

Fusion Engineering and Technology 1810 Gillespie Way Suite 207 El Cajon, CA 92020

(619) 736-2800

All Receive - Agenda Item #

For the Information of the:

CITY COUNCIL

Date CA CC

CM ACM DCM (3)

City of Carlsbad City Council Hearing June 25, 2024

Subject:

939 Begonia Court

Variance - Hillside Development Ordinance

Hello City Council Member,

Please find below Civil Engineer notes / summary regarding the subject variance application.

1. Construction Options:

- a. Exhibit 'A': Restore Slope with Reinforcement. Construction difficulty. Long term erosion concern. City Staff Engineers have made comments / statements that over steepened 1.5:1 (67%) inclination 'sliver' fill slope is acceptable, but they are not the responsible charge Civil / Geotechnical Engineer.
- b. <u>Exhibit 'B':</u> Singular 6' Retaining Wall with Reinforced Slope. Significant grading operation to facilitate grid installation of over steepened 1.5:1 slope.
- c. <u>Exhibit 'C':</u> Singular Over Height (H=11' max exposed) Retaining Wall with 2:1 Slope. Large temp backcut required. Similar construction concerns as above option.
- d. Exhibit 'D': Structurally Retrofit Existing Retaining Walls in place. Least impactful to slope.
- e. Exhibit 'E': 2:1 Slope projection. For reference only.

2. Variance Justification:

- a. Community Statistics (236 Lots Studied):
 - i. 939 Begonia Court 47% Slope Encumbrance vs 22% Average (w/ Rear Yard Slope). Only one other lot within study area has over 45% slope encumbrance.
- b. Immediate Neighborhood Statistics (937 to 942 Begonia Court):
 - i. Avg Lot Slope Encumbrance = 34% (939 is 1.39X Avg)
 - ii. Average useable rear yard area = 3,519 s.f. (939 is 2,506 s.f., or 29% Less than Avg)

3. Community Support:

a. Exhibit 'F': Petition in support of existing retaining walls to remain signed by 67 neighbors.

4. Precedence:

- a. Hom Residence (2170 Twain Avenue):
 - i. Exhibit 'G': Already had a singular developer installed retaining wall (6' max exposed per HDO) with ~3ksf of useable back yard area. Said wall could have been extended, while meeting HDO, to provide identical increase in area of house pad level as City approved (multiple) terraced walls.
 - ii. 14,070 s.f., 1 of 3 lots with over 0.3 acre out of 149 total residential lots per Map 14340.43.6% Slope encumbrance, 25' high, both less than 939 Begonia.
 - iii. Exhibit 'H': Multiple other properties in this community have constrained back yards, separate from 'cut back slope' lots. Furthermore, the 'cut back' nature of the developer installed slope has no bearing on the reality experienced by the homeowner, i.e. when the homeowner purchased the lot the slope was existing and they bought 'as is', same as Begonia.
 - iv. Exhibit 'I': Hom residence retaining wall variance documentation do not provide evidence of meeting surficial and global stability factor of safety requirements.



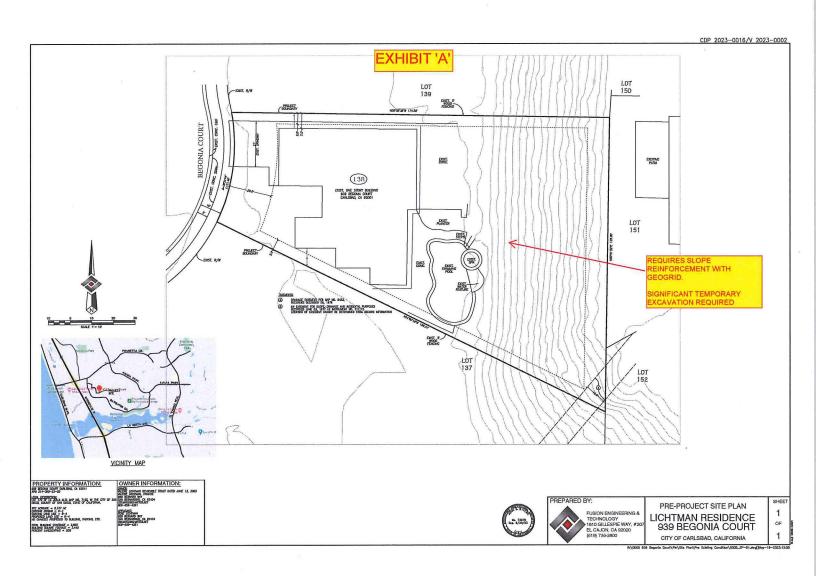
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- b. Other examples of precedence throughout the City that were approved apart of larger project and/or unpermitted walls that have not been enforced.
- c. Constitutional provisions for fair application of laws.

Should you have any questions regarding the information contained in this memo please contact me. Thank You,

Johnny Rivera, P.E. C73878 President / Principal of Civil Engineering Mobile: (619)992-6618

Johnny@FusionEngTech.com



7.2.1. OPTION 1- MSE Wall System

MSE walls can be constructed near the toe of the slope. The wall should not be constructed atop or near the influence of the existing cantilever retaining walls. The lower MSE wall should have geogrid lengths of not less than 8 feet. The limits of the geogrid should be extended to the backcut, even if shorter geogrid lengths are shown on the wall plans. A minimum horizontal fill width of 8 feet should be maintained on the slope. The fill slope can be constructed as described in Section 7.5.6. A minimum of 1 subdrain should be installed at the toe of the slope. A second drain may also be needed behind the upper MSE retaining wall. The MSE retaining walls should be embedded as recommended by the designer, but no less than 12 inches at the toe of the slope. MSE walls installed above descending slope should be embedded so that the daylight distance from the bottom of the wall to the slope face is at least 5 feet.

7.2.2. OPTION 2- Restore Slope with Reinforced Soil Slope

A stabilization keyway should be constructed at the toe of the proposed slope. The limits of this keyway should be based on the final slope design, but should be no less than 12 feet wide. Reinforced soil slopes (RSS) should be constructed on fill slopes steeper than 2:1. The grading contractor should have experience in the construction of a RSS. There are several methods on constructing a RSS, such as using temporary wooden formwork or permanent wire mesh forms (See Figure 7.2.2, below), and the grading contractor should select the most economical method of construction. The construction method should allow for the fill to be compacted out to the slope face without damaging the reinforcement.

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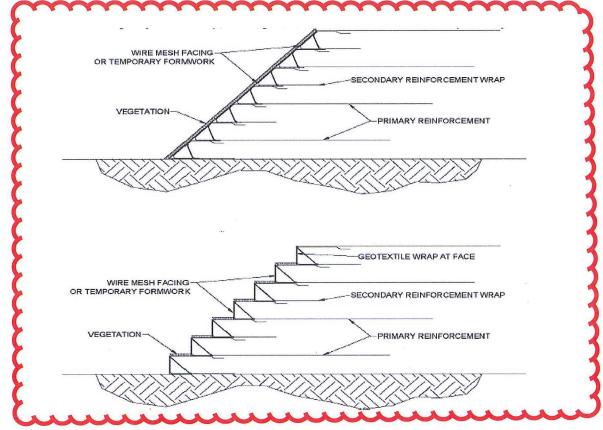


Figure 7.2.2 Alternative Methods of RSS Construction (from TenCateTM 2010a)

The primary reinforcement can include placing layers of Mirafi Miragrid 3XT (or approved equivalent) every 4 feet vertically starting from the bottom of the keyway. The primary geogrid layers should extend from the slope face to the backcut. The primary geogrid should be oriented so that the primary strength is perpendicular to the slope face. Splices in the primary direction should be avoided. A secondary layer of reinforcement consisting of Mirafi Miramesh TR (or approved equivalent) should be wrapped around the slope face and embedded a minimum of 5 feet with a maximum vertical spacing of 18 inches. The Miramesh vertical spacing can be reduced to every 2 to 4 feet if the primary geogrid layer is wrapped on the outside of the Miramesh and the primary geogrid is embedded a minimum of 8 feet as measured from the slope face. Geogrid reinforced slopes are expected to be globally and surficially stable to inclinations up to 1:1 (H:V). Splicing of the secondary layer shall not be conducted.

7.2.3. Temporary Backcut Stability

During grading operations, temporary backcuts will be required to accomplish removals and provide room to place geogrid. Care should be taken during backcut construction and backfill should be placed expeditiously in order to minimize risk of failure. Complete removal of the failed materials will be required should failure occur.

Backcuts exposing competent Very Old Paralic Deposits should be made no steeper than 1:1 to heights of up to 20 feet. Steeper backcuts may be possible for small sections but should be evaluated by AGS. Shallower backcuts are recommended below existing walls or within undocumented fill. Close geologic mapping of the stabilization and buttress key backcuts should be provided to document the exposed conditions. Revised recommendations may be necessary should areas of instability be encountered.

In consideration of the inherent instability created by temporary construction of backcuts, it is imperative that grading schedules be coordinated to minimize the unsupported exposure time of these excavations. Once started these excavations and subsequent fill operations should be maintained to completion without intervening delays imposed by avoidable circumstances. In cases where five-day workweeks comprise a normal schedule, grading should be planned to avoid exposing at-grade or near-grade excavations through a non-work weekend. Where improvements may be affected by temporary instability, either on or offsite, further restrictions such as slot cutting, extending work days, implementing weekend schedules, and/or other requirements considered critical to serving specific circumstances may be imposed.

7.3. Geologic Observation During Grading

All temporary slope excavations, including front, side and backcuts, and all cut slopes should be mapped to verify the geologic conditions that were modeled prior to grading.

7.4. Seepage

Seepage, if encountered during grading, should be evaluated by the Geotechnical Consultant. If seepage is excessive, remedial measures such as horizontal drains or under drains may need to be installed.

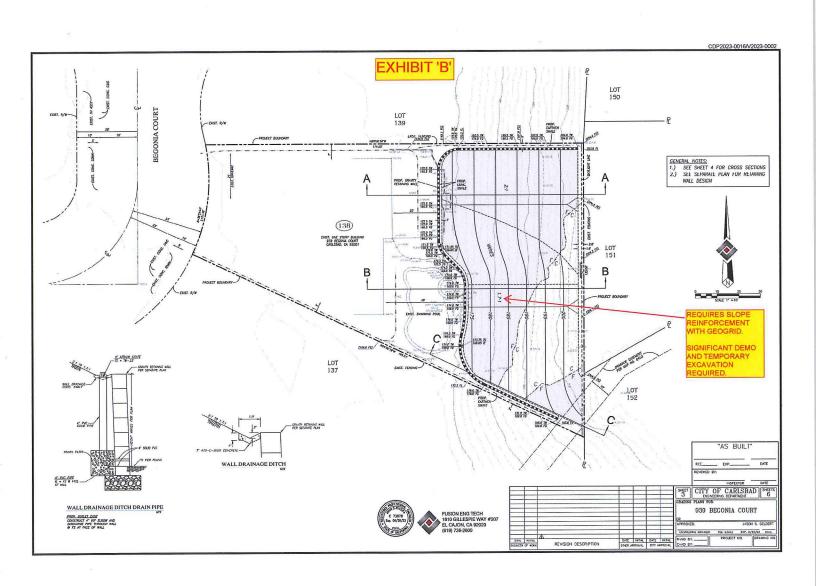
7.5. Earthwork Considerations

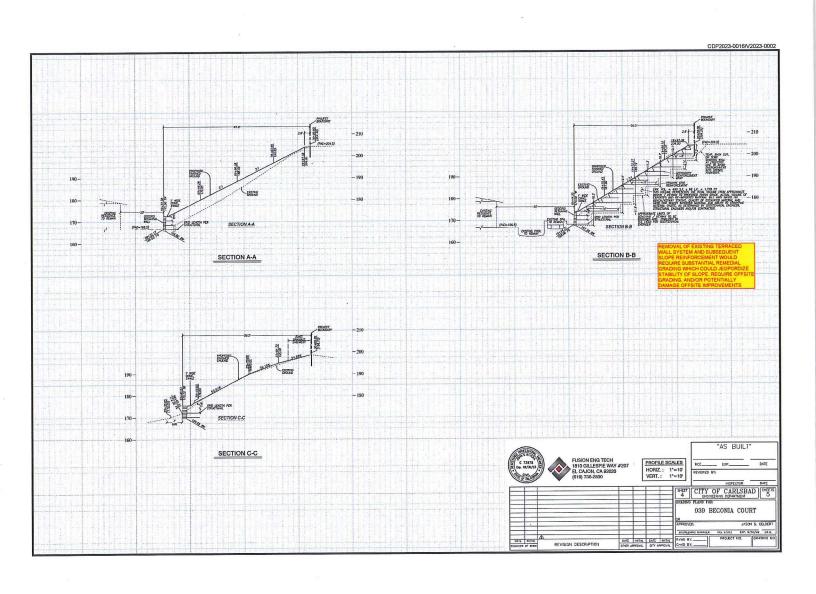
7.5.1. Compaction Standards

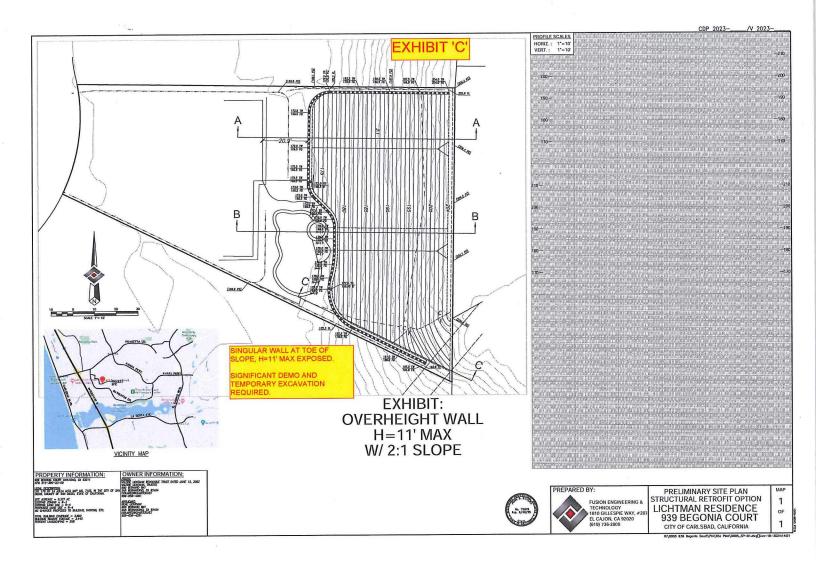
All fills should be compacted at least 90 percent of the maximum dry density as determined by ASTM D1557. All loose and or deleterious soils should be removed to expose firm native soils or bedrock. Prior to the placement of fill, the upper 6 to 8 inches of suitable material should be ripped, moisture conditioned to optimum moisture or slightly above optimum, and compacted to a minimum of 90 percent of the maximum dry density (ASTM D1557). Fill should be placed in thin (6 to 8-inch) lifts, moisture conditioned to optimum moisture or slightly above, and compacted to at least 90 percent of the maximum dry density (ASTM D1557) until the desired grade is achieved.

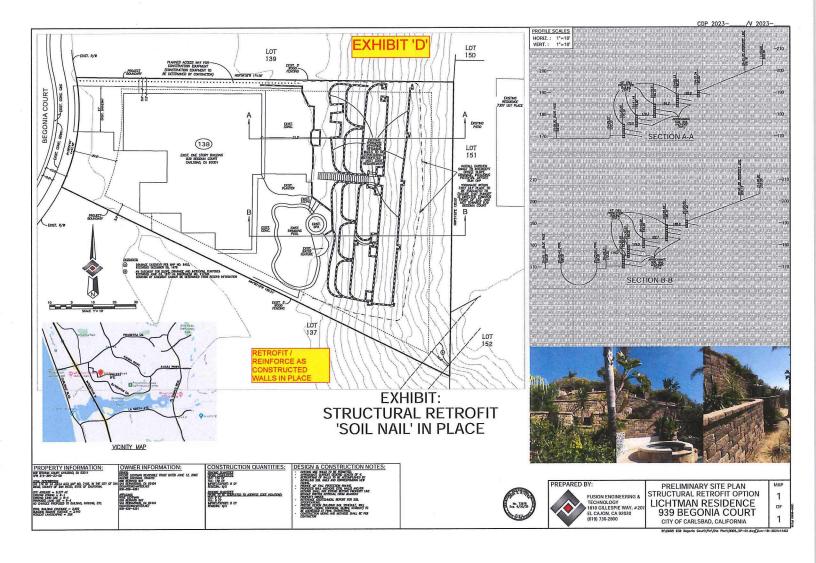
7.5.2. Benching

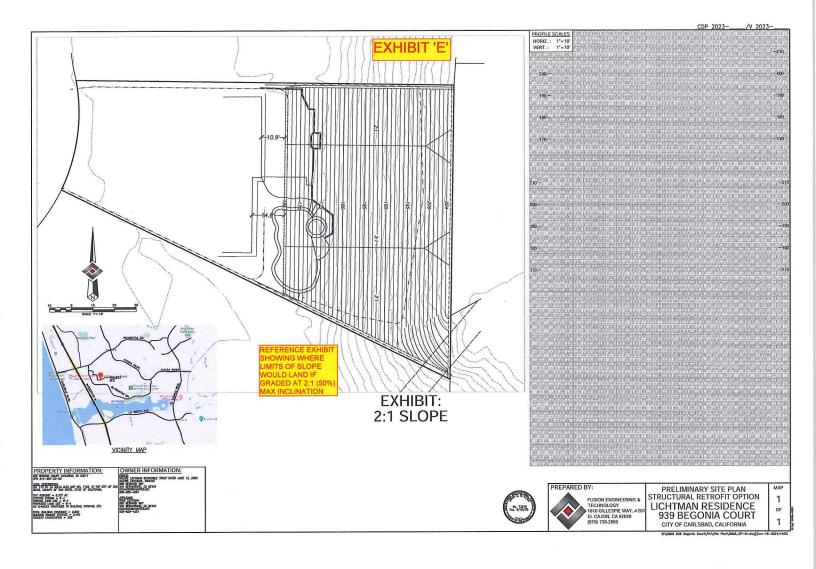
Where the natural slope is steeper than 5-horizontal to 1-vertical and where determined by the Geotechnical Consultant, compacted fill material shall be keyed and benched into competent materials.











RRENT RETAINING WAL

LCITY OF CARLSBAD

ATTACHMENT 6

We, the citizens of the City of Carlsbad, petition the City to allow the permit of the currently existing retaining wall located at the premises located at: 939 Begonia Court, Carlsbad.

We live in the neighborhood where the current retaining wall is located. It enhances the value of our property and does not pose a threat to public safety. It will be over-burdensome and disruptive to our neighborhood if it is forced to be removed by the City. We therefore petition that the wall be permitted.

Allowing the permitting of the existing wall will avoid a lengthy nuisance in our neighborhood in both noise and possible ingress and egress over our properties. In addition, it will avoid heavy machinery and vast amounts of dirt and soil to be moved in and around our streets and properties. It will also avoid the possible instability of the hill on which the retaining wall is situated, if the wall is forced to be removed.

Name	Address	Signature
Mark BALDWIN	1 CARENDED CA 92011	MUD BLJ
Katheryn Bachyn	7212 Arabea Place W Carlebal, CA 92011	Holly & Booknan
Reagan West	LITO WAREN THESE	M
JAMES Step	0 1 1	Deepo
Sandy Ros		11 San Dea & Ro
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ED SPAKAGELL	1 929 ORCHID WAY CARLOSA	9 Glorgo M.
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Name	Address	Signature
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BRIAN NORTON	900 POPPY LAWS	M = -
Scott CHARLE	912 POPPI (N	ψ-
STEFAN ASPOR	923 BECONIA CT	
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Jon Etel	7/07 Printer way	1
Lisa Eyer	7107 Primrose Way	- F Eng
GAUGU HANEY	7108 Primose Way	Sun Arg
Kelly Lewis	7105 Primrose Way	Klyent
Jason Lewis	7105 Priminge Way	Ju)
Keith Bryan	7104 Pameese Way	469 r-
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Jun HEART	930 Begana Ct	James
SAM LEONARL	919 BECONIA- CT	Sperito all
MIKE KENNEDY	932 Begonia CT.	Mich Keng
STEARLY HUSSI	927 BERNA CT.	45
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Ron Kieffe	921 Poppy Lane	Ronkreff
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EVIN HARRIS	942 BE60HACT	1.1.
BARAHAC HARRIS	942 Begon's Cot	Sandbleis
Michael Heck	915 Poppy Lu	man Hel

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Name	Address	Signature
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John Turberille		gr-
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Kevin Connors	921 Beginno Court 92011	11/-
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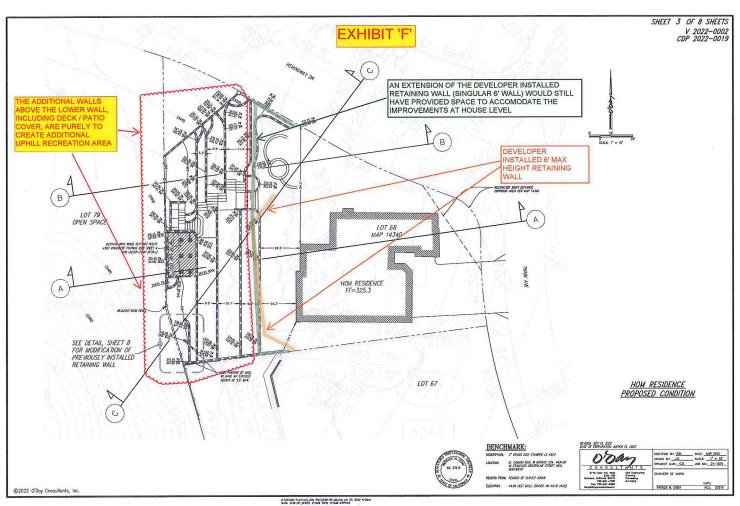
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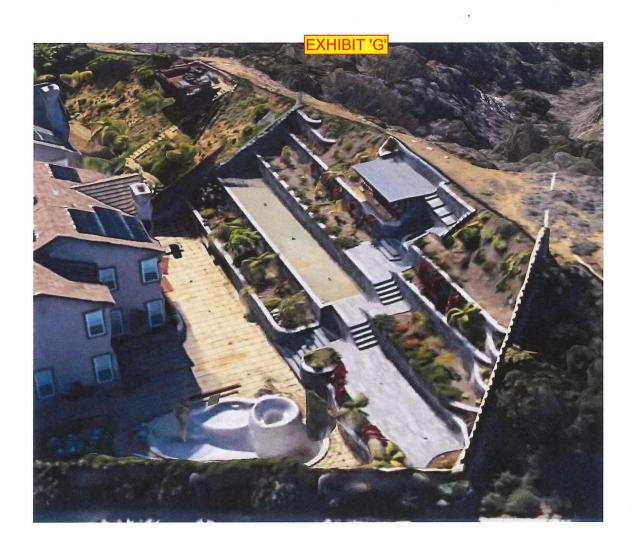
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Name	Address	Signature
Linda Krane	n 7305 Lily Pl	



May 3, 2023

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PROJECT ANALYSIS Exhibit 4

(GENERAL PLAN, MUNICIPAL CODE, AND OTHER REGULATIONS)

to decrease the stability of the wall, as test pits sever the geogrid reinforcement and disturb the soil compaction. A report on the findings was prepared and reviewed by the City and its third-party consultant.

The technical reports conclude that, in general, the tiered Keystone walls are spaced far enough apart to where they do not negatively place a surcharge on each other. In one location however, it is suggested that minor remedial work should be conducted to avoid potential future surcharge. A condition to this effect is included with the draft resolution. However, with this single exception, it is concluded that the Keystone walls were constructed consistent with the Keystone Construction Manual guidelines, that the walls show no sign of distress, and it is expected that they would continue performing as intended. It is also noted that the wall system has been constructed for almost three years at this point, through two and a half rainy seasons, with no visible slumping of the soil backfill or movement in the pavers. The technical reports indicate that the factors of safety against deep-seated failure are determined to be at an acceptable level, that no structural issues with the wall have been observed, that the walls will not impact improvements on any adjacent properties, and that the walls have been constructed in a manner suitable for their intended use.

Variance (CMC Chapter 21.50)

Pursuant to CMC Chapter 21.50, variances are granted to resolve practical difficulties or physical hardships that may result from the unique size, shape, topography, or dimensions of a property. The applicant is requesting a variance to sections of the Zoning Ordinance in order to allow the authorized construction of the stepped retaining wall system and wood deck. The following Hillside Development regulations apply to manufactured slopes which have a gradient of greater than forty percent and an elevation differential of greater than fifteen feet.

Section 21.95.140(C)(1)(a)(i); "[Retaining walls] on or into an uphill perimeter manufactured slope shall be limited to a maximum of six vertical feet as measured from the existing grade at the toe of the slope."

Section 21.95.140(C)(1)(a)(ii); "Decks may be constructed upon an uphill perimeter manufactured slope up to the required building setback(s) of the underlying zone."

In order to support an approval for a variance, all five required findings of fact from CMC Section 21.50.050 must be made. These five required findings and analysis are discussed below.

1. That because of special circumstances applicable to the subject property, including size, shape, topography, location or surroundings, the strict application of the zoning ordinance deprives such property of privileges enjoyed by other property in the vicinity and under identical zoning classification.

The subject property possesses unusual topographic constraints which result in special circumstances which other properties in the vicinity do not possess. The subject lot was constructed with a "cut-back" slope.