTOVOLTAIC REQUIREMENT:	YES - 5KW ROOF MOUNTED
ELECTRIC VEHICLE CHARGING STATIONS:	YES - 2 INSTALLED & 2 READY
HOT WATER HEATING REQUIREMENT:	YES
TRAFFIC DEMAND MANAGEMENT REQUIRED:	NO

PROJECT DESCRIPTION

THE PROJECT IS A FAST CASUAL RESTAURANT THAT SEATS 40. THE ARCHITECTURE IS CONTEMPORARY WITH SMOOTH STUCCO AND BURNISHED BLOCK WALLS AND COLUMNS. THE NEW STRUCTURE IS 24'-0" HIGH

THE PROPOSED DEVELOPMENT ENCOMPASSES CARLSBAD'S APN 210-170-08-00, WHICH IS CURRENTLY DEVELOPED COMERCIALLY AS A 2-STORY OFFICE BUILDING. THE 10,977 S.F. BUILDING WAS CONSTRUCTED IN 1972 AND IS LOCATED NEAR OTHER COMMERCIAL USES. THE SUBMITTAL IS TO DEMOLISH THE EXISTING BUILDING AND CONSTRUCT A NEW 3,945 S.F. FAST FOOD RESTAURANT BUILDING. THE PROJECT'S ENTITLEMENTS INCLUDE GENERAL PLAN AMENDMENT, ZONE CHANGE, AND LOCAL COASTAL AMENDMENT TO REZONE THE PROPERTY FROM PLANNED INDUSTRIAL TO COMMERCIAL TOURIST (C-T) TO BE ZONED CONSISTENTLY WITH THE REST OF THE CENTER.

THE PROJECT IS IN A COASTAL ZONE.

A. PLANNED DEVELOPMENT NON-RESIDENTIAL-PUD2019-0003
B. GENERAL PLAN AMENDMENT - GPA2019-0001
C. COASTAL DEVELOPMENT PERMIT - CDP2019-0007
D. LOCAL COASTAL PLAN AMENDMENT - LCPA2019-0002
E. ZONE CHANGE - ZC2019-0001
F. SDP AMENDMENT - AMEND2019-004

Chick-fil-A
5200 Buffington Road
Atlanta, Georgia
30349-2998

crho
ARCHITECTS
1833 E 17th. Street, Suite 301
Santa Ana, CA. 92705
phone 714.832.1834

CHICK-FIL-A
I-5 & PALOMAR AIRPORT RD FSU
5850 AVENIDA ENCINAS, CARLSBAD, CA

FSR# 04306

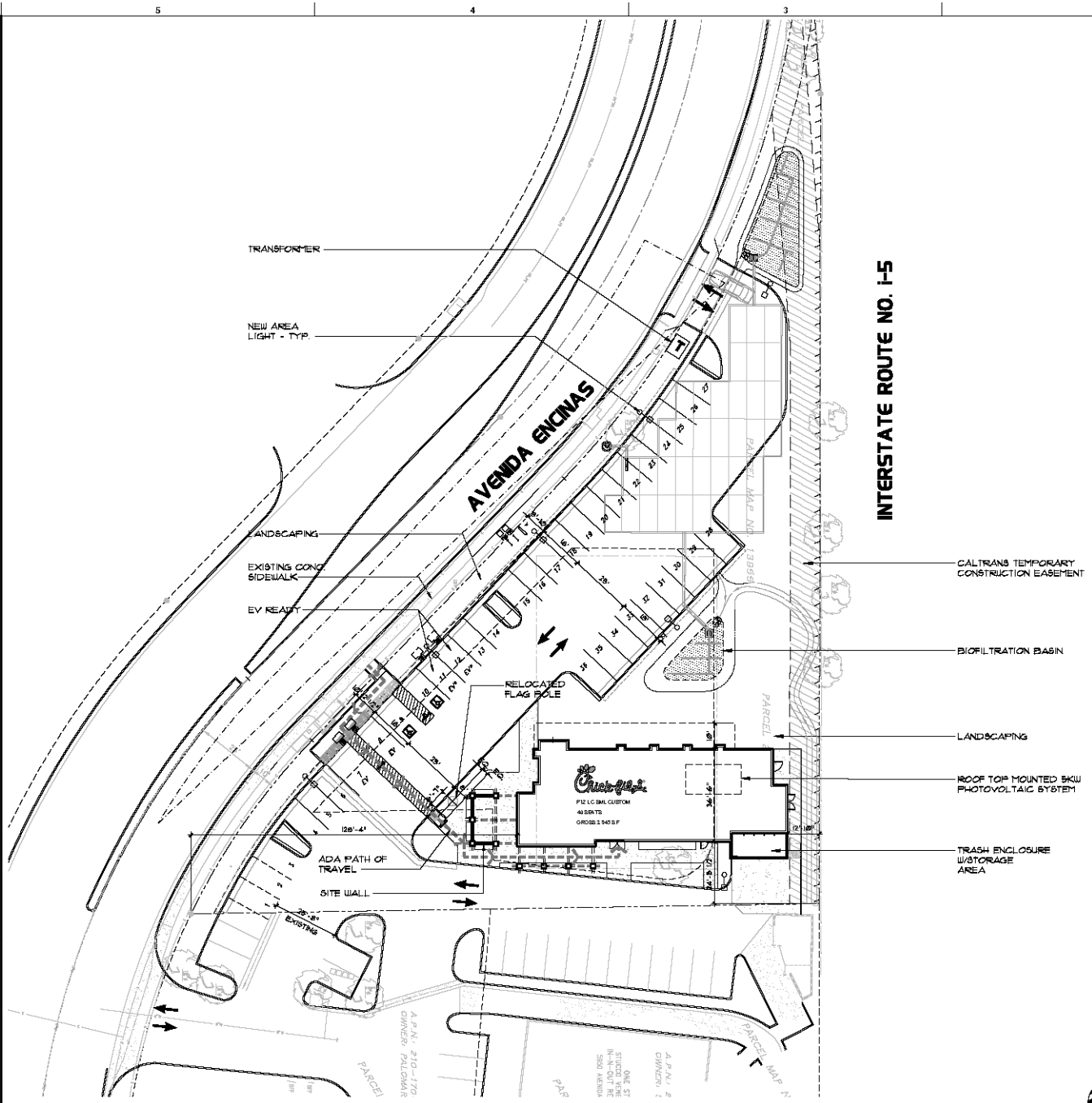
REVISION SCHEDULE

NO.	DATE	DESCRIPTION
REVISED: 7-11-19		

ARCHITECT'S PROJECT #	18-168
PRINTED FOR	Plan'g, Building, Etc.
DATE	09-24-18
DRAWN BY	AM

SHEET
COVER SHEET

SHEET NUMBER
T-1.1



1 PRELIMINARY SITE PLAN

1"= 20'-0"

NORTH

GRAPHIC SCALE

BUILDING DATA

OCCUPANCY:	A2 (RESTAURANT)
FIRE SPRINKLERED:	YES
CONSTRUCTION TYPE:	V-B
SITE AREA:	37,391 S.F.
BUILDING AREA:	3,427 S.F.
BUILDING HEIGHT	24'-0"
FAR:	.09
ZONING:	PLANNED INDUSTRIAL

PARKING

STANDARD SPACES REQUIRED:	FOR RESTAURANT LES THAN 4,000 SF IN SIZE 1 STALL/ 100 SF OF GFA
	3,945 /100 = 40
	40 STALLS REQUIRED
TOTAL SPACES PROVIDED:	96
EVCS	2
EVCS READY:	2
TOTAL:	4

PALOMAR PLACE PARKING SUMMARY–EXISTING

BUILDING NO.	TENANT	ADDRESS	BUILDING FOOTPRINT*	USE	NOTES	REQUIRED PARKING SPACES**
-	MULTI-TENANT OFFICE	5930 AVENIDA ENCINAS	0,000 SF	DINE-IN/TAKE OUT RESTAURANT	2-STORY OFFICE	34
2	IN-N-OUT RESTAURANT	5950 AVENIDA ENCINAS	2,360 SF	DINE IN/TAKE OUT RESTAURANT	DRIVE-THRU	59
3	DRAFT REPUBLIC	5958 AVENIDA ENCINAS	0,000 SF	DINE-IN RESTAURANT		172
4	TOAST CASTROBRUNCH	5970 AVENIDA ENCINAS	6,200 SF	DINE-IN RESTAURANT		80
5	MIGUEL'S COCINA	5980 AVENIDA ENCINAS	8,880 SF	DINE-IN RESTAURANT		136
6	MCDONALDS	5990 AVENIDA ENCINAS	3,500 SF	DINE-IN/TAKE OUT RESAURANT	DRIVE-THRU	35

* BUILDING FOOTPRINT AREA INFORMATION PROVIDED BY 4G DEVELOPMENT AND CONSULTING, INC. ON 5-17-19

** PARKING REQUIREMENT CALCULATION BASED UPON CITY OF CARLSBAD MUNICIPAL CODE 21.44.020:
RESTAURANTS
1 PARKING STALL/100 SF OF BUILDING FOOTPRINT AREA (40,000 SF)
OR
40 PARKING STALLS + 1 PARKING STALL/50 SF OF BUILDING FOOTPRINT AREA (>4,000 SF)
RETAIL, PROFESSIONAL SERVICES
1 PARKING STALL/300 SF OF BUILDING FOOTPRINT AREA

TOTAL PARKING = 659
15% REDUCTION = 99
TOTAL REQUIRED PARKING = 560
TOTAL PROVIDED PARKING = 477

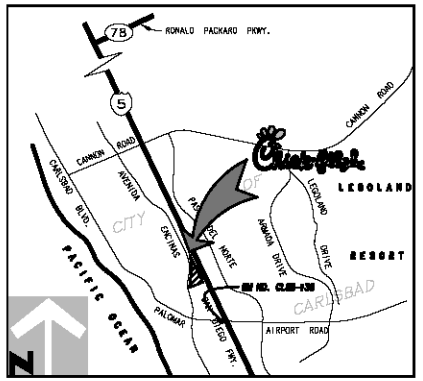
PALOMAR PLACE PARKING SUMMARY–PROPOSED

BUILDING NO.	TENANT	ADDRESS	BUILDING FOOTPRINT*	USE	NOTES	REQUIRED PARKING SPACES**
1	CHICK-FIL-A	5950 AVENIDA ENCINAS	3,305 SF	DINE-IN/TAKE OUT RESTAURANT		40
2	IN-N-OUT RESTAURANT	5960 AVENIDA ENCINAS	2,360 SF	DINE IN/TAKE OUT RESTAURANT	DRIVE-THRU	59
3	DRAFT REPUBLIC	5958 AVENIDA ENCINAS	0,000 SF	DINE-IN RESTAURANT		172
4	TOAST CASTROBRUNCH	5970 AVENIDA ENCINAS	6,200 SF	DINE-IN RESTAURANT		80
5	MIGUEL'S COCINA	5980 AVENIDA ENCINAS	8,880 SF	DINE-IN RESTAURANT		136
6	MCDONALDS	5990 AVENIDA ENCINAS	3,500 SF	DINE-IN/TAKE OUT RESAURANT	DRIVE-THRU	38

* BUILDING FOOTPRINT INFORMATION PROVIDED BY 4G DEVELOPMENT AND CONSULTING, INC. ON 5-17-19

** PARKING REQUIREMENT CALCULATION BASED UPON CITY OF CARLSBAD MUNICIPAL CODE 21.44.020:
1 PARKING STALL/100 SF OF BUILDING FOOTPRINT AREA (40,000 SF)
OR
40 PARKING STALLS + 1 PARKING STALL/50 SF OF BUILDING FOOTPRINT AREA (>4,000 SF)

TOTAL PARKING = 495
15% REDUCTION = 74
TOTAL REQUIRED PARKING = 421
TOTAL PROVIDED PARKING = 465



2 VICINITY MAP

NTS

Chick-fil-A
5200 Buffington Road
Atlanta, Georgia
30349-2998

crho ARCHITECTS
1833 E 17th. Street, Suite 301
Santa Ana, CA. 92705
phone 714.832.1804

CHICK-FIL-A
I-5 & PALOMAR AIRPORT RD FSU
5950 AVENIDA ENCINAS, CARLSBAD, CA

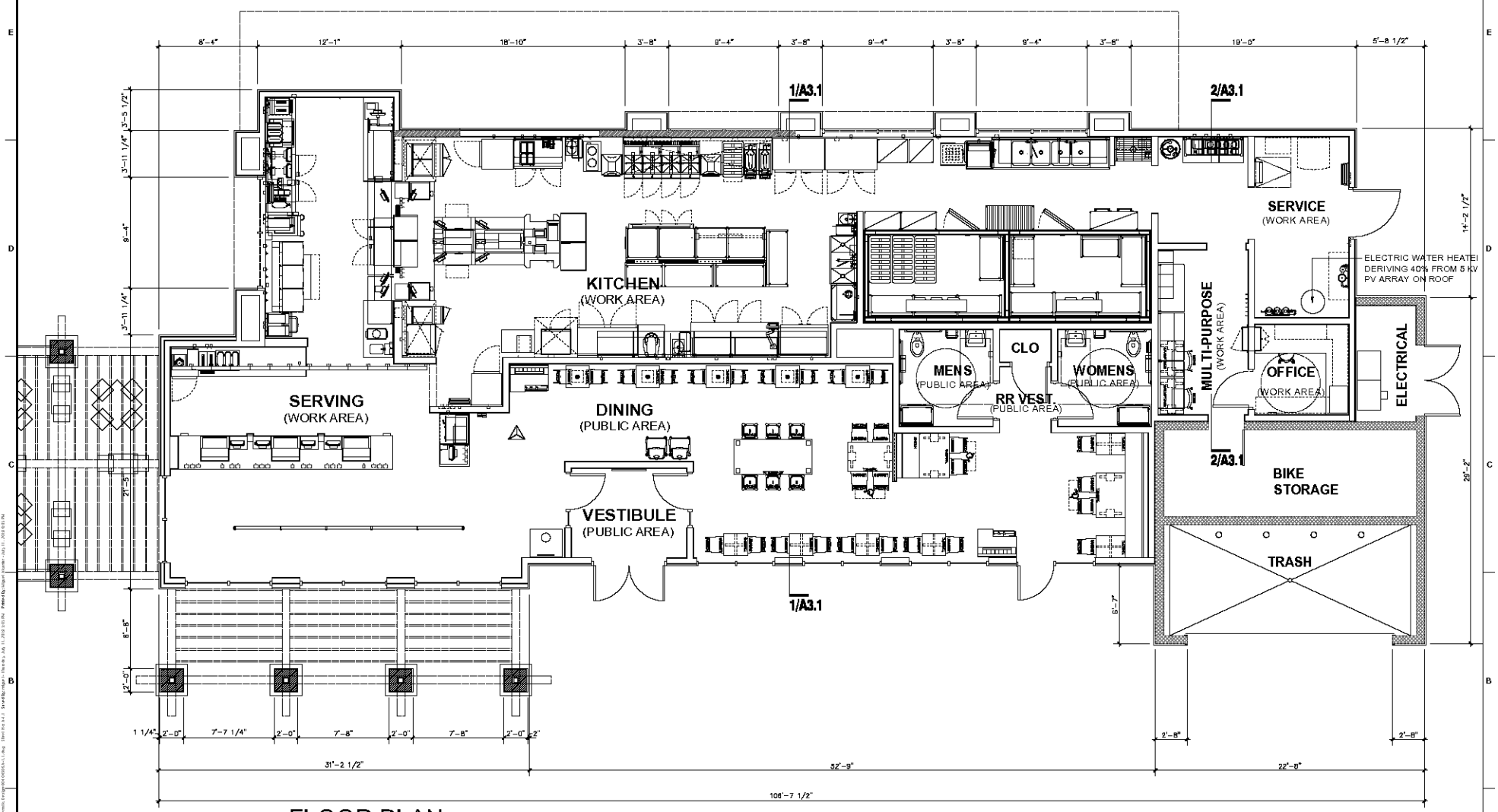
FSR# 04306

REVISION SCHEDULE
NO. DATE DESCRIPTION
REVISED: 7-11-19

ARCHITECT'S PROJECT # 16-168
PRINTED FOR Plan'g, Building, Fire
DATE 09-24-19
DRAWN BY AM

SHEET
SITE PLAN

SHEET NUMBER
SP-1



FLOOR PLAN

1/4"= 1'-0"

BUILDING AREA = 3,273 S.F.

TRASH ENCLOSURE, BIKE STORAGE AND ELECTRICAL AREA = 428 S.F.

TOTAL GFA = 3,945 S.F.

0 2' 4' 8' 16'

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30349-2998

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Santa Ana, CA. 92705
phone 714.832.1834

CHICK-FIL-A

I-5 & PALOMAR AIRPORT RD FSU

5850 AVENIDA ENCINAS, CARLSBAD, CA

FSR# 04306

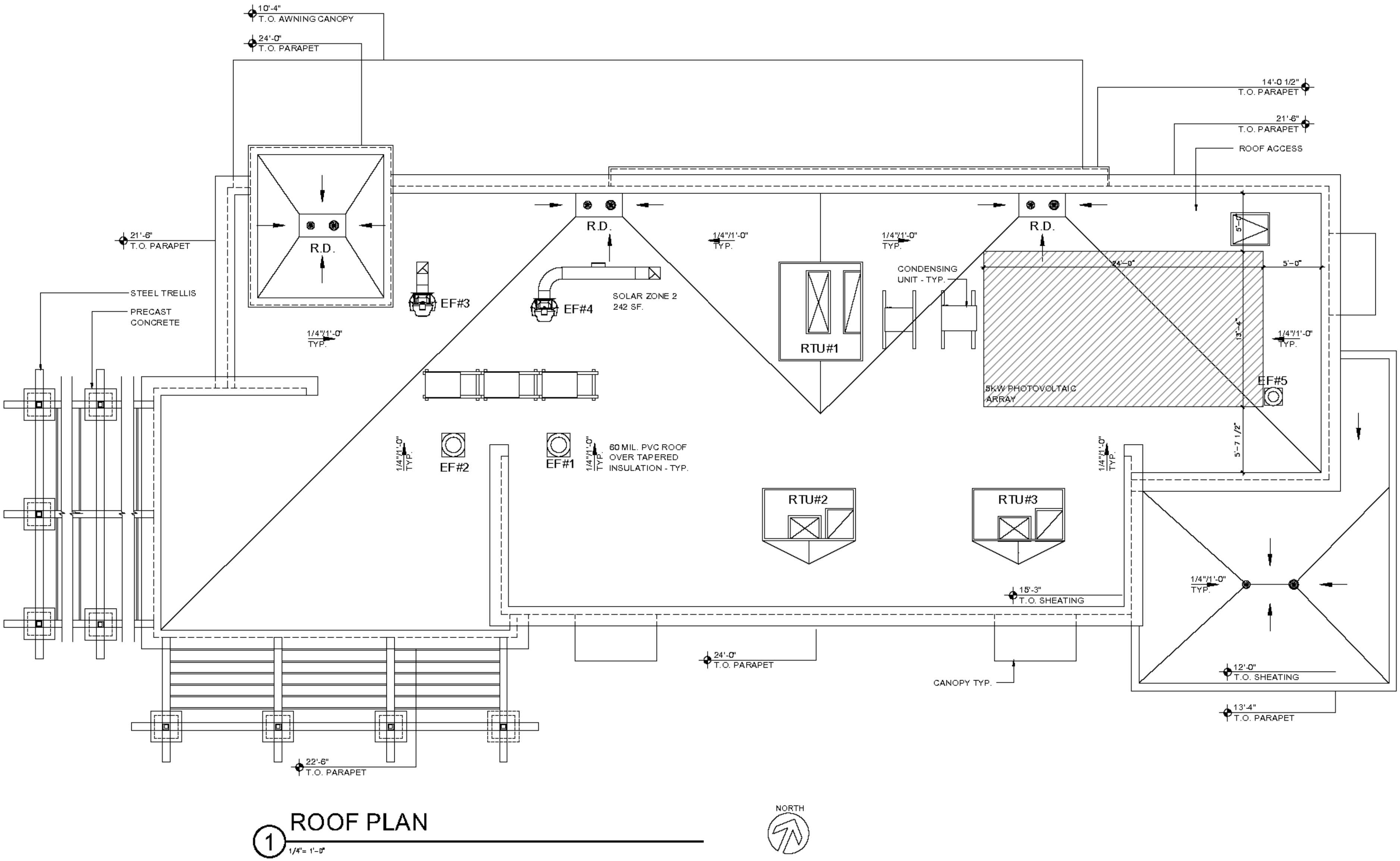
REVISION SCHEDULE

NO.	DATE	DESCRIPTION
	REVISED: 5-24-19	
	REVISED: 7-11-19	

ARCHITECT'S PROJECT #	16-168
PRINTED FOR	Plan'g, Building, Pkg
DATE	09-24-18
DRAWN BY	AM

SHEET
FLOOR PLAN

SHEET NUMBER
A-1.1



1 ROOF PLAN

1/4"= 1'-0"

0 2' 4' 8' 16'

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Atlanta, Georgia
30349-2998

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CHICK-FIL-A
I-5 & PALOMAR AIRPORT RD FSU
5850 AVENIDA ENCINAS, CARLSBAD, CA

FSR# 04306

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REVISED: 6-24-19	
REVISED: 7-11-19	

ARCHITECT'S PROJECT #	16-168
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DATE	09-24-18
DRAWN BY	AM

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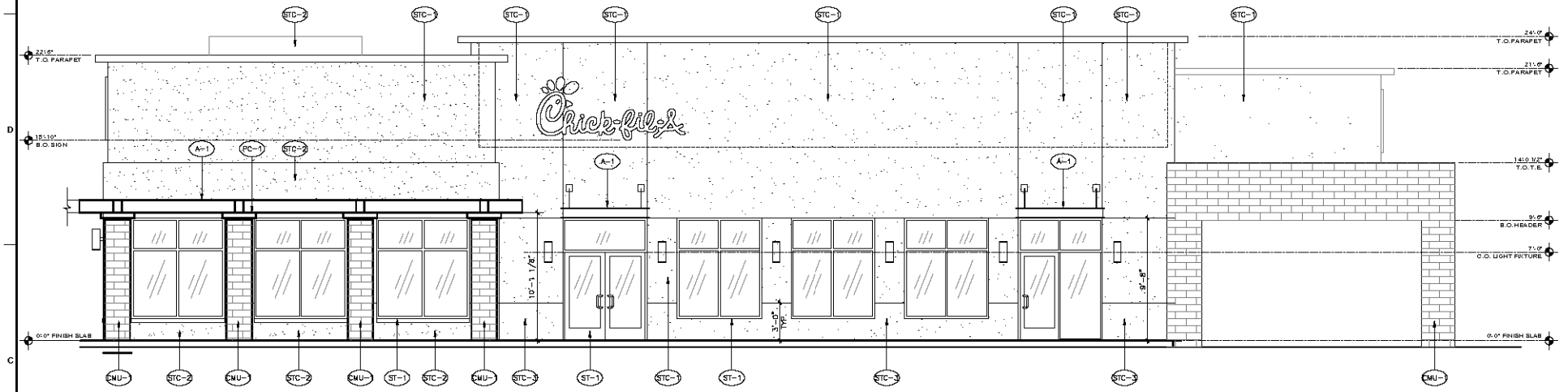
SHEET
ROOF PLAN

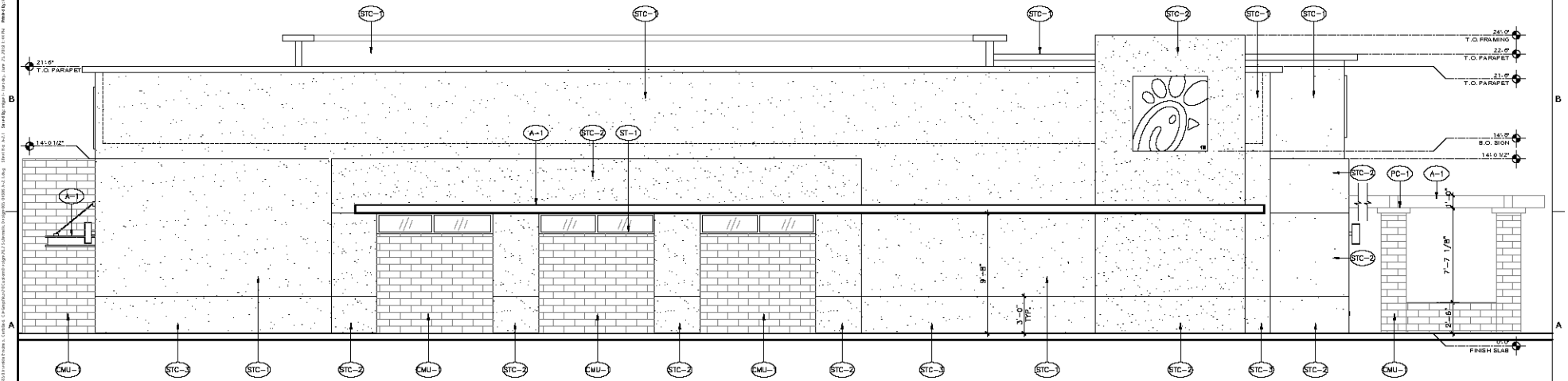
SHEET NUMBER
A-1.7

EXTERIOR FINISHES			
STC–1	STUCCO STUCCO STD. COLOR: SHERWIN WILLIAMS SW7541 "GRECIAN IVORY"	CMU–1	CMU VENEER BURNISHED CONCRETE ORCO – CUSTOM COLOR
STC–2	STUCCO STUCCO STD. COLOR: SHERWIN WILLIAMS SW7549 "STUDIO TAUPE"	PC–1	PRECAST CONCRETE 365 PRECAST COLOR: "TO MATCH CMU–1"
STC–3	STUCCO STUCCO STD. COLOR: SHERWIN WILLIAMS SW7068 "GRIZZLE GRAY"	ST–1	STOREFRONT COLOR: "DARK BRONZE"
A–1	ALUMINUM AWNING COLOR: "DARK BRONZE"		



1 SOUTH ELEVATION

1/4"= 1'-0"



2 NORTH ELEVATION

1/4"= 1'-0"

0 2' 4' 8' 16'

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CHICK-FIL-A

I-5 & PALOMAR AIRPORT RD FSU

5850 AVENIDA ENCINAS, CARLSBAD, CA

FSR# 04306

REVISION SCHEDULE

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		REVISED: 6-24-19
		REVISED: 7-11-19

ARCHITECT'S PROJECT # 16-168
PRINTED FOR Plan1, Building, Etc.
DATE 09-24-18
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SHEET
EXTERIOR ELEVATIONS

SHEET NUMBER
A-2.1

EXTERIOR FINISHES			
STC-1	STUCCO STUCCO STO. COLOR: SHERWIN WILLIAMS SW7541 "GRECIAN IVORY"	CMU-1	CMU VENEER BURNISHED CONCRETE ORCO – CUSTOM COLOR
STC-2	STUCCO STUCCO STO. COLOR: SHERWIN WILLIAMS SW7549 "STUDIO TAUPE"	PC-1	PRECAST CONCRETE 365 PRECAST COLOR: "TO MATCH CMU-1"
STC-3	STUCCO STUCCO STO. COLOR: SHERWIN WILLIAMS SW7068 "GRIZZLE GRAY"	ST-1	STOREFRONT COLOR: "DARK BRONZE"
A-1	ALUMINUM AWNING COLOR: "DARK BRONZE"		

WEST ELEVATION

1 1/4"= 1'-0"

EAST ELEVATION

2 1/4"= 1'-0"

0 2' 4' 8' 16'

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CHICK-FIL-A
I-5 & PALOMAR AIRPORT RD FSU
5850 AVENIDA ENCINAS, CARLSBAD, CA

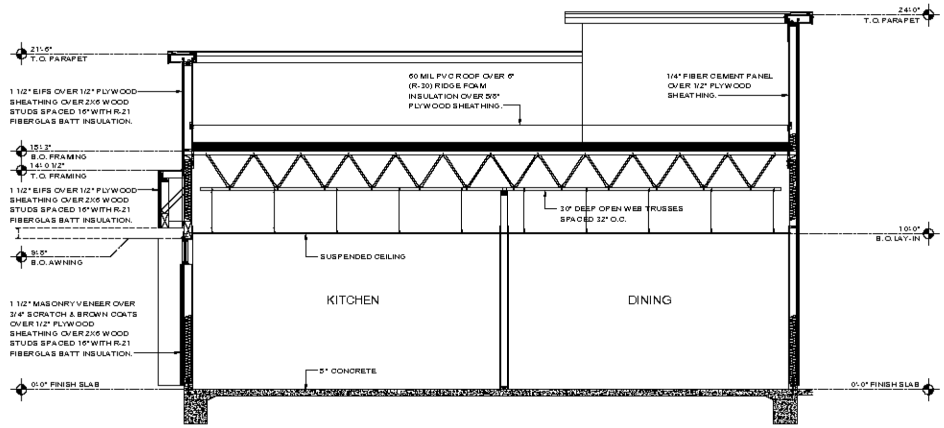
FSR# 04306

REVISION SCHEDULE
NO. DATE DESCRIPTION
REVISED: 6-24-19
REVISED: 7-11-19

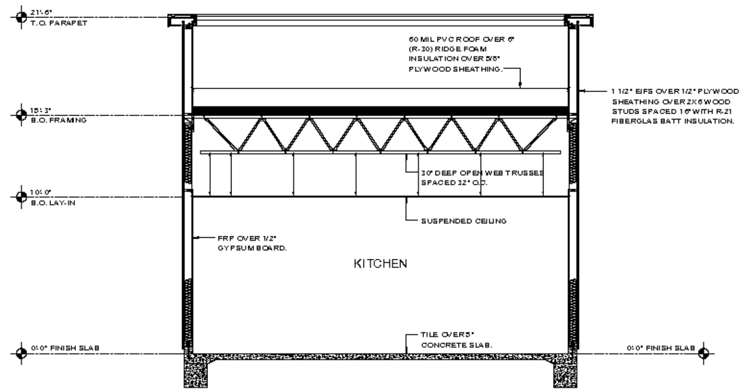
ARCHITECT'S PROJECT # 16-168
PRINTED FOR Permit, Building, Etc.
DATE 08-24-18
DRAWN BY AM

SHEET
EXTERIOR ELEVATIONS

SHEET NUMBER
A-2.2



1 SECTION
1/4"= 1'-0"



2 SECTION
1/4"= 1'-0"

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CHICK-FIL-A
I-5 & PALOMAR AIRPORT RD FSU
5850 AVENIDA ENCINAS, CARLSBAD, CA

FSR# 04306

REVISION SCHEDULE

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SHEET
EXTERIOR ELEVATIONS

SHEET NUMBER
A-3.1

GAS FIRED ROOFTOP UNIT SCHEDULE

MARK	TOTAL COOLING MBH	SENSIBLE COOLING MBH	HEATING INPUT MBH	HEATING OUTPUT MBH	STAGES	SUPPLY	O.A.	HP	ESP	MODEL R-410A	MANUFACTURER	REMARKS
AC#1	288.4	219.2	480	384	2	9500	1665	10	0.80	LGH300S4B	LENNOX	1,3,4,5,7,8,9,10,11,12,13,14,15,16
AC#2	154.8	116.1	240	192	2	3750	1250	3	0.65	LGH150H4B	LENNOX	2,3,4,6,7,8,9,10,11,12,13,15,16
AC#3	154.8	116.1	240	192	2	3750	1475	3	0.65	LGH150H4B	LENNOX	1,3,4,7,8,9,10,11,12,13,14,15,16

NOTES
- COOLING CAPACITIES ARE GROSS, BASED ON ENTERING: 80FDB/67FWB, OUTDOOR: 95FDB, AND 400 CFM PER TON.
- CHICK-FIL-A MAINTAINS A NATIONAL ACCOUNT FOR EQUIPMENT WITH LENNOX CORPORATION. CONTACT LENNOX NATIONAL ACCOUNTS AT 800-367-6285 (OR BY FAX AT 972-497-5112) FOR PRICING, ORDERING AND AVAILABILITY.
- MECHANICAL CONTRACTOR TO VERIFY LENNOX SUBMITTAL WITH CONSTRUCTION DOCUMENTS.

REMARKS
1. PROVIDE DIFFERENTIAL ENTHALPY ECONOMIZER WITH POWER EXHAUST. HIGH EFFICIENCY/LOW LEAKAGE ECONOMIZER.
2. PROVIDE DIFFERENTIAL ENTHALPY ECONOMIZER WITH BAROMETRIC EXHAUST. HIGH EFFICIENCY/LOW LEAKAGE ECONOMIZER.
3. PROVIDE 14" HIGH ROOF CURB.PROVIDE CURBS PLUS RESTRAINT CLIP KIT.
4. SEE DETAIL 2/M-501 FOR SETTING OF PRODIGY M3 BOARD CONTROL PARAMETERS BY MC.
5. PROVIDE FACTORY INSTALLED AND UNIT POWERED 115V GFI SERVICE OUTLET.
6. PROVIDE FACTORY INSTALLED 115V GFI SERVICE OUTLET.
7. PROVIDE FACTORY INSTALLED RETURN SIDE SMOKE DETECTOR.
8. PROVIDE FACTORY INSTALLED NON-FUSED DISCONNECT.
9. PROVIDE 2" MERV 8 THROW AWAY FILTERS.
10. PROVIDE HINGED PANELS FOR FILTER ACCESS, FAN MOTOR ACCESS, COMPRESSOR ACCESS AND CONTROL COMPARTMENT ACCESS.
11. ADJUST GAS MANIFOLD PRESSURE AT LOCATIONS WHERE ELEVATION EXCEEDS 2000' ABOVE SEA LEVEL AS RECOMMENDED BY MANUFACTURER.
12. PROVIDE FACTORY COIL HAIL GUARD, FIELD INSTALLED.
13. NOT USED. OR PROVIDE FRESH AIR TEMPERING KIT.
14. PROVIDE HUMIDITROL OPTION WITH FACTORY WALL MOUNTED HUMIDITY SENSOR.
15. PROVIDE FACTORY INSTALLED BELT TENSIONER.
16. PROVIDE FACTORY CONFIGURED PHASE LOSS PROTECTION.
17. PROVIDE FACTORY INSTALLED CONDENSATE PAN DRAIN OVERFLOW SWITCH.
18. PROVIDE UNIT WITH MSAV BLOWER.
19. PROVIDE FACTORY STAINLESS STEEL HEAT EXCHANGER.

EXHAUST FAN SCHEDULE

MARK	CFM	ESP	RPM	Tip Speed	HP	Area Served	MODEL	MANUFACTURER	REMARKS
EF#1	1700	0.75	1,241	4,873	3/4	HOOD#1	150 CPS	LOREN COOK	1,2,3,4,5,6,7,8,9,10,11,17
EF#2	1786	0.95	1,345	5,281	3/4	HOOD#2,3,4	150 CPS	LOREN COOK	1,2,3,4,5,6,7,8,9,10,11,17
EF#3	150	0.375	1,164	2,780	1/8	RESTROOMS	ACED-90C15DH	LOREN COOK	3,11,12,13,14,15,16

NOTES
- GREASE EXHAUST FAN RPM BASED ON 80 DEGREE F AIR AT 1000 FEET ABOVE SEA LEVEL.
- GREASE EXHAUST FANS TO BE U.L. 762 LISTED.
- CHICK-FIL-A HAS A NATIONAL ACCOUNT WITH TOM BARROW COMPANY FOR THE FAN/CURB PACKAGE. THE MECHANICAL CONTRACTOR IS REQUIRED TO PURCHASE THE FAN/CURB PACKAGE DIRECTLY FROM TOM BARROW COMPANY. CONTACT MR. SCOTT GEORGE AT 404-351-1010 FOR PRICING AND AVAILABILITY. FANS AND CURBS NOT PURCHASED THRU TOM BARROW COMPANY WILL NOT BE ACCEPTED.

REMARKS
1. UPBLAST, ARRANGEMENT 10, CCW ROTATION. SEE PLANS TO CONFIRM CONFIGURATION.
2. PROVIDE FACTORY STEEL FAN WHEEL.
3. PROVIDE FACTORY INSTALLED, PRE-WIRED, NEMA 3 NON-FUSED DISCONNECT.
4. PROVIDE FACTORY STEEL INLET FLANGE AND INLET COMPANION FLANGE.
5. PROVIDE AND INSTALL ROOFTOP SOLUTIONS G2 DRIP GUARD. MECHANICAL CONTRACTOR TO CONTACT ROOFTOP SOLUTIONS AT 800-913-7034.
6. PROVIDE FACTORY WEATHER HOUSING W/ HINGED ACCESS DOOR.
7. PROVIDE FACTORY DRAIN CONNECTION.
8. PROVIDE FACTORY BOLTED ACCESS DOOR ON SCROLL.
9. PROVIDE FACTORY INSTALLED BELT DRIVE WITH ADJUSTABLE MOTOR SHEAVE AND SPARE BELT.
10. PROVIDE FACTORY STEEL OUTLET COMPANION FLANGE.
11. INTEGRAL THERMAL OVERLOAD WITH AUTOMATIC RESET.
12. PROVIDE BIRDSCREEN.
13. BACKDRAFT DAMPER IN DUCT BY MECHANICAL CONTRACTOR AS SHOWN ON 4/M401.
14. STARTER BY ELECTRICAL CONTRACTOR. INTERLOCK WITH LIGHTS BY ELECTRICAL CONTRACTOR.
15. PROVIDE 12" HIGH CURB.
16. PROVIDE FACTORY INSTALLED AND WIRED SPEED CONTROLLER.
17. UTILITY SET FAN CURB AND ASSOCIATED EXHAUST DUCT CURB PROVIDED BY TOM BARROW COMPANY.

AIR DOOR SCHEDULE

MARK	CFM	VELOCITY	HEATING CAP	HP	AREA SERVED	MODEL	MANUFACTURER	REMARKS
AD#1	750	3050 FPM	7.2 KW	1/5 HP	DRIVE THRU	MP-1-30E	Powered Aire	1,2
AD#2	3867	4220 FPM	N/A	3/4 HP	REAR DOOR	RBT-1-48	Powered Aire	3

NOTES
- CHICK-FIL-A HAS A NATIONAL ACCOUNT WITH TOM BARROW COMPANY FOR THE AIR DOORS. THE MECHANICAL CONTRACTOR SHALL PURCHASE THE AIR DOORS DIRECTLY FROM TOM BARROW COMPANY. CONTACT MR. SCOTT GEORGE AT 404-351-1010, FOR PRICING AND AVAILABILITY. AIR DOORS NOT PURCHASED THRU TOM BARROW COMPANY WILL NOT BE ACCEPTED.

REMARKS
1. FACTORY PROVIDED, FIELD WIRED WALL SWITCH (HEAT/OFF/FAN).
2. FACTORY PROVIDED, WIRED, AND UNIT MOUNTED SPEED CONTROLLER LOCATED ON BOTTOM.
3. FACTORY PROVIDED MAGNETIC DOOR CONTACT WITH FACTORY INSTALLED LOW VOLTAGE CONTROLS LOCATED IN AIR DOOR CABINET.

AIR DEVICE SCHEDULE

MARK	DESCRIPTION	LOCATION	NECK SIZE	FACE SIZE	FRAME TYPE	REMARKS
A	PRICE MODEL APDC ALUMINUM SUPPLY AIR DIFFUSER WITH INDIVIDUALLY ADJUSTABLE CURVED AIR PATTERN CONTROLLERS.	DINING/ KITCHEN	VARIES	24"x24"	LAY-IN	1,7
C	PRICE MODEL SMCD STEEL SUPPLY AIR DIFFUSER FIELD ADJUSTABLE AIR PATTERN CONTROLLERS.	ENTRY	14"x14"	19"x19"	BEVELLED	1,3,5,6
F	PRICE MODEL 80 EGGCRATE RETURN AIR GRILLE WITH REMOVABLE WHITE CORE, FACTORY FLAT BLACK BACKPAN AND ROUND NECK.	DINING/ OFFICE/ KITCHEN	VARIES	24"x24"	LAY-IN	1,7
J	PRICE MODEL SMCD STEEL SUPPLY AIR DIFFUSER FIELD ADJUSTABLE AIR PATTERN CONTROLLERS.	RESTROOMS	10"x10"	15"x15"	BEVELLED	1,2,3,5,6
K	PRICE MODEL APDDR ALUMINUM PERFORATED FACE RETURN AIR GRILLE.	RESTROOMS/ ENTRY	14"x14"	16"x16"	SURFACE	1,4,5,6

NOTES
- CHICK-FIL-A HAS A NATIONAL ACCOUNT WITH TOM BARROW COMPANY FOR THE AIR DEVICES. THE MECHANICAL CONTRACTOR SHALL PURCHASE THE AIR DEVICES DIRECTLY FROM TOM BARROW COMPANY. CONTACT MR. SCOTT GEORGE AT 404-351-1010, FOR PRICING AND AVAILABILITY. AIR DEVICES NOT PURCHASED THRU TOM BARROW COMPANY WILL NOT BE ACCEPTED.

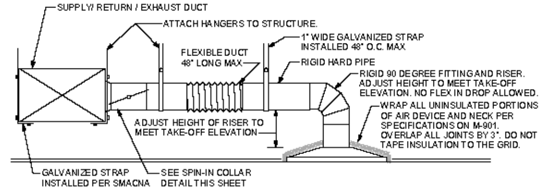
REMARKS
1. STANDARD OFF WHITE FINISH.
2. PROVIDE MODEL VCS3 NECK DAMPER.
3. SEE DRAWING M-201 FOR THROW.
4. PROVIDE MODEL VCR7 NECK DAMPER ON GRILLES IN RESTROOMS SERVING EXHAUST FAN.
5. PROVIDE BACKPAN. MC TO SEAL JOINTS WITH MASTIC AND INSULATE EXTERNALLY.
6. FIELD INSULATE BACKPAN AS SHOWN ON DETAIL 1/M-401.
7. FACTORY INSULATED R-6 BACKPAN.

GAS FIRED INFRARED HEATER SCHEDULE

MARK	INPUT (MBH)	FRAME LENGTH	FRAME WIDTH	FRAME DEPTH	MOUNTING TYPE	MODEL	MANUFACTURER
GIH	50	48-1/4"	13"	10"	Bracket	2352-NG	Schwank

NOTES
- CONFIRM HEATER QUANTITY WITH CANOPY SHOP DRAWINGS.
- CHICK-FIL-A HAS A NATIONAL ACCOUNT WITH TOM BARROW COMPANY FOR THE GAS FIRED INFRARED HEATERS. THE MECHANICAL CONTRACTOR SHALL PURCHASE THE HEATER PACKAGE DIRECTLY FROM TOM BARROW COMPANY. CONTACT MR. SCOTT GEORGE AT 404-351-1010, FOR PRICING AND AVAILABILITY. HEATERS NOT PURCHASED THRU TOM BARROW COMPANY WILL NOT BE ACCEPTED.

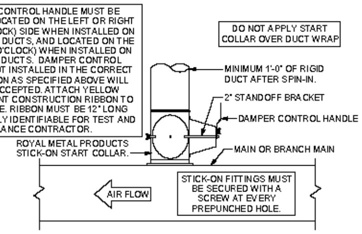
REMARKS
1. STEEL BURNER WITH CERAMIC BURNER TILES.
2. STAINLESS STEEL LENS WITH BLACK EMISSIVE COATING.
3. PROVIDE ENGRAVED PLASTIC LABEL AT EACH UNIT WITH UNIT DESIGNATION IN 1" HIGH WHITE LETTERS ON A BLACK BACKGROUND. MOUNT TO CANOPY DECK, FACING FORWARD, 12" LATERALLY FROM THE LONG SIDE OF THE HEATER.
4. STAINLESS STEEL HEAT SHIELDS PROVIDED BY TOM BARROW COMPANY.



1 SAG/RAG/GRILLE TAKE-OFF
NOT TO SCALE

CHICK-FIL-A HAS A NATIONAL ACCOUNT WITH TOM BARROW COMPANY FOR THE ROYAL METAL PRODUCTS START COLLARS FOR BOTH WITH AND WITHOUT A MANUAL BALANCING DAMPER. THE MECHANICAL CONTRACTOR IS REQUIRED TO PURCHASE THE ROYAL METAL PRODUCTS START COLLARS DIRECTLY FROM TOM BARROW COMPANY. CONTACT MR. SCOTT GEORGE AT 404-351-1010 FOR PRICING AND AVAILABILITY. ROYAL METAL PRODUCTS START COLLARS NOT PURCHASED THRU TOM BARROW COMPANY WILL NOT BE ACCEPTED.

DAMPER CONTROL HANDLE MUST BE EXPOSED, LOCATED ON THE LEFT OR RIGHT (9 OR 3 O'CLOCK) SIDE WHEN INSTALLED ON HORIZONTAL DUCTS, AND LOCATED ON THE BOTTOM (6 O'CLOCK) WHEN INSTALLED ON VERTICAL DUCTS. DAMPER CONTROL HANDLES NOT INSTALLED IN THE CORRECT ORIENTATION AS SPECIFIED ABOVE WILL NOT BE ACCEPTED. ATTACH YELLOW FLUORESCENT CONSTRUCTION RIBBON TO THE HANDLE. RIBBON MUST BE 12" LONG AND BE EASILY IDENTIFIABLE FOR TEST AND BALANCE CONTRACTOR.

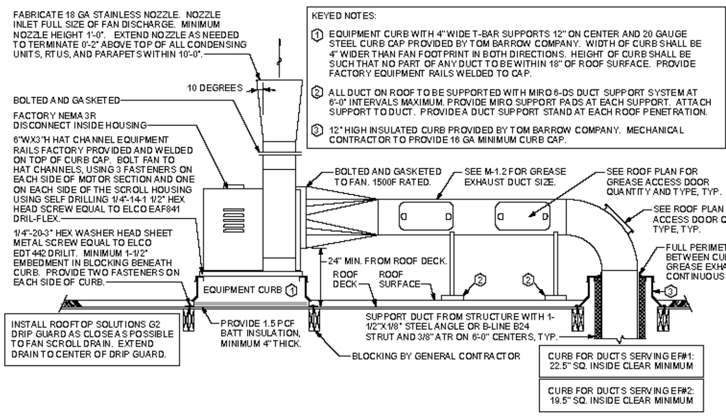


2 START COLLAR
NOT TO SCALE

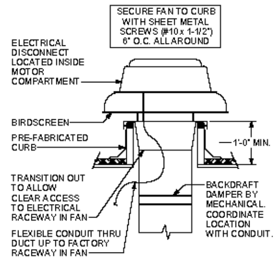
ALL DUCTWORK AND UNFINISHED METAL ON ROOF EXCEPT STAINLESS SHALL BE PREPARED WITH TWO COATS OF SHERWIN WILLIAMS B66-200 SERIES DTM WHITE ACRYLIC SEMI-GLOSS INDUSTRIAL MAINTENANCE COATING. DEGREASE AND PRIME BARE METAL SURFACE WITH ONE COAT OF SHERWIN WILLIAMS DTM ACRYLIC PRIMER PRIOR TO PAINTING.

KEYED NOTES:

1. EQUIPMENT CURB WITH 4" WIDE T-BAR SUPPORTS 12" ON CENTER AND 20 GAUGE STEEL CURB CAP PROVIDED BY TOM BARROW COMPANY. WIDTH OF CURB SHALL BE 4" WIDER THAN FAN FOOTPRINT IN BOTH DIRECTIONS. HEIGHT OF CURB SHALL BE SUCH THAT NO PART OF ANY DUCT TO BE WITHIN 18" OF ROOF SURFACE. PROVIDE FACTORY EQUIPMENT RAILS WELDED TO CAP.
2. ALL DUCT ON ROOF TO BE SUPPORTED WITH MIRO 6-DS DUCT SUPPORT SYSTEM AT 6'-0" INTERVALS MAXIMUM. PROVIDE MIRO SUPPORT PADS AT EACH SUPPORT. ATTACH SUPPORT TO DUCT. PROVIDE A DUCT SUPPORT STAND AT EACH ROOF PENETRATION.
3. 12" HIGH INSULATED CURB PROVIDED BY TOM BARROW COMPANY. MECHANICAL CONTRACTOR TO PROVIDE 16 GA MINIMUM CURB CAP.



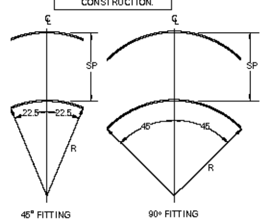
3 KITCHEN HOOD EXHAUST FANS
NOT TO SCALE



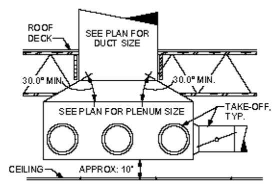
4 RESTROOM EXHAUST FAN
NOT TO SCALE

TURNING VANE SCHEDULE		
R	SP	GA
2"	1.5"	24

1. NO TRAILING EDGE.
2. SINGLE THICKNESS CONSTRUCTION.



5 TURNING VANES
NOT TO SCALE



6 RETURN DROP GEOMETRY
NOT TO SCALE

BIM 360://00_CFA_FSR_Templates_P12/00000_NewStore_LC_MEC.rvt
5/14/2019 1:22:41 PM
30-LC-0000-M-401-HVAC DETAILS & SCHEDULES

Chick-fil-A
5200 Buffington Road
Atlanta, Georgia 30349-2998

SITE ADAPT LOGO AND ADDRESS

PROTOTYPICAL SET

NOT FOR REGULATORY APPROVAL, BIDDING, OR CONSTRUCTION

CHICK-FIL-A
PROJECT NAME
STREET ADDRESS
CITY, ST 00000

FSR# 0000

BUILDING TYPE / SIZE P12 LC ALL
RELEASE v2 19.02

REVISION SCHEDULE

NO	DATE	DESCRIPTION
2	01/17/18	Template Updates
4	04/18/18	Template Updates
5	06/27/18	Template Updates

PROTOTYPICAL SET

CONSULTANT PROJECT # XXXX
PRINTED FOR PROTOTYPICAL SET
DATE XX/XX/XX
DRAWN BY JAL

SHEET
HVAC DETAILS & SCHEDULES

SHEET NUMBER
M-401

APPENDIX B

Pertinent Sections of the City of Carlsbad Noise Element to the General Plan, Noise Guidelines Manual and CALGreen Code

TABLE 5–1: LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

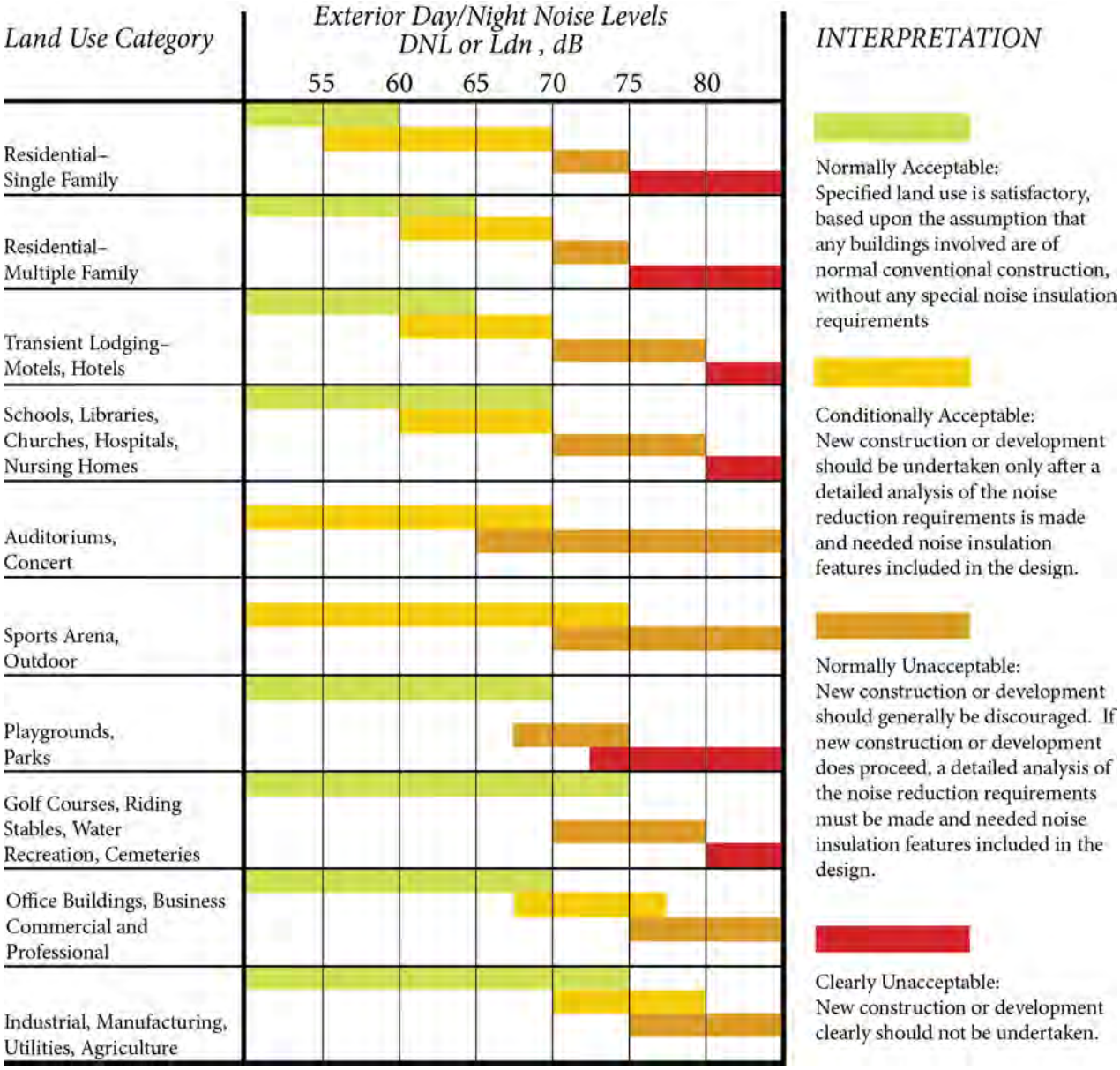


Table 5-3 provides standards for noise from non-transportation noise sources such as, but not limited to, industrial facilities, automotive servicing, car washes, equipment yards, nightclubs, hotels, and shopping centers. These standards apply to the noise sources themselves, as measured at the edge of the property line; noise caused by motor vehicles traveling to and from the site is exempt from this standard.

TABLE 5–2: ALLOWABLE NOISE EXPOSURE[1]

LAND USE	OUTDOOR ACTIVITY[2, 3] AREAS (DBA CNEL)	INTERIOR SPACES (DBA CNEL)
Residential	60[4]	45
Motels, Hotels	65	45
Hospitals, Residential Care Facilities, Schools, Libraries, Museums, Churches, Day Care Facilities	65	45
Playgrounds, Parks, Recreation Uses	65	50
Commercial and Office Uses	65	50
Industrial Uses	70	65

1 Development proposed within the McClellan-Palomar Airport Area of Influence shall also be subject to the noise compatibility policies contained in the ALUCP.

2 For non-residential uses, where an outdoor activity area is not proposed, the standard does not apply. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving use.

3 Where it is not possible to reduce noise in outdoor activity areas to the allowable maximum, levels up to 5 dB higher may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

4 An exterior noise exposure level of 65 dBA CNEL is allowable for residential uses in a mixed-use project and for residential uses within the McClellan-Palomar Airport Area of Influence, pursuant to the noise compatibility policies contained in the ALUCP.

TABLE 5–3: PERFORMANCE STANDARDS FOR NON-TRANSPORTATION SOURCES (AS MEASURED AT PROPERTY LINE OF SOURCE/SENSITIVE USE)

NOISE LEVEL DESCRIPTOR	DAYTIME (7 A.M. TO 10 P.M.)	NIGHTTIME (10 P.M. TO 7 A.M.)
Hourly Leq, dB	55	45
Maximum Level, dB	75	65

Each of the noise levels specified above shall be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.

5.504.7 Environmental tobacco smoke (ETS) control. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions.

SECTION 5.505
INDOOR MOISTURE CONTROL

5.505.1 Indoor moisture control. Buildings shall meet or exceed the provisions of *California Building Code,* CCR, Title 24, Part 2, Sections 1203 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures not applicable to low-rise residential occupancies, see Section 5.407.2 of this code.

SECTION 5.506
INDOOR AIR QUALITY

5.506.1 Outside air delivery. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the 2013 *California Energy Code,* or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 Carbon dioxide (CO2) monitoring. For buildings or additions equipped with demand control ventilation, CO2 sensors and ventilation controls shall be specified and installed in accordance with the requirements of the 2013 *California Energy Code,* Section 120(c)(4).

SECTION 5.507
ENVIRONMENTAL COMFORT

5.507.4 Acoustical control. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E90 and ASTM E413 or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

   Exceptions:

   1. L_{dn} or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
   2. L_{dn} or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L_{dn} noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1 Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L_{eq}-1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (L_{eq}-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of compliance. An acoustical analysis documenting complying interior sound levels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: http://www.toolbase.org/PDF/CaseStudies/stc_icc_ratings.pdf.

SECTION 5.508
OUTDOOR AIR QUALITY

5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

APPENDIX C

Railway Noise Calculations

COASTER SCHEDULE

EFFECTIVE October 8, 2018 / VÁLIDA 8 de octubre, 2018

SOUTHBOUND		MONDAY-FRIDAY										
OCEANSIDE TO SAN DIEGO	READ DOWN	COASTER	COASTER	COASTER	COASTER	COASTER	COASTER	COASTER	COASTER	COASTER	COASTER	COASTER
TRAIN SERVICE NO.		630	634	636	638	640	644	648	654	656	660	662
Oceanside	↓	5:03a	6:02a	6:33a	7:15a	7:40a	9:37a	11:08a	2:42p	3:32p	5:11p	5:41p
Carlsbad Village	↓	5:07a	6:06a	6:37a	7:20a	7:44a	9:42a	11:13a	2:47p	3:36p	5:16p	5:46p
Carlsbad Poinsettia	↓	5:13a	6:12a	6:42a	7:26a	7:49a	9:47a	11:18a	2:52p	3:43p	5:21p	5:51p
Encinitas	↓	5:19a	6:18a	6:50a	7:32a	7:56a	9:54a	11:25a	3:00p	3:49p	5:27p	5:56p
Solana Beach	↓	5:25a	6:23a	6:57a	7:39a	8:01a	10:00a	11:33a	3:05p	3:54p	5:34p	6:01p
Sorrento Valley	↓	5:35a*	6:40a	7:08a	7:49a	8:12a	10:11a*	11:42a*	3:14p*	4:03p	5:43p	6:11p
San Diego-Old Town	↓	5:57a	7:04a	7:30a	8:12a	8:35a	10:33a	12:07p	3:36p	4:28p	6:07p	6:37p
San Diego-SF Depot	↓	6:05a	7:11a	7:38a	8:20a	8:43a	10:40a	12:14p	3:44p	4:35p	6:15p	6:45p

NORTHBOUND		MONDAY-FRIDAY										
SAN DIEGO TO OCEANSIDE	READ DOWN	COASTER	COASTER	COASTER	COASTER	COASTER	COASTER	COASTER	COASTER	COASTER	COASTER	COASTER
TRAIN SERVICE NO.		631	635	639	645	651	653	655	657	661	663	665
San Diego-SF Depot	↓	6:15a	7:39a	9:18a	12:49p	1:56p	3:36p	4:21p	4:53p	5:38p	6:26p	7:13p
San Diego-Old Town	↓	6:23a	7:47a	9:26a	12:57p	2:04p	3:44p	4:29p	5:01p	5:46p	6:34p	7:21p
Sorrento Valley	↓	6:45a	8:10a	9:48a*	1:19p*	2:26p*	4:06p	4:51p	5:24p	6:08p	6:56p	7:43p*
Solana Beach	↓	6:57a	8:23a	9:59a	1:30p	2:36p	4:17p	5:00p	5:34p	6:20p	7:06p	7:53p
Encinitas	↓	7:03a	8:30a	10:05a	1:36p	2:42p	4:23p	5:08p	5:40p	6:26p	7:12p	7:59p
Carlsbad Poinsettia	↓	7:09a	8:36a	10:10a	1:42p	2:48p	4:29p	5:14p	5:46p	6:32p	7:18p	8:05p
Carlsbad Village	↓	7:15a	8:42a	10:16a	1:47p	2:54p	4:35p	5:21p	5:52p	6:38p	7:24p	8:11p
Oceanside	↓	7:20a	8:47a	10:23a	1:54p	3:00p	4:41p	5:28p	5:58p	6:45p	7:30p	8:18p

SOUTHBOUND		SATURDAY, SUNDAY & HOLIDAYS			
OCEANSIDE TO SAN DIEGO	READ DOWN	COASTER	COASTER	COASTER	COASTER
TRAIN SERVICE NO.		680	684	688	692
Oceanside	↓	8:20a	11:08a	2:00p	5:21p
Carlsbad Village	↓	8:25a	11:13a	2:05p	5:26p
Carlsbad Poinsettia	↓	8:30a	11:18a	2:10p	5:31p
Encinitas	↓	8:36a	11:25a	2:16p	5:37p
Solana Beach	↓	8:42a	11:33a	2:24p	5:44p
Sorrento Valley	↓	8:51a*	11:42a*	2:33p*	5:53p*
San Diego-Old Town	↓	9:13a	12:07p	2:54p	6:14p
San Diego-SF Depot	↓	9:21a	12:14p	3:02p	6:23p

NORTHBOUND		SATURDAY, SUNDAY & HOLIDAYS			
SAN DIEGO TO OCEANSIDE	READ DOWN	COASTER	COASTER	COASTER	COASTER
TRAIN SERVICE NO.		681	685	689	693
San Diego-SF Depot	↓	9:35a	12:25p	3:36p	7:10p
San Diego-Old Town	↓	9:42a	12:33p	3:44p	7:18p
Sorrento Valley	↓	10:04a*	12:57p*	4:06p*	7:43p*
Solana Beach	↓	10:13a	1:06p	4:17p	7:53p
Encinitas	↓	10:19a	1:11p	4:23p	7:58p
Carlsbad Poinsettia	↓	10:26a	1:16p	4:29p	8:04p
Carlsbad Village	↓	10:33a	1:21p	4:35p	8:10p
Oceanside	↓	10:39a	1:27p	4:41p	8:16p

* Sorrento Valley COASTER Connection shuttle service not available for this train.

* El servicio de la conexión de autobús Sorrento Valley COASTER no está disponible para este tren.

COASTER operates on a Holiday (Sunday) schedule on Memorial Day, Labor Day, Thanksgiving Day, Christmas Day, and New Year's Day. Independence Day, July 4, operates on a Saturday schedule. **Schedule subject to change.**

COASTER opera en un horario festivo (Domingo) el Día de la Recordación, Día del Trabajo, Día de Acción de Gracias, Día de Navidad, y Año Nuevo. El Día de la Independencia, 4 de julio, opera en el horario de Sábado. **Los horarios están sujetos a cambios.**

Ride Any Amtrak Pacific Surfliner® Train

COASTER passengers can ride any Amtrak Pacific Surfliner® train, 7 days/week with any valid **COASTER Day Pass or Monthly/30-Day Pass**, within the trip limits printed on their COASTER pass. Valid between Oceanside and San Diego ONLY. Trips north of Oceanside will require a separate Amtrak ticket and reservation.

For a complete Amtrak Pacific Surfliner schedule, please visit **PacificSurfliner.com**

NOT VALID: FRI-TUES OF MEMORIAL DAY WEEKEND, FRI-TUES OF LABOR DAY WEEKEND, MONDAY THROUGH THE FOLLOWING TUESDAY OF THANKSGIVING WEEK, OPENING DAY THROUGH SUNDAY OF THE SUMMER DEL MAR RACES, AND WED-SUN OF COMIC-CON WEEK *(these dates subject to change).*

ONLY SERVES: • *Oceanside* • *Solana Beach* • *San Diego-Old Town* • *San Diego-SF Depot*

DOES NOT SERVE: • *Carlsbad Village* • *Carlsbad Poinsettia* • *Encinitas* • *Sorrento Valley*

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One-way tickets valid for 2 hours from time of purchase. Tickets may be purchased via the Compass Cloud app on mobile devices.
Boletos adquiridos en las máquinas son VÁLIDOS SOLAMENTE EL MISMO DÍA de su compra. NO REEMBOLSOS.
Boletos de viaje sencillo son válidos por 2 horas desde el momento de compra. Boletos pueden ser comprados a través de la aplicación "Compass Cloud" en dispositivos móviles.

NORTH COUNTY TRANSIT DISTRICT
GoNCTD.com (760) 966-6500
@GoNCTD /GoNCTD /nctdtransit

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

A. Revision Date (MM/DD/YYYY)	B. Reporting Agency	C. Reason for Update (Select only one)	D. DOT Crossing Inventory Number
09 / 23 / 2015	☒ Railroad ☐ Transit ☐ State ☐ Other	☐ Change in Data ☐ New Crossing ☐ Closed ☐ No Train Traffic ☐ Quiet Zone Update ☐ Re-Open ☐ Date Change Only ☒ Change in Primary Operating RR ☐ Admin. Correction	026821E

Part I: Location and Classification Information

1. Primary Operating Railroad	2. State	3. County
North County Transportation District- Coaster [NCTC]	CALIFORNIA	SAN DIEGO

4. City / Municipality	5. Street/Road Name & Block Number	6. Highway Type & No.
☒ In ☐ Near CARLSBAD	CARLSBAD VILLAGE DRIVE (Street/Road Name) | 400 (* Block Number)	LOCAL STREET

7. Do Other Railroads Operate a Separate Track at Crossing?	8. Do Other Railroads Operate Over Your Track at Crossing?
☐ Yes ☒ No If Yes, Specify RR	☒ Yes ☐ No If Yes, Specify RR ATK, BNSF, PSRR

9. Railroad Division or Region	10. Railroad Subdivision or District	11. Branch or Line Name	12. RR Milepost
☐ None COASTAL	☐ None SAN DIEGO	☐ None COASTER	(prefix) | 0229.30 (nnnn.nnn) | (suffix)

13. Line Segment *	14. Nearest RR Timetable Station *	15. Parent RR (if applicable)	16. Crossing Owner (if applicable)
106-2293	CP CARL	☒ N/A	☐ N/A #N\A

17. Crossing Type	18. Crossing Purpose	19. Crossing Position	20. Public Access (if Private Crossing)	21. Type of Train	22. Average Passenger Train Count Per Day
☒ Public ☐ Private	☒ Highway ☐ Pathway, Ped. ☐ Station, Ped.	☒ At Grade ☐ RR Under ☐ RR Over	☐ Yes ☐ No	☒ Freight ☐ Transit ☒ Intercity Passenger ☐ Shared Use Transit ☒ Commuter ☐ Tourist/Other	☐ Less Than One Per Day ☒ Number Per Day 50

23. Type of Land Use
☐ Open Space ☐ Farm ☐ Residential ☒ Commercial ☐ Industrial ☐ Institutional ☐ Recreational ☐ RR Yard

24. Is there an Adjacent Crossing with a Separate Number?	25. Quiet Zone (FRA provided)
☐ Yes ☒ No If Yes, Provide Crossing Number	☒ No ☐ 24 Hr ☐ Partial ☐ Chicago Excused Date Established

26. HSR Corridor ID	27. Latitude in decimal degrees	28. Longitude in decimal degrees	29. Lat/Long Source
☒ N/A	(WGS84 std: nn.nnnnnnn) 33.1591000	(WGS84 std: -nnn.nnnnnnn) -117.3486020	☒ Actual ☐ Estimated

30.A. Railroad Use *	31.A. State Use *
30.B. Railroad Use *	31.B. State Use *
30.C. Railroad Use *	31.C. State Use *
30.D. Railroad Use *	31.D. State Use *
32.A. Narrative (Railroad Use) *	32.B. Narrative (State Use) *

33. Emergency Notification Telephone No. (posted)	34. Railroad Contact (Telephone No.)	35. State Contact (Telephone No.)
888-243-5247	760-966-6500	415-703-3722

Part II: Railroad Information

1. Estimated Number of Daily Train Movements

1.A. Total Day Thru Trains (6 AM to 6 PM)	1.B. Total Night Thru Trains (6 PM to 6 AM)	1.C. Total Switching Trains	1.D. Total Transit Trains	1.E. Check if Less Than One Movement Per Day ☐ How many trains per week?
32	12	6	0	

2. Year of Train Count Data (YYYY)	3. Speed of Train at Crossing
2015	3.A. Maximum Timetable Speed (mph) 90 3.B. Typical Speed Range Over Crossing (mph) From 5 to 90

4. Type and Count of Tracks
Main 1 Siding 0 Yard 0 Transit 0 Industry 0

5. Train Detection (Main Track only)
☒ Constant Warning Time ☐ Motion Detection ☐AFO ☐ PTC ☐ DC ☐ Other ☐ None

6. Is Track Signaled?	7.A. Event Recorder	7.B. Remote Health Monitoring
☒ Yes ☐ No	☒ Yes ☐ No	☐ Yes ☒ No

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date *(MM/DD/YYYY)*	PAGE 2	D. Crossing Inventory Number *(7 char.)*
09/23/2015		026821E

Part III: Highway or Pathway Traffic Control Device Information

1. Are there Signs or Signals? ☒ Yes ☐ No

2. Types of Passive Traffic Control Devices associated with the Crossing

2.A. Crossbuck Assemblies *(count)*	2.B. STOP Signs *(R1-1) (count)*	2.C. YIELD Signs *(R1-2) (count)*	2.D. Advance Warning Signs *(Check all that apply; include count)* ☐ None
4	0	0	☒ W10-1 2 ☐ W10-3 ☐ W10-11 ☐ W10-2 ☐ W10-4 ☐ W10-12

2.E. Low Ground Clearance Sign *(W10-5)*	2.F. Pavement Markings	2.G. Channelization Devices/Medians	2.H. EXEMPT Sign *(R15-3)*	2.I. ENS Sign *(I-13)* Displayed
☐ Yes *(count_____)* ☒ No	☒ Stop Lines ☐ Dynamic Envelope ☒ RR Xing Symbols ☐ None	☒ All Approaches ☐ Median ☐ One Approach ☐ None	☐ Yes ☒ No	☒ Yes ☐ No

2.J. Other MUTCD Signs ☒ Yes ☐ No	2.K. Private Crossing Signs *(if private)*	2.L. LED Enhanced Signs *(List types)*
Specify Type R8-8 Count 2 Specify Type _____ Count _____ Specify Type _____ Count _____	☐ Yes ☐ No	

3. Types of Train Activated Warning Devices at the Grade Crossing *(specify count of each device for all that apply)*

3.A. Gate Arms *(count)*	3.B. Gate Configuration	3.C. Cantilevered *(or Bridged)* Flashing Light Structures *(count)*	3.D. Mast Mounted Flashing Lights *(count of masts)* 4	3.E. Total Count of Flashing Light Pairs
Roadway 4 Pedestrian 0	☐ 2 Quad ☐ 3 Quad ☒ 4 Quad ☐ Full *(Barrier)* Resistance ☒ Median Gates	Over Traffic Lane 0 ☐ Incandescent Not Over Traffic Lane 0 ☐ LED	☒ Incandescent ☐ LED ☒ Back Lights Included ☐ Side Lights Included	6

3.F. Installation Date of Current Active Warning Devices: *(MM/YYYY)*	3.G. Wayside Horn	3.H. Highway Traffic Signals Controlling Crossing	3.I. Bells *(count)*
_____/_____ ☒ Not Required	☐ Yes Installed on *(MM/YYYY)* _____/_____ ☒ No	☐ Yes ☒ No	2

3.J. Non-Train Active Warning	3.K. Other Flashing Lights or Warning Devices
☐ Flagging/Flagman ☐ Manually Operated Signals ☐ Watchman ☐ Floodlighting ☒ None	Count 0 Specify type _____

4.A. Does nearby Hwy Intersection have Traffic Signals?	4.B. Hwy Traffic Signal Interconnection	4.C. Hwy Traffic Signal Preemption	5. Highway Traffic Pre-Signals	6. Highway Monitoring Devices *(Check all that apply)*
☐ Yes ☒ No	☒ Not Interconnected ☐ For Traffic Signals ☐ For Warning Signs	☐ Simultaneous ☐ Advance	☐ Yes ☒ No Storage Distance * _____ Stop Line Distance * _____	☐ Yes - Photo/Video Recording ☐ Yes – Vehicle Presence Detection ☒ None

Part IV: Physical Characteristics

1. Traffic Lanes Crossing Railroad	2. Is Roadway/Pathway Paved?	3. Does Track Run Down a Street?	4. Is Crossing Illuminated? *(Street lights within approx. 50 feet from nearest rail)*
☐ One-way Traffic ☒ Two-way Traffic ☐ Divided Traffic Number of Lanes 4	☒ Yes ☐ No	☐ Yes ☒ No	☒ Yes ☐ No

5. Crossing Surface *(on Main Track, multiple types allowed)* Installation Date * *(MM/YYYY)* _____/_____ Width * 10 Length * 100
☐ 1 Timber ☐ 2 Asphalt ☐ 3 Asphalt and Timber ☒ 4 Concrete ☐ 5 Concrete and Rubber ☐ 6 Rubber ☐ 7 Metal
☐ 8 Unconsolidated ☐ 9 Composite ☐ 10 Other *(specify)* _____

6. Intersecting Roadway within 500 feet?	7. Smallest Crossing Angle	8. Is Commercial Power Available? *
☒ Yes ☐ No If Yes, Approximate Distance *(feet)* 100	☐ 0° – 29° ☐ 30° – 59° ☒ 60° - 90°	☒ Yes ☐ No

Part V: Public Highway Information

1. Highway System	2. Functional Classification of Road at Crossing	3. Is Crossing on State Highway System?	4. Highway Speed Limit
☐ (01) Interstate Highway System ☐ (02) Other Nat Hwy System (NHS) ☐ (03) Federal AID, Not NHS ☒ (08) Non-Federal Aid	☐ (0) Rural ☒ (1) Urban ☐ (1) Interstate ☐ (5) Major Collector ☐ (2) Other Freeways and Expressways ☐ (3) Other Principal Arterial ☐ (6) Minor Collector ☒ (4) Minor Arterial ☐ (7) Local	☐ Yes ☒ No	25 MPH ☒ Posted ☐ Statutory

5. Linear Referencing System *(LRS Route ID)* *

6. LRS Milepost *

7. Annual Average Daily Traffic *(AADT)*	8. Estimated Percent Trucks	9. Regularly Used by School Buses?	10. Emergency Services Route
Year 1991 AADT 012030	15 %	☐ Yes ☒ No Average Number per Day _____	☐ Yes ☒ No

Submission Information - *This information is used for administrative purposes and is not available on the public website.*

Submitted by _____ Organization _____ Phone _____ Date _____

PACIFIC SURFLINER®

SAN LUIS OBISPO - LOS ANGELES - SAN DIEGO

Effective October 8, 2018

AMTRAK PACIFIC SURFLINER®

SAN LUIS OBISPO - SANTA BARBARA
VENTURA - LOS ANGELES
ORANGE COUNTY - SAN DIEGO
and intermediate stations

Including

CALIFORNIA COASTAL SERVICES

connecting

NORTHERN AND SOUTHERN CALIFORNIA

NOTE: **Weekend Service Changes**

Visit: PacificSurfliner.com

AMTRAK

See where the train can take you℠

Caltrans

PACIFIC Surfliner LOSSAN

Amtrak.com

NRPS Form W31–10/8/18. Schedules subject to change without notice.

PACIFIC SURFLINER - Southbound

Train Number ▸				5804	5818	562	1564	564	1566	566	768	572	1572
Normal Days of Operation ▸				Daily	Daily	Daily	SaSuHo	Mo-Fr	SaSuHo	Mo-Fr	Daily	Mo-Fr	SaSuHo
Will Also Operate ▸							11/22, 12/25,1/1		11/22, 12/25,1/1				11/22, 12/25,1/1
Will Not Operate ▸								11/22, 12/25,1/1		11/22, 12/25,1/1		11/22, 12/25,1/1	
On Board Service ▸						B	B	B	B	B	B	B	B
	Mile	Symbol											
SAN LUIS OBISPO, CA –Cal Poly –Amtrak Station	0	○ ♿ C ● ♿ QT	Dp								3 45A 4 00A		
Grover Beach, CA	12	○ ♿ QT									4 25A		
Santa Maria, CA–IHOP	24	○ ♿									4 40A		
Guadalupe-Santa Maria, CA	25	○ ♿ QT											
Lompoc-Surf Station, CA	51	○											
Lompoc, CA–Visitors Center	67	○ ♿											
Solvang, CA	68	○ ♿									5 15A		
Buellton, CA–Opposite Burger King	72	○ ♿									5 25A		
Goleta, CA	110	○ ♿ QT									6 35A		
Santa Barbara, CA–UCSB	118	○ ♿											
SANTA BARBARA, CA	119	● ♿ QT	Ar Dp								43 6 30A 6 49A		
Carpinteria, CA	129	○ ♿ QT									7 04A		
Ventura, CA	145	○ ♿ QT									7 29A		
Oxnard, CA	155	● ♿ QT									7 43A		
Camarillo, CA	165	○ ♿									7 54A		
Moorpark, CA	175	○ ♿									8 08A		
Simi Valley, CA	186	○ ♿									8 23A		
Chatsworth, CA	194	○ ♿									8 40A		
Van Nuys, CA–Amtrak Station	203	● ♿ QT									8 56A		
Hollywood Burbank Airport, CA ✈	209	○ ♿ QT									9 04A		
Glendale, CA	216	○ ♿									9 16A		
LOS ANGELES, CA ✈	222	● ♿ QT	Ar Dp	90 1 15A	90 3 15A	6 05A	6 52A	7 02A	8 19A	8 33A	9 35A 9 55A	10 54A	11 20A
Fullerton, CA	248	● ♿ QT		D1 50A	D3 50A	6 36A	7 23A	7 33A	8 50A	9 04A	10 26A	11 25A	11 51A
Anaheim, CA (Disneyland®)	253	● ♿ QT				6 45A	7 31A	7 41A	8 58A	9 12A	10 34A	11 33A	11 59A
Santa Ana, CA	258	● ♿ QT		2 05A	D4 05A	6 55A	7 40A	7 49A	9 07A	9 21A	10 43A	11 42A	**12 08P**
Irvine, CA	268	● ♿ QT			D4 25A	7 08A	7 53A	8 02A	9 18A	9 32A	10 54A	11 55A	**12 21P**
San Juan Capistrano, CA	280	● ♿ QT			D4 40A	7 23A	8 09A	8 22A	9 31A	9 46A	11 09A	**12 15P**	**12 41P**
San Clemente, CA - Pier	288	○							9 48A	10 04A	11 22A		
Oceanside, CA (LEGOLAND®) 55	309	● ♿ QT			D5 15A	8 02A	8 42A	8 55A	10 19A	10 28A	11 47A	**12 52P**	**1 15P**
Solana Beach, CA	325	● ♿ QT			D5 35A	8 18A	9 01A	9 14A	10 38A	10 42A	**12 08P**	**1 08P**	**1 31P**
San Diego (Old Town), CA	347	○ ♿ QT				L8 50A	L9 33A	L9 46A	L11 08A	L11 13A	**L12 36P**	**L1 40P**	**L2 03P**
SAN DIEGO, CA ✈ (Tijuana)	350	● ♿ QT	Ar		6 00A	8 58A	9 48A	10 01A	11 21A	11 23A	**12 50P**	**1 52P**	**2 13P**

PACIFIC SURFLINER SCHEDULES EFFECTIVE 10/8/18

Service on Pacific Surfliner®

Coaches: Unreserved (seating not guaranteed).
Thruway Bus Connections require advance reservations.

B **Pacific Business class:** Reserved seat service with complimentary beverages, light snacks and newspaper. Amtrak Metropolitan Lounge is available in Los Angeles for Pacific Business class passengers.

Sea View Café℠: Sandwiches, snacks and beverages.

Checked baggage at select stations/trains; size restriction for carry on luggage is 28" x 22" x 11". Consult Amtrak.com for latest baggage policies.

Wi-Fi available.

Bicycles: Most *Pacific Surfliner* trains have racks for seven bicycles located in the cab car, at the opposite end of the train from the locomotive. These slots are available by reservation only and are offered without charge. Passengers must properly secure their bicycles in the racks. For some train departures and on Thruway buses, reservations are not available and only a limited number of bicycles can be carried. When space is available, unboxed bicycles may be put in the baggage bin under connecting Thruway buses. Amtrak disclaims liability for loss or damage. Passengers connecting to Amtrak trains 2, 4, and 14 must obtain a bike reservation in advance. Carry on Trainside checked bike space is limited and a fee is required. Visit Amtrak.com/bikes for more information.

37 Connection between Thruway bus and train at Los Angeles.

43 Connection between Thruway bus and train at Santa Barbara.

44 Metrolink commuter train connection available. Separate ticket required. Call Metrolink at (800) 371-LINK for exact departure times.

55 LEGOLAND is located 8 miles from Oceanside station. Transfers may be made at passenger's expense.

65 Thruway bus connection at San Luis Obispo Amtrak Station arrives Atascadero at 3:15 p.m. and Paso Robles at 3:35 p.m.

66 Connection between Thruway bus and train at San Luis Obispo Amtrak Station.

76 Thruway bus connects to San Joaquins trains at Bakersfield.

90 Travel on this bus is reserved and must be part of an itinerary involving a train trip in one direction or the other. Also, the Los Angeles ticket office is open 30 minutes ahead of departure for night buses 5804 and 5818.

91 Travel on this bus is reserved and must be part of an itinerary involving a train trip in one direction or the other. Since most stations are unstaffed at the hours the buses operate, advance reservations can be made and tickets purchased online at Amtrak.com or Amtrak Quik-Trak kiosks located at most stations. Reserved, ticketed customers have priority seating. Unreserved, ticketed passengers are carried on a space-available basis. The ticket office is open at Los Angeles, San Diego and Oceanside 30 minutes before the departure of the bus.

Smoking is prohibited on trains and only permitted in designated areas at stations.

The *Pacific Surfliner* is financed primarily through funds made available by the LOSSAN Agency through the California Department of Transportation.

SYMBOLS KEY

D	Stops only to discharge passengers; train may leave before time shown.
L	Stops to receive and discharge passengers; train may leave before time shown.
R	Stops only to receive passengers.
	Thruway Bus stop
✈	Airport connection
QT	Quik-Trak self-serve ticketing kiosk
○	Unstaffed station
C	California Station Hosts. See page 7.
●	Staffed Station with ticket office; may or may not be open for all train departures.
♿	Station wheelchair accessible; no barriers between station and train.
♿	Station wheelchair accessible; not all station facilities accessible.

PACIFIC SURFLINER - Southbound

Train Number ▸				774	580	782	584	1584	1590	590	792	796	5816
Normal Days of Operation ▸				Daily	Daily	Daily	Mo-Fr	SaSuHo	SaSuHo	Mo-Fr	Daily	Daily	Daily
Will Also Operate ▸								11/22, 12/25,1/1	11/22, 12/25,1/1				
Will Not Operate ▸							11/22, 12/25,1/1			11/22, 12/25,1/1			
On Board Service ▸				B	B	B	B	B	B	B	B	B	
	Mile	Symbol											
SAN LUIS OBISPO, CA	0		Dp			9 00A					1 15P	66 3 40P	
–Cal Poly													
–Amtrak Station				6 55A		9 20A					1 35P	4 15P	
Grover Beach, CA	12			7 15A		9 45A					1 55P	4 35P	
Santa Maria, CA–IHOP	24					R10 10A					2 15P		
Guadalupe-Santa Maria, CA	25			7 31A								4 51P	
Lompoc-Surf Station, CA	51			8 05A								5 29P	
Lompoc, CA–Visitors Center	67					R10 55A							
Solvang, CA	68					R11 25A					2 50P		
Buellton, CA–Opp. Burger King	72					R11 35A					3 00P		
Goleta, CA	110			9 13A		12 35P					4 25P	6 48P	
Santa Barbara, CA–UCSB	118				90 11 10A								
SANTA BARBARA, CA	119		Ar			43 12 30P					43 4 15P	6 59P	
			Dp	9 27A	90 11 40A	12 49P					4 40P	7 02P	
Carpinteria, CA	129			9 42A		1 04P					4 55P	7 18P	
Ventura, CA	145			10 04A	90 12 10P	1 26P					5 26P	7 40P	
Oxnard, CA	155			10 18A	90 12 35P	1 42P					5 40P	7 54P	
Camarillo, CA	165			10 35A		1 53P					5 56P		
Moorpark, CA	175					2 07P					6 25P		
Simi Valley, CA	186			11 02A		2 22P					6 41P	8 39P	
Chatsworth, CA	194			11 14A		2 39P					6 57P	8 51P	
Van Nuys, CA–Amtrak Station	203			11 28A		2 53P					7 09P	9 07P	
Hollywood Burbank Airport, CA ✈	209			11 35A		3 01P					7 17P	9 14P	
Glendale, CA	216			11 45A		3 11P					7 28P	9 24P	
LOS ANGELES, CA ✈	222		Ar	12 15P	37 2 20P	3 35P					7 47P	9 48P	
			Dp	12 33P	2 58P	4 08P	5 15P	5 15P	6 46P	7 21P	8 15P	10 22P	90 11 20P
Fullerton, CA	248			1 04P	3 29P	4 39P	5 47P	5 47P	7 17P	7 52P	8 46P	10 53P	D11 55P
Anaheim, CA (Disneyland®)	253			1 12P	3 37P	4 47P	5 56P	5 56P	7 26P	8 00P	8 54P	11 01P	
Santa Ana, CA	258			1 21P	3 46P	4 56P	6 05P	6 05P	7 34P	8 09P	9 02P	11 10P	12 10A
Irvine, CA	268			1 34P	3 59P	5 09P	6 18P	6 18P	7 46P	8 22P	9 15P	11 21P	
San Juan Capistrano, CA	280			1 49P	4 14P	5 24P	6 32P	6 32P	8 00P	8 38P	9 30P	11 36P	
San Clemente, CA - Pier	288												
Oceanside, CA (LEGOLAND®) 55	309			2 24P	4 52P	6 01P	7 06P	7 06P	8 45P	9 11P	10 05P	12 10A	
Solana Beach, CA	325			2 43P	5 13P	6 20P	7 23P	7 20P	8 59P	9 35P	10 19P	12 26A	
San Diego (Old Town), CA	347			L3 14P	L5 42P	L6 54P	L7 53P	L7 57P	L9 27P	L10 03P	L10 47P	L12 54A	
SAN DIEGO, CA ✈ (Tijuana)	350		Ar	3 28P	5 50P	7 07P	8 09P	8 14P	9 46P	10 16P	11 03P	1 15A	

PACIFIC SURFLINER SCHEDULES EFFECTIVE 10/8/18

Pacific Surfliner Thruway Bus Connections

Fullerton • Palm Springs • Indio

768/767/ 1767	782/579/ 1579		Connecting Train Number		767/1767/ 572/1572	782/785
4968	4984		Thruway Number		4967	4985
Daily	Daily		Days of Operation		Daily	Daily
11 00A	4 50P	Dp	Fullerton, CA–Trans. Ctr.	Ar	10 05A	4 25P
D11 50A	D5 45P		Riverside, CA–Metrolink Station		R9 00A	R3 25P
D12 30P	D6 25P		Cabazon, CA–Morongo Casino		R8 20A	R2 35P
D1 00P	D6 55P		Palm Springs, CA –Downtown SunLine Transit		R7 50A	R2 10P
1 10P	D7 00P		Palm Springs, CA–Airport ✈		R7 45A	2 00P
	D7 30P		Palm Desert, CA–SunLine Transit		R7 15A	
	D7 40P		La Quinta, CA–SunLine Transit		R7 00A	
	7 50P	Ar	Indio, CA–Behind Denny's	Dp	6 50A	

NOTE—All *Pacific Surfliner* Thruway Bus Connections above require advance reservations and may only be booked with a connecting train trip.

SHADING KEY

Daytime train	Connecting train	Thruway and connecting services

See page 4 for Connecting Transit Services, page 5 for Airport Connections, and page 8 for Route Map.

See in San Diego

Get to Top destinations from San Diego Santa Fe Depot and Old Town Transit Center

Balboa Park and San Diego Zoo: MTS Rapid Bus Route 215 from Kettner Blvd. adjacent to Santa Fe Depot

SeaWorld San Diego: From Old Town take MTS Route 9 (west side of station); From Santa Fe Depot take Green Line to Old Town and transfer to MTS Bus Route 9

International Border at San Ysidro (for Tijuana): From Santa Fe Depot cross Kettner Blvd. to America Plaza Station to MTS Blue Line Trolley

Petco Park: MTS Green Line Trolley from Santa Fe Depot (or Old Town) to Gaslamp Quarter (headsign will read "Downtown SD")

San Diego County Credit Union Stadium: MTS Green Line Trolley from Old Town (or Santa Fe Depot) to San Diego County Credit Union Stadium (headsign may read "Santee")

San Diego Cruise Terminal/International Airport: MTS Route 992 bus runs from the Santa Fe Depot to the airport every 15 minutes seven days a week. Board on the corner of Broadway and Kettner (near Starbucks). The trip to the airport takes only 10 minutes. Exact change one-way fare is $2.25. The Cruise Terminal is also served by Route 992, but is only a three block walk from Santa Fe Depot.

PACIFIC SURFLINER - Northbound

Train Number ▸				5803	5813	759	561	1761	763	1565	565	1767	767	569
Normal Days of Operation ▸				Daily	Daily	Mo-Fr	Mo-Fr	SaSuHo	Daily	SaSuHo	Mo-Fr	SaSuHo	Mo-Fr	Mo-Fr
Will Also Operate ▸								11/22, 12/25,1/1		11/22, 12/25,1/1		11/22, 12/25,1/1		
Will Not Operate ▸						11/22, 12/25,1/1	11/22, 12/25,1/1				11/22, 12/25,1/1		11/22, 12/25,1/1	11/22, 12/25,1/1
On Board Service ▸						B	B	B	B	B	B	B	B	B
	Mile	Symbol												
SAN DIEGO, CA (Tijuana)	0	●♿QT	Dp				4 00A	4 40A	5 55A	6 45A	6 57A	8 05A	8 25A	9 43A
San Diego (Old Town), CA	3	○♿QT					4 07A	4 47A	6 02A	6 52A	7 04A	8 12A	8 32A	9 50A
Solana Beach, CA	26	●♿QT					4 37A	5 17A	6 33A	7 25A	7 37A	8 46A	9 02A	10 23A
Oceanside, CA (LEGOLAND®) 55	41	●♿QT					4 53A	5 37A	6 57A	7 43A	7 55A	9 08A	9 23A	10 40A
San Clemente, CA - Pier	63	○												
San Juan Capistrano, CA	70	●♿QT					5 25A	6 09A	7 30A	8 18A	8 30A	9 44A	10 01A	11 17A
Irvine, CA	83	●♿QT					5 41A	6 25A	7 48A	8 34A	8 46A	9 59A	10 16A	11 31A
Santa Ana, CA	92	●♿QT		91 1 45A	91 4 50A		5 52A	6 36A	7 59A	8 46A	8 58A	10 10A	10 27A	11 42A
Anaheim, CA (Disneyland®)	97	●♿QT					6 02A	6 48A	8 08A	8 55A	9 07A	10 19A	10 36A	11 51A
Fullerton, CA	102	●♿QT		91 2 05A	91 5 15A		6 11A	7 00A	8 16A	9 03A	9 15A	10 28A	10 45A	11 59A
LOS ANGELES, CA	128	●♿QT	Ar	91 2 45A	91 6 05A		7 03A	7 30A	8 51A	9 44A	9 56A	11 08A	11 25A	**12 34P**
			Dp	91 2 55A		4 09A	44	7 50A	9 11A			11 48A	11 48A	
Glendale, CA	134	○♿		91 3 10A		4 22A	44	8 02A	9 23A			**12 00N**	**12 00N**	
Hollywood Burbank Airport, CA	142	○♿QT		76 91 3 25A		4 34A	44	8 12A	9 33A			**12 10P**	**12 10P**	
Van Nuys, CA–Amtrak Station	147	●♿QT				4 44A	44	8 21A	9 43A			**12 20P**	**12 20P**	
Chatsworth, CA	157	○♿				5 06A	44	8 33A	9 55A			**12 32P**	**12 32P**	
Simi Valley, CA	164	○♿				5 19A		8 45A	10 07A			**12 44P**	**12 44P**	
Moorpark, CA	175	○♿				5 31A		8 57A				**12 56P**	**12 56P**	
Camarillo, CA	186	○♿				5 46A		9 10A	10 31A					
Oxnard, CA	195	●♿QT				5 58A		9 21A	10 44A			**1 16P**	**1 16P**	
Ventura, CA	205	○♿QT				6 12A		9 35A	11 00A			**1 30P**	**1 30P**	
Carpinteria, CA	221	○♿QT				6 34A		10 06A	11 22A			**1 52P**	**1 52P**	
SANTA BARBARA, CA	232	●♿QT	Ar			L6 47A		L10 19A	11 41A			L2 13P	L2 13P	
			Dp			43 6 55A		43 10 30A	11 44A			2 25P	2 25P	
Santa Barbara, CA–UCSB	233	○♿												
Goleta, CA	241	○♿QT				7 16A		10 43A	11 56A			2 32P	2 32P	
Solvang, CA	267	○♿				7 45A		11 20A				D3 20P	D3 20P	
Buellton, CA–Opp. Burger King	271	○♿				7 55A		11 30A				D3 30P	D3 30P	
Lompoc, CA–Visitors Center	284	○♿										D4 00P	D4 00P	
Lompoc-Surf Station, CA	300	○							1 08P					
Guadalupe-Santa Maria, CA	326	○♿QT							1 44P			D4 35P	D4 35P	
Santa Maria, CA–IHOP	327	○♿				8 25A		12 00N				D3 50P	D3 50P	
Grover Beach, CA	338	○♿QT				8 45A		12 20P	2 01P			D4 55P	D4 55P	
SAN LUIS OBISPO, CA									2 30P					
–Amtrak Station	350	C●♿QT	Ar			9 10A		12 45P	65 2 40P			4 35P	4 35P	
–Cal Poly		○♿	Ar			9 25A		1 00P	2 50P			4 55P	4 55P	

PACIFIC SURFLINER SCHEDULES EFFECTIVE 10/8/18

Connecting Transit Services in Southern California

Metrolink provides commuter rail service from Los Angeles Union Station to the Antelope Valley, downtown Burbank, Oxnard, Riverside, San Bernardino and Orange County. It supplements *Pacific Surfliner* service between Oxnard and Oceanside. (800) 371-5465; metrolinktrains.com. *Rail 2 Rail:* The Rail 2 Rail program offers *Pacific Surfliner* monthly pass holders access to Metrolink and COASTER commuter trains within the station limits of their pass.

Los Angeles County Metropolitan Transportation Authority provides bus, subway, and light rail services in the Los Angeles area; Metro's Red, Purple and Gold lines originate at Union Station and provide rail connections to Hollywood, Universal City and Pasadena. 323.GO.METRO; metro.net.

North County Transit District operates the COASTER commuter rail service which supplements *Pacific Surfliner* service between San Diego and Oceanside including additional stops at Sorrento Valley, Solana Beach, Encinitas and Carlsbad. The Sprinter operates frequent rail service between Oceanside, Vista, San Marcos and Escondido. The Breeze also provides bus service at many *Pacific Surfliner* stations. (760) 966-6500; www.gonctd.com.

San Diego Metropolitan Transit System operates bus and the San Diego Trolley service. Direct service to San Diego's Santa Fe Depot and Old Town stations. (619) 233-3004; sdmts.com.

Orange County Transportation Authority provides bus transit service throughout Orange County including *Pacific Surfliner* stations in Fullerton, Anaheim, Santa Ana, Irvine, San Juan Capistrano and San Clemente. (714) 636-7433; www.octa.net.

Santa Barbara Metropolitan Transit District provides bus transit service in Santa Barbara County, including connections to the Downtown and Waterfront shuttles serving State Street, the Santa Barbara Zoo and Santa Barbara Harbor. (805) 963-3366; sbmtd.gov.

Anaheim Resort Transit provides convenient bus connections from the Anaheim station to the Disneyland Resort and Anaheim Convention Center. (888) 364-2787; www.rideart.org.

For a complete list of connecting public transit providers, visit PacificSurfliner.com.

Connect to Local Transit from Pacific Surfliner

The *Pacific Surfliner* provides free connections to many bus and transit services near train stations. Simply show your valid Amtrak *Pacific Surfliner* paper ticket or e-Ticket to the driver when you board the bus or shuttle. You can also purchase a discounted one-day transit pass for Metro (Los Angeles) and MTS (San Diego) in the Café car. Visit PacificSurfliner.com for details.

SHADING KEY

- Daytime train
- Connecting train
- Thruway and connecting services

PACIFIC SURFLINER - Northbound

Train Number ▸				1569	573	1573	777	1579	579	583	785	591	595	5811
Normal Days of Operation ▸				SaSuHo	Mo-Fr	SaSuHo	Daily	SaSuHo	Mo-Fr	Daily	Daily	Daily	Daily	Daily
Will Also Operate ▸				11/22, 12/25,1/1		11/22, 12/25,1/1		11/22, 12/25,1/1						
Will Not Operate ▸					11/22, 12/25,1/1				11/22, 12/25,1/1					
On Board Service ▸				B	B	B	B	B	B	B	B	B	B	
	Mile	Symbol												
SAN DIEGO, CA (Tijuana)	0	●♿QT	Dp	9 43A	10 45A	10 51A	12 05P	1 30P	1 35P	2 50P	3 58P	6 43P	8 57P	91 9 40P
San Diego (Old Town), CA	3	○♿QT		9 50A	10 52A	10 58A	12 12P	1 37P	1 42P	2 57P	4 05P	6 50P	9 04P	
Solana Beach, CA	26	●♿QT		10 23A	11 22A	11 31A	12 43P	2 11P	2 16P	3 31P	4 36P	7 23P	9 35P	91 10 10P
Oceanside, CA (LEGOLAND®) 55	41	●♿QT		10 40A	11 46A	11 51A	1 00P	2 29P	2 36P	3 48P	4 53P	7 43P	9 53P	91 10 40P
San Clemente, CA - Pier	63	○								4 10P	5 19P			
San Juan Capistrano, CA	70	●♿QT		11 21A	12 23P	12 22P	1 33P	3 01P	3 08P	4 25P	5 34P	8 16P	10 26P	91 11 15P
Irvine, CA	83	●♿QT		11 35A	12 37P	12 36P	1 48P	3 16P	3 23P	4 42P	5 49P	8 31P	10 41P	91 11 30P
Santa Ana, CA	92	●♿QT		11 46A	12 48P	12 47P	1 59P	3 27P	3 34P	4 55P	6 00P	8 42P	10 52P	91 11 50P
Anaheim, CA (Disneyland®)	97	●♿QT		11 55A	12 58P	12 57P	2 08P	3 36P	3 43P	5 05P	6 10P	8 51P	11 01P	
Fullerton, CA	102	●♿QT		12 03P	1 08P	1 07P	2 16P	3 45P	3 52P	5 17P	6 20P	9 00P	11 10P	91 12 10A
LOS ANGELES, CA	128	●♿QT	Ar	12 38P	1 43P	1 46P	2 51P	4 29P	4 36P	5 54P	6 57P	9 35P	11 50P	91 12 55A
			Dp				3 06P				7 16P	37 9 50P		91 1 10A
Glendale, CA	134	○♿					3 18P				7 28P	10 05P		1 25A
Hollywood Burbank Airport, CA	142	○♿QT					3 28P				7 38P			76 91 1 40A
Van Nuys, CA–Amtrak Station	147	●♿QT					3 38P				7 48P	10 30P		
Chatsworth, CA	157	○♿					3 50P				8 00P	D10 50P		
Simi Valley, CA	164	○♿					4 02P				8 12P	D11 10P		
Moorpark, CA	175	○♿										D11 25P		
Camarillo, CA	186	○♿					4 28P				8 36P	D11 35P		
Oxnard, CA	195	●♿QT					4 39P				8 47P	D11 45P		
Ventura, CA	205	○♿QT					4 58P				9 01P	D11 59P		
Carpinteria, CA	221	○♿QT					5 22P				9 23P	D12 15A		
SANTA BARBARA, CA	232	●♿QT	Ar				5 41P				L9 51P	D12 35A		
			Dp				5 44P				43 10 00P			
Santa Barbara, CA–UCSB	233	○♿										12 55A		
Goleta, CA	241	○♿QT					5 56P				10 04P			
Solvang, CA	267	○♿									D10 45P			
Buellton, CA–Opp. Burger King	271	○♿									D10 50P			
Lompoc, CA–Visitors Center	284	○♿												
Lompoc-Surf Station, CA	300	○					7 02P							
Guadalupe-Santa Maria, CA	326	○♿QT					7 38P							
Santa Maria, CA–IHOP	327	○♿									D11 30P			
Grover Beach, CA	338	○♿QT					7 55P				11 55P			
SAN LUIS OBISPO, CA							8 36P							
–Amtrak Station	350	C●♿QT	Ar				66 8 40P				12 20A			
–Cal Poly		○♿	Ar				8 50P				12 35A			

PACIFIC SURFLINER SCHEDULES EFFECTIVE 10/8/18

Pacific Surfliner Thruway Bus Connections

Los Angeles • Long Beach • San Pedro

573	777	583	785		Connecting Train Number		564	768	774	580
5710	5712	5714	5702		Thruway Number		5713	5715	5717	5719
Daily	Daily	Daily	Daily		Days of Operation		Daily	Daily	Daily	Daily
2 40P	4 30P	6 35P	9 15P	Dp	Los Angeles, CA–Union Station	Ar	5 45A	8 45A	11 30A	1 35P
D3 35P	D5 25P	D7 30P	D10 10P	Ar	Long Beach, CA–Transit Gallery	Dp	4 25A	7 25A	10 25A	12 35P
D3 50P 4 05P	D5 40P 5 55P	D7 45P 8 00P	D10 25P 10 40P	Ar	San Pedro, CA–Catalina Terminal –Library	Dp	4 10A 4 00A	7 10A 7 00A	10 10A 10 00A	12 20P 12 10P

NOTE—All *Pacific Surfliner* Thruway Bus Connections above require advance reservations and may only be booked with a connecting train trip.

Sea View Café℠

Visit the onboard **Sea View Café** and check out our updated menu, featuring fresh salads and sandwiches, snacks, local craft beer, cocktails, wine and more!

See pages 2-3 for Services and Symbols Key. See page 8 for Route Map.

Airport Connections

Los Angeles International Airport

FlyAway bus service operates directly from Los Angeles Union Station to all terminals of Los Angeles International Airport. Frequent service 24 hours a day. Travel time is 40-45 minutes. Reservations are not required. Tickets are available at FlyAway ticket booth near berth 1 of the Patsaouras Transit Plaza on the east side of Union Station. Credit and debit cards only are accepted, no cash. For further information, including purchasing tickets online, limited service from Van Nuys and Westwood (UCLA), etc., go to lawa.org/flyaway or call (866) 435-9529.

Hollywood Burbank Airport

The Hollywood Burbank Airport train station/Thruway bus stop is one short block from the main air terminal. Shuttle service between the station and airport terminal is available on call from the courtesy telephone on the sidewalk by the Empire Avenue crosswalk. Rental car agencies are located between the station and airport.

CALIFORNIA COASTAL ROUTES - Southbound

Train Name ▸ [85] [86] [88]				Capitol Corridor / Pacific Surfliner	Capitol Corridor / Pacific Surfliner	Pacific Surfliner	Capitol Corridor / Pacific Surfliner	Capitol Corridor / Pacific Surfliner	Coast Starlight / Pacific Surfliner	Capitol Corridor / Pacific Surfliner	Capitol Corridor / Pacific Surfliner	Capitol Corridor
Train Number ▸				549/768	749/768	782	523/792	792	11/796	527/796	727/796	537/737
Normal Days of Operation ▸				Mo-Fr[74]	SaSuHo[74]	Daily	Mo-Fr	SaSuHo	Daily	Mo-Fr	SaSuHo	Daily
On Board Service ▸				B	B	B	B	B	R	B	B	
	Mile	Symbol										
SACRAMENTO, CA	0		Dp	6 55P	7 35P		5 30A		6 35A	7 05A	8 10A	12 10P
Davis, CA	13			7 10P	7 50P		5 45A		6 50A	7 20A	8 25A	12 25P
Fairfield-Vacaville, CA	35			7 30P	8 10P		6 05A			7 40A	8 45A	12 45P
Suisun-Fairfield, CA	40			7 37P	8 17P		6 12A			7 47A	8 52A	12 52P
Martinez, CA	57			7 56P	8 36P		6 31A		7 34A	8 06A	9 11A	1 11P
Richmond, CA	76			8 22P	9 02P		6 57A			8 32A	9 37A	1 37P
Berkeley, CA	82			8 30P	9 10P		7 05A			8 40A	9 45A	1 45P
Emeryville, CA	84			8 35P	9 15P	R4 55A	7 10A		8 20A	8 45A	9 50A	1 50P
OAKLAND, CA	89		Ar	D8 43P	9 34P		[89]7 19A		8 35A	[89]8 53A	[89]9 59A	1 58P
–Jack London Square			Dp	[74]10 00P	[74]10 00P	R4 40A	7 25A	7 25A	8 50A	9 25A	9 25A	1 59P
Oakland Coliseum, CA.	94						7 28A			9 03A	10 08A	2 08P
San Francisco, CA–Transbay Term.				10 35P	10 35P	R5 20A	R7 55A	R7 55A	R7 45A	R9 55A	R9 55A	
Hayward, CA	102						7 39A			9 14A	10 19A	2 19P
Fremont-Centerville, CA	114						7 55A			9 30A	10 35A	2 35P
Santa Clara, CA–Great America	125						8 12A			9 47A	10 52A	2 52P
Santa Clara, CA–University Sta.	128						8 20A			9 55A	11 00A	3 00P
SAN JOSE, CA	132		Ar	11 40P	11 40P	6 15A	8 38A		9 55A	10 18A	11 18A	3 18P
			Dp	11 45P	11 45P	6 20A	9 10A	9 10A	10 07A	11 20A	11 20A	3 25P
Salinas, CA	203			12 45A	12 45A	7 30A	10 25A	10 25A	11 48A	12 25P	12 25P	4 40P
King City, CA–McDonald's				M2 15A	M2 15A	M8 50A	M11 45A	M11 45A		2 00P	2 00P	MD5 35P
Paso Robles, CA	300			3 15A	3 15A	[68]9 45A	12 40P	12 40P	1 38P	2 55P	2 55P	D6 20P
Atascadero, CA–Transit Center	310									3 10P	3 10P	
San Luis Obispo, CA–Cal Poly	334			3 45A	3 45A	R9 00A	1 15P	1 15P		3 40P	3 40P	D6 55P
SAN LUIS OBISPO, CA	335		Ar	3 55A	3 55A	10 25A	1 25P	1 25P	3 07P	3 50P	3 50P	7 00P
			Dp	4 00A	4 00A	10 30A	1 35P	1 35P	3 20P	4 15P	4 15P	7 10P
Grover Beach, CA	348			4 25A	4 25A	9 45A	1 55P	1 55P		4 35P	4 35P	D7 30P
Santa Maria, CA–IHOP	360			4 40A	4 40A	R10 10A	2 15P	2 15P				D7 55P
Guadalupe-Santa Maria, CA	361									4 51P	4 51P	
Lompoc-Surf Station, CA	388									5 29P	5 29P	
Lompoc, CA–Visitors Center	404					R10 55A						
Solvang, CA–Solvang Park	436			5 15A	5 15A	R11 25A	2 50P	2 50P				D8 30P
Buellton, CA–Opposite Burger King				5 25A	5 25A	R11 35A	3 00P	3 00P				D8 35P
Goleta, CA	447			R6 35A	R6 35A	R12 35P	R4 25P	R4 25P		6 48P	6 48P	
Santa Barbara, CA–UCSB	455											9 10P
SANTA BARBARA, CA	456		Ar	6 30A	6 30A	12 30P	4 15P	4 15P	5 55P	6 59P	6 59P	9 30P
			Dp	6 49A	6 49A	12 49P	4 40P	4 40P	6 02P	7 02P	7 02P	
Carpinteria, CA	466			7 04A	7 04A	1 04P	4 55P	4 55P		7 18P	7 18P	
Ventura, CA	482			7 29A	7 29A	1 26P	5 26P	5 26P		7 40P	7 40P	
Oxnard, CA	492			7 43A	7 43A	1 42P	5 40P	5 40P	D7 05P	7 54P	7 54P	
Camarillo, CA	502			7 54A	7 54A	1 53P	5 56P	5 56P				
Moorpark, CA	512			8 08A	8 08A	2 07P	6 25P	6 25P				
Simi Valley, CA	523			8 23A	8 23A	2 22P	6 41P	6 41P	D7 48P	8 39P	8 39P	
Chatsworth, CA	531			8 40A	8 40A	2 39P	6 57P	6 57P		8 51P	8 51P	
Van Nuys, CA–Amtrak Station	540			8 56A	8 56A	2 53P	7 09P	7 09P	D8 22P	9 07P	9 07P	
Hollywood Burbank Airport, CA ✈	546			9 04A	9 04A	3 01P	7 17P	7 17P	D8 31P	9 14P	9 14P	
Glendale, CA	553			9 16A	9 16A	3 11P	7 28P	7 28P		9 24P	9 24P	
LOS ANGELES, CA ✈	559		Ar	9 35A	9 35A	3 35P	7 47P	7 47P	9 00P	9 48P	9 48P	
			Dp	9 55A	9 55A	4 08P	8 15P	8 15P	10 22P	10 22P	10 22P	
Fullerton, CA	585			10 26A	10 26A	4 39P	8 46P	8 46P	10 53P	10 53P	10 53P	
Anaheim, CA (Disneyland®)	590			10 34A	10 34A	4 47P	8 54P	8 54P	11 01P	11 01P	11 01P	
Santa Ana, CA	595			10 43A	10 43A	4 56P	9 02P	9 02P	11 10P	11 10P	11 10P	
Irvine, CA	605			10 54A	10 54A	5 09P	9 15P	9 15P	11 21P	11 21P	11 21P	
San Juan Capistrano, CA	617			11 09A	11 09A	5 24P	9 30P	9 30P	11 36P	11 36P	11 36P	
San Clemente, CA - Pier	625			11 22A	11 22A							
Oceanside, CA (LEGOLAND®) [55]	646			11 47A	11 47A	6 01P	10 05P	10 05P	12 10A	12 10A	12 10A	
Solana Beach, CA	662			12 08P	12 08P	6 20P	10 19P	10 19P	12 26A	12 26A	12 26A	
San Diego (Old Town), CA	684			L12 36P	L12 36P	L6 54P	L10 47P	L10 47P	L12 54A	L12 54A	L12 54A	
SAN DIEGO, CA ✈	687		Ar	12 50P	12 50P	7 07P	11 03P	11 03P	1 15A	1 15A	1 15A	

CAPITOL CORRIDOR SCHEDULES EFFECTIVE 5/7/18. PACIFIC SURFLINER SCHEDULES EFFECTIVE 10/8/18.

Service on California Coastal Routes

M Meal stop.

[55] LEGOLAND is located 8 miles from Oceanside station. Transfers may be made at passenger's expense.

[68] Bus 4782 operates express service to Santa Barbara via San Luis Obispo.

[85] For detailed service information for the *Capitol Corridor* between Reno and San Jose, please refer to our corresponding timetable folder (W34).

[86] For detailed service information for the *Pacific Surfliner* between San Luis Obispo and San Diego, please refer to pages 2-5.

[88] For detailed service information for the *Coast Starlight* between Seattle and Los Angeles, please visit Amtrak.com.

[89] Train departs Oakland two minutes after arrival and makes connection with southbound coastal bus at San Jose.

* Train 767 operates earlier on Saturdays, Sundays and Holidays as Train 1767. See schedule on page 4.

Smoking is prohibited on trains and only permitted in designated areas at stations.

See pages 2-3 for Services and Symbols Key; page 4-5 for Amenites; and page 8 for Route Map.

CALIFORNIA COASTAL ROUTES - Northbound

Train Name ▸ 85 86 88	Mile	Symbol		Capitol Corridor	Pacific Surfliner / Capitol Corridor	Capitol Corridor	Pacific Surfliner / Capitol Corridor	Pacific Surfliner / Capitol Corridor	Pacific Surfliner / Coast Starlight	Pacific Surfliner	Pacific Surfliner	Pacific Surfliner / Capitol Corridor	Pacific Surfliner / Capitol Corridor
Train Number ▸				732	759/538	538	1761/744	763/748	763/14	767	777	785/522	785/720
Normal Days of Operation ▸				SaSuHo	Mo-Fr	Mo-Fr	SaSuHo	SaSuHo	Daily	Daily*	Daily	Mo-Fr	SaSuHo
On Board Service ▸							B	B	R	B	B	B	B
SAN DIEGO, CA	0		Dp				4 40A	5 55A	5 55A	8 25A	**12 05P**	**3 58P**	**3 58P**
San Diego (Old Town), CA	3						4 47A	6 02A	6 02A	8 32A	**12 12P**	**4 05P**	**4 05P**
Solana Beach, CA	26						5 17A	6 33A	6 33A	9 02A	**12 43P**	**4 36P**	**4 36P**
Oceanside, CA (LEGOLAND®) 55	41						5 37A	6 57A	6 57A	9 23A	**1 00P**	**4 53P**	**4 53P**
San Clemente, CA - Pier	63											**5 19P**	**5 19P**
San Juan Capistrano, CA	70						6 09A	7 30A	7 30A	10 01A	**1 33P**	**5 34P**	**5 34P**
Irvine, CA	83						6 25A	7 48A	7 48A	10 16A	**1 48P**	**5 49P**	**5 49P**
Santa Ana, CA	92						6 36A	7 59A	7 59A	10 27A	**1 59P**	**6 00P**	**6 00P**
Anaheim, CA (Disneyland®)	97						6 48A	8 08A	8 08A	10 36A	**2 08P**	**6 10P**	**6 10P**
Fullerton, CA	102						7 00A	8 16A	8 16A	10 45A	**2 16P**	**6 20P**	**6 20P**
LOS ANGELES, CA	128		Ar				7 30A	8 51A	8 51A	11 25A	**2 51P**	**6 57P**	**6 57P**
			Dp		4 09A		7 50A	9 11A	10 10A	11 48A	**3 06P**	**7 16P**	**7 16P**
Glendale, CA	134				4 22A		8 02A	9 23A		**12 00N**	**3 18P**	**7 28P**	**7 28P**
Hollywood Burbank Airport, CA	142				4 34A		8 12A	9 33A	**R**10 29A	**12 10P**	**3 28P**	**7 38P**	**7 38P**
Van Nuys, CA–Amtrak Station	147				4 44A		8 21A	9 43A	**R**10 40A	**12 20P**	**3 38P**	**7 48P**	**7 48P**
Chatsworth, CA	157				5 06A		8 33A	9 55A		**12 32P**	**3 50P**	**8 00P**	**8 00P**
Simi Valley, CA	164				5 19A		8 45A	10 07A	**R**11 11A	**12 44P**	**4 02P**	**8 12P**	**8 12P**
Moorpark, CA	175				5 31A		8 57A			**12 56P**			
Camarillo, CA	186				5 46A		9 10A	10 31A			**4 28P**	**8 36P**	**8 36P**
Oxnard, CA	195				5 58A		9 21A	10 44A	11 44A	**1 16P**	**4 39P**	**8 47P**	**8 47P**
Ventura, CA	205				6 12A		9 35A	11 00A		**1 30P**	**4 58P**	**9 01P**	**9 01P**
Carpinteria, CA	221				6 34A		10 06A	11 22A		**1 52P**	**5 22P**	**9 23P**	**9 23P**
SANTA BARBARA, CA	232		Ar		**L**6 47A		**L**10 19A	11 41A	**12 33P**	**L2 13P**	**5 41P**	**L9 51P**	**L9 51P**
			Dp	6 05A	6 55A	7 55A	10 30A	11 44A	**12 40P**	**2 25P**	**5 44P**	**10 00P**	**10 00P**
Santa Barbara, CA–UCSB	233			6 25A		8 15A							
Goleta, CA	241				**D**7 16A		**D**10 43A	11 56A		**2 32P**	**5 56P**	**D10 04P**	**D10 04P**
Solvang, CA–Solvang Park	279				7 45A		11 20A			**D3 20P**		**D10 45P**	**D10 45P**
Buellton, CA–Opposite Burger King					7 55A		11 30A			**D3 30P**		**D10 50P**	**D10 50P**
Lompoc, CA–Visitors Center	288									**D4 00P**			
Lompoc-Surf Station, CA	300							**1 08P**			**7 02P**		
Guadalupe-Santa Maria, CA	326							**1 44P**		**D4 35P**	**7 38P**		
Santa Maria, CA–IHOP	327			7 30A	8 25A	9 25A	**D12 00N**			**D3 50P**		**D11 30P**	**D11 30P**
Grover Beach, CA	338			8 00A	8 45A	9 55A	**12 20P**	**2 01P**		**D4 55P**	**7 55P**	**11 55P**	**11 55P**
SAN LUIS OBISPO, CA	350	C	Ar	8 20A	9 10A	10 15A	**12 45P**	**2 30P**	**3 22P**	**4 35P**	**8 36P**	12 20A	12 20A
			Dp	8 25A	9 15A	10 20A	**12 50P**	**2 40P**	**3 35P**	**4 45P**	**8 40P**	12 25A	12 25A
San Luis Obispo, CA–Cal Poly	351			8 30A	9 25A	10 25A	**1 00P**	**2 50P**		**4 50P**	**D8 50P**	12 35A	12 35A
Atascadero, CA–Transit Center	375							**3 15P**			**D9 10P**		
Paso Robles, CA	385			9 05A	9 55A	11 00A	**1 30P**	**3 35P**	**4 37P**	**5 25P**	**9 25P**	1 05A	1 05A
King City, CA–McDonald's				**M**10 10A	**M**11 20A	**M12 05P**	**M2 55P**	**M5 00P**		**M6 50P**		**M**2 30A	**M**2 30A
Salinas, CA	483			11 15A	**12 10P**	**1 10P**	**3 40P**	**6 00P**	**6 28P**	**7 40P**		3 15A	3 15A
SAN JOSE, CA	554	C	Ar	**12 50P**	**1 20P**	**2 45P**	**D4 55P**	**D7 15P**	**8 11P**	**D8 40P**			
			Dp	**1 05P**	**3 10P**	**3 10P**	**6 40P**	**9 10P**	**8 23P**			4 25A	4 25A
Santa Clara, CA–University Sta.	561			**1 11P**	**3 16P**	**3 16P**	**6 46P**	**9 16P**					
Santa Clara, CA–Great America	564			**1 18P**	**3 23P**	**3 23P**	**6 53P**	**9 23P**					
Fremont-Centerville, CA	573			**1 35P**	**3 40P**	**3 40P**	**7 10P**	**9 40P**					
Hayward, CA	585			**1 50P**	**3 56P**	**3 56P**	**7 25P**	**9 55P**					
San Francisco, CA–Transbay Term.		C			**D2 30P**	**D2 30P**	**D6 05P**	**D8 25P**	**D10 05P**	**D9 45P**		**D5 40A**	**D5 40A**
Oakland Coliseum, CA	593			**2 00P**	**4 06P**	**4 06P**	**7 35P**	**10 05P**					
OAKLAND, CA –Jack London Square	598	C	Ar	**2 07P**	**4 13P**	**4 13P**	**6 35P**	**D8 55P**	**9 24P**	**D10 15P**		6 10A	6 10A
			Dp	**2 08P**	**4 14P**	**4 14P**	**7 43P**	**10 13P**	**9 39P**			6 25A	8 15A
Emeryville, CA	603	C		**2 17P**	**4 23P**	**4 23P**	**7 52P**	**10 22P**	**10 04P**	**D10 05P**		6 34A	8 24A
Berkeley, CA	604			**2 21P**	**4 27P**	**4 27P**	**7 56P**	**10 26P**				6 38A	8 28A
Richmond, CA	610			**2 28P**	**4 34P**	**4 34P**	**8 03P**	**10 33P**				6 45A	8 35A
Martinez, CA	630	C		**2 54P**	**5 00P**	**5 00P**	**8 29P**	**10 59P**	**10 46P**			7 11A	9 01A
Suisun-Fairfield, CA	647			**3 13P**	**5 19P**	**5 19P**	**8 48P**	**11 18P**				7 30A	9 20A
Fairfield-Vacaville, CA	652			**3 20P**	**5 26P**	**5 26P**	**8 55P**	**11 25P**				7 37A	9 27A
Davis, CA	674	C		**3 40P**	**5 46P**	**5 46P**	**9 15P**	**11 45P**	**11 25P**			7 57A	9 47A
SACRAMENTO, CA	687	C	Ar	**4 14P**	**6 24P**	**6 24P**	**9 49P**	12 19A	**11 59P**			8 25A	10 15A

CAPITOL CORRIDOR SCHEDULES EFFECTIVE 5/7/18. PACIFIC SURFLINER SCHEDULES EFFECTIVE 10/8/18.

SHADING KEY

- Daytime train
- Overnight train
- Thruway and connecting services

Pacific Surfliner Unreserved Coach Seating

Coach seating on the *Pacific Surfliner* is unreserved; seats are occupied on a first come, first served basis. Unreserved coach seating is not guaranteed; reserved seating is available in Pacific Business class.

C California Station Hosts

The Station Host Association of California is a volunteer organization that assists rail passengers, meeting and greeting them at eleven California stations, and helping them with schedules, boarding, and general inquiries. For more information, visit www.stationhost.org.

CALIFORNIA'S AMTRAK PASSENGER RAIL and THRUWAY BUS SERVICE

Noise Model Based on Federal Transit Adminstration General Transit Noise Assessment
Developed for Chicago Create Project

Case: S190205

RESULTS			
Noise Source	**Ldn (dB)**	**Leq - daytime (dB)**	**Leq - nighttime (dB)**
All Sources	54	43	42
Source 1	40	37	32
Source 2	34	31	26
Source 3	45	39	39
Source 4	45	38	38
Source 5	0	0	0
Source 6	0	0	0
Horn Ldn 1	47		
Horn Ldn 2	52		

Enter noise receiver land use category below.

LAND USE CATEGORY	
Noise receiver land use category (1, 2 or 3)	2

Enter data for up to 8 noise sources below - see reference list for source numbers.

NOISE SOURCE PARAMETERS								
Parameter	**Source 1**		**Source 2**		**Source 3**		**Source 4**	
Source Num.	Commuter Diesel Locomotive	2	Commuter Rail Cars	3	Freight Locomotive	9	Freight Cars	10
Distance (source to receiver)	distance (ft)	750	distance (ft)	750	distance (ft)	750	distance (ft)	750
Daytime Hours	speed (mph)	40	speed (mph)	40	speed (mph)	35	speed (mph)	35
(7 AM - 10 PM)	trains/hour	3	trains/hour	3	trains/hour	1	trains/hour	1
	locos/train	1	cars/train	5	locos/train	2	length of cars (ft) / train	2000
Nighttime Hours	speed (mph)	40	speed (mph)	40	speed (mph)	35	speed (mph)	35
(10 PM - 7 AM)	trains/hour	1	trains/hour	1	trains/hour	1	trains/hour	1
	locos/train	1	cars/train	5	locos/train	2	length of cars (ft) / train	2000
Wheel Flats?			% of cars w/ wheel flats	20.00%			% of cars w/ wheel flats	20.00%
Jointed Track?	Y/N	N	Y/N	N	Y/N	N	Y/N	N
Embedded Track?	Y/N	N	Y/N	N	Y/N	N	Y/N	N
Aerial Structure?	Y/N	N	Y/N	N	Y/N	N	Y/N	N
Barrier Present?	Y/N	N	Y/N	N	Y/N	N	Y/N	N
Intervening Rows of of Buildings	number of rows	3	number of rows	3	number of rows	3	number of rows	3

SOURCE REFERENCE LIST	
Source	**Number**
Commuter Electric Locomotive	1
Commuter Diesel Locomotive	2
Commuter Rail Cars	3
RRT/LRT	4
AGT, Steel Wheel	5
AGT, Rubber Tire	6
Monorail	7
Maglev	8
Freight Locomotive	9
Freight Cars	10
Hopper Cars (empty)	11
Hopper Cars (full)	12
Crossover	13
Automobiles	14
City Buses	15
Commuter Buses	16
Rail Yard or Shop	17
Layover Tracks	18
Bus Storage Yard	19
Bus Op. Facility	20
Bus Transit Center	21
Parking Garage	22
Park & Ride Lot	23

HORN NOISE CALCULATION	
Freight	
trains/day	3
trains/night	3
distance (ft)	1050
speed (mph)	35
ground absorption (0-1)	1
Hourly Leq at 50 feet (daytime)	67.0
Hourly Leq at 50 feet (nighttime)	69.2
Ldn at 50 feet	75.3
Ldn at specified distance	46.5
Commuter	
trains/day	39
trains/night	9
distance (ft)	1050
speed (mph)	40
ground absorption (0-1)	1
Hourly Leq at 50 feet (daytime)	77.5
Hourly Leq at 50 feet (nighttime)	73.4
Ldn at 50 feet	80.7
Ldn at specified distance	51.9

APPENDIX D

Cadna Analysis Data and Results

Cadna Noise Model - Roadway Source Input - Calibration									
Name	ID	Lme Day (dBA)	Exact Traffic Count Data			Speed Limit (km/h)	SCS Distance (m)	Surface Type	Throttle
			Total (hourly)	Total% Medium /Heavy Trucks	%Heavy Trucks				
I-5 NB	R_1	77.8	6435	4.8	60.4	105	18.29	1	No
I-5 SB	R_2	77.8	6435	4.8	60.4	105	14.63	1	No
I-5 SB Ramp	R_3	59.7	754	4.8	60.4	48	4.88	1	No
Avenida Encinas NB	R_4	56.1	240	2.6	0.0	64	7.32	1	No
Avenida Encinas SB	R_5	56.1	240	2.6	0.0	64	7.32	1	No
Palomar Airport Rd EB	R_6	63.9	936	3.0	33.3	72	11.89	1	No
Palomar Airport Rd WB	R_7	63.9	936	3.0	33.3	72	11.89	1	No

Cadna Noise Model - Roadway Source Input - Current Model									
Name	ID	Lme Day (dBA)	Exact Traffic Count Data			Speed Limit (km/h)	SCS Distance (m)	Surface Type	Throttle
			Total (hourly)	Total% Medium /Heavy Trucks	%Heavy Trucks				
I-5 NB	R_1	79.3	9108	4.8	60.4	105	18.29	1	No
I-5 SB	R_2	79.3	9108	4.8	60.4	105	14.63	1	No
I-5 SB Ramp	R_3	61.2	1067	4.8	60.4	48	4.88	1	No
Avenida Encinas NB	R_4	58.1	345	3.0	33.3	64	7.32	1	No
Avenida Encinas SB	R_5	58.1	345	3.0	33.3	64	7.32	1	No
Palomar Airport Rd EB	R_6	65.4	1325	3.0	33.3	72	11.89	1	No
Palomar Airport Rd WB	R_7	65.4	1325	3.0	33.3	72	11.89	1	No

Cadna Noise Model - Roadway Source Input - Future Model									
Name	ID	Lme Day (dBA)	Exact Traffic Count Data			Speed Limit (km/h)	SCS Distance (m)	Surface Type	Throttle
			Total (hourly)	Total% Medium /Heavy Trucks	%Heavy Trucks				
I-5 NB	R_1	80	10902	4.8	60.4	105	21.95	1	No
I-5 SB	R_2	79.7	9964	4.8	60.4	105	21.95	1	No
I-5 SB Ramp	R_3	60	810	4.8	60.4	48	4.88	1	No
Avenida Encinas NB	R_4	57.6	308	2.6	0.0	64	7.32	1	No
Avenida Encinas SB	R_5	57.6	308	2.6	0.0	64	7.32	1	No
Palomar Airport Rd EB	R_6	64.7	1118	3.0	33.3	72	11.89	1	No
Palomar Airport Rd WB	R_7	64.7	1118	3.0	33.3	72	11.89	1	No

Cadna Noise Model - Roadway Source Input - Worst-Case Model									
Name	ID	Lme Day (dBA)	Exact Traffic Count Data			Speed Limit (km/h)	SCS Distance (m)	Surface Type	Throttle
			Total (hourly)	Total% Medium /Heavy Trucks	%Heavy Trucks				
I-5 NB	R_1	80	10902	4.8	60.4	105	21.95	1	No
I-5 SB	R_2	79.7	9964	4.8	60.4	105	21.95	1	No
I-5 SB Ramp	R_3	61.2	1067	4.8	60.4	48	4.88	1	No
Avenida Encinas NB	R_4	58.1	345	2.6	0.0	64	7.32	1	No
Avenida Encinas SB	R_5	58.1	345	2.6	0.0	64	7.32	1	No
Palomar Airport Rd EB	R_6	65.4	1325	3.0	33.3	72	11.89	1	No
Palomar Airport Rd WB	R_7	65.4	1325	3.0	33.3	72	11.89	1	No

Cadna Noise Model - Roadway Source Geometry (All Models)					
Name	ID	Coordinates			
		X	Y	Z	Ground
		(m)	(m)	(m)	(m)
I-5 NB	R_1	678.05	343.99	0.00	0.00
		635.38	968.70	0.00	0.00
I-5 SB	R_2	608.05	960.03	0.00	0.00
		656.72	344.65	0.00	0.00
I-5 SB Ramp	R_3	617.56	822.56	0.00	0.00
		610.84	804.80	0.00	0.00
		604.54	635.12	0.00	0.00
		585.49	576.91	0.00	0.00
		512.46	423.98	0.00	0.00
Avenida Encinas NB	R_4	579.06	957.16	0.00	0.00
		586.39	871.82	0.00	0.00
		573.73	835.48	0.00	0.00
		515.38	769.73	0.00	0.00
		502.99	728.99	0.00	0.00
		488.71	611.81	0.00	0.00
		474.43	548.31	0.00	0.00
		469.13	536.14	0.00	0.00
		425.21	466.86	0.00	0.00
		413.03	466.86	0.00	0.00
		384.79	396.24	0.00	0.00
		379.23	356.91	0.00	0.00
Avenida Encinas SB	R_5	572.48	948.43	0.00	0.00
		575.92	864.55	0.00	0.00
		565.75	843.05	0.00	0.00
		506.24	774.04	0.00	0.00
		493.81	733.29	0.00	0.00
		468.14	554.44	0.00	0.00
		457.03	528.51	0.00	0.00
		421.17	474.66	0.00	0.00
		410.73	459.03	0.00	0.00
		386.68	421.43	0.00	0.00
		376.29	392.94	0.00	0.00
		370.88	356.33	0.00	0.00
Palomar Airport Rd EB	R_6	596.53	358.04	0.00	0.00
		508.32	402.57	0.00	0.00
		465.15	425.4	0.00	0.00
		423.31	451.57	0.00	0.00
		384.31	485.08	0.00	0.00
		365.68	502.93	0.00	0.00
		334.09	534.58	0.00	0.00
		318.00	553.59	0.00	0.00
		267.29	617.09	0.00	0.00
Palomar Airport Rd WB	R_7	268.57	622.95	0.00	0.00
		327.83	548.23	0.00	0.00
		369.64	504.15	0.00	0.00
		417.27	472.40	0.00	0.00
		468.61	440.23	0.00	0.00
		511.45	418.22	0.00	0.00
		635.57	358.58	0.00	0.00

Cadna Noise Model - Sound Levels										
Name	ID	Type	Oktave Spectrum (dB)						A	lin	Source
			125	250	500	1000	2000	4000			
Rail	L1	Lw (c)	110.2	103.7	110.1	110.3	109.5	106.3	116.7	126.8	Typical

Cadna Noise Model - Line Sources - All Models								
Name	ID	Result. PWL (dBA)	Result. PWL' (dBA)	Lw / Li		Coordinates		
				Type	Value	X	Y	Z
						(m)	(m)	(m)
Rail	L1	116.7	89	PWL	L1	339.46	939.92	0.00
						344.13	353.21	0.00

Cadna Noise Model - Buildings - Worst-Case Façade Model					
Name	ID	Coordinates			
		X	Y	Z	Ground
		(m)	(m)	(m)	(m)
CFA	B_1	561.76	778.20	6.10	0.00
		565.54	778.18	6.10	0.00
		565.57	777.00	6.10	0.00
		590.09	776.94	6.10	0.00
		590.03	768.96	6.10	0.00
		484.86	768.99	6.10	0.00
		584.84	765.55	6.10	0.00
		568.54	765.89	6.10	0.00
		568.51	765.21	6.10	0.00
		559.03	765.39	6.10	0.00
		559.06	771.90	6.10	0.00
		561.68	771.85	6.10	0.00

Cadna Noise Model - Existing Noise Levels at Receivers - Traffic Calibration						
Name	ID	Level Lr	Height	Coordinates		
				X	Y	Z
		(dBA)	(m)	(m)	(m)	(m)
Calibration	Cal1	65.6	1.52	533.43	778.47	1.52

Cadna Noise Model - Existing Noise Levels at Receivers - Rail Calibration						
Name	ID	Level Lr	Height	Coordinates		
				X	Y	Z
		Ldn	(m)	(m)	(m)	(m)
Calibration	Cal2	54.0	1.52	560.92	783.00	1.52

Cadna Noise Model - Noise Levels at Receivers - Worst-Case Facade							
Name	Level Traffic Only	Level Rail Only	Level Traffic + Rail	Height	Coordinates		
					X	Y	Z
	CNEL	CNEL	CNEL	(m)	(m)	(m)	(m)
F1	68.1	49.2	68.2	1.52	575.69	777.28	1.52
F2	74.1	39.3	74.1	1.52	590.23	773.00	1.52
F3	67.4	51.4	67.5	1.52	575.69	765.52	1.52
F4	54.3	54.1	57.2	1.52	558.94	769.58	1.52
OU1	61.8	54.2	62.5	1.22	555.08	771.35	1.22

Eilar Associates, Inc.
210 South Juniper Street, Suite 100
Escondido, California 92025-4230
Phone: (760) 738-5570

Date: 13 Aug 2019

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.70
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	
Strictly acc. to AzB	

Receivers

Name	M.	ID	Level Lr		Limit. Value		Land Use			Height		Coordinates		
			Day	Night	Day	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
			53.2	50.1	0.0	0.0		x	Total	1.52	r	570.88	745.21	1.52

Point Sources

Name	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
EF1	+	EF1	73.6	73.6	73.6	Lw	EF		0.0	0.0	0.0				720.00	180.00	270.00	0.0		(none)	7.10	r	571.23	771.27	7.10
EF2	+		73.6	73.6	73.6	Lw	EF		0.0	0.0	0.0				720.00	180.00	270.00	0.0		(none)	7.10	r	567.33	771.50	7.10
EF3	+		73.6	73.6	73.6	Lw	EF		0.0	0.0	0.0				720.00	180.00	270.00	0.0		(none)	7.10	r	567.43	773.98	7.10
EF4	+		73.6	73.6	73.6	Lw	EF		0.0	0.0	0.0				720.00	180.00	270.00	0.0		(none)	7.10	r	570.96	773.91	7.10
RTU1	+	AC1	93.5	93.5	93.5	Lw	AC1		0.0	0.0	0.0				720.00	180.00	270.00	0.0		(none)	7.10	r	576.34	773.58	7.10
RTU2	+	AC2	90.5	90.5	90.5	Lw	AC2		0.0	0.0	0.0				720.00	180.00	270.00	0.0		(none)	7.10	r	576.51	768.37	7.10
RTU3	+	AC3	90.5	90.5	90.5	Lw	AC2		0.0	0.0	0.0				720.00	180.00	270.00	0.0		(none)	7.10	r	581.95	768.14	7.10
Produce	+	Truck	108.5	108.5	108.5	Lw	T48		0.0	0.0	0.0				30.00	0.00	0.00	0.0		(none)	1.52	r	563.79	793.62	1.52
Bread	+	Truck	108.5	108.5	108.5	Lw	T48		0.0	0.0	0.0				30.00	0.00	0.00	0.0		(none)	1.52	r	563.70	793.70	1.52
Food	+	Truck	108.5	108.5	108.5	Lw	T48		0.0	0.0	0.0				45.00	0.00	0.00	0.0		(none)	1.52	r	563.79	793.87	1.52

Buildings

Name	M.	ID	RB	Residents	Absorption	Height	
						Begin	
						(m)	
CFA	+		x	0	0.37	6.10	r

Geometry - Buildings

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(m)		(m)	(m)	(m)	(m)
CFA	+		x	0	0.37	6.10	r	561.76	778.20	6.10	0.00
								565.54	778.18	6.10	0.00
								565.57	777.00	6.10	0.00
								590.09	776.94	6.10	0.00
								590.03	768.96	6.10	0.00
								584.86	768.99	6.10	0.00
								584.84	765.55	6.10	0.00
								568.54	765.89	6.10	0.00
								568.51	765.21	6.10	0.00
								559.03	765.39	6.10	0.00
								559.06	771.90	6.10	0.00
								561.68	771.85	6.10	0.00

Sound Level Spectra

Name	ID	Type	Oktave Spectrum (dB)												Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
Lennox LGH300S4B	AC1	Lw	A			79.0	84.0	88.0	89.0	85.0	82.0	73.0	93.5	98.8	Manufacturer
Lennox LGH150H4B	AC2	Lw	A			75.0	81.0	87.0	85.0	80.0	74.0	70.0	90.5	95.6	Manufacturer
Loren Cook 150 CPS	EF	Lw			69.0	72.0	78.0	70.0	64.0	66.0	60.0	51.0	73.6	80.2	Manufacturer
Delivery Truck	T48	Lw (c)			115.0	109.0	104.1	105.5	104.2	101.0	95.8	90.2	108.5	117.0	Typical

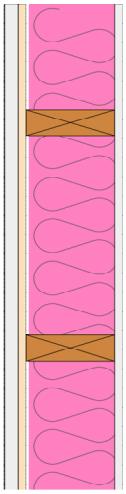
APPENDIX E

Sound Insulation Prediction Results

Sound Insulation Prediction (v9.0.16)

Program copyright Marshall Day Acoustics 2017
margin of error is generally within STC +/- 3 dB
- Key No. 1866
Job Name:CFA - I-5 & Palomar
Job No.:S190205 Initials:rcowell
Date.:3/7/2019
File Name:Exterior Wall Assembly.ixl

Notes:



STC 43
OITC 33

Mass-air-mass resonant frequency = =49 Hz

Panel Size = 8.9 ft x 13.1 ft

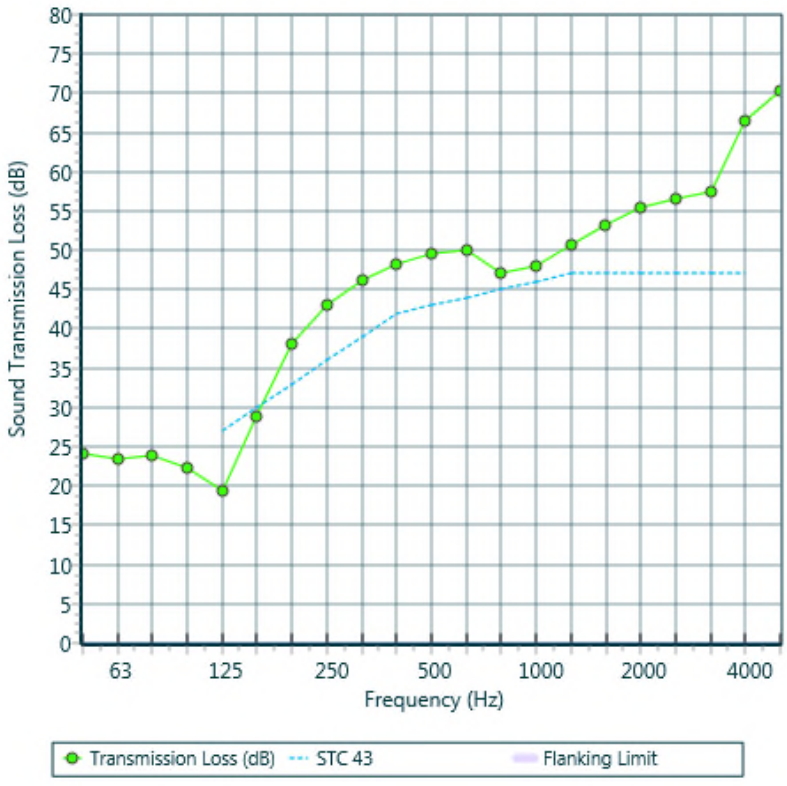
Partition surface mass = 13.9 lb/ft2

System description

Panel 1 : 1 x 0.87 in -Coat Plaster (sand:gypsum =3:1) + 1 x 0.5 in Plywood

Frame: Timber stud (5.7 in x 1.8 in), Stud spacing 16 in ; Cavity Width 5.67 in , 1 x fiberglass (1.4 lb/ft3) Thickness 6.0 in
Panel 2 : 1 x 0.5 in Type X Gypsum Board

freq.(Hz)	TL(dB)	TL(dB)
50	24	
63	23	24
80	24	
100	22	
125	19	22
160	29	
200	38	
250	43	41
315	46	
400	48	
500	50	49
630	50	
800	47	
1000	48	48
1250	51	
1600	53	
2000	55	55
2500	57	
3150	58	
4000	66	62
5000	70	



APPENDIX F

Exterior-to-Interior Noise Analysis

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: CFA I-5 & Palomar
Project # : S190205
Room Name: Dining/Serving Areas

Wall 1 of 2

Room Type : **Medium Hard**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	1.2	1.2	1.2	1.2	1.0	1.0	: Moderately Reflective Room
Room Absorption (Sabins) :	488	488	488	488	611	611	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**67.4**	**CNEL**	50.7	56.2	58.7	62.7	62.7	56.7	: Traffic Spectrum
Source 2:	**Train**	**51.4**	**CNEL**	44.8	38.3	44.7	44.9	44.1	40.9	: Train Spectrum
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**67.5**	**CNEL**	51.7	56.3	58.9	62.8	62.8	56.8	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
Exterior Wall	N	74	10	1	292.5	22	41	49	48	55	62
Window, Insulated Dual-Glazed (STC 25)	N	7	8	3	168.0	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	N	6.5	8	3	156.0	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	N	6.5	2.5	2	32.5	14	21	24	22	30	29
Window, Insulated Dual-Glazed (STC 25)	N	3.25	7	1	22.8	14	21	24	22	30	29
Glass Door, Single Pane	N	6.5	7	1	45.5	12	19	21	19	27	26
Glass Door, Single Pane	N	3.25	7	1	22.8	12	19	21	19	27	26
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **16.5** ft **Overall Area:** **740** ft^2
Volume: **12210** ft^3

Number of Impacted Walls: **2**

Windows Open		
Interior Noise Level:	**44.5**	**CNEL**
Windows Closed		
Interior Noise Level:	**44.5**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
51.7	56.3	58.9	62.8	62.8	56.8	: Exterior Wall Noise Exposure
15.4	22.8	25.6	23.6	31.6	30.6	: Transmission Loss
28.7	28.7	28.7	28.7	28.7	28.7	: Wall Surface Area Factor
26.9	26.9	26.9	26.9	27.9	27.9	: Absorption
38.1	35.3	35.1	41.0	32.0	27.1	: Noise Level

44.4 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
51.7	56.3	58.9	62.8	62.8	56.8	: Exterior Wall Noise Exposure
15.4	22.8	25.6	23.6	31.6	30.6	: Transmission Loss
28.7	28.7	28.7	28.7	28.7	28.7	: Wall Surface Area Factor
26.9	26.9	26.9	26.9	27.9	27.9	: Absorption
38.1	35.3	35.1	41.0	32.0	27.1	: Noise Level

44.4 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: CFA I-5 & Palomar
Project # : S190205
Room Name: Dining/Serving Areas

Wall 2 of 2

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**54.3**	**CNEL**	37.6	43.1	45.6	49.6	49.6	43.6	: Traffic Spectrum
Source 2:	**Train**	**54.1**	**CNEL**	47.5	41.0	47.4	47.6	46.8	43.6	: Train Spectrum
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**57.2**	**CNEL**	47.9	45.2	49.6	51.7	51.4	46.6	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
Exterior Wall	N	18	10	1	124.0	22	41	49	48	55	62
Window, Insulated Dual-Glazed (STC 25)	N	7	8	1	56.0	14	21	24	22	30	29
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Overall Area: **180** ft²

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
47.9	45.2	49.6	51.7	51.4	46.6	: Exterior Wall Noise Exposure
17.8	26.0	29.0	27.0	35.0	34.1	: Transmission Loss
22.6	22.6	22.6	22.6	22.6	22.6	: Wall Surface Area Factor
26.9	26.9	26.9	26.9	27.9	27.9	: Absorption
25.8	14.9	16.2	20.4	11.1	7.2	: Noise Level
27.7	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
47.9	45.2	49.6	51.7	51.4	46.6	: Exterior Wall Noise Exposure
17.8	26.0	29.0	27.0	35.0	34.1	: Transmission Loss
22.6	22.6	22.6	22.6	22.6	22.6	: Wall Surface Area Factor
26.9	26.9	26.9	26.9	27.9	27.9	: Absorption
25.8	14.9	16.2	20.4	11.1	7.2	: Noise Level
27.7	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: CFA I-5 & Palomar
Project # : S190205
Room Name: Kitchen

Wall 1 of 1

Room Type : **Medium Hard**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	1.2	1.2	1.2	1.2	1.0	1.0	: Moderately Reflective Room
Room Absorption (Sabins) :	432	432	432	432	540	540	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**68.1**	**CNEL**	51.4	56.9	59.4	63.4	63.4	57.4	: Traffic Spectrum
Source 2:	**Train**	**49.2**	**CNEL**	42.6	36.1	42.5	42.7	41.9	38.7	: Train Spectrum
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**68.2**	**CNEL**	51.9	56.9	59.5	63.4	63.4	57.5	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
Exterior Wall	N	60	10	1	558.0	22	41	49	48	55	62
Window, Insulated Dual-Glazed (STC 25)	N	7	1.5	4	42.0	14	21	24	22	30	29
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **18** ft
Overall Area: **600** ft²
Volume: **10800** ft³
Number of Impacted Walls: **1**

Windows Open
Interior Noise Level: **36.3** **CNEL**

Windows Closed
Interior Noise Level: **36.3** **CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
51.9	56.9	59.5	63.4	63.4	57.5	: Exterior Wall Noise Exposure
20.6	32.0	35.4	33.4	41.4	40.5	: Transmission Loss
27.8	27.8	27.8	27.8	27.8	27.8	: Wall Surface Area Factor
26.4	26.4	26.4	26.4	27.3	27.3	: Absorption
32.7	26.4	25.6	31.5	22.5	17.4	: Noise Level

36.3 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
51.9	56.9	59.5	63.4	63.4	57.5	: Exterior Wall Noise Exposure
20.6	32.0	35.4	33.4	41.4	40.5	: Transmission Loss
27.8	27.8	27.8	27.8	27.8	27.8	: Wall Surface Area Factor
26.4	26.4	26.4	26.4	27.3	27.3	: Absorption
32.7	26.4	25.6	31.5	22.5	17.4	: Noise Level

36.3 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: CFA I-5 & Palomar
Project # : S190205
Room Name: Office

Wall 1 of 1

Room Type : **Medium Soft**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Fairly Absorptive Room
Room Absorption (Sabins) :	34	34	34	34	42	42	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**74.1**	**CNEL**	57.4	62.9	65.4	69.4	69.4	63.4	: Traffic Spectrum
Source 2:	**Train**	**39.3**	**CNEL**	32.7	26.2	32.6	32.8	32.0	28.8	: Train Spectrum
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**74.1**	**CNEL**	57.4	62.9	65.4	69.4	69.4	63.4	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
Exterior Wall	N	7	10	1	70.0	22	41	49	48	55	62
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **8** ft **Overall Area:** **70** ft²
Volume: **560** ft³

Number of Impacted Walls: **1**

Windows Open
Interior Noise Level: **39.0** **CNEL**

Windows Closed
Interior Noise Level: **39.0** **CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
57.4	62.9	65.4	69.4	69.4	63.4	: Exterior Wall Noise Exposure
22.0	41.0	49.0	48.0	55.0	62.0	: Transmission Loss
18.5	18.5	18.5	18.5	18.5	18.5	: Wall Surface Area Factor
15.3	15.3	15.3	15.3	16.2	16.2	: Absorption
38.6	25.1	19.6	24.6	16.6	3.6	: Noise Level

39.0 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
57.4	62.9	65.4	69.4	69.4	63.4	: Exterior Wall Noise Exposure
22.0	41.0	49.0	48.0	55.0	62.0	: Transmission Loss
18.5	18.5	18.5	18.5	18.5	18.5	: Wall Surface Area Factor
15.3	15.3	15.3	15.3	16.2	16.2	: Absorption
38.6	25.1	19.6	24.6	16.6	3.6	: Noise Level

39.0 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: CFA I-5 & Palomar
Project # : S190205
Room Name: Service Area

Wall 1 of 2

Room Type : **Medium Hard**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	1.2	1.2	1.2	1.2	1.0	1.0	: Moderately Reflective Room
Room Absorption (Sabins) :	54	54	54	54	68	68	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**74.1**	**CNEL**	57.4	62.9	65.4	69.4	69.4	63.4	: Traffic Spectrum
Source 2:	**Train**	**39.3**	**CNEL**	32.7	26.2	32.6	32.8	32.0	28.8	: Train Spectrum
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**74.1**	**CNEL**	57.4	62.9	65.4	69.4	69.4	63.4	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
Exterior Wall	N	17	10	1	142.0	22	41	49	48	55	62
Window, Insulated Dual-Glazed (STC 25)	N	4	7	1	28.0	14	21	24	22	30	29
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: **8** ft

Overall Area: **170** ft²
Volume: **1360** ft³

Number of Impacted Walls: **2**

Windows Open
Interior Noise Level: **48.5** **CNEL**

Windows Closed
Interior Noise Level: **48.5** **CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
57.4	62.9	65.4	69.4	69.4	63.4	: Exterior Wall Noise Exposure
19.3	28.6	31.8	29.8	37.8	36.8	: Transmission Loss
22.3	22.3	22.3	22.3	22.3	22.3	: Wall Surface Area Factor
17.4	17.4	17.4	17.4	18.3	18.3	: Absorption
43.1	39.2	38.6	44.6	35.6	30.6	: Noise Level

48.4 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
57.4	62.9	65.4	69.4	69.4	63.4	: Exterior Wall Noise Exposure
19.3	28.6	31.8	29.8	37.8	36.8	: Transmission Loss
22.3	22.3	22.3	22.3	22.3	22.3	: Wall Surface Area Factor
17.4	17.4	17.4	17.4	18.3	18.3	: Absorption
43.1	39.2	38.6	44.6	35.6	30.6	: Noise Level

48.4 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: CFA I-5 & Palomar
Project # : S190205
Room Name: Service Area

Wall 2 of 2

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**68.1**	**CNEL**	51.4	56.9	59.4	63.4	63.4	57.4	: Traffic Spectrum
Source 2:	**Train**	**49.2**	**CNEL**	42.6	36.1	42.5	42.7	41.9	38.7	: Train Spectrum
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**68.2**	**CNEL**	51.9	56.9	59.5	63.4	63.4	57.5	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
Exterior Wall	N	8	10	1	80.0	22	41	49	48	55	62
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Overall Area: **80** ft²

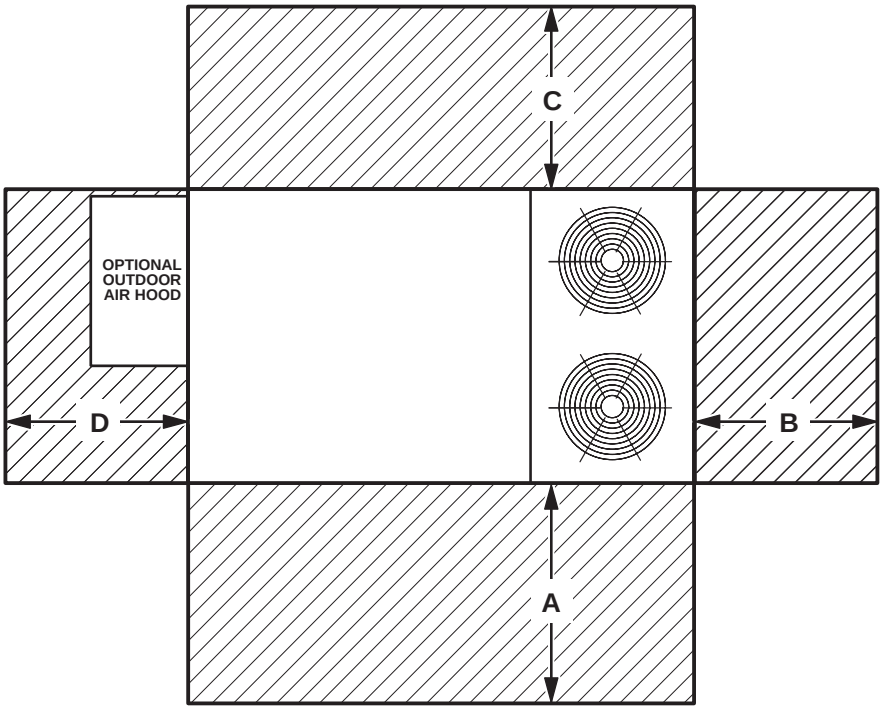
125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
51.9	56.9	59.5	63.4	63.4	57.5	: Exterior Wall Noise Exposure
22.0	41.0	49.0	48.0	55.0	62.0	: Transmission Loss
19.0	19.0	19.0	19.0	19.0	19.0	: Wall Surface Area Factor
17.4	17.4	17.4	17.4	18.3	18.3	: Absorption
31.6	17.6	12.2	17.1	9.1	-3.8	: Noise Level
32.0	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
51.9	56.9	59.5	63.4	63.4	57.5	: Exterior Wall Noise Exposure
22.0	41.0	49.0	48.0	55.0	62.0	: Transmission Loss
19.0	19.0	19.0	19.0	19.0	19.0	: Wall Surface Area Factor
17.4	17.4	17.4	17.4	18.3	18.3	: Absorption
31.6	17.6	12.2	17.1	9.1	-3.8	: Noise Level
32.0	**CNEL**	WINDOWS CLOSED				

APPENDIX G

Manufacturer Data Sheets

UNIT CLEARANCES - INCHES (MM)



[1] Unit Clearance	A		B		C		D		Top Clearance
	in.	mm	in.	mm	in.	mm	in.	mm	
Service Clearance	60	1524	36	914	36	934	60	1524	Unobstructed
Clearance to Combustibles	36	914	1	25	1	25	1	25	
Minimum Operation Clearance	36	914	36	914	36	914	36	914	

NOTE - Entire perimeter of unit base requires support when elevated above the mounting surface.

[1] Service Clearance - Required for removal of serviceable parts.
Clearance to Combustibles - Required clearance to combustible material.
Minimum Operation Clearance - Required clearance for proper unit operation.

OUTDOOR SOUND DATA

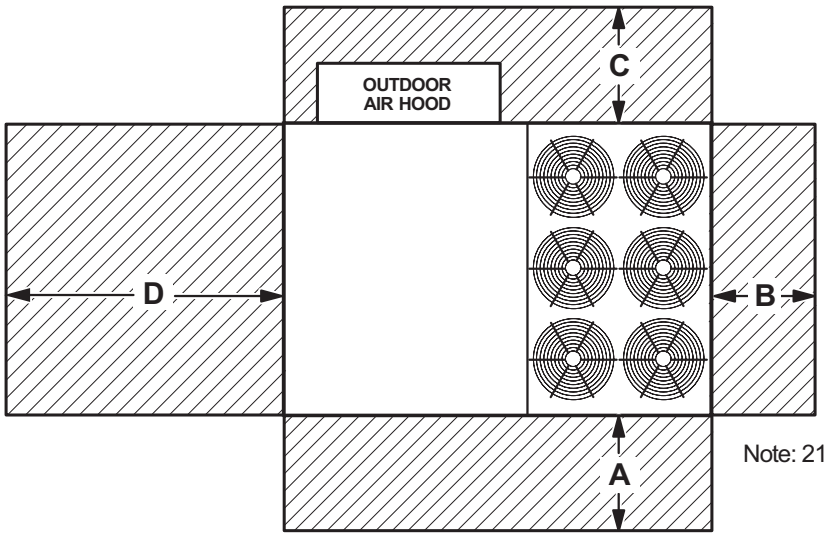
Unit Model Number	Octave Band Linear Sound Power Levels dB, re 10^{-12} Watts - Center Frequency - Hz							[1] Sound Rating Number (SRN) (dBA)
	125	250	500	1000	2000	4000	8000	
092, 102 and 120	76	79	84	83	79	73	66	88
150	75	81	87	85	80	74	70	90

Note - The octave sound power data does not include tonal corrections.

[1] Sound Rating Number according to AHRI Standard 270-95 or AHRI Standard 370-2001 (includes pure tone penalty). “SRN” is the overall A-Weighted Sound Power Level, (LWA), dB (100 Hz to 10,000 Hz).

INSTALLATION CLEARANCES

Unit With Economizer



Note: 210-240-300 sizes shown

[1] Unit Clearance	A		B		C		D		Top Clearance
	in.	mm	in.	mm	in.	mm	in.	mm	
Service Clearance	60	1524	36	914	36	934	66	1676	Unobstructed
Clearance to Combustibles	36	914	1	25	1	25	1	25	
Minimum Operation Clearance	45	1143	36	914	36	914	41	1041	

NOTE - Entire perimeter of unit base requires support when elevated above the mounting surface.

[1] **Service Clearance** - Required for removal of serviceable parts.
Clearance to Combustibles - Required clearance to combustible material.
Minimum Operation Clearance - Required clearance for proper unit operation.

OUTDOOR SOUND DATA

Unit Model Number	Octave Band Linear Sound Power Levels dB, re 10^{-12} Watts - Center Frequency - Hz							[1] Sound Rating Number (SRN) (dBA)
	125	250	500	1000	2000	4000	8000	
156	71	78	81	81	76	71	63	86
180	80	83	87	88	84	80	71	93
210, 240, 300	79	84	88	89	85	82	73	94

Note - The octave sound power data does not include tonal corrections.

[1] Sound Rating Number according to ARI Standard 370-2001 (includes pure tone penalty). “SRN” is the overall A-Weighted Sound Power Level, (LWA), dB (100 Hz to 10,000 Hz).

CPS & CPA

Size 150

RPM	SP	Condition	Sound power re 10^{-12} watts, Octave bands 1	2	3	4	5	6	7	8	L_wA
1400	1.0	Inlet	69	72	78	70	64	66	60	51	74
		Outlet	80	74	79	72	69	68	58	52	75
1680	1.0	Inlet	74	78	83	77	71	72	69	62	80
		Outlet	85	81	84	79	75	74	68	61	82
	2.0	Inlet	74	75	79	73	67	67	63	57	75
		Outlet	83	77	79	74	70	69	64	61	77
1960	1.0	Inlet	78	82	85	83	77	77	77	74	85
		Outlet	90	86	86	85	80	78	76	72	87
	2.0	Inlet	75	79	82	80	74	74	71	64	82
		Outlet	85	82	83	82	78	76	70	63	84
2240	1.0	Inlet	82	85	87	87	81	80	81	82	89
		Outlet	94	88	89	90	84	82	80	80	91
	2.0	Inlet	80	82	85	85	79	78	77	72	87
		Outlet	90	86	87	87	84	80	77	70	89
	3.0	Inlet	78	80	83	83	76	76	75	68	84
		Outlet	86	83	84	84	81	78	74	67	86
2520	1.0	Inlet	85	88	90	89	84	83	83	86	92
		Outlet	97	91	91	94	88	85	83	84	95
	2.0	Inlet	84	86	89	88	82	82	82	81	90
		Outlet	94	89	90	91	87	84	81	78	93
	4.0	Inlet	82	83	85	84	79	78	78	71	86
		Outlet	89	84	86	86	84	80	78	72	89
2800	1.0	Inlet	87	91	93	91	87	86	86	88	95
		Outlet	99	94	93	95	92	88	86	87	97
	3.0	Inlet	85	88	90	89	85	83	83	80	92
		Outlet	95	91	92	91	90	86	83	78	94
	5.0	Inlet	84	86	88	86	82	80	80	75	89
		Outlet	91	87	88	87	86	83	80	76	91
3080	1.0	Inlet	89	93	95	93	90	88	88	90	97
		Outlet	101	97	95	97	95	91	88	89	100
	3.0	Inlet	87	91	93	92	89	86	86	85	95
		Outlet	98	95	94	95	93	89	86	83	98
	6.0	Inlet	85	88	90	88	85	83	82	78	91
		Outlet	92	90	90	89	89	86	83	78	93
3360	1.0	Inlet	90	96	98	96	93	90	90	92	99
		Outlet	102	100	97	99	97	93	91	91	102
	4.0	Inlet	89	93	95	94	91	88	88	86	97
		Outlet	98	97	95	96	95	91	88	84	99
	8.0	Inlet	90	93	92	90	86	83	83	79	92
		Outlet	95	93	90	90	90	87	84	84	94

Size 165

RPM	SP	Condition	Sound power re 10^{-12} watts, Octave bands 1	2	3	4	5	6	7	8	L_wA
1300	1.0	Inlet	71	75	78	71	66	67	60	52	75
		Outlet	80	76	80	73	70	68	59	52	77
1560	1.0	Inlet	76	80	84	78	72	74	71	63	81
		Outlet	87	81	86	80	76	76	69	62	83
	2.0	Inlet	75	77	81	73	68	69	64	58	77
		Outlet	84	77	81	75	72	70	65	61	78
1820	1.0	Inlet	80	83	86	83	78	78	78	76	86
		Outlet	91	86	88	86	81	79	77	74	88
	2.0	Inlet	78	81	84	81	75	75	72	65	83
		Outlet	86	83	85	83	79	77	71	64	85
2060	1.0	Inlet	84	87	88	87	82	81	82	84	90
		Outlet	95	89	90	91	85	83	81	82	92
	2.0	Inlet	82	84	87	86	80	80	79	74	88
		Outlet	91	87	89	88	85	82	78	72	90
	3.0	Inlet	80	82	85	83	78	78	76	69	85
		Outlet	87	84	86	85	82	79	75	68	87
2340	1.0	Inlet	87	90	92	91	85	84	85	88	94
		Outlet	98	91	93	95	89	86	84	86	96
	2.0	Inlet	86	88	90	90	83	83	83	83	92
		Outlet	96	90	92	93	88	85	82	80	94
	4.0	Inlet	83	84	87	86	80	80	79	72	88
		Outlet	90	85	88	88	86	82	79	71	90
2600	1.0	Inlet	89	93	94	93	88	87	87	90	96
		Outlet	101	95	95	97	92	89	87	88	98
	3.0	Inlet	88	90	92	91	86	85	85	82	93
		Outlet	97	92	94	93	91	87	84	79	96
	5.0	Inlet	85	87	89	88	83	82	82	76	90
		Outlet	92	88	90	90	88	84	81	75	93
2860	1.0	Inlet	91	95	97	95	91	89	89	92	98
		Outlet	103	98	97	99	95	92	89	90	101
	3.0	Inlet	90	93	95	93	89	88	87	87	96
		Outlet	100	96	96	97	94	90	87	85	99
	6.0	Inlet	87	89	92	90	86	84	84	79	93
		Outlet	94	91	92	91	91	87	84	78	95
3120	1.0	Inlet	93	97	99	97	94	91	91	94	101
		Outlet	104	101	99	100	98	94	92	92	103
	4.0	Inlet	91	95	96	95	92	89	89	88	98
		Outlet	100	98	97	97	96	92	89	86	100
	8.0	Inlet	91	94	94	91	88	85	84	80	94
		Outlet	96	93	92	92	91	88	86	84	96

The sound power level ratings shown are in decibels, referred to 10^{-12} watts, calculated per AMCA International Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet L_{WI}, $L_{WI}A$ and outlet L_{WO}, $L_{WO}A$ sound power levels for Installation Type B: free inlet, ducted outlet. Inlet ratings do not include the effects of duct end correction. Outlet ratings include the effects of duct end correction.

APPENDIX H

Pertinent Sections of Transportation Impact Analysis

LINSCOTT LAW & GREENSPAN engineers

N:\3103\Figures
Date: 6/17/2019
Time: 1:47 PM

Figure 3-3

Existing Mid-Day Traffic Volumes

CHICK-FIL-A I-5 & PALOMAR AIRPORT ROAD

LINSCOTT LAW & GREENSPAN engineers

N:\3103\Figures
Date: 6/17/2019
Time: 1:50 PM

Figure 4-9

Total Project Traffic Assignment

(Mid-Day Peak Hour)

CHICK-FIL-A I-5 & PALOMAR AIRPORT ROAD

LINSCOTT LAW & GREENSPAN engineers

N:\3103\Figures
Date: 6/17/2019
Time: 1:49 PM

Figure 4-11

Existing+Project Traffic Volumes

(Mid-Day Peak Hour)

CHICK-FIL-A I-5 & PALOMAR AIRPORT ROAD

APPENDIX I

Temporary Construction Noise Calculations

Noise Attenuation by Distance Calculation

Job: Chick-fil-A I-5 & Palomar
Job #: S190205.2
Date: 8/12/2019
Source: Excavator
Receiver: Worst-Case

Noise Source

Noise Level (dBA) 72 at 50 feet

Distances

Source Elevation 5 feet at 5 feet above grade
Receiver Elevation: 5 feet at 5 feet above grade
Source to Receiver Distance: 90 feet

Path Calculation

Source to Receiver Direct Path Distance: **90** feet

Sound Pressure Level **66.9** at 90 feet
Hours of Use: **8**
Duty Cycle (%): **40**
Level During 8 Hour day: **62.9**

Summation

Number of Sources: 2

Level during 8 hour day: **68.4**

Noise Attenuation by Distance Calculation

Job: Chick-fil-A I-5 & Palomar
Job #: S190205.2
Date: 8/12/2019
Source: Dozer
Receiver: Worst-Case

Noise Source

Noise Level (dBA)	76	at	50	feet

Distances

Source Elevation	5	feet	at	5	feet above grade
Receiver Elevation:	5	feet	at	5	feet above grade
Source to Receiver Distance:	90	feet			

Path Calculation

Source to Receiver Direct Path Distance:	**90**	feet

Sound Pressure Level	**70.9**	at	90	feet
Hours of Use:	**8**			
Duty Cycle (%):	**40**			
Level During 8 Hour day:	**66.9**			

APPENDIX J

Temporary Construction Vibration Calculations

Construction Vibration Calculation

Job: CFA I-5 & Palomar
Job #: S190205.2
Date: 8/12/2019
Source 1: Vibratory Roller (Worst-Case)
Receiver: South PL

Vibration Source

Vibration Level (PPV, in/sec) 0.21 at 25 feet

Path Calculation

Source to Receiver Direct Path Distance: **50** feet

Vibration Level (PPV, in/sec) **0.074** at 50 feet

Path Calculation

Source to Receiver Direct Path Distance: **75** feet

Vibration Level (PPV, in/sec) **0.040** at 75 feet

Path Calculation

Source to Receiver Direct Path Distance: **195** feet

Vibration Level (PPV, in/sec) **0.010** at 195 feet

APPENDIX K

Recommended Products

TECHNICAL DATA

DRAFT & ACOUSTICAL
SOUND SEALANT

OSI® Greenseries™ Draft & Acoustical Sound Sealant is a non-flammable, latex-based sealant specially designed to reduce sound transmissions and drafts in all types of wall systems where a sound-rated assembly is required. Its primary function is to achieve and maintain the specific STC (Sound Transmission Class) value of the system designed.

The paintable sealant remains flexible and adheres firmly to wood, metal studs, concrete, gypsum board and most other building materials. The easy-to-use sealant cleans up easily with soap and water.

FEATURES
- Permanently flexible
- Easy application and cleanup
- UL Classification – R9732; UL 723
- Easy water cleanup
- Low VOC, compliant formula
- Will not harden, crack or separate
- Non-staining & non-migrating
- High degree of adhesive and cohesive strength.

USES
Greenseries™ Draft & Acoustical was developed primarily for commercial construction utilizing light weight cavity walls and floor systems. Draft & Acoustical Sealant is used successfully in office buildings, hotels, apartment complexes, and other types of commercial & residential construction.

PHYSICAL PROPERTIES

Type	Synthetic Latex Rubber
Color	White
Solids by weight	75%
Toxicity	Toxic only if swallowed. Refer to MSDS.
Flammability	Nonflammable
Flash Point	200°F. TCC (minimum amount of solvent present)
Tooling/Open Time	15 minutes
Tack Free Time	30 minutes
Cure Time	2-7 days
Application Temperature	40°F minimum
Service Temperature	-5°F - 170°F
Freeze-Thaw Stability	3 cycles. Unaffected by freezing after curing
Shelf Life	1 year from date made at 75°F
Sag or Slump	Nil (ASTM D2202)
VOC Level	22g/l or <1% by wt.
Shore "A" Hardness	45 +/-5 (Cured 30 days @ room temp.)
Clean-up	Water and soap before curing
Accelerated Weathering	No cracks, discoloration or chalking: 1000 hrs. in Xenon Arc Weatherometer

The sealant is used for exposed and unexposed applications at perimeter joints, floor and ceiling runners, cut outs in gypsum board, veneer plaster systems and other areas where a sound rated assembly is required. The sealant can also be applied or buttered around all electrical boxes and outlets, cold air returns, heating and air conditioning ducts, and other utility equipment penetrating wall surfaces for increased acoustical performance. Also works well for sealing sill and and base plates in residential construction.

SPECIFICATIONS
- UL Classified – 48S9 (R9732). Tested in accordance with and conforms to UL 723: U.B.C. Standard No. 42-1 Class I.
- ASTM E84: Surface Burning Characteristics of Building Materials.
- ASTM E90-85: Laboratory Measurement of Airborne-Sound Transmission Loss of Building Materials.
- ASTM D217: Testing Standard for Consistency.
- ASTM C919-79: Standard Practice for Use of Sealants in Acoustical Applications.
- SCAQMD Rule 1168 V.O.C.; CARB; and BAAQMD compliant
- GREENGUARD Certified
- Meets LEEDS requirements

LIMITATIONS
- Keep from freezing
- Do not use below 40°F. (5°C.).
- Not recommended for use on mirrors or underwater applications.
- Not recommended for exterior use.

PACKAGING
28 oz. cartridges – 12 per case (Item No. GS79928)

STORAGE
Store at 70°F. +/- 5° (21°C) for long shelf life and easy application. Do not store below 40°F. (5°C.).

COVERAGE
3/8" round bead size: approx. 40 lin. ft. per 28 oz. cartridge.
¼" round bead size: Approx. 89 lin. ft. / 28oz cartridge.

PERFORMANCE CHARACTERISTICS

1. Underwriters Laboratories Inc. Classified 48S9 (R9732) UL 723: Sealant tested for surface burning characteristics

	Applied to organic Reinforced Cement Board*
Flame Spread	5
Smoke Development	5

*Tested as applied in two 1/2in. beads, 8in. on center. The sealant covered 5.6 percent of the exposed sample area.

2. ASTM E90-85: STC Value – Effect of sealing the opening on a test wall partition.

APPLICATION PROCEEDURES

All surfaces must be clean and free of dust, dirt, oil, moisture and other foreign substances which could interfere with the bond of the sealant.

DIRECTIONS

1. Cut spout on tube to desired bead size (3/8" round bead recommended) and puncture seal inside spout.
2. Sealant should be applied as specified in the sound-rated system being installed (either wood or metal studs)

A. Bottom & Top Runners: Apply a continuous 3/8" round bead of sealant on runners before setting gypsum board. Gypsum board shall be set into sealant to form complete contact with adjacent materials. Fill joint on top runners to complete seal. Repeat procedure for double layer applications.

B. Cut-Outs and Perimeter Joints. Backs of electrical boxes, pipes, duct systems and other types of utility equipment penetrating wall surfaces shall be buttered with sealant. Seal all joints at perimeter edges including abutting surfaces and corner joints.

3. Maximum joint size should not exceed ⅝" x ½".
4. Clean tools and excess sealant immediately after application with soap and water.
5. If necessary, sealant can be painted as applicable to meet project requirements after 24 hours.

CAUTION! CONTAINS ETHYLENE GLYCOL , MINERAL SPIRITS and crystalline silica. Avoid eye contact. Do not take internally. If swallowed, may cause abdominal discomfort. Use with adequate ventilation. Refer to MSDS.

WARNING: This product contains a chemical known to the State of California to cause cancer.

KEEP OUT OF REACH OF CHILDREN

FIRST AID

Eye Contact: In case of eye contact, flush with clean water for at least 15 minutes. Skin Contact: Wash skin thoroughly with soap and water. Ingestion: DO NOT induce vomiting. Seek medical attention. If dizziness occurs, remove to fresh air.

NOTICE TO PURCHASER

Henkel Corporation warrants this product when used according to directions. If not satisfied with the product's performance when used as directed, return sales receipt and used container to Henkel Corporation, 32150 Just Imagine Drive, Avon OH, 44011 for product replacement or refund. User shall determine suitability of product for use and assumes all risk.

QUESTIONS?

For commercial use or other questions pertaining to this product, call Henkel Technical Service at 800-321-0253 M-F, 9am – 4pm. or visit our website at www.greenseries.com.

Test partition consisted of metal studs 24" O.C. with double layer gypsum board, Fire code "C" and attached with screws on both sides. Inside of partition was filled with sound insulation. Partition system was erected and shimmed out 4.75 mm (0.1875in.) at top, bottom and edges.

Results: Sound Transmission Class Value

1. Un-sealed partition – Arrows show sound travel around or through partitions.
   a. STC=15
2. Single bead of sealant used at top and bottom runners only – both sides of partition system.
   a. STC=24

Metal Stud Partition Door/Window frame in a hollow partition

3. Single bead of sealant used at top, bottom and perimeter joints – both sides of system.
   a. STC=45
4. Double bead of sealant used at top, bottom and perimeter joints – both sides of system.
   a. STC=55

OSI® GreenSeries™ Draft & Acoustical Sound Sealant is currently under going tested by GREENGUARD.
The GREENGUARD INDOOR AIR QUALITY CERTIFIED Mark is a registered certification mark used under license through the GREENGUARD Environmental Institute.

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Professional Adhesives & Sealants
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Avon, OH 44011
U.S.A.

Phone: (440) 937-7000
Fax: (440) 937-7092

AC-20 FTR®

(Fire & Temperature Rated) Acoustical & Insulation Sealant

Specification Data Sheet

PECORA CORPORATION

BASIC USES

• AC-20 FTR® fire-rated systems are suitable for applications in schools, hospitals, churches, high-rise office buildings and hotels, prisons, sports arenas, and other public-use buildings to ensure a safe and orderly evacuation in the event of a fire.

2. MANUFACTURER

Pecora Corporation
165 Wambold Road
Harleysville, PA 19438
Phone: 215-723-6051
800-523-6688
Fax: 215-721-0286
Website: www.pecora.com

3. PRODUCT DESCRIPTION

AC-20 FTR® is a unique acrylic latex sealant that is UL® Classified in firestopping systems for expansion joints and through penetrations. When properly installed, these systems effectively contain fire, smoke, toxic fumes, and water within a given area surrounded by firewalls for a two, three, or four hour period, depending on the design specifications.

Other Uses: Excellent adhesive, flexibility and durability qualities make AC-20 FTR® ideal for insulating and weatherproofing around windows, doors, panels, siding, duct work, base plates, etc. It is compatible with all common building materials including specialties such as polystyrene, polyurethane, cork, vinyl, foamed and fibrous glass.

Used as an acoustical sealant, AC-20 FTR® reduces sound transmission in partition systems to achieve specific STC values by sealing spaces around cut-outs and at perimeters of partitions. The sealant cures to a tough rubber to form a long-lasting acoustical seal.

PACKAGING

• 30 fl. oz. (.887 liter) fiber cartridges
• 5-gallon (18.9 liter) pails

COLOR

• White, Beige-Gray
Special colors available in 250-gallon (946 liter) batches.

4. TECHNICAL DATA

Applicable Standards: ASTM C-834-86 specification for latex sealing compounds.

Fire Rated System: Two-hour Fire and Temperature Rated wall and floor joint systems up to 7" (178mm) wide and four-hour systems up to 4" wide can be designed with AC-20 FTR® in conjunction with Ultra Block fire blocking material in fire-rated walls and floors. Reference: ANSI/UL 263, ASTM E-119, NFPA No. 251.

UL CLASSIFIED

UNDERWRITERS LABORATORIES INC.® CLASSIFIED JOINT TREATMENT MATERIALS FIRE RESISTANCE CLASSIFICATION

DESIGNS J900H (FFS 0006) &U900 "O" (WWS 0010), J900Z (FFS 2002), U900Z-009 (WWS 2008), J900Z-007 (FFS 1010), U900Z-015 (WWS 1012)

AC-20 FTR® in conjunction with Ultra Block® achieves a 2-hour fire rating when sealing around steel or copper pipe and electrical metallic tubing or steel conduit in through penetration systems. Reference: ANSI/UL 1479, ASTM E-814.

FILL, VOID OR CAVITY MATERIALS CLASSIFIED BY UNDERWRITERS LABORATORIES INC. FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEM NO. CAJ 1093

In addition to its fire-blocking value, Ultra Block® is very efficient acoustically, having a noise reduction coefficient of .75 and sound transmission coefficient of .5 (Ultra Block® is a registered trademark of Backer Rod Mfg. and Supply Co., Denver, CO, USA.)

5. INSTALLATION

Surface Preparation: Surfaces must be free of all contamination. Sealant may be applied to damp, porous surfaces. No priming is required.

Application: Refer to Pecora Firestopping Manual 07270 and UL Fire Resistance Directory for installation details on fire-rated joint and through penetration systems. For insulating and weatherproofing purposes, fill all window, door, and panel perimeter joints using a resilient backer rod to control sealant depth to 1/2" (13mm) maximum. For best results, protect sealant from excessive low temperatures and apply above 40°F (4°C). For acoustical purposes, apply continuous

TYPICAL PHYSICAL PROPERTIES

Test Property	Value	Procedure
Modulus @ 100% (psi)	15-20	ASTM D412
Ultimate Tensile (psi)	30-40	ASTM D412
Ultimate Elongation (%)	400-500	ASTM D412
Movement Capability (%)	±7 1/2	ASTM D412
VOC Content	31 g/L	

beads of sealant to seal perimeters of all sound-rated partitions. Apply sealant in the angles formed by metal components or base-layer panels and abutting surfaces. Apply sealant around all openings formed for outlets; electrical, telephone, light fixtures, etc.

Tooling: Tool material flush with surfaces to allow for expected shrinkage and insure good contact and adhesion to the substrate.

Cleaning: Remove excess material with water or a damp cloth before it cures. Sealant may be painted within 30 minutes after application with a good grade of latex paint.

Shelf Life: AC-20 FTR® has a shelf life well in excess of one year when stored in unopened containers below 80° F (27°C).

Precautions: AC-20 FTR® is non-flammable, non-toxic, non-irritating and environmentally safe. However, do not take internally. Refer to Material Safety Data Sheet for additional information.

Ultra Block® is a non-carcinogenic processed continuous filament textile glass fiber that may cause skin, eye and respiratory irritation. When applying, wear long sleeves, gloves, cap, goggles or safety glasses and NIOSH/MSHA-approved dust respirator. After use bathe with soap and warm water. Wash clothes separately and rinse after use. Refer to Material Safety Data Sheet for additional information.

FOR PROFESSIONAL USE ONLY.
KEEP OUT OF THE REACH OF CHILDREN.

6. AVAILABILITY AND COST

Pecora products are available from our stocking distributors in all major cities. For the name and telephone number of your nearest representative call one of our locations listed below or visit our website at www.pecora.com.

7. WARRANTY

Pecora Corporation warrants its products to be free of defects. Under this warranty, we will provide, at no charge, replacement materials for, or refund the purchase price of, any product proven to be defective when installed in accordance with our published recommendations and in applications considered by us as suitable from this product. This warranty in lieu of any and all other warranties expressed or implied, and in no case will Pecora be liable for incidental or consequential damages.

8. MAINTENANCE

If the sealant is damaged and the bond is intact, cut out the damaged area and recaulk. No primer is required. If the bond has been affected, remove the sealant, clean and prepare the joint in accordance with instructions under "Installation".

9. TECHNICAL SERVICES

Pecora representatives are available to assist you in selecting an appropriate product and to provide on-site application instructions or to conduct jobsite inspections. For further assistance call our Technical Service Department at 800-523-6688.

ISO 9001:2000
KEMA CERTIFICATE
Accredited by ANSI-RAB NAP

PECORA CORPORATION

www.pecora.com

PEOPLE • PRODUCTS • PERFORMANCE

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