Highland Estates Subdivision Project

Addendum to the Highland Estates Final Environmental Impact Report

SCH No. 2007052068

MAY 2021

PREPARED FOR

County of San Mateo
Planning and Building Department

PREPARED BY

SWCA Environmental Consultants

HIGHLAND ESTATES SUBDIVISION PROJECT

ADDENDUM TO THE HIGHLAND ESTATES FINAL ENVIRONMENTAL IMPACT REPORT

SCH NO. 2007052068

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CHAPTER 1. PURPOSE OF ADDENDUM

The County of San Mateo Planning and Building Department, serving as the lead agency under the California Environmental Quality Act (CEQA), prepared the Final Environmental Impact Report (Final EIR) on the Highland Estates Subdivision Project (project) (State Clearinghouse #2007052068). At the County of San Mateo Planning Commission (Commission) public hearing on February 10, 2010, the Commission recommended that the County of San Mateo Board of Supervisors (Board) certify the Final EIR. The Commission also recommended project approval and the adoption of the ordinances amending the Resource Management (RM) Zoning District Regulations, and the rezoning of two portions of the project site, subject to the revised findings and conditions of approval detailed in the April 12, 2010, staff report prepared by the County of San Mateo Planning and Building Department. The Board certified the Final EIR as complete and adequate on April 27, 2010, pursuant to CEQA; approved the project, including adoption of the ordinances and rezoning; and imposed conditions of approval.

State CEQA Guidelines Section 15164 states that the lead agency shall prepare an addendum to a previously certified EIR if the project sponsor needs to make some changes or additions to a project and if certain conditions are met. These conditions are based on State CEQA Guidelines Section 15162, which specifies the conditions that would require preparation of a subsequent EIR. If ***none*** of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred, then an addendum to an EIR is the appropriate document to complete environmental review of changes to a project. Specifically, an addendum to an EIR is appropriate if ***none*** of the following three conditions occur:

1) Substantial changes are proposed in the approved project that will require major revision of the EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

2) Substantial changes occur with respect to the circumstances under which the project is being undertaken that will require major revision to the EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

3) New information of substantial importance, which was not known and could not have been known at the time the EIR was certified as complete, shows that the project will have significant effects not previously disclosed, that the significant impacts previously disclosed will be substantially more severe, that mitigation measures or alternatives previously found infeasible would be feasible and effective in reducing one or more impacts but adoption declined by the project applicant, or that new mitigation measures or alternatives are required but adoption declined by the project applicant.

1.1 IDENTIFICATION OF ADDENDUM AS APPROPRIATE CEQA DOCUMENT

With respect to the first condition, this addendum describes why the proposed changes to the approved project's earthwork program for Lots 5 through 8 ***are not substantial*** to the extent that there would be (1) new significant environmental effects from those identified in the Final EIR, (2) a substantial increase in the severity of previously identified significant effects, or (3) the need for the adoption of any new or considerably different mitigation measures.

With respect to the second condition, the circumstances and assumptions under which the project's earthwork program and construction schedule were previously developed have changed since certification of the Final EIR. As described below under Chapter 3, Modifications to the Implementation of the Approved Project, this change is a result of implementation of Mitigation Measure GEO-2b in the approved project's Mitigation Monitoring and Reporting Program (MMRP) (see Appendix A to this addendum). None of the other attributes of the approved project, including project footprint, locations of the home sites, and staging, are proposed to change. With updated site-specific geotechnical information, the project sponsor is now proposing the changes to the approved project that are the subject of this addendum. However, as noted under the first condition above, these changed circumstances and associated proposed changes do not require major revisions to the EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.

With respect to the third condition, no new information of substantial importance that was not known and could not have been known at the time the EIR was certified as complete, beyond what is described under the second condition above, has become available since the Final EIR was certified. Therefore, pursuant to State CEQA Guidelines Section 15164, none of the three conditions requiring the preparation of a subsequent or supplemental EIR has occurred, and the County of San Mateo Planning and Building Department has prepared this addendum to the certified Final EIR on the Highland Estates Subdivision Project.

Consistent with State CEQA Guidelines Section 15164, this addendum to the Final EIR describes the proposed changes to the circumstances and assumptions under which the approved project is undertaken and analyzes the potential environmental effects of the proposed changes based on and using the same methodology as the analysis of the environmental impacts identified in the Final EIR, unless otherwise noted. As presented below, this addendum explains why the proposed changes to the circumstances and assumptions under which the approved project is undertaken would not:

1) result in any new significant environmental impacts;
2) result in a substantial increase in the severity of impacts previously identified in the Final EIR; or
3) require the adoption of any new or considerably different mitigation measures from those included in the Final EIR.

CHAPTER 2. BACKGROUND

2.1 SUMMARY DESCRIPTION OF APPROVED PROJECT

The 97-acre Highland Estates site is located within an area known as the San Mateo Highlands neighborhood in an unincorporated area of San Mateo County, to the west of the San Mateo City limit (see **Figure 1: Regional and Site Location Map**). Highway 92 and Interstate 280 (I-280) are located south and west of the project site, respectively. The Lower and Upper Crystal Springs Reservoirs are also west of the project site. The Highland Estates site is bordered by Bunker Hill Drive to the north and northeast; Polhemus Road to the southeast; Ticonderoga Drive to the south; and Ticonderoga Drive, Lexington Avenue, and Yorktown Road to the west. The Highland Estates site is predominately surrounded by single-family residential uses. Other surrounding land uses in the project area include the Crystal Springs United Methodist Church and the Crystal Springs Shopping Center east of the site; the Hillsborough West Apartments southeast of the site; and the Highlands Recreation Center west of the site. The Highlands Elementary School is approximately 200 feet northwest of the project site.

The Highland Estates site has been subject to multiple land development proposals dating back over 25 years. The approved project consists of 11 lots on undeveloped portions around the perimeter of the 97-acre site. The Final EIR assumed concurrent construction of 11 single-family homes ranging in size from approximately 2,800 to 3,600 square feet and other subdivision improvements, all to be completed in 1 year. The residential lots total approximately 4.53 acres, located in three areas around the perimeter of the Highland Estates site along Ticonderoga Drive, Bunker Hill Drive, Cobblehill Place, and Cowpens Way. The portion of the site zoned RM includes the development of nine lots, while the other two proposed dwelling units would be constructed on the single-family residential-zoned portion of the site. The subdivision would result in a total of 11 single-family home lots, and 92.43 acres of the site would be designated as open space. Lots 1 through 4 are located along Bunker Hill Drive, along the northern boundary of the site, and Lots 5 through 8 are located along Ticonderoga Drive, along the southern boundary of the site. Lots 9 and 10 are located at the end of Cobblehill Place at the south side of the project, and Lot 11 is located at the end of Cowpens Way in the southwesterly portion of the project site (see **Figure 2: Aerial Imagery**).

The Highlands Estates project required several approvals from the County of San Mateo, including rezoning, a major subdivision permit, a lot line adjustment, an RM permit, and a grading permit. As part of the project, the County of San Mateo also adopted a zoning text amendment to RM District regulations to allow for reduced setbacks for residential projects in urban areas that preserve open space. This zoning text amendment, as approved by the Board, applies not only to the project but to all residential projects proposed in the RM District.

With concurrent construction, the proposed earthwork for development of Lots 1 through 11 was estimated to require approximately 6,700 cubic yards (cy) of cut and the need for approximately 7,600 cy of fill with majority of the cut to be reused as fill (see **Table 1: Proposed Earthwork of Approved Project**). The cut and fill quantities required for the development of driveways and other subdivision

improvements on all lots, including grading required to construct building pads to the sub-floor elevations shown on the Vesting Tentative Map and the removal of unstable soils, are reflected in this table.

Table 1: Proposed Earthwork of Approved Project

Area	Proposed Cut (cy)	Proposed Fill (cy)
Lots 1–4	500	2,300
Lots 5–8	4,700	700 [A]
Lots 9 and 10	300	2,900
Lot 11	1,200	1,000
TOTAL	***6,700***	***7,600*** [B]
Imported Fill	900	--

Notes: cy = cubic yards

[A] Includes 200 cubic yards of drain rock

[B] Includes 900 cubic yards of imported fill

Source: Final EIR, p. 2.0-2

Most of the cut (4,700 cy) is associated with the existing unconsolidated landslide materials on Lots 5 through 8. The proposed fill for the project is mainly for constructing building pads and driveways on Lots 1 through 4 and for the creation of flat areas on all the lots for access, play, and landscaping. Import/export volumes were assumed to be balanced with a need for the import of approximately 900 cy of fill, including 200 cy of drain rock. The fill material, including drain rock, would be imported from nearby locations in the San Francisco Peninsula. The expected haul routes were described as follows:

- To Ticonderoga Drive, the haul routes would likely be from Highway 92 to Polhemus Road north.
- To Bunker Hill Drive, the haul routes would likely be from Highway 92 and then west to Skyline Boulevard.

Given that a typical haul truck can carry approximately 12 cy of earth materials, approximately 75 construction truck trips (150 one-way trips) for import of additional fill materials was estimated for the approved project.

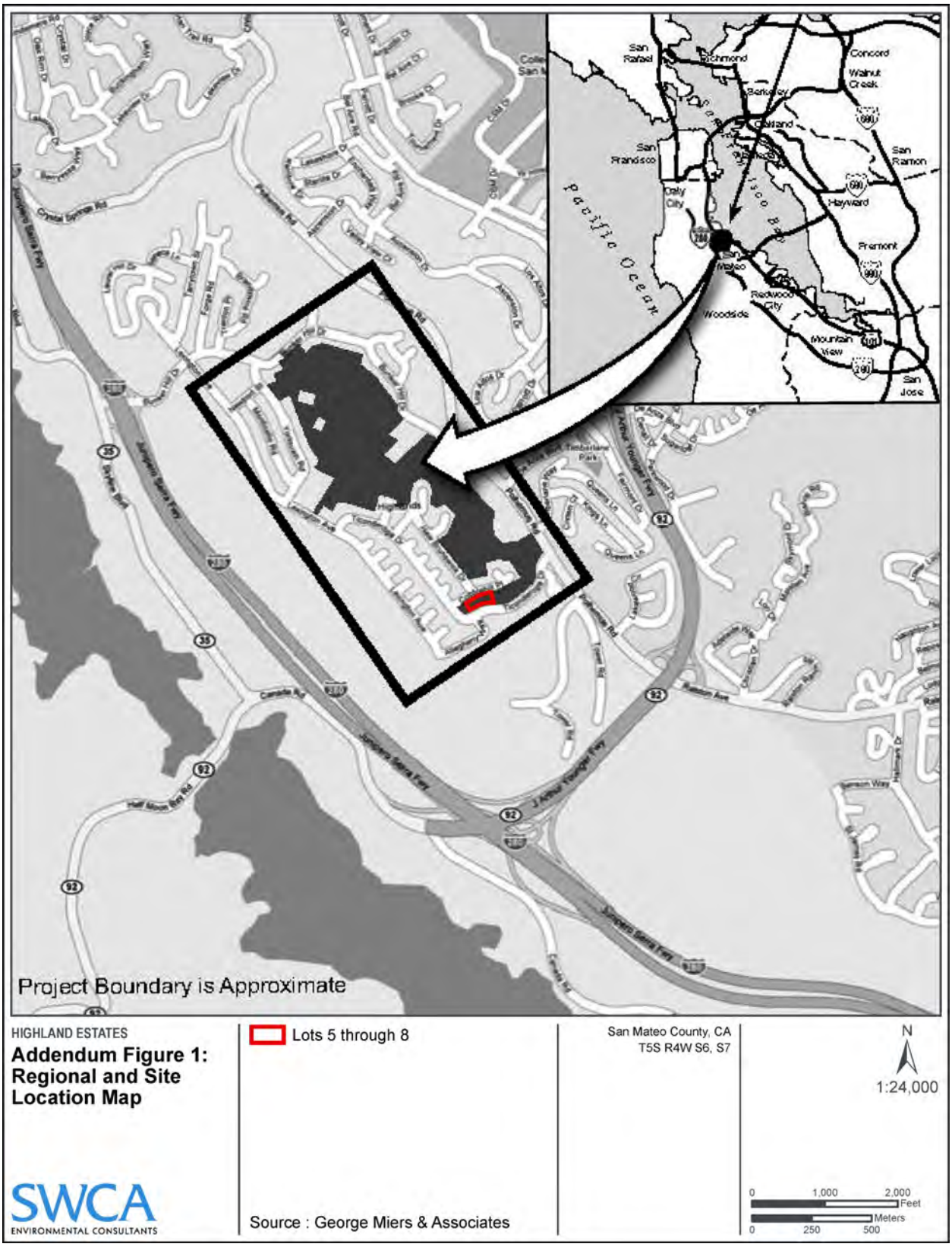

Figure 1: Regional and Site Location Map

Figure 2: Aerial Imagery

2.2 ENVIRONMENTAL REVIEW PROCESS

The County of San Mateo Planning and Building Department, serving as the lead agency under CEQA, prepared the Final EIR for the Highland Estates Subdivision Project. The County of San Mateo published the Draft EIR on December 19, 2008, with a public comment period end date of February 17, 2009. On February 11, 2009, the Commission held an informational public hearing on the December 2008 Draft EIR. In response to public comments regarding the geotechnical analysis in the December 2008 Draft EIR, the Community Development Director announced that the December 2008 Draft EIR would be revised and recirculated to include the full geotechnical scope authorized by the Board on September 30, 2008. A Recirculated Draft EIR was published on September 14, 2009, and made available to the public from September 14, 2009, to November 9, 2009. The September 2009 Recirculated Draft EIR addresses the geotechnical questions raised by the comments received on the December 2008 Draft EIR as well as other public comments. The Final EIR, which responded to received comments on the September 2009 Recirculated Draft EIR, was published on December 31, 2009, with a public comment period end date of January 14, 2010. The Final EIR was subsequently updated to address public review of the Final EIR, additional community stakeholder input, and the Commission hearing on February 10, 2010.

The County of San Mateo Planning and Building Department prepared the Findings for the project and the MMRP in accordance with State CEQA Guidelines Sections 15091 (Findings) and 15097 (Mitigation Monitoring or Reporting). The Findings document identified impacts resulting from the approved project, and the MMRP outlines mitigation measures to reduce significant impacts to less-than-significant levels. For the Board hearing on April 27, 2010, the County of San Mateo Planning and Building Department prepared a staff report (April 12, 2010) that included findings and conditions of approval resulting from public review of the Final EIR, additional community stakeholder input, and the Commission hearing on February 10, 2010. The Board certified the Final EIR as complete and adequate on April 27, 2010, pursuant to CEQA; approved the project, including adoption of the ordinances and rezoning; and imposed conditions of approval.

The Highland Estates Final EIR consists of (a) the September 2009 Recirculated Draft EIR, which is incorporated by reference; (b) a list of persons and organizations who commented on the September 2009 Recirculated Draft EIR; (c) comments received on the September 2009 Recirculated Draft EIR; (d) revisions to the September 2009 Recirculated Draft EIR; (e) revisions to the Final EIR published on December 31, 2009; (f) the County of San Mateo Planning and Building Department's responses to significant environmental points raised in the review and consultation process during public review of the Final EIR, through additional community stakeholder input, and at the February 10, 2010, Commission hearing; and (g) the approved MMRP. Information in the Final EIR is incorporated by reference.

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CHAPTER 3. MODIFICATIONS TO THE IMPLEMENTATION OF THE APPROVED PROJECT

3.1 BACKGROUND

As identified in previous geotechnical and geologic reports prepared for the Highland Estates site and summarized in the Final EIR, shallow landsliding is a known geologic/geotechnical condition in the project site area. Development of the site and specifically the 11 lots in the approved project was concluded to be feasible by multiple geotechnical engineers—Treadwell and Rollo,[1] Cornerstone Earth Group (the current geotechnical engineer-of-record), and other geotechnical engineers and engineering geologists—provided that geotechnical recommendations to mitigate the shallow landslides were implemented.[2] Mitigation Measures GEO-1 and GEO-2b (see Appendix A to this addendum) are identified in the Final EIR and were incorporated as conditions of approval for project development. Mitigation Measures GEO-1 and GEO-2b require the preparation of design-level geotechnical investigations prior to site development and the incorporation of the recommendations of a qualified geotechnical engineer related to the conduct of future construction activities on the project site.

In 2011, pursuant to Mitigation Measure GEO-1, the project applicant contracted with the Cornerstone Earth Group to perform a design-level geotechnical investigation for Lots 1 through 4 based on project applicant–provided information consisting of, but not limited to, the previously prepared geologic/geotechnical reports and the set of plans dated January 20, 2010, for Lots 1 through 11 titled "Highland Estates" prepared by BKF Engineers, Inc. Based on the information provided in that design-level geotechnical investigation, residences on Lots 1 through 4 were completed in 2016–2017.

In 2015, pursuant to Mitigation Measure GEO-2b, the Cornerstone Earth Group performed an updated design-level geotechnical investigation for Lots 5 through 11 (see Appendix B to this addendum).[3] The general setting of Lots 5 through 11 is described as follows:

> "Lots 5 through 8 are located on the northern side of Ticonderoga Drive which slopes upward from Ticonderoga Drive with slopes as steep as approximately 2:1 to 2.5:1[4] . . . Lots 9 and 10 are located at the end of Cobblehill Place along the approximate crest of a ridge that slopes gently to steeply downward to the east, northeast away from the end of Cobblehill Place. Lot 11 will be constructed at the end of Cowpens Way and generally slopes downward away from the end of Cowpens Way."[5]

[1] Revised Geologic Evaluation, Environmental Impact Report, Highlands Estates Residential Development Report, San Mateo County, CA, Treadwell & Rollo, August 27, 2009 (see September 2009 Recirculated Draft EIR, Appendix 4.3).
[2] September 2009 Recirculated Draft EIR, Section 4.3, Geology and Soils, subsection 4.3.5.3, Project Impacts.
[3] Cornerstone Earth Group, Updated Geotechnical Investigation, Highland Estates Lots 5 through 11, Ticonderoga Drive/Cobblehill Place/Cowpens Way, San Mateo California, October 30, 2015 (see Appendix B of this addendum).
[4] Ratio provided in Horizontal:Vertical
[5] Cornerstone Earth Group, Updated Geotechnical Investigation, Highland Estates Lots 5 through 11, Ticonderoga Drive/Cobblehill Place/Cowpens Way, San Mateo California, October 30, 2015, p. 2 (see Appendix B of this addendum).

Based on progress on the issued building permits, residences on Lots 9 through 11 are expected to be completed in June 2021. Construction and grading requirements dated July 13, 2020, identified applicable conditions of approval required for development of Lots 9 through 11 including, but not limited to, a grading/construction traffic management plan, including requirements to be met for winter grading between October 1 and April 30 (Improvement Measure TRANS-1); construction dust control plans; Mitigation Measure AQ-1 requirements for construction air quality; Mitigation Measure NOI-1 requirements for construction equipment noise abatement; and biological resource mitigation measures (e.g., Mitigation Measure BIO-2d and Mitigation Measure BIO-5a for Lot 11).

In carrying out the required design-level geotechnical investigation for Lots 5 through 11, it became evident to the project applicant and the County of San Mateo that the amount of soil that must be removed from Lots 5 through 8 to enable homes to be safely constructed is greater than the amount of soil removal previously documented in the EIR. As part of the design-level geotechnical investigation for construction of the home on Lots 5 through 8, Cornerstone Earth Group supplemented prior findings and recommendations related to the slope stability analysis and provided landslide mitigation plans and details so that all unstable soils are fully removed and structures and retaining walls are fixed with drilled pier foundations to protect from future slope instability (see Appendices B and C of this addendum). Therefore, the focus of the analysis in Chapter 4 of this addendum is on the new circumstances and assumptions for the earthwork required for completion of the approved project.

3.2 PROPOSED MODIFICATIONS

The specific changes to the earthwork program, and the associated increase in construction truck trips and the construction schedule for development of Lots 5 through 8, are directly related to findings from the required design-level geotechnical investigation prepared by Cornerstone Earth Group. The specific changes are further informed by the September 11, 2018 "Highland Estates – Lots 5 through 8 Improvement Plans" prepared by BKF Engineers, Inc. (see Appendix C to this addendum), and subsequent clarifying information from communications between the project applicant's geotechnical and engineering consultants and the County of San Mateo Planning and Building Department.

The specific differences between the circumstances and assumptions under which the approved project was to be undertaken, and the way in which the project is presently proposed to be undertaken, consist of the following:

- The EIR assumed that all 11 lots would be built concurrently over 1 year (starting in June 2009 with completion in June 2010, as evaluated in the air quality modeling), whereas actual buildout of the project has occurred in phases, with Lots 1 through 4 constructed in 2016–2017, Lots 9 through 11 currently under construction (2020–2021), and Lots 5 through 8 proposed for construction in 2021–2022. As a result, the assumption in the EIR that import/export volumes would be balanced and would therefore not require off-hauling of excavated soils for disposal at the Ox Mountain Landfill is no longer applicable.

- The overall volume of imported fill and exported soil, and the associated truck trips, will increase due to the removal of unstable soils associated with the mapped landslides, soils deemed unsuitable for on-site reuse as fill, and the resulting need to import suitable fill materials. While the new circumstances and assumptions are a direct result of the implementation of Mitigation Measure GEO-2b, the number of construction truck trips is greater than that considered in the EIR and its supporting air quality modeling.
- The need for a greater amount of cut and fill on Lots 5 through 8 has extended the time during which construction activities will occur on Lots 5 through 8. As a result, the construction schedule assumption in the EIR for the duration of construction activities, i.e., an approximately 3- to-5-week period, has increased to accommodate the amount of site grading and other construction to an approximately 10-week period.

As described in the EIR, Lots 5 through 8 are located along the north side of Ticonderoga Drive on steeply sloping woodland and grassland with a moderately dense growth of coast live oak trees and other trees, such as California bay and toyon, as well as grasses and shrubs. The lots are bounded by residential development to the west and north, undeveloped land to the east, and Ticonderoga Drive on the south. **Table 2: Changes to Proposed Earthwork for Lots 5 through 8** presents the revisions to the proposed earthwork for Lots 5 through 8 compared to that under the approved project.

Table 2: Changes to Proposed Earthwork for Lots 5 through 8

Area	Approved Cut (cy)	Approved Fill (cy)	Revised Cut (cy)	Revised Fill (cy)	Revised Cut after Balance (cy)	Cut for Landslide Mitigation (cy)	Change in Cut (cy)
Lots 5–8	4,700	700	5,230	320	4,910	2,880	+7,790
TOTAL	***4,700***	***700*** [A]	***5,230***	***320***	***4,910***	***2,880***	***+7,790***

Notes: cy = cubic yards

[A] Includes 200 cubic yards of drain rock for Lots 5–8.

Source: County of San Mateo, Highland Estates Recirculated Draft EIR, September 2009, pp. 3.0-23, 3.0-29, and 4.4-31; Board Staff Report, April 12, 2010, Table 8-Changes to Proposed Earthwork, pp. 28–29; BKF Engineers, Inc., Technical Memorandum re: Grading Associated with Highland Estates Lots 5 through 11, March 7, 2019; and County of San Mateo, Spreadsheet for Grading for Chamberlain Project Lots 5-8 June 25, 2020.

The grading activities necessary to prepare the lots for the building pads and provide slope stability for home foundations include excavation and stockpiling of soils for reuse as compacted fill; creation of engineered slopes and stepped foundations; and installation of retaining walls. Piers drilled into the underlying bedrock would be installed for each lot to provide slope stability for the future homes and retaining walls that would be built. These same construction activities would continue to be used; however, for development to be safely undertaken on Lots 5 through 8, revisions to the project require an increased volume of earthwork to remove the two mapped landslides and the existing fills within the location of proposed improvements and to provide stable slopes for construction. With Lots 1 through 4 and Lots 9 through 11 completed and near completion, respectively, and limited balancing opportunities between Lots 5 through 8 (approximately 320 cy), the proposed changes translate into the generation of 7,790 cy of cut soils requiring approximately 650 construction truck trips (1,300 one-way trips) for

removal and disposal, and up to an additional 7 weeks for completion of grading activities on Lots 5 through 8, for a total of 10 weeks.

With regard to Lots 5 through 8, none of the other attributes of the approved project, including project footprint, locations of the home sites, and staging, have changed. Construction on Lots 5 through 8 would continue to consist of multi-level, single-family, wood-framed houses designed to step up the hill and follow the natural contours.[6] The structures would be supported on drilled pier and grade beam foundations with raised wood or structural concrete slab floors with driveways and garages anticipated to be located adjacent to Ticonderoga Drive. Shared driveways to access individual garages would be developed to limit curb cuts on Ticonderoga Drive. Other lot improvements would include utilities, bioretention planters, retaining walls to retain fill adjacent to garage and lower house walls, and landscaping. However, as noted above, substantial additional earthwork is expected for landslide repair (see Appendices B and C to this addendum).

[6] Highland Estates – Lots 5 through 8 Improvement Plans in Appendix C to this Addendum.

CHAPTER 4. ENVIRONMENTAL IMPACT ANALYSIS

This chapter includes an analysis of the impacts of the project as modified for development of Lots 5 through 8. The changes described are evaluated to determine whether they would result in a new significant impact or increase the severity of previously disclosed impacts of the approved project as identified in the Final EIR. The Final EIR evaluated the following environmental resource topics: Aesthetics, Biological Resources, Geology and Soils, and Other Resource Topics.[7] The other environmental resource topics determined to be potentially significant and addressed in the Final EIR were greenhouse gas (GHG) emissions, construction-related air emissions, construction-related noise levels, hazards associated with naturally occurring asbestos, risks associated with wildland fires, potential traffic impacts, and wastewater impacts. Project effects related to all other environmental resource topics were (1) determined in the Initial Study prepared for the project to be less than significant with mitigation, (2) determined through the Initial Study analysis to not be applicable or to have no impact, or (3) determined to generate environmental impacts that would be clearly less than significant.[8]

The following environmental resource topics, and all other issue areas required to be evaluated under CEQA, have been reevaluated in this addendum for the project modifications needed for development of Lots 5 through 8. As the analysis shows, the changes to the proposed earthwork and the extension to the construction timeline for Lots 5 through 8 would not result in additional significant environmental impacts not addressed in the Final EIR or increase the severity of previously identified environmental impacts. No new mitigation measures (as incorporated as conditions of approval) are required; however, minor modifications to an element of the construction air quality mitigation measure identified to reduce the less-than-significant construction-related air quality impacts are recommended. This recommendation is based on improvements in the performance of off-road construction equipment since the project was originally analyzed, which render the originally proposed off-road Tier 1 and Tier 2 mitigation measure obsolete. Additionally, there are no other changed circumstances that would alter the impacts analysis of the proposed development, as modified, inclusive of the tools and methodologies used to evaluate such impacts, e.g., air quality modeling software, and updates to the State CEQA Guidelines and Appendix G (Initial Study Checklist).

4.1 AESTHETICS

Potential impacts related to aesthetics are discussed in Section 4.1 of the September 2009 Recirculated Draft EIR and Section 2.0 of Final EIR. The change in the cut and fill volumes and associated increase to the construction schedule and the number of construction truck trips would not result in aesthetic impacts not already disclosed in the Final EIR. As proposed, both levels of the newly constructed homes on Lots 5 through 8 would continue to remain visible from Ticonderoga Drive since the land in this portion of the site slopes upwards away from the road. There are no proposed changes related to the footprint or

[7] September 2009 Recirculated Draft EIR Chapter 4, Sections 4.1 through 4.4, and December 2009 Final EIR Section 2.3, pp. 2.0-2 to 2.0-6.

[8] September 2009 Recirculated Draft EIR Chapter 4, Section 4.4.3, pp. 4.4-41 to 4.4-61, and Appendix 1.0, Initial Study, pp. 14–97.

elevation of these homes. Therefore, Impacts AES-1 through AES-4, which are based on home elevations and locations and potential effects on scenic vistas and the existing visual character, remain unchanged and the same improvement measures apply to the completion of the project as presently proposed (Improvement Measure AES-1a, Improvement Measure AES-1b, and Improvement Measure AES-2). There are no other changes in circumstances, e.g., designation of additional scenic corridor areas and roads or changes to the design of the proposed homes, that would affect the aesthetic impacts of the proposed development, as modified.[9]

4.2 BIOLOGICAL RESOURCES

Potential impacts related to biological resources are discussed in Section 4.2 of the September 2009 Recirculated Draft EIR and Section 2.0 of the Final EIR. The change in the cut and fill volumes and the associated increase to the construction schedule and the number of construction truck trips would not alter the project footprint, including the building footprints and grading limits, as presented in the Final EIR. The type of construction activities associated with the proposed earthwork for Lots 5 through 8 and associated construction truck traffic would not be substantially greater in magnitude nor cover area beyond the limits of the site preparation activities of the approved project such that new biological resources impacts would be introduced or previously disclosed impacts in the Final EIR would be increased. Because the duration of construction activities on the site (up to 7 additional weeks for a total of 10 weeks) and additional construction truck traffic would extend the period that active nests could potentially be exposed to construction-related noise, this information will be considered at the time that Mitigation Measure BIO-2b (nesting bird surveys) is implemented. However, the proposed earthwork changes would not affect the timing of the nesting bird surveys or the nature of the construction noise generated by trucks and site activities. Thus, changes to grading and other construction activities would not result in additional significant environmental impacts not addressed in the Final EIR or increase the severity of previously identified environmental impacts. Therefore, Impacts BIO-1 through BIO-11 remain unchanged and the same mitigation measures (as incorporated as conditions of approval) still apply to the completion of the project as presently proposed (Mitigation Measures BIO-2a, BIO-2b, BIO-2c, and BIO-2d [protection of woodrat nests, nesting birds, bats, and red legged frogs, respectively]; Mitigation Measure BIO-3 [tree protection]; Mitigation Measures BIO-5a, BIO-5b, and BIO-5c [willow scrub habitat protection, erosion control plan, and lighting plan, respectively]; and Mitigation Measure BIO-6 [purple needlegrass protection]). Based on a review of the California Natural Diversity Database[10] and California Native Plant Society,[11] no other sensitive or protected species have potential to be impacted by the project, as modified, nor would there be a substantial increase in the severity of impacts previously identified in the Final EIR. Thus, there are no other changes in circumstances that would affect the impacts of the proposed development, as modified, on biological resources.

[9] County of San Mateo, Scenic Corridor Areas in San Mateo County, https://data.smcgov.org/Government/Scenic-Corridor-Areas-in-San-Mateo-County/x3gh-mff3, accessed March 1, 2021.

[10] California Department of Fish and Wildlife, California Natural Diversity Database RareFind5, CDFW 2003, as updated 2021, accessed March 1, 2021.

[11] California Native Plant Society, *Inventory of Rare and Endangered Plants* (online edition, v8-03 0.39), California Native Plant Society Rare Plant Program, Sacramento, CA, http://www.rareplants.cnps.org, CDFW accessed March 1, 2021.

4.3 GEOLOGY AND SOILS

Potential impacts related to geology and soils are discussed in Section 4.3 of the September 2009 Recirculated Draft EIR and Section 2.0 of the Final EIR. The analysis of impacts provided in the EIR focused on the locations of the proposed homes and subdivision improvements relative to landslides, unstable geologic units, and other potential geologic hazards, and concluded that the proposed residential development is feasible from a geologic perspective with the implementation of proposed mitigation measures which require, among other things, mitigation/repair of active landslides that pose a potential hazard to the development of Lots 5 through 8 along Ticonderoga Drive and the selection and building of foundation systems for all proposed residences that would be expected to result in satisfactory building performance.[12]

The change to cut and fill volumes on Lots 5 through 8 is a function of on-site monitoring and more refined characterization of the underlying soils and extent of landslide repair resulting from implementation of Mitigation Measures GEO-1 and GEO-2b of the EIR (as incorporated as conditions of approval). Implementation of Mitigation Measure GEO-2a, which is specific to the development of Lots 7 and 8, requires that "materials used to construct the buttress fill should have effective strength parameters equal to or better than the parameters used in the Treadwell & Rollo 2009 study."[13] This mitigation addresses the static and seismic slope stability of the proposed buttress fill repair solution. Further, the proposed earthwork changes necessary for completion of Lots 5 through 8 would not alter the locations of homes or subdivision improvements. Although the total volume of soil export is greater, the geologic hazards remain the same as those analyzed in the EIR and the solutions to reduce those hazards, as presented in the mitigation measures, also remain the same. There are no other changes in circumstances that would affect the geology and soils impacts of the proposed development, as modified. Therefore, the conclusion for Impacts GEO-1 through GEO-6 remain unchanged and all mitigation and improvement measures (as incorporated as conditions of approval), including Mitigation Measure GEO-2a (buttress fill parameters for Lots 7 and 8), Improvement Measure GEO-3 (stormwater pollution prevention plan), Mitigation Measure GEO-4 (seismic design criteria), and Mitigation Measure GEO-5 (expansive soils), apply to the completion of the project as presently proposed.

4.4 ENVIRONMENTAL RESOURCE TOPICS DETERMINED TO BE POTENTIALLY SIGNIFICANT IN THE EIR

Based on the conclusions of the Final EIR which evaluated the effects of the development of 11 single-family homes on Lots 1 through 11, this section of the addendum is focused on topics that were determined to be potentially significant. These environmental resource topics are evaluated below in adequate detail with respect to the project modifications and, where applicable, other changed circumstances.

[12] County of San Mateo, Highland Estates Recirculated Draft EIR, September 2009, Appendix 4.3 (Revised Geologic Evaluation), p. 21.
[13] County of San Mateo, Highland Estates Recirculated Draft EIR, September 2009, Section 4.3, p. 4.3-33.

4.4.1 Global Climate Change

Potential impacts related to climate change are discussed in subsection 4.4.2.1 of the September 2009 Recirculated Draft EIR and Section 2.0 of the Final EIR. As discussed there, to assess the impact of the proposed project with respect to global climate change and cumulative GHG emissions, the project's construction and operational GHG emissions were quantified on a carbon dioxide equivalent (CO_2E) basis. In addition, the project was evaluated based on its ability to meet the emissions reduction targets and strategies prescribed in Assembly Bill (AB) 32, as well as the extent to which the project would offset associated vehicle miles traveled (VMTs) and GHG emissions. As concluded, the project features and site characteristics, including a modest increase in VMT due to the suburban location and its relatively small size, were determined to be consistent with implementing programs, policies, and regulations to achieve the statewide GHG emission reduction goals established under AB 32 and to follow the County of San Mateo's Green Building Ordinance and other residential energy efficiency measures. Thus, the approved project would result in negligible direct and indirect contributions to cumulative GHG emissions and global climate change.

Since certification of the Final EIR, the Bay Area Air Quality Management District (BAAQMD) has yet to establish thresholds of significance for construction-related GHG emissions; however, the County of San Mateo Planning and Building Department has completed the 2013 Energy Efficiency Climate Action Plan. The 2013 Energy Efficiency Climate Action Plan includes a GHG inventory of all the emissions that resulted from the unincorporated areas of San Mateo County and a list of various proposed measures to reduce these emissions. The 2013 Energy Efficiency Climate Action Plan satisfies the BAAQMD's requirements for a Qualified GHG Reduction Strategy. In addition, the County of San Mateo adopted the 2016 California Green Building Standards Code since certification of the Final EIR, incorporating and updating the Green Building Ordinance in the process. Thus, development projects that comply with the County of San Mateo's Energy Efficiency Climate Action Plan and the 2016 California Green Building Standards Code, as adopted by the County of San Mateo, are projects with less-than-significant impacts on GHG emissions.

The County of San Mateo Office of Sustainability is currently working with the County of San Mateo Planning and Building Department to update the plan and demonstrate how the County of San Mateo will meet its emissions reduction targets, consistent with AB 32-targeted reductions for 2035 and the recommendations of the BAAQMD. The measures in the 2013 Energy Efficiency Climate Action Plan to reduce GHG emissions focus on adopting green building standards and ordinances, streamlining permitting processes and incentivizing adoption of clean energy systems and water-conserving products, and making updates to general plan and municipal codes to promote water conservation practices.

The change in cut and fill volumes and the associated increase in the duration of the construction schedule, number of construction truck trips, and construction site activity would result in additional construction-related GHG emissions. While construction-related GHG emissions would increase due to increased earthwork and additional construction truck trips, the completion of the project as presently proposed would continue to comply with applicable plans, policies, and regulations for GHG reduction

such as limits on idling time of construction vehicles, use of clean fuels, and maintenance of all construction equipment in a good state of repair. Therefore, the conclusions under EIR Impact GCC-1 remain unchanged. Additionally, with no changes to the land use program or other operational characteristics of the project, the operational-related GHG emissions estimated for the project, including those from mobile sources, would remain the same as described in the EIR. As noted, the completion of the project as presently proposed would continue to comply with applicable plans, policies, and regulations for GHG reduction, including those identified in the 2013 Energy Efficiency Climate Action Plan (e.g., limiting idling and utilizing cleaner fuels, equipment, and vehicles to exceed the BAAQMD requirements); thus, the development of a qualified GHG reduction strategy is not a changed circumstance that would result in additional significant environmental impacts not addressed in the Final EIR or increase the severity of previously identified environmental impacts.

4.4.2 Construction-Related Air Quality

Air pollutant standards have been identified by the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) for the following six criteria air pollutants that affect ambient air quality: ozone, carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. Subsets of PM have also been identified for which permissible levels have been established. These include PM of 10 microns in diameter or less (PM_{10}) and PM of 2.5 microns in diameter or less ($PM_{2.5}$). These air pollutants are called "criteria air pollutants" because they are regulated by specific public health- and welfare-based criteria.

Potential impacts related to construction-related air quality emissions are discussed in subsection 4.4.2.2 of the September 2009 Recirculated Draft EIR and Section 2.0 of Final EIR. As discussed in the Final EIR, construction-related air pollutant emissions are temporary due to the short-term nature of such activities, and, with full implementation of feasible construction emission control measures recommended in the BAAQMD CEQA Air Quality Guidelines, exposure to particulate matter emissions during such activities can be measurably reduced. Development of the project site as approved would result in air pollutant emissions that could be potentially significant without implementation of best management practices as promulgated by the BAAQMD. Thus, Mitigation Measure AQ-1, identified in the Final EIR and incorporated as a condition of approval (see pp. 4-8 to 4-9), requires the project applicant to follow BAAQMD-recommended and additional respirable particulate matter (PM_{10}) reduction practices by including them in the contractor construction documents.

A review of the differences in the cut/fill volumes included in the EIR analyses and the original construction emissions technical construction air quality modeling,[14] as summarized below, informed the approach to the assessment of the effects of the changes in the volumes of the import/export and the associated construction truck trips necessary for completion of the project:

[14] County of San Mateo, Highland Estates Recirculated Draft EIR, September 2009, pp. 3.0-23, 3.0-29, and 4.4-31; Appendix 4.4 of the September 2009 Recirculated Draft EIR; and Board Staff Report, April 12, 2010, Table 8-Changes to Proposed Earthwork, pp. 28–29.

- The December 2008 Draft EIR analysis estimated the cut/fill volumes for Lots 1 through 4 (500 cy/200 cy), Lots 5 through 8 (1,000 cy/800 cy), and Lots 9 through 11 (2,200 cy/4,200 cy) with import of 2,000 cy (167 construction truck trips [334 one-way trips]), assuming a 12-cy load for each haul truck).
- The September 2009 Recirculated Draft EIR documented changes to proposed earthwork for Lots 5 through 8 (1,000 cy/1,000 cy), increasing the fill volume by 200 cy. The estimates for Lots 1 through 4 and Lots 9 through 11 remained the same. The addition of 200 cy of drain rock import for Lots 5 through 8 resulted in a construction truck trip increase from 167 (334 one-way) trips to 183 (366 one-way) trips (based on a 12-cy load).
- The December 2009 Final EIR included final changes certified by the Board in April 2010. Changes to proposed earthwork included revised cut/fill estimates for Lots 1 through 4 (500 cy/2,300cy), Lots 5 through 8 (4,700 cy/700 cy), and Lots 9 through 11 (1,500 cy/3,900 cy) and continued to assume concurrent construction. The volume of total imported fill materials was reduced from 2,200 cy to 900 cy, including the 200 cy of drain rock for Lots 5 through 8. The reduction to 900 cy of imported fill resulted in a construction truck trip decrease from 183 (366 one-way) trips to 75 (150 one-way) trips (based on a 12-cy load).
- URBEMIS2007,[15] used to calculate air quality emissions for the 2008 December Draft EIR, included construction-related emissions; however, the 167 construction truck trips (334 one-way trips) for import of 2,000 cy of fill were not included. URBEMIS2007 was not updated with the September 2009 Recirculated Draft EIR or the Final EIR.

Furthermore, the tools and methodologies for estimating air pollutant emissions have been updated since the certification of the Final EIR. California Emissions Estimator Model (CalEEMod) Version 2016.3.2 is now the air quality modeling software recommended for quantification of construction and operational emissions by the California Air Pollution Control Officers Association.[16] It replaced the software in use at the time of the original air quality modeling (URBEMIS2007 Version 9.2.4). Additionally, thresholds of significance have been updated and/or established by the BAAQMD as part of the 2010 and 2017 revisions to the BAAQMD CEQA Air Quality Guidelines. Notably, thresholds of significance have been established based on average pounds per day limitations. The original analysis did not disclose the anticipated pound-per-day emission rate. CalEEMod is used for the updated impact analysis of the project, as modified, and the results are compared with the updated BAAQMD significance thresholds.

[15] The December 2008 Draft EIR GHG emissions and air quality analyses were completed using URBEMIS2007 Version 9.2.4. The air quality modeling results are included in Appendix 4.4 of the September 2009 Recirculated Draft EIR and were not updated to address revisions to the originally proposed project that was the subject of the technical analysis in the December 2008 Draft EIR.

[16] CalEEMod Version 2016.3.2 is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professional to quantify potential criteria pollutant and GHG emissions associated with land use projects. Because CalEEMod is the standard model used to estimate emissions from land use projects, the revised analysis for Lots 5 through 8 was run using CalEEMod. Additionally, since the original 2008 December Draft EIR used URBEMIS for the analysis, the original project emissions were reevaluated using CalEEMod to better understand originally proposed project impacts based on the more refined methodologies and emission factors available in CalEEMod.

As part of the updated construction air quality analysis for the approved project and project as modified, the assumptions for the construction analysis year(s) and the statewide fleet mix from the CARB inventory for off-road construction equipment have been updated to reflect current information related to EPA certification. And finally, since certification of the Final EIR, the regional clean air plan (2017 Bay Area Clean Air Plan) has been updated.

The proposed changes in site preparation, excavation depths, and grading activities and the associated increase in the duration of the construction schedule, number of construction truck trips, and construction site activity would result in construction-related criteria air pollutant emissions above those estimated in the construction air quality analysis in the EIR. Following completion of grading, truck movement would be involved with the delivery of construction materials to the project site. However, none of the proposed changes to earthwork for Lots 5 through 8 would alter the home construction phase; thus, the number of daily vendor truck trips to the site during construction and the construction site activities would be expected to remain the same. The differences between the project as originally proposed and the revised project are listed below:

- An increase in the grading phase duration (from roughly 3 to 5 weeks to roughly 10 weeks);
- A 7,790 cy increase in export volumes; and
- An increase in export trips from the 167 construction truck trips (334 one-way trips) originally analyzed to 649.2 export round trips (rounded up to 650 for conservatism [1,300 one-way trips]).

The project modifications analyzed herein center on Lots 5 through 8 due to proposed changes from the conditions previously analyzed for these lots. In order to make a direct comparison between the originally analyzed conditions and the project modifications, the original analysis was re-run using CalEEMod. Therefore, to complete this analysis, the original project assumptions (originally analyzed for the entirety of Lots 1 through 11) were updated to address the change in platform—from URBEMIS to CalEEMod—and scaled to derive assumptions for a CalEEMod analysis of Lots 5 through 8 as originally proposed. Additionally, as noted above, the assumption for the construction year analysis has changed from 2009/2010 to 2021/2022, and the CalEEMod default assumptions, as provided by CARB, for off-road construction equipment emissions factors by model year and horsepower, have changed to incorporate technological improvements for vehicle diesel emissions reduction. A separate CalEEMod analysis was then completed to determine impacts from Lots 5 through 8 as revised (see Appendix D to this addendum).

Construction on Lots 5 through 8: Original and Current Proposal for Project Implementation

Table 3: Comparison of Lots 5–8 Average Daily Construction-Related Criteria Air Pollutant Emission Levels in Pounds per Day provides a comparison of unmitigated and mitigated construction-related criteria air pollutant emissions specific to Lots 5 through 8 of the project site, as originally and as currently proposed. The BAAQMD has established thresholds of significance for construction emissions since the certification of the EIR (see **Table 3**). Projects that would result in criteria air pollutant

emission levels below these average daily pound-per-day thresholds (i.e., 54 pounds per day for reactive organic gases [ROG], nitrogen oxides [NOx], and fine particulate matter [$PM_{2.5}$] and 82 pounds per day for respirable particulate matter [PM_{10}]) would not violate an air quality standard, contribute substantially to an air quality violation, or result in a cumulatively considerable net increase in criteria air pollutants within the air basin.[17] Construction emission levels for completion of the project as originally proposed and as revised are presented in **Table 3** to determine if the new thresholds of significance would be exceeded and/or if the changes to the project would result in a substantial increase in the severity of Impact AQ-1.

As shown in **Table 3**, construction-related criteria air pollutant emission levels for Lots 5 through 8 would be well below BAAQMD construction thresholds both as originally proposed and as revised. Additionally, the results presented in **Table 3** show that construction-related criteria air pollutant emission levels for the project as now proposed would not result in a substantial increase in the severity of Impact AQ-1. The CalEEMod runs (unmitigated and with implementation of Mitigation Measure AQ-1) indicate that increases in construction emissions to complete the project as currently proposed (i.e., the 650 construction truck trips [1,300 one-way trips] necessary to address changes in cut and fill volumes on Lots 5 through 8) would not be substantial such that new significant environmental effects or a substantial increase in the severity of the previously identified significant effects would occur because the emission levels would be below the CEQA thresholds for average daily construction emissions. Thus, the measures identified under Mitigation Measure AQ-1 for the project and adopted as a condition of approval (presented below) would continue to apply to the completion of the project as presently proposed and would continue to minimize less-than-significant construction-related emission levels.

Table 3: Comparison of Lots 5–8 Average Daily Construction-Related Criteria Air Pollutant Emission Levels in Pounds per Day

A.	**CALEEMOD Original Unmitigated Construction Emission Levels for Lots 5–8**	**ROG**	**NOx**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
	2021 Average Daily [A]	1.12	10.07	9.51	0.02	1.28	0.79
	2022 Average Daily	13.90	0.99	1.32	0.00	0.08	0.06
	Construction Phase Maximum	**13.90**	**10.07**	**9.51**	**0.02**	**1.28**	**0.79**
	2017 BAAQMD Construction Threshold	***54***	***54***	***N/A***	***N/A***	***82***	***54***
B.	**CALEEMOD Original Mitigated Construction Emission Levels for Lots 5–8**	**ROG**	**NOx**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
	2021 Average Daily	1.12	10.07	9.51	0.02	0.94	0.63
	2022 Average Daily	13.90	0.99	1.32	0.00	0.08	0.06
	Construction Phase Maximum	**13.90**	**10.07**	**9.51**	**0.02**	**0.94**	**0.63**
	2017 BAAQMD Construction Threshold)	***54***	***54***	***N/A***	***N/A***	***82***	***54***

[17] BAAQMD, CEQA Air Quality Guidelines, May 2017, p. 8-2, http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, accessed March 1, 2021.

C.	**CALEEMOD Proposed Unmitigated Construction Emission Levels for Lots 5–8**	**ROG**	**NOx**	**CO**	**SO2**	**PM_{10}**	**$PM_{2.5}$**
	2021 Average Daily	1.28	12.67	11.22	0.02	2.06	1.20
	2022 Average Daily	3.68	5.96	6.45	0.01	0.39	0.29
	Construction Phase Maximum	3.68	12.67	11.22	0.02	2.06	1.20
	2017 BAAQMD Construction Threshold	*54*	*54*	*N/A*	*N/A*	*82*	*54*
D.	**CALEEMOD Proposed Mitigated Construction Emission Levels for Lots 5–8**	**ROG**	**NOx**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
	2021 Average Daily	1.28	12.67	11.22	0.02	1.37	0.87
	2022 Average Daily	3.68	5.96	6.45	0.01	0.36	0.28
	Construction Phase Maximum	**3.68**	**12.67**	**11.22**	**0.02**	**1.37**	**0.87**
	2017 BAAQMD Construction Threshold	***54***	***54***	***N/A***	***N/A***	***82***	***54***

Notes: N/A = not applicable

[A] Average daily emissions in pounds per day are derived based on the length of the construction period working days during each calendar year. The worst-case average daily emission rates for 2021 or 2022 are included in the table. The higher ROG emission rates during the original project scenario are a result of the short-averaging time (only 10 days in the calendar year), which is made up mostly of the architectural coatings phase. The site preparation phase, paving phase, building construction phase, and architectural coating phase are the same length in both the analyses (original and proposed). The only phase where the length of phase differs is the grading phase (25 working days proposed in the original project versus 54 days under the project as revised).

It is important to note that CalEEMod emission factor rates for the off-road equipment used during construction are based on the statewide fleet mix from CARB's off-road inventory model per year and horsepower. Because the construction years proposed for the project, as modified for completion, have been updated to 2021 and 2022 when most equipment expected to be available would meet EPA's Tier 3 and Tier 4 standards, implementing Tier 1 and Tier 2 mitigation for off-road equipment, as specified in the mitigation measure, results in higher mitigated emissions than unmitigated emissions. This is due to the statewide fleet mix being composed of engines of a higher Tier rating on average than the proportions of Tier 1 and 2 equipment originally proposed as mitigation for the project by phase. Thus, Mitigation Measure AQ-1, as detailed below, should be revised as follows, with outdated information shown in ~~strikethrough~~. See the MMRP, included as Appendix A, for the same update to Mitigation Measure AQ-1. The removal of outdated mitigation measures is necessary since the use of Tier 1 and Tier 2 technology would be likely to increase emission levels from the project. Additionally, new mitigation measures for off-road equipment are not needed to keep the project below thresholds of significance and therefore having a less-than-significant impact.

Revised Mitigation Measure AQ-1: The Project Applicant shall require that the following BAAQMD-recommended and additional PM_{10} reduction practices be implemented by including them in the contractor construction documents:

- ~~The first phase of construction shall require 30 percent of construction equipment to meet Tier 1 EPA certification standards for clean technology. The remainder of construction equipment (70 percent), which would consist of older technologies, shall be required to use emulsified fuels.~~
- ~~The second phase of construction shall require 30 percent of construction equipment to meet Tier 2 EPA certification standards for clean technology and 50 percent to meet Tier 1 EPA~~

~~certification standards. The remaining 20 percent of construction equipment, which would consist of older technologies, shall use emulsified fuels.~~

- For all larger vehicles, including cement mixers or other devices that must be delivered by large trucks, vehicles shall be equipped with CARB level three verified control devices.
- Water all active construction areas at least twice daily.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.
- Pave, apply water three times daily, or apply non-toxic soil stabilizers on all unpaved access roads, parking areas, and staging areas at the construction sites.
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at the construction sites.
- Sweep public streets adjacent to construction sites daily (with water sweepers) if visible soil material is carried onto the streets.
- Hydroseed or apply non-toxic soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).
- Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speeds on unpaved roads to 15 miles per hour.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as soon as possible.
- Install wheel washers for all exiting trucks or wash off the tires or tracks of all trucks and equipment leaving the construction site.
- Install wind breaks at the windward sides of the construction areas.
- Suspend excavation and grading activities when wind (as instantaneous gusts) exceeds 25 miles per hour.

Because there is no change to the proposed land uses or total amount of development analyzed in the EIR, the project is expected to remain consistent with the applicable air quality plan, i.e., the 2017 Bay Area Clean Air Plan, and operations-related criteria air pollutant emission increases are not expected to change.[18] Thus, the project would not contribute to a cumulatively considerable net increase of any criteria pollutant for which the region is classified as non-attainment under an applicable federal or state ambient air quality standard.

[18] September 2009 Recirculated Draft EIR, Appendix 4.4, and Appendix 1.0, Initial Study, pp. 36–38.

4.4.3 Construction-Related Noise

Potential impacts related to construction noise are discussed in subsection 4.4.2.3 of the September 2009 Recirculated Draft EIR and Section 2.0 of the Final EIR. The construction noise analysis in the EIR was qualitative and did not quantify the noise or vibration levels associated with construction activities. As discussed, construction noise is exempt from the County of San Mateo Noise Ordinance if the activities take place between 7:00 a.m. and 6:00 p.m. weekdays and 9:00 a.m. to 5:00 p.m. on Saturdays. Mitigation Measure NOI-1, identified in the Final EIR and incorporated as a condition of approval, would reduce the potential for construction-related noise impacts to a less-than-significant level. This mitigation measure includes construction equipment noise reduction measures and places further limits on the allowable construction hours identified in the County of San Mateo Noise Ordinance, i.e., construction activity for the approved project would be limited to the hours of 7:00 a.m. and 7:00 p.m. on weekdays and 8:00 a.m. to 5:00 p.m. on Saturdays (inside work only).

The change in cut and fill volumes for Lots 5 through 8 and the associated increase in the duration of the construction schedule, number of construction truck trips, and construction site activity would increase project construction-related noise impacts, as more construction truck trips would be required than previously analyzed. The type of construction equipment (tractors, backhoes, dozers, dump trucks, graders, street sweepers, and construction worker vehicles) and activities associated with the proposed earthwork for Lots 5 through 8 would not be different than those necessary for the approved project. Although on-site construction activities related to grading would last longer, there are no changes to the proposed home construction methods (e.g., drilled piers); thus, construction site activities would not introduce new impacts or increase the severity of the disclosed impacts related to off-road construction noise, assuming implementation of construction equipment noise reduction measures identified in Mitigation Measure NOI-1.

The proposed earthwork for Lots 5 through 8 would result in more construction truck traffic than previously analyzed due to the landslide mitigation repairs and the limited opportunities for balancing (7,790 cy). Approximately 650 construction truck trips (1,300 one-way trips) would be involved in the transport of exported material/imported fill associated with completion of the project as presently proposed, compared to 75 construction truck trips (900 cy of imported fill) assessed for the approved project (150 one-way trips).[19] These additional construction truck trips represent a three- to four-fold increase over the number of construction truck trips assumed for the air quality modeling and an eight-fold increase over the number of construction truck trips for the approved project.

The number of daily construction truck trips on a construction site typically varies and is dependent on the operations associated with off hauling and length of time of grading operations. The Final EIR assumed that five construction truck trips (10 one-way trips) to import fill could be completed daily and

[19] The air quality supporting documentation developed for the December 2008 Draft EIR estimated and analyzed 167 construction truck trips (334 one-way trips) for the transport of imported fill (2,000 cy). In the September 2009 Recirculated Draft EIR, 183 to 217 construction truck trips (366 to 434 one-way trips) for transport of 2,200 cy of imported fill and concurrent or sequential development of the lots were estimated and analyzed .

that large, heavy-duty dump trucks (each with a capacity of 12 cy) would travel past residential uses, which are considered sensitive receptors, on route to the Ticonderoga Drive sites (via Polhemus Road and Highway 92) and to the Bunker Hill sites (via Skyline Boulevard and Highway 92). Trucks associated with grading activities along Ticonderoga Drive for Lots 5 through 8 would travel to and from Ticonderoga Drive via Polhemus Road and Highway 92 and then travel either west or east on Highway 92, depending on the disposal site, and would not pass residential uses on Ticonderoga Drive. The construction management plan measures identified in the Final EIR and incorporated as conditions of approval (i.e., Improvement Measure TRANS-1) would remain applicable and limit construction truck trips to the hours between 9:00 a.m. and 4:00 p.m. daily during non-commute hours. The construction management plan requirements identified in the construction and grading requirements for development of Lots 9 through 11 (dated July 13, 2020) would also be applicable to development of Lots 5 through 8, which would limit construction truck trips on Ticonderoga Drive to the hours between 9:00 a.m. and 2:00 p.m. daily during school days (excluding non-school, summer months).

Based on the timeframes for construction traffic described above, the project applicant has determined that an average of 13 construction truck trips per day (26 one-way trips) is achievable. Therefore, for completion of the project as presently proposed, the total site export/import process would be completed in approximately 10 weeks rather than between 3 to 5 weeks as previously analyzed in the EIR. This would be slightly more than twice as long depending on the construction schedule, weather, and equipment availability. Thus, the additional construction truck trips necessary to haul cut soils would increase the duration of exposure to construction-related truck noise by up to 7 weeks.

As discussed in the Final EIR, the approved project's estimated contribution to traffic growth from construction of 11 single-family residential homes in a suburban location would be very low, representing an average contribution of 108 daily trips including 13 a.m. and 15 p.m. peak hour vehicle trips, or less than 1 percent of overall traffic. Although noticeable, the increased construction truck traffic related to the off haul of cut soils from Lots 5 through 8 (approximately 26 one-way trips per day on average) would not constitute a doubling of average daily traffic volumes along any of the subject roadways, which is typically considered a threshold to determine if noise increases are perceptible to humans. Thus, the increased duration for off hauling and the resultant noise would not constitute a substantial increase in the severity of Impact NOI-1, which was considered less than significant with implementation of Mitigation Measure NOI-1, assuming implementation of the same mitigation measures, as well as the construction management plans under Improvement Measure TRANS-1 and the construction and grading requirements for Lots 9 through 11 (dated July 13, 2020). There are no other changes in circumstances that would affect the construction-related noise impacts of the project as modified for completion, e.g., an update to the County of San Mateo Noise Ordinance. Therefore, completion of the project as presently proposed would not result in additional significant environmental impacts not addressed in the Final EIR or increase the severity of previously identified environmental impacts.

4.4.4 Hazards and Hazardous Materials

Potential impacts related to hazards and hazardous materials are discussed in subsection 4.4.2.4 of the September 2009 Recirculated Draft EIR and Section 2.0 of Final EIR. The change to cut and fill volumes and the associated increase in the duration of the construction schedule, number of construction truck trips, and construction site activity would not alter the project footprint as presented in the EIR. The design-level geotechnical investigation prepared for Lots 5 through 11 indicated low potential for the presence of naturally occurring asbestos (NOA) in the sheared rock underlying the site. Although a new boring on Lot 11 did not reveal the presence of NOA, based on three previous exploratory borings that encountered serpentinite, the potential to encounter NOA could not be ruled out. As with the approved project, the project as modified for completion of Lots 5 through 8 would continue to present the same risk. Thus, there are no other changes in circumstances that would affect the impacts of the proposed development on hazards and hazardous materials. Therefore, Impact HAZMAT-2 remains unchanged and Mitigation Measure HAZMAT-3 (as incorporated as a condition of approval) would continue to apply to the completion of the project, as presently proposed, requiring soil sampling during grading operations and, if NOA is identified at the site, the preparation of a Site Health and Safety Plan and Soil Management Plan with methods for control of airborne dust and disposition of soils.

The topic of wildland fire is discussed below under Section 4.6 because of changes to Appendix G of the State CEQA Guidelines that shifted this issue from "Hazards and Hazardous Materials" and updated the questions.

4.4.5 Transportation

Potential impacts related to transportation are discussed in subsection 4.4.2.5 of the September 2009 Recirculated Draft EIR and Section 2.0 of the Final EIR. The change to cut and fill volumes and the associated increase in the duration of the construction schedule, number of construction truck trips, and construction site activity would increase the project's construction-related traffic impacts as more off-haul truck trips would be required than previously analyzed. Approximately 650 construction truck trips (1,300 one-way trips) would be involved in the transport of exported material/imported fill associated with completion of the project as presently proposed, compared to the 75 construction truck trips (900 cy of imported fill) assessed for the approved project (150 one-way trips).[20]

Based on the timeframes for construction traffic in relevant adopted mitigation and improvement measures, the applicant could achieve an average of up to 13 construction truck trips (26 one-way trips) per day for disposal of cut soils at Ox Mountain Landfill, such that the total site export/import process would be completed in 10 weeks rather than 3 to 5 weeks as previously analyzed. Thus, the number of daily truck trips associated with the export/import process would increase from approximately 10 daily

[20] The air quality supporting documentation developed for the December 2008 Draft EIR estimated and analyzed 167 construction trucks trips (334 one-way trips) for the transport of imported fill (2,000 cy). In the September 2009 Recirculated Draft EIR, 183 to 217 construction truck trips (366 to 434 one-way trips) for transport of 2,200 cy of imported fill and concurrent or sequential development of the lots were estimated and analyzed.

trips on average to about 26 trips, all traveling to and from the project site along Ticonderoga Drive, Polhemus Road, and Highway 92. As discussed in the Final EIR, the approved project's estimated contribution to traffic growth would represent an average contribution of 108 daily trips, or less than 1 percent of overall traffic. Although the number of daily construction truck trips traveling to and from a construction site can vary, the increase in the number of daily construction truck trips in relation to average daily traffic volumes would not be substantially greater for the project, as modified, than the previously estimated in the Final EIR for the approved project and, similarly, would not adversely affect the operation of intersections between the worksites and the nearest freeways. In addition to a daily increase in construction truck trips, the timeframe in which these trips would be conducted would increase from that previously analyzed (from 3 to 5 weeks to 10 weeks). Thus, the duration of construction truck activity would be greater (but not substantially greater), and the less-than-significant traffic impacts associated with construction truck traffic would be experienced for up to an additional 7 weeks.

Although the increase in the number of daily construction truck trips and the extended duration of construction truck trip activity would be greater than that analyzed in the EIR, these changes would not constitute a substantial increase in the severity of Impact TRANS-1, which was considered less than significant. As with the approved project, the less-than-significant construction-related traffic impacts associated with development of Lots 5 through 8 would be further reduced with implementation of the construction management plan measures identified in the Final EIR and incorporated as conditions of approval (i.e., Improvement Measure TRANS-1 and the construction and grading requirements for development of Lots 9 through 11). These measures would remain applicable to the modified project and would limit construction truck trips on Ticonderoga Drive to the hours between 9:00 a.m. and 4:00 p.m. daily during non-commute hours and 9:00 a.m. and 2:00 p.m. daily during school days (excluding non-school, summer months). Therefore, completion of the project as presently proposed would not result in additional significant environmental impacts not addressed in the Final EIR or increase the severity of previously identified environmental impacts.

Since certification of the Final EIR, the County of San Mateo adopted Traffic Impact Study Requirements (September 1, 2013). The development of these requirements is not a changed circumstance that would result in additional significant environmental impacts not addressed in the Final EIR or increase the severity of previously identified environmental impacts. For a discussion of state-mandated changes to the methods used to determine the effects of transportation-related environmental impacts pursuant to Senate Bill (SB) 743, see Section 4.6.2, below. There are no other changes in circumstances that would affect the transportation-related impacts of the proposed development as modified for completion.

4.4.6 Wastewater

Potential impacts related to wastewater are discussed in subsection 4.4.2.6 of the September 2009 Recirculated Draft EIR and Section 2.0 of the Final EIR. The change to cut and fill volumes and the associated increase in the construction schedule, number of construction truck trips, and construction site activity would not change the project's demand for utilities and service systems. Since there are no changes to the land use program or changes to the construction of utility lines and on-site stormwater

drainage facilities, Impacts UTIL-1 through UTIL-3 remain unchanged and the same mitigation measure (as incorporated as a conditions of approval) would still apply to the completion of the project as presently proposed (i.e., Mitigation Measure UTIL-1, payment of impact fees for inflow and infiltration improvements to impact areas of the existing sewer system to ensure a net-zero increase during wet weather events). There are no other changes in circumstances that would affect the wastewater collection system impacts of the proposed development as modified for completion.

4.5 ENVIRONMENTAL RESOURCE TOPICS DETERMINED TO BE LESS THAN SIGNIFICANT IN THE EIR

Based on the conclusions of the Final EIR, which evaluated the effects of the development of 11 single-family home on Lots 1 through 11, this section of the addendum is focused on environmental resource topics that were determined to be less than significant with mitigation or clearly less than significant.[21] These environmental resource topics are evaluated below in adequate detail with respect to the project modifications and, where applicable, other changed circumstances.

4.5.1 Land Suitability and Geology

Completion of the project as presently proposed would not alter the project's physical environmental changes such that environmental issues associated with land suitability and geology would require further evaluation. The potential for agricultural production on the project site, the site's classification under the Farmland Mapping and Monitoring Program, its location in relation to mapped flood hazards zones and highwater tables, and the presence of expansive soils would not be affected by the proposed changes to the earthwork necessary for safe development on Lots 5 through 8. Therefore, land suitability and geology impacts related to completion of the project as presently proposed would remain unchanged from those identified in the Initial Study, i.e., less than significant or no impact.

Other land suitability and geology issues were identified in the Initial Study as significant unless mitigated. These related to effects on water quality because of project construction and operations, i.e., excavation, stockpiling and grading of soils and accidental upset of common household hazards, such as cleaning products, pesticides, herbicides, gasoline, and paint. As a result, Mitigation Measures HYDRO-1 and HYDRO-2 were identified to reduce construction- and operation-related water quality impacts.[22] Construction-related impacts would be reduced to less-than-significant levels through implementation of an erosion control plan for approval by the County of San Mateo and the installation of bioretention planters to filter stormwater runoff.

Although the additional excavation may be needed within the limits of grading, requiring additional water for dust control and modified best management practices to prevent soil erosion from storm events, the amount of future impervious surfaces would not be affected. Grading activities would still be required to

[21] September 2009 Recirculated Draft EIR Chapter 4, Section 4.4.3, pp. 4.4-41 to 4.4-61, and Appendix 1.0, Initial Study, pp. 14–97.
[22] County of San Mateo, Highland Estates Recirculated Draft EIR, September 2009, Appendix 1.0 (Initial Study), pp. 31–33.

comply with National Pollutant Discharge Elimination System permit requirements and the County of San Mateo Municipal Code requirements that regulate water quality during construction of the project. The changes would not create new significant impacts or substantially more severe water quality effects because the California Department of Water Resources water use efficiency standards were identified as project features, and Mitigation Measures HYDRO-1 and HYDRO-2,[23] Mitigation Measures GEO-1 and GEO-2b,[24] Improvement Measure GEO-3 (relating to project surface and subsurface drainage), and Mitigation Measure HAZMAT-3[25] (relating to the characterization of on-site soils, use of fill materials that could include serpentinite, and surface water run-off) would apply to the project as changed. Therefore, water quality impacts related to completion of the project as presently proposed would remain unchanged from those identified in the Initial Study and EIR.

Overall, land suitability and geology impacts related to completion of the project as presently proposed would remain unchanged from those identified in the Initial Study and the same mitigation and improvement measures (as incorporated as conditions of approval) would be applicable to development of Lots 5 through 8.

See Sections 4.2 and 4.3 of this addendum, respectively, for a discussion of the biological resource and geologic and geotechnical issues identified as potentially significant in the Initial Study and the effects of development of Lots 5 through 8, as modified.

4.5.2 Vegetation and Wildlife

Completion of the project as presently proposed would not alter the project's physical environmental changes such that environmental issues associated with vegetation and wildlife would require further evaluation. The proposed changes to the earthwork necessary for safe development on Lots 5 through 8 would not alter the location of the project site in relation to marine or wildlife reserves and adopted or approved state, regional or local habitat conservation plans. There are no other changes in circumstances that would affect the vegetation and wildlife impacts of the proposed development as modified for completion. Therefore, vegetation and wildlife impacts related to completion of the project as presently proposed would remain unchanged from those identified in the Initial Study, i.e., no impact.

See Section 4.2 of this addendum for a discussion of the biological resources identified as potentially significant in the Initial Study and the effects of development on Lots 5 through 8, as modified.

4.5.3 Physical Resources

The change to cut and fill volumes on Lots 5 through 8 and the associated increase in the duration of the construction schedule, number of construction truck trips, and construction site activity would not affect site development beyond the duration of grading activities. Completion of the project as presently proposed would not alter the project's physical environmental changes such that environmental issues

[23] County of San Mateo, Highland Estates Recirculated Draft EIR, September 2009, Appendix 1.0 (Initial Study), pp. 32–33.
[24] County of San Mateo, Highland Estates Recirculated Draft EIR, September 2009, Section 4.4.2.4, pp. 4.4-34 to 4.4-35.
[25] County of San Mateo, Highland Estates Recirculated Draft EIR, September 2009, Section 4.4.2.4, pp. 4.4-34 to 4.4-35.

associated with physical resources would require further evaluation. The proposed changes to the earthwork necessary for safe development on Lots 5 through 8 would not alter the building footprints or limits of grading; thus, there would be no changes to the removal of vegetation, trees, soils, rock, sand, or gravel or the fact that those physical resources were not proposed to be removed for commercial gain. The proposed changes would not affect the determination that the site is not a locally important mineral resource recovery site, that it is not zoned for agricultural use, that is does not contain soils suitable for agriculture, or that is not protected under the Williamson Act. There are no other changes in circumstances that would affect the physical resources impacts of the proposed development as modified for completion. Therefore, impacts on physical resources related to completion of the project as presently proposed would remain unchanged from those identified in the Initial Study, i.e., no impact.

See Section 4.3 of this addendum for a discussion of the geologic and geotechnical issues identified as potentially significant in the Initial Study and the effects of development on Lots 5 through 8, as modified.

4.5.4 Air Quality, Water Quality, and Sonic

The change to cut and fill volumes on Lots 5 through 8 and the associated increase in the construction schedule, number of construction truck trips, and construction site activity would not affect site development upon completion of grading activities. Completion of the project as presently proposed would not alter the project's physical environmental changes such that environmental effects associated with air quality, water quality, and sonic issues would require further evaluation. The Initial Study conclusions related to the emissions of operation-related criteria air pollutants; the burning of brush, trees, and construction materials; compliance with regional air quality plans; cumulatively considerable contributions to federal and state standards for zone and PM_{10}; the generation of objectionable odors; the effects on groundwater resources, water quality standards, and waste discharge requirements; the demand on the existing sewer system; the use of hazardous materials during construction and operation including near a school; the transport and handling of hazardous materials; groundborne noise and vibration related to construction; the site's location in relation to hazardous materials sites, flood hazard zones, airports, and private airstrips; and the site's susceptibility to seiches, tsunamis, or mudflows would not be affected by the proposed changes to the earthwork necessary for safe development on Lots 5 through 8. Construction-related water quality issues related to surface drainage are discussed above under Section 4.5.1.

Overall, project-related changes for development of Lots 5 through 8 are not expected to result in new significant effects or a substantial increase in the severity of previously identified environmental effects related to air quality, water quality, or sonic issues, which were determined to have no impacts, less-than-significant impacts, or less-than-significant impacts with mitigation. There are no other changes in circumstances that would affect the air quality-, water quality-, or sonic-related impacts of the proposed development as modified for completion. Therefore, impacts related to completion of the project as presently proposed would remain unchanged from those identified in the Initial Study. The mitigation measure identified in the Initial Study as applicable to the approved project (Mitigation Measure

HAZMAT-1 [development of a safety plan]) would continue to apply to the project, as modified for development on Lots 5 through 8, to reduce the hazards and hazardous materials impacts to a less-than-significant level.

See Sections 4.4.2 and 4.4.3 of this addendum, respectively, for a discussion of the construction-related air pollutant emissions and construction-related noise identified as potentially significant in the Initial Study and the development of Lots 5 through 8, as modified.

4.5.5 Transportation

Potential impacts related to transportation are discussed in the Initial Study (Appendix 1.0 to the September 2009 Recirculated Draft EIR), subsection 4.4.3.5 of the September 2009 Recirculated Draft EIR, and Section 2.0 of the Final EIR. The change to cut and fill volumes on Lots 5 through 8 and the associated increase in the duration of the construction schedule, number of construction truck trips, and construction site activity would not affect site development upon completion of grading activities. Completion of the project as presently proposed would not alter the project's physical environmental changes such that environmental effects associated with transportation would require further evaluation. The conclusions related to limitations on access to commercial establishments, schools, or parks; effects on pedestrian patterns; the use of off-road vehicles; effects on air traffic patterns and emergency access; effects on parking capacity; and compliance with local plans, policies, and ordinances supporting alternative transportation (including effects on public transit) would not be affected by the proposed changes to the earthwork necessary for safe development on Lots 5 through 8. There are no other changes in circumstances that would affect the transportation-related impacts of the proposed development as modified for completion. Therefore, these transportation-related impacts related to completion of the project as presently proposed would remain unchanged from those identified in the Initial Study.

Additionally, the proposed changes to earthwork needed to prepare Lots 5 through 8 for home construction would not alter the alignment of Ticonderoga Drive or introduce new driveway locations for access to the lots. As with the approved project, the traffic hazard impacts associated with the curved sections and steep grades of Ticonderoga Drive and development of Lots 5 through 8 would remain for the project, as modified. There are no other changes in circumstances that would affect the traffic hazards-related impacts of the proposed development as modified for completion. Therefore, the conclusion for traffic hazard impacts remains unchanged and Mitigation Measure TRANS-2 (installation of traffic signs) applies to the completion of the project as presently proposed.

See Section 4.4.5 of this addendum for a discussion of the operational-related effects on project-level and cumulative vehicle levels of service on the local roadway system and construction-related transportation impacts identified as potentially significant in the Initial Study and the effects of development on Lots 5 through 8, as modified.

4.5.6 Land Use and General Plans

The change to cut and fill volumes on Lots 5 through 8 and the associated increase in the duration of the construction schedule, number of construction truck trips, and construction site activity would not affect site development upon completion of grading activities. Completion of the project as presently proposed would not alter the project's physical environmental changes such that environmental effects associated with issues of land use, compliance with general plans, and capacity of public utilities and services would require further evaluation. The Initial Study conclusions related to the potential for congregation of more than 50 persons on a regular basis; the introduction of a new type of activity; the use of equipment that interferes with communications and defense systems; the proposed land use change; growth inducement, either directly or indirectly; the demand on public facilities, such as transportation infrastructure, transit, schools, parks, police, fire, hospitals, and public utilities (including landfills); the site's location in relation to existing and planned public facilities; increases in fossil fuel consumption; the required permits and rezoning actions; displacement of existing homes, including low-income housing, or commercial establishments; interference with emergency response plans; the introduction of health hazards; the division of an established community; and the exceedance of applicable wastewater treatment requirements would not be substantially affected by the proposed changes to the earthwork necessary for safe development on Lots 5 through 8.

Although policies of the County of San Mateo General Plan (January 2013) have been updated since certification of the Final EIR, including the Energy and Climate Change Element and the Housing Element, the project changes, which are limited to earthwork and associated construction truck trips, would not change the determination of the project's consistency with local land use plans, policies, or regulations from what was previously analyzed. Indirect and direct construction- and operational-related GHG emissions were determined to be less than significant for the approved project. Thus, with limited change to the magnitude and duration of construction activities related to development of Lots 5 through 8, which are temporary and short-term in nature, and no changes to occupancy characteristics, the project, as modified, would continue to have less-than-significant impacts related to consistency with local land use plans, policies, or regulations, as updated.

Additionally, the project, as modified, would include a larger volume of soil removal due to landslide repairs requiring off-site disposal. As with the approved project, development of Lots 5 through 8 would be required to divert the maximum amount of site materials from landfills per the County of San Mateo Construction and Demolition Ordinance No. 04099, which, at the time of Final EIR certification, required that 100 percent of inert solids (e.g., asphalt, brick, concrete, dirt, etc.) and 50 percent of all other construction and demolition debris be salvaged, reused, or recycled. Since certification of the Final EIR, the County of San Mateo adopted the 2016 California Green Building Standards Code, incorporating and updating Construction and Demolition Ordinance No. 04099 in the process. Thus, development of the project, as modified, would require a minimum of 65 percent of construction and demolition debris be salvaged, reused, or recycled. The Ox Mountain landfill has a total permitted capacity of

60,500,000 cy. As of December 2015, the remaining capacity at the landfill was 22,180,000 cy.[26] The volume of soils (7,790 cy) requiring disposal generated by the project, as modified, would represent substantially less than 1 percent of the total amount of solid waste the landfill is permitted to accept. This volume would not be substantial in relation to existing landfill capacity, and as with the approved project, would continue to be a one-time disposal and would not significantly affect landfill capacity. Therefore, the project, as modified for construction of Lots 5 through 8, is not expected to generate significant amounts of solid waste and any associated waste would be sufficiently accommodated by the Ox Mountain landfill. Given this, solid waste impacts, as well as those related to compliance with solid waste–related plans, policies, and regulations, would remain less than significant.

Overall, impacts related to completion of the project as presently proposed would remain unchanged from those identified in the Initial Study and Section 4.4.3.6 of the Final EIR. There are no other changes in circumstances related to land use and general plans, and no new development has occurred in the vicinity of the project site different from that anticipated in the cumulative land use analysis.

4.5.7 Aesthetic, Cultural, and Historic

The proposed project is not adjacent to a scenic highway, nor would it affect trees, rock outcroppings, and historic buildings within a scenic corridor or a State scenic highway. Potentially significant impacts associated with scenic views from off-site locations, including designated scenic routes, and the existing visual character were analyzed in the EIR (see Section 4.1 of this addendum). The Initial Study determined that the project would not involve the construction of structures more than three stories or 36 feet in height and would not result in a significant increase in light or glare.[27] Although completion of the project as presently proposed would require more site grading activity, it would not affect the footprints, design, or elevations of the homes. Therefore, aesthetics impacts related to completion of the project as presently proposed would remain unchanged from those identified in the Initial Study (i.e., no impact or less than significant).

The cultural and paleontological resources analysis conducted for the Initial Study (see Appendix 1.0 to the September 2009 Recirculated Draft EIR, pp. 51–54) was based on the literature review and site reconnaissance of the portion of the 97-acre project site proposed for development at the time, which included Lots 5 through 8, as well as the previously prepared geologic/geotechnical reports. Although the literature review and site reconnaissance did not identify any architectural or other historic period resources, it was determined, given the undeveloped nature of the site, that construction could result in accidental discovery of buried pre-historic archaeological resources and/or human remains. Therefore, mitigation was identified to reduce the potentially significant impact on cultural resources to a less-than-significant level (see Mitigation Measures CULT-1, CULT-2, CULT-3, CULT-4, CULT-5, and CULT-11 on pp. 52 and 54 of the Initial Study). Although there are no known unique paleontological resources on

[26] CalRecycle, SWIS Facility/Site Activity Details, Corinda Los Trancos Landfill (Ox Mountain) (41-AA-0002), https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/1561?siteID=3223, accessed March 1, 2021.

[27] County of San Mateo, Highland Estates Recirculated Draft EIR, September 2009, Section 4.4.3.7, pp. 4.4-61 and Appendix 1.0 (Initial Study), pp. 50–51.

the site, based on presence of the Franciscan Formation that may contain marine and continental rocks, site grading could result in the potential discovery of paleontological resources. Therefore, mitigation was identified to reduce the potentially significant paleontological resources impact to a less-than-significant level (see Mitigation Measures CULT-6, CULT-7, CULT-8, CULT-9, and CULT-10 on p. 53 of the Initial Study).

Overall, the project changes related to the proposed earthwork on Lots 5 through 8 would not change the determination of the project's impacts on cultural or paleontological resources from what was previously analyzed in the Final EIR. Although completion of the project as presently proposed would require more site grading activity, project changes would not result in new or substantially more severe impacts. There are no other changes in circumstances related to aesthetics, cultural, or historic impacts that would affect the impacts of the proposed development as modified for completion. Therefore, cultural and paleontological resources impacts related to completion of the project as presently proposed would remain unchanged from those identified in the Initial Study and the same set of mitigation measures would remain applicable.

4.6 UPDATES TO STATE CEQA GUIDELINES APPENDIX G: ENVIRONMENTAL CHECKLIST FORM

4.6.1 Tribal Cultural Resources

Since certification of the Final EIR in April 2010, legislative changes at the state level have altered the steps for evaluating tribal cultural resources. In 2014, AB 52 was passed, which requires more robust notification outreach at the onset of a project. This change resulted in an update to the State CEQA Guidelines Initial Study Checklist to include questions related to tribal cultural resources. Changes to the State CEQA Guidelines were approved as part of the 2018 CEQA Update and separated the topic of "Tribal Cultural Resources" from "Cultural Resources."

Cultural resources including those associated with Native American tribes were discussed in the Initial Study, included as an appendix to the Final EIR (see Appendix 1.0 to the September 2009 Recirculated Draft EIR). Based on the literature review and site reconnaissance of the portion of the 97-acre project site proposed for development at the time, which included Lots 5 through 8, one documented Native American resource was identified. However, this resource was determined to not be in an area of the project site that would be developed. Although the literature review and site reconnaissance did not identify any architectural or other historic period resources, it was determined, given the undeveloped nature of the site, that construction could result in accidental discovery of pre-historic archaeological resources and/or human remains. Therefore, mitigation was identified to reduce the potentially significant impact to a less-than-significant level (see Mitigation Measures CULT-1, CULT-2, CULT-3, CULT-4, and CULT-4).

The project changes related to the proposed earthwork on Lots 5 through 8 would not change the determination of the project's potential impacts on cultural resources, including those related to Native

American tribes, from what was previously analyzed. Outside of the procedural changes, there are no other changes in circumstances related to tribal cultural resources. Impacts related to completion of the project as presently proposed would remain unchanged from those identified in the Initial Study.

4.6.2 Transportation

The change in the State CEQA Guidelines resulting from implementation of SB 743, adding Section 15064.3, became effective in 2019. It requires the analysis of vehicle miles traveled (VMT) instead of a vehicle level of service (LOS) analysis, which measures vehicular delay, or the additional driving time encountered by drivers during the most congested times of travel (the a.m. and p.m. peak periods). SB 743 prohibits the use of LOS to measure impacts under CEQA and requires agencies to adopt alternative measures of such impacts. Prior to implementation of SB 743, the County of San Mateo used LOS analysis to determine transportation-related environmental impacts under CEQA. The method now being used by the County of San Mateo to measure development-related environmental impacts under CEQA is to assess VMT, using modified State Office of Planning and Research (OPR) recommendations.[28]

VMT as a metric to determine the significance of operational transportation impacts of a project were not discussed in the Final EIR as part of the transportation impact assessment; however, VMT were calculated as part of the assessment of project-related impacts under Global Climate Change (Final EIR Section 4.4.2.1). As described there, the project was evaluated based on its ability to meet the emissions reduction targets and strategies prescribed in AB 32, as well as the extent to which the project would offset associated VMT and GHG emissions. As concluded, the project features and site characteristics, including a modest increase in VMT due to the suburban location and its relatively small size, were determined to be consistent with implementing programs, policies, and regulations to achieve the statewide GHG emission reduction goals established under AB 32 and to follow the County of San Mateo Green Building Ordinance and other residential energy efficiency measures. Thus, the approved project would result in negligible direct and indirect contributions to cumulative GHG emissions and global climate change.

Based on the method now being used by the County of San Mateo to measure transportation-related environmental impacts under CEQA, the project, as modified, would meet the screening criteria for development of small projects in urban/suburban areas of unincorporated portions of the County of San Mateo, i.e., it would generate fewer than 110 average daily trips (approximately 40),[29] would be consistent with the General Plan, and no substantial evidence exists that the project would have a potentially significant VMT impact. As a result, it would be exempt from further CEQA transportation impact analysis. Thus, the project, as modified, would not affect the features of the approved project that

[28] County of San Mateo, Inter-Departmental Correspondence, Department of Public Works to Board, Change to Vehicle Miles Traveled as Metric to Determine Transportation Impacts under CEQA Analysis, September 23, 2020, Attachment A.

[29] County of San Mateo, Highland Estates Recirculated Draft EIR, September 2009, Section 4.4.2.5, pp. 4.4-36 to 4.4-37, and Appendix 4.4 (Fehr & Peers, Traffic Report for Highland Estates, September 2008). As described, the approved project (all 11 lots) would generate 108 daily vehicle trips on average.

were used in the Final EIR analysis to determine GHG emissions impacts. The proposed changes would affect the timing of construction on Lots 5 through 8 and the nature or magnitude of construction activities (a temporary set of activities that would have a one-time increase in VMT due to on-road construction equipment and construction worker trips), but with no change to long-term operations, would generate substantially the same number of VMT as what was expected to occur under the approved project. There are no other changes in circumstances that would affect the transportation-related impacts of the proposed development as modified for completion. Therefore, the project, as modified, would have a less-than-significant impact on VMT.

4.6.3 Wildfire

Since certification of the Final EIR in April 2010, legislative changes at the state level have altered the steps for evaluating wildfire. Changes to the State CEQA Guidelines approved as part of the 2018 State CEQA Guidelines update identifies wildfire as a separate environmental resource area, breaking it out as a subset of hazards and hazardous materials. Wildland fire hazards are covered in the September 2009 Recirculated Draft EIR (see Section 4.4.2.4, Hazards and Hazardous Materials, pp. 4.4-32 to 4.4-33). As discussed there, Lots 1 through 4 and Lots 9 through 11 are located near the portions of the open space parcel with densely vegetated trees and foliage, i.e., intermixed with wildlands. Because the building footprints of homes on Lots 1 through 4 and Lots 9 through 11 would be located only approximately 30 feet from the open space parcel, the project would expose residents to wildland fire risk hazards. Mitigation Measure HAZMAT-2 requires the maintenance of fuel breaks up to 100 feet from the building footprint and access to the open space parcel for vegetation clearance. As noted, the mitigation only applies to Lots 1 through 4 and Lots 9 through 11.

The change to cut and fill volumes and the associated increase in the construction schedule, number of construction truck trips, and construction site activity would not alter the project footprint of homes on Lots 5 through 8 as presented in the EIR. The project changes related to the proposed earthwork on Lots 5 through 8 would not change the determination of the project's potential impacts on wildfire from what was previously analyzed, i.e., less-than-significant impact for Lots 5 through 8. Additionally, the areas designated by the state as very high fire hazard severity zones, as well as the County of San Mateo designations of high fire hazards areas, in the EIR have not changed.[30] Therefore, there are no changes in circumstances related to wildfire, and impacts related to completion of the project as presently proposed would remain unchanged from those identified in the EIR.

[30] County of San Mateo, Fire Wildland Urban Interface, https://planning.smcgov.org/documents/san-mateo-county-hazards-fire-wildland-urban-interface, and California State Fire Severity Zones, https://planning.smcgov.org/documents/san-mateo-county-hazards-california-state-fire-severity-zones, accessed March 1, 2021.

4.7 RESOURCE MANAGEMENT DISTRICT ZONING TEXT AMENDMENT

Completion of the project as presently proposed with modifications for Lots 5 through 8 would not affect the analysis of the Resource Management District zoning text amendment, which is now approved. The text of the amendment and the project's compliance with the amendment remain unchanged.

4.8 GROWTH INDUCEMENT

Completion of the project as presently proposed with modifications for Lots 5 through 8 would not affect the project's potential for growth inducement, as the total amount of development and population associated with the approved project remains unchanged.

4.9 ALTERNATIVES

The analysis of alternatives to the approved project focuses on avoiding or further reducing potentially significant project impacts. The proposed project changes would not result in new or substantially more severe impacts, as explained above. Therefore, the No Project (No Build), No Project (Residential Use), Alternative Project Scheme, and Reduced Density alternatives described in Chapter 6.0 of the Final EIR would not be affected by the proposed modifications needed for development of Lots 5 through 8.

4.10 OTHER CEQA CONSIDERATIONS

The project modifications do not change the approved project's irreversible commitment to resources, irreversible environmental changes, or potential environmental damage from accidents from what was previously analyzed in the EIR.

4.11 CUMULATIVE IMPACTS

The cumulative analysis in Chapter 4.0 of the EIR and the Initial Study evaluated cumulative impacts using a combined approach of a list of reasonably foreseeable projects along with the specifications of the adopted General Plan. For environmental topics such as traffic, noise, and air quality, where specific quantification of future impacts was required for analysis, a list of reasonably foreseeable projects, as shown in EIR Table 4.0-1, Reasonably Foreseeable Projects, was used (see pp. 4.0-3 to 4.0-4 of the September 2009 Recirculated Draft EIR). For other impact topics such as geology and aesthetics, where impact analysis is based on more general principles, the specifications of the County of San Mateo General Plan were used to determine cumulative impacts. A review of the list of reasonably foreseeable projects identified in the EIR for the cumulative analysis indicates that the list, including the Ascension Heights Subdivision Project, has not changed, although certain projects have already been implemented since certification of the Final EIR for the Highland Estates Subdivision Project. The proposed modifications for the earthwork on Lots 5 through 8 needed to complete the Highlands Estates project are

not expected to increase the severity of previously analyzed cumulative impacts. This is due in part to the fact that the proposed size and amount of development on the project site would remain the same as originally analyzed, and because geologic impacts of the project are site-specific and would not combine with any resulting from other nearby development projects to result in any cumulative impacts.

By definition, regional air pollution is largely a cumulative impact in that no single project is sufficient in size to, by itself, result in non-attainment of air quality standards. Instead, a project's individual emissions are considered to contribute to the existing, cumulative air quality conditions. If a project's contribution to cumulative air quality conditions is considerable, then the project's impact on air quality would be considered significant.[31] Given this, the updated impact analysis confirms that the project, as modified, would result in criteria air pollutant emission levels below these thresholds and would not result in a cumulatively considerable net increase in the level of nonattainment criteria air pollutants (ozone precursors or PM). While temporary construction traffic would increase both in number of truck trips and in duration, the increases would not result in long-term traffic noise, traffic effects, or permanent increases in VMT that could combine with other development in the vicinity to cause new significant noise or transportation impacts. Thus, cumulative impacts under each environmental resource identified above would not be affected as a result of the project modifications necessary to safely develop homes on Lots 5 through 8.

[31] BAAQMD, CEQA Air Quality Guidelines, May 2017, http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, accessed March 1, 2021.

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CHAPTER 5. CONCLUSION

On the basis of the discussion and analysis presented above, the County of San Mateo Planning and Building Department has determined that the information presented in the Highland Estates Final EIR, certified by the Board on April 27, 2010, remains valid, and all conclusions in the Final EIR are applicable to the approved project with the modifications necessary for development of Lots 5 through 8. Specifically, with the implementation of approved mitigation measures, the development of Lots 5 through 8 would not result in new significant impacts not identified in the Final EIR, nor would it result in substantially more severe impacts than what was identified in the Final EIR.

As described above on pp. 4-9 to 4-10 of this addendum, minor changes to Mitigation Measure AQ-1 are recommended to maintain the original intent and effect of the mitigation measure. Since certification of the Final EIR and approval of the project, and due to the timing of project implementation (over 10 years), diesel emission control technologies for off-road construction equipment fleets have improved and thus warrant modifications to the approved construction air quality mitigation measure (Revised Mitigation Measure AQ-1). The proposed changes are not related to the proposed modifications to the implementation of the approved project or the adequacy of the previous EIR analysis because the findings of the updated analysis show that the original project and the project as modified would not exceed the construction-related significance thresholds established by the BAAQMD after EIR certification and project approval. No other changes to project mitigation measures or improvement measures are necessary or recommended.

Therefore, none of the changes that have occurred with respect to circumstances relevant to the undertaking of the project, as modified for completion, would cause new significant environmental impacts or would cause a substantial increase in the severity of previously identified significant effects. No new information has become available that would affect the analysis or conclusions in the Final EIR. Therefore, no major revision of the EIR is required and no additional environmental review is required beyond this EIR addendum.

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APPENDIX A

Revised Mitigation Monitoring and Reporting Program

4.0 MITIGATION MONITORING AND REPORTING PROGRAM

The California Environmental Quality Act (CEQA) requires that a Lead Agency establish a program to monitor and report on mitigation measures adopted as part of the environmental review process to avoid or reduce the severity and magnitude of potentially significant environmental impacts associated with project implementation. CEQA (Public Resources Code Section 21081.6 (a) (1)) requires that a Mitigation Monitoring and Reporting Program (MMRP) be adopted at the time that the public agency determines to approve a project for which an EIR has been prepared, to ensure that mitigation measures identified in the EIR are fully implemented.

The MMRP for the Highland Estates project is presented in **Table 4.0-1, Mitigation and Monitoring Reporting Program**. **Table 4.0-1** includes the full text of project-specific mitigation measures identified in the final EIR. The MMRP describes implementation and monitoring procedures, responsibilities, and timing for each mitigation measure identified in the EIR, including:

Significant Impact: Identifies the Impact Number and statement from the final EIR.

Mitigation Measure: Provides full text of the mitigation measure as provided in the final EIR.

Monitoring/Reporting Action(s): Designates responsibility for implementation of the mitigation measure and when appropriate, summarizes the steps to be taken to implement the measure.

Mitigation Timing: Identifies the stage of the project during which the mitigation action will be taken.

Monitoring Schedule: Specifies procedures for documenting and reporting mitigation implementation.

The County of San Mateo may modify the means by which a mitigation measure will be implemented, as long as the alternative means ensure compliance during project implementation. The responsibilities of mitigation implementation, monitoring, and reporting extend to several County departments and offices. The manager or department lead of the identified unit or department will be directly responsible for ensuring the responsible party complies with the mitigation. The Planning and Building Department is responsible for the overall administration of the program and for assisting relevant departments and project managers in their oversight and reporting responsibilities. The Planning and Building Department is also responsible for ensuring the relevant parties understand their charge and complete the required procedures accurately and on schedule.

Table 4.0-1
Mitigation Monitoring and Reporting Program
(REVISED APRIL 2021)

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
AESTHETICS				
Impact AES-1: The proposed project would alter project views but would not obstruct scenic views from existing off-site and residential areas or adversely affect scenic views from a designated scenic route.	**Improvement Measure AES-1a:** The Project Applicant shall provide "finished floor verification" to certify that the structures are actually constructed at the height shown on the approved plans. The Project Applicant shall have a licensed land surveyor or engineer establish a baseline elevation datum point in the vicinity of the construction site. Prior to the below floor framing inspection or the pouring of concrete slab for the lowest floors, the land surveyor shall certify that the lowest floor height as constructed is equal to the elevation of that floor specified by the approved plans. Similarly, certifications of the garage slab and the topmost elevation of the roof are required. The application shall provide the certification letter from the licensed land surveyor to the Building Inspection Section.	County of San Mateo Planning and Building Department Shall oversee compliance with approved height of construction	Project design and review process	Confirm and document during building permit review and project construction
	Improvement Measure AES-1b: The Project Applicant shall plant a total of four (4) trees (minimum 24-gallon each), one directly in front of each home on lots 5 through 8 to soften and screen views of the new homes from off-site locations. These trees will be in addition to the seven (7) 15-gallon replacement trees included in the proposed project.	County of San Mateo Planning and Building Department Shall oversee tree placement	Project design and review process and during construction	Confirm and document prior to completion of construction
Impact AES-2: The proposed project would construct single-family residences on an undeveloped site in a residential neighborhood but would not degrade the existing visual character of the site.	**Improvement Measure AES-2:** Construction contractors shall minimize the use of on-site storage and when necessary store building materials and equipment away from public view and shall keep activity within the project site and construction equipment laydown areas.	County of San Mateo Planning and Building Department Shall oversee monitoring of construction activities	During construction	Confirm and document during construction

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
BIOLOGICAL RESOURCES				
Impact BIO-2: The proposed project would result in a substantial adverse effect on special-status wildlife species.	**Mitigation Measure BIO-2a:** No earlier than 30 days prior to the commencement of construction activities, a survey shall be conducted to determine if active woodrat nests (stickhouses) with young are present within the disturbance zone or within 100 feet of the disturbance zone. If active woodrat nests (stickhouses) with young are identified, a fence shall be erected around the nest site adequate to provide the woodrat sufficient foraging habitat at the discretion of a qualified biologist and based on consultation with the CDFG. At the discretion of the monitoring biologist, clearing and construction within the fenced area would be postponed or halted until young have left the nest. The biologist shall serve as a construction monitor during those periods when disturbance activities will occur near active nest areas to ensure that no inadvertent impacts on these nests will occur. If woodrats are observed within the disturbance footprint outside of the breeding period, individuals shall be relocated to a suitable location within the open space by a qualified biologist in possession of a scientific collecting permit. This will be accomplished by dismantling woodrat nests (outside of the breeding period), to allow individuals to relocate to suitable habitat within the adjacent open space.	County of San Mateo Planning and Building Department Shall oversee implementation of pre-construction survey recommendations	No earlier than 30 days prior to commencement of construction activities	Confirm completion of survey prior to grading and construction and monitor for compliance with construction limits during construction

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
BIOLOGICAL RESOURCES (continued)				
Impact BIO-2 (continued)	**Mitigation Measure BIO-2b:** No earlier than two weeks prior to commencement of construction activities that would occur during the nesting/breeding season of native bird species potentially nesting/roosting on the site (typically February through August in the project region), a survey for nesting birds shall be conducted by a qualified biologist experienced with the nesting behavior of bird species of the region. The intent of the survey would be to determine if active nests of special-status bird species or other species protected by the Migratory Bird Treaty Act and/or the California Fish and Game Code are present in the construction zone or within 500 feet of the construction zone. The surveys shall be timed such that the last survey is concluded no more than two weeks prior to initiation of construction or tree removal work. If ground disturbance activities are delayed, then an additional pre-construction survey shall be conducted such that no more than two weeks will have elapsed between the last survey and the commencement of ground disturbance activities. If active nests are found in areas that could be directly affected or subject to prolonged construction-related noise, a no-disturbance buffer zone shall be created around active nests during the breeding season or until a qualified biologist determines that all young have fledged. The size of the buffer zones and types of construction activities restricted within them will be determined through consultation with the CDFG, taking into account factors such as the following: • Noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity; • Distance and amount of vegetation or other screening between the construction site and the nest; and • Sensitivity of individual nesting species and behaviors of the nesting birds.	County of San Mateo Planning and Building Department Shall oversee implementation of pre-construction survey recommendations	No earlier than two weeks prior to commencement of grading	Confirm and document prior to grading

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
BIOLOGICAL RESOURCES (continued)				
Impact BIO-2 (continued)	Limits of construction to avoid an active nest shall be established in the field with flagging, fencing, or other appropriate barriers and construction personnel shall be instructed on the sensitivity of nest areas. A qualified biologist shall serve as a construction monitor during those periods when construction activities would occur near active nest areas of special-status bird species and all birds covered by the Migratory Bird Act to ensure that no impacts on these nests occur.			
	Mitigation Measure BIO-2c: Prior to the commencement of construction activities during the breeding season of native bat species in California (generally occurs from April 1 through August 31), a focused survey shall be conducted by a qualified bat biologist to determine if active maternity roosts of special-status bats are present within any of the trees proposed for removal. Should an active maternity roost of a special- status bat species be identified, the roost shall not be disturbed until the roost is vacated and juveniles have fledged, as determined by the biologist. Once all young have fledged, then the tree may be removed. Species-appropriate replacement roosting habitat (e.g., bat boxes) shall be provided should the project require the removal of a tree actively used as a maternity roost. The replacement roosting habitat shall be subject to the approval of the CDFG.	County of San Mateo Planning and Building Department Shall oversee implementation of pre-construction survey recommendations	Prior to commencement of construction activities during the breeding season (April 1 through August 31)	Confirm and document prior to grading and construction
	Mitigation Measure BIO-2d: Immediately preceding initial ground disturbance activities on lot 11, a preconstruction clearance survey shall be conducted by a qualified biologist for California red-legged frogs. The survey shall be conducted to determine whether individual California red-legged frogs are present within the disturbance boundary. Should a California red-legged frog be observed during the clearance survey, all construction activities on lot 11 shall be immediately halted and the USFWS shall be immediately contacted. Under no circumstances shall a California red-legged frog be collected or relocated, unless USFWS personnel or their agents implement the measure. Construction-related activities may resume once the frog has naturally left the lot or has been relocated by a permitted biologist (authorized by the USFWS).	County of San Mateo Planning and Building Department Shall oversee implementation of pre-grading survey recommendations	Prior to commencement of grading on lot 11	Confirm and document prior to grading

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
BIOLOGICAL RESOURCES (continued)				
Impact BIO-3: The implementation of the proposed project would result in the loss of protected trees.	**Mitigation Measure BIO-3:** As required by the County for the removal of trees within the RM District, tree replacement shall occur at a minimum 1:1 ratio for all protected trees removed with a circumference of or exceeding 55 inches (17.5 inches diameter at breast height). The replacement of indigenous trees shall be in kind (i.e., live oaks removed shall be replaced by live oaks) and exotic trees to be removed shall be replaced with an appropriate species on the tree list maintained by the County of San Mateo Planning Department. Replacement trees shall also be maintained for a minimum of 2 years, but up to 5 years (as determined by the County of San Mateo Planning Department). To facilitate the successful replacement of trees, a tree replacement plan shall be prepared and shall meet the following standards: • Where possible, the plan shall identify suitable areas for tree replacement to occur such that the existing native woodlands in the open space are enhanced and/or expanded. • The plan shall specify, at a minimum, the following: – The location of planting sites; – Site preparation and planting procedures; – A schedule and action plan to maintain and monitor the tree replacement sites; – A list of criteria and performance standards by which to measure success of the tree replacement; and – Contingency measures in the event that tree replacement efforts are not successful.	County of San Mateo Planning and Building Department Shall oversee tree replacement	Project design and review process and during construction	Confirm and document during building permit review and prior to completion of construction
Impact BIO-5: The proposed project could have a substantial adverse effect on willow scrub habitat (a riparian and sensitive plant community) bordering lot 11.	**Mitigation Measure BIO-5a:** Prior to the commencement of construction activities on lot 11, the outer edge of the willow scrub habitat (facing lot 11) shall be delineated by a qualified biologist. Temporary fencing shall be installed that clearly identifies the outer edge of the willow habitat and that identifies the willow scrub as an "Environmentally Sensitive Area." Signs shall be installed indicating that the fenced area is "restricted" and that all construction activities, personnel, and operational disturbances are prohibited.	County of San Mateo Planning and Building Department Shall oversee installation of temporary fencing	Prior to commencement of grading on lot 11	Confirm and document prior to grading

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
BIOLOGICAL RESOURCES (continued)				
Impact BIO-5 (continued)	**Mitigation Measure BIO-5b:** Prior to the issuance of a grading permit, the Project Applicant shall develop an erosion control plan. The plan shall include measures such as silt fencing to prevent project-related erosion and sedimentation from adversely affecting the creek zone and other habitats on and near lots 1–11. The erosion control plan shall be subject to approval by the County of San Mateo Planning Department.	County of San Mateo Planning and Building Department Shall review erosion control plan	Prior to issuance of grading permit	Document during grading and construction
	Mitigation Measure BIO-5c: Prior to the issuance of a grading permit, the Project Applicant shall develop a lighting plan. The lighting plan shall require that all lighting be directed and shielded as to minimize light spillage into nearby willow scrub habitat, as well as adjacent oak woodland habitats. The lighting plan shall be subject to approval by the County of San Mateo Planning Department.	County of San Mateo Planning and Building Department Shall review lighting plan	Prior to issuance of grading permit	Document prior to completion of construction
Impact BIO-6: The implementation of the proposed project would result in the loss of stands of purple needlegrass, which is a sensitive plant community.	**Mitigation Measure BIO-6:** Prior to the commencement of construction on lot 8, the occurrence of purple needlegrass shall be mapped, including all stands on the lot with 20 percent or greater cover of native grasses and having a diameter greater than 10 feet. The area of purple needlegrass to be lost due to development of the lot shall then be calculated. As part of the proposed project, approximately 92 acres of open space would be maintained as open space under a conservation easement. This open space contains a serpentine grassland (on the slope west of the water tanks) that is dominated by native grasses (including purple needlegrass) and other native plant species. These native grasses, including purple needlegrass, would be permanently protected by the conservation easement. In addition, non-native plant areas adjacent to the serpentine grassland shall be restored to support native grasses over an area twice the acreage (2:1) of the stands of purple needlegrass to be lost on lot 8.	County of San Mateo Planning and Building Department Shall oversee mapping of purple needlegrass and dedication of open space	Mapping: Prior to commencement of grading on lot 8; Granting of conservation easement: Prior to recordation of final subdivision map; Native grass planting: Prior to completion of construction	Mapping: Prior to commencement of grading on lot 8; Granting of conservation easement: Prior to recordation of final subdivision map; Native grass planting: Prior to completion of construction

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
GEOLOGY AND SOILS				
Impact GEO-1: The proposed project would involve development on slopes steeper than 15 percent and could expose people and structures to landslide hazards.	**Mitigation Measure GEO-1:** A design-level geotechnical investigation of the site shall be performed prior to any project grading including static and seismic slope stability analysis of the areas of the project site to be graded and developed. The specific mitigation measures to be utilized in order to stabilize existing landslides and areas of potential seismically induced landslides shall be presented in the report. The specific mitigation measures shall include some of the following measures or measures comparable to these: • Landslide debris on lots 7 and 8 shall be excavated and replaced with a fully drained conventional buttress fill that is founded in the underlying Franciscan mélange, as recommended by the project geotechnical engineer. (Lots 7-8) • Retaining walls shall be designed to withstand high lateral earth pressure from adjoining natural materials and/or backfill shall be installed at the rear of lots 5 through 8. In addition, retaining walls shall be built in the front of lots 5 and 6 to aid in maintaining the slopes behind the lots and the more extensive cut required for lots 5 and 6. (Lots 5-8) • A surface drainage system shall be installed for each lot to mitigate new landslides developing within the thin veneer of soil mantling the bedrock on the slope below lots 1 through 4. (Lots 1-4) • Subsurface drainage galleries may be installed to control the flow of groundwater and reduce the potential for slope instabilities from occurring in the future. (All lots) • Over-steepening of slopes shall be avoided. Horizontal benches shall be constructed on all reconstructed slopes at an interval of 25 to 30 feet. New fill shall be compacted to at least 90 percent relative compaction (as determined by ASTM test method D1557). (All lots) • Drilled piers and grade-beam foundations shall be used to support foundations in accordance with recommendations of the project geotechnical engineer. (All lots)	County of San Mateo Planning and Building Department Shall oversee implementation of design-level geotechnical investigation recommendations	Prior to issuance of grading permit	Confirm and document during grading and building permit review

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
GEOLOGY AND SOILS (continued)				
Impact GEO-2: The proposed project is located on a geologic unit that may be unstable or could become unstable as a result of the project.	**Mitigation Measure GEO-2a:** Materials used to construct the buttress fill should have effective strength parameters equal to or better than the parameters used in the Treadwell & Rollo 2009 study. (Lots 7 and 8)	County of San Mateo Planning and Building Department Shall oversee implementation of geotechnical investigation recommendations	Prior to issuance of grading permit	Document and confirm during building permit review
	Mitigation Measure GEO-2b: The following mitigation measures shall be implemented to ensure the stability of proposed structures that are located on deep fill soils: • A site-specific, design-level geotechnical investigation shall be completed during the design phase of the proposed project, and prior to approval of new building construction within the site for specific foundation design, slope configuration, and drainage design. (All lots) • The geotechnical investigation shall provide recommendations to prevent water from ponding in pavement areas and adjacent to the foundation of the proposed residences, and to prevent collected water from being discharged freely onto the ground surface adjacent to the residences, site retaining walls, or artificial slopes. The project geotechnical engineer shall identify on site areas downslope of the homes where the collected water may be discharged utilizing properly designed energy dissipaters. (All lots) • Fills used at the project site shall be properly placed with keyways and subsurface drainage, and adequately compacted following the recommendations of the final geotechnical report and Geotechnical Engineer, in order to significantly reduce fill settlement. (All lots) • Underground utilities shall be designed and constructed using flexible connection points to allow for differential settlement. (All lots)	County of San Mateo Planning and Building Department Shall oversee implementation of design-level geotechnical investigation recommendations	Prior to issuance of grading permit	Confirm and document during grading and building permit review

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
GEOLOGY AND SOILS (continued)				
Impact GEO-2 (continued)	Foundation plans shall be submitted to the County for review prior to issuance of a building permit. All foundation excavations shall be observed during construction by the project Geotechnical Engineer to insure that subsurface conditions encountered are as anticipated. As- built documentation shall be submitted to the County. (All lots) • Drilled pier and grade-beam foundations or other appropriate foundations per the recommendations of the design-level geotechnical investigation shall be developed for lots that are determined to likely experience soil creep. (All lots) All work shall be completed in accordance with requirements of the 2007 California Building Code and the San Mateo County Building Code. (All lots)			
Impact GEO-3: The proposed project would not result in substantial soil erosion or the loss of topsoil from grading activities.	**Improvement Measure GEO-3:** In compliance with the NPDES regulations, the Project Applicant shall file a Notice of Intent with the State Water Resources Control Board (SWRCB) prior to the start of grading and prepare a SWPPP. The SWPPP shall include specific best management practices to reduce soil erosion. The SWPPP shall include locations and specifications of recommended soil stabilization techniques, such as placement of straw wattles, silt fence, berms, and storm drain inlet protection. The SWPPP shall also depict staging and mobilization areas with access routes to and from the site for heavy equipment. The SWPPP shall include temporary measures to reduce erosion to be implemented during construction, as well as permanent measures. County staff and/or representatives shall review the SWPPP to ensure adequate compliance with State and County standards. County staff and/or representatives shall visit the site during grading and construction to ensure compliance with the SWPPP, as well as note any violations, which shall be corrected immediately. A final inspection shall be completed prior to occupancy.	County of San Mateo Planning and Building Department Shall review and oversee compliance with the SWPPP	Prior to issuance of grading permit; During construction	Confirm and document during grading, building permit review, construction, and prior to project occupancy

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
GEOLOGY AND SOILS (continued)				
Impact GEO-4: The proposed project could expose people or structures to potential adverse effects, including the risk of loss, injury, or death involving strong seismic groundshaking.	**Mitigation Measure GEO-4:** The Project Applicant shall be required to use the seismic design criteria listed below to design structures and foundations to withstand expected seismic sources in accordance with the California Building Code (2007) as adopted by the County of San Mateo. Site Class: C Soil Profile Name: Very Dense Soil and Soft Rock Occupancy Category: II Seismic Design Category: E Mapped Spectral Response for Short Periods- 0.2 Sec (S_s): 2.226 g Mapped Spectral Response for Long Periods- 1 Sec (S1): 1.273 g Site Coefficient- Fa, based on the mapped spectral response for short periods: 1.0 Site Coefficient- Fv, based on the mapped spectral response for long periods: 1.3 Adjusted Maximum Considered EQ Spectral Response for Short Periods (SMS): 2.226 Adjusted Maximum Considered EQ Spectral Response for Long Periods (SM1): 1.655 Design (5-percent damped) Spectral Response Acceleration Parameters at short periods (SDS): 1.484 Design (5-percent damped) Spectral Response Acceleration Parameters at long periods (SD1): 1.103	County of San Mateo Planning and Building Department Shall oversee compliance with California Building Code	Project design and review process	Confirm and document during building permit review

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
GEOLOGY AND SOILS (continued)				
Impact GEO-5: The proposed project could potentially expose residents to substantial risks to life or property from development on expansive soils.	**Mitigation Measure GEO-5:** During site grading, soils in each lot shall be observed and tested by the project Geotechnical Engineer to determine if expansive soils are exposed. Should expansive soils be encountered in planned building or pavement locations, the following measures shall be implemented under the direction of the Geotechnical Engineer in order to mitigate the impact of expansive soils: • Expansive soils in foundation areas shall be excavated and replaced with non-expansive fill to the specifications of the geotechnical engineer. • A layer of non-expansive fill soils 12 to 24 inches in thickness shall be placed over the expansive materials and prior to the placement of pavements or foundations. • Moisture conditioning of expansive soil shall be applied to a degree that is several percent above the optimum moisture content or lime treating of the expansive soil. • Foundations shall be constructed to be below the zone of seasonal moisture fluctuation or to be capable of withstanding the effects of seasonal moisture fluctuations. • Specific control of surface drainage and subsurface drainage measures shall be provided. • Low water demand landscaping shall be used.	County of San Mateo Planning and Building Department Shall oversee implementation of geotechnical investigation recommendations	During grading activities	Confirm and document prior to issuance of building permit

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
OTHER RESOURCE TOPICS				
Impact AQ-1: The proposed project would generate pollutants that would violate existing standards of air quality on site or in the surrounding area or violate an air quality standard or contribute substantially to an existing or project air quality violation.	**Mitigation Measure AQ-1:** The Project Applicant shall require that the following BAAQMD recommended and additional PM_{10} reduction practices be implemented by including them in the contractor construction documents: ~~The first phase of construction shall require 30 percent of construction equipment to meet Tier 1 EPA certification standards for clean technology. The remainder of construction equipment (70 percent), which would consist of older technologies, shall be required to use emulsified fuels.~~ • ~~The second phase of construction shall require 30 percent of construction equipment to meet Tier 2 EPA certification standards for clean technology and 50 percent to meet Tier 1 EPA certification standards. The remaining 20 percent of construction equipment, which would consist of older technologies, shall use emulsified fuels.~~ • For all larger vehicles, including cement mixers or other devices that must be delivered by large trucks, vehicles shall be equipped with CARB level three verified control devices. • Water all active construction areas at least twice daily. • Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard. • Pave, apply water three times daily, or apply non-toxic soil stabilizers on all unpaved access roads, parking areas, and staging areas at the construction sites. • Sweep daily (with water sweepers) all paved access roads, parking eas, and staging areas at the construction sites. • Sweep public streets adjacent to construction sites daily (with water sweepers) if visible soil material is carried onto the streets. • Hydroseed or apply non-toxic soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).	County of San Mateo Planning and Building Department Shall oversee implementation of recommendations	During grading and construction	Confirm and document during grading and building permit review

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
OTHER RESOURCE TOPICS (continued)				
Impact AQ-1 (continued)	• Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.). Limit traffic speeds on unpaved roads to 15 miles per hour. • Limit traffic speeds on unpaved roads to 15 miles per hour. • Install sandbags or other erosion control measures to prevent silt runoff to public roadways. • Replant vegetation in disturbed areas as soon as possible. • Install wheel washers for all exiting trucks or wash off the tires or tracks of all trucks and equipment leaving the construction site. • Install wind breaks at the windward sides of the construction areas • Suspend excavation and grading activities when wind (as instantaneous gusts) exceeds 25 miles per hour.			

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
OTHER RESOURCE TOPICS (continued)				
Impact NOI-1: The proposed project would generate noise levels in excess of levels determined appropriate according to the County Noise Ordinance standard.	**Mitigation Measure NOI-1:** The Project Applicant shall require that the following noise reduction practices be implemented by including them in the contractor construction documents: • Equipment and trucks used for project construction would utilize the best available noise control techniques (e.g., improved exhaust mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically-attenuating shields or shrouds) in order to minimize construction noise impacts. • Equipment used for project construction would be hydraulically or electrically powered impact tools (e.g., jack hammers and pavement breakers) wherever possible to avoid noise associated with compressed air exhaust from pneumatically-powered tools. Compressed air exhaust silencers would be used on other equipment. Other quieter procedures would be used such as drilling rather than impact equipment whenever feasible. • The construction activity would be kept to the hours of 7:00 AM to 7:00 PM, Monday through Friday. Saturday hours (8:00 AM to 5:00 PM) are permitted upon the discretion of County approval based on input from nearby residents and businesses. Saturday construction (8:00 AM to 5:00 PM) would be allowed once the buildings are fully enclosed. • Residential property owners within 200 feet of planned construction areas shall be notified of the construction schedule in writing, prior to construction; the project sponsor shall designate a "disturbance coordinator" who shall be responsible for responding to any local complaints regarding construction noise; the coordinator (who may be an employee of the developer or general contractor) shall determine the cause of the complaint and shall require that reasonable measures warranted to correct the problem be implemented; a telephone number of the noise disturbance coordinator shall be conspicuously posted at the construction site fence and on the notification sent to neighbors adjacent to the site.	County of San Mateo Planning and Building Department Shall monitor compliance with construction noise reduction practices	During grading	Confirm and document during grading and building permit review

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
OTHER RESOURCE TOPICS (continued)				
Impact HAZMAT-1: The proposed project would expose people or structures to a significant risk of loss, injury or death involving wild land fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.	**Mitigation Measures HAZMAT-2:** Individual property owners for lots 1-4 and 9, 10, and 11 shall be responsible for maintaining a fuel break by removing all hazardous flammable materials or growth from the ground around each home for a distance of not less than 100 feet from its exterior circumference, for the life of the project. Property owners of lots listed above shall arrange with the property owner of the open space parcel to obtain legal access to the open space parcel for the purpose of vegetation clearance. This would not include the authorization of tree removal for trees protected by the RM zoning regulations. This requirement shall be recorded as a deed restriction on lots 1 through 4, and 9, 10, and 11 prior to the start of construction on these lots.	California Department of Forestry and Fire Protection Shall monitor maintenance of fuel breaks	During project occupancy	Confirm recordation of deed restriction prior to construction Confirm and document compliance during dry season annually

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
OTHER RESOURCE TOPICS (continued)				
Impact HAZMAT-2: The proposed project would create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	**Mitigation Measure HAZMAT-3:** During the design level geotechnical investigation, representative soil samples shall be obtained for each lot proposed on an area underlain or potentially underlain by serpentine bedrock. These samples shall be tested for the presence of naturally occurring asbestos by a state certified testing laboratory in accordance with requirements of the CARB and the BAAQMD and the results shall be provided to the County Planning Department. If naturally occurring asbestos is identified at the site, a site health and safety (H&S) plan including methods for control of airborne dust shall be prepared. This plan shall be reviewed and approved by the County of San Mateo prior to grading in areas underlain by serpentine-bearing soils or bedrock and naturally occurring asbestos. The H&S plan shall strictly control dust-generating excavation and compaction of material containing naturally occurring asbestos. The plan shall also identify site- monitoring activities deemed necessary during construction (e.g., air monitoring). Worker monitoring shall also be performed as appropriate. The plan shall define personal protection methods to be used by construction workers. All worker protection and monitoring shall comply with provisions of the Mining Safety and Health Administration (MSHA) guidelines, California Division of Occupational Safety and Health (DOSH), and the Federal Occupational Safety and Health Administration (OSHA). If naturally occurring asbestos is found at the site, a Soil Management Plan shall be developed and approved by the County Planning Department to provide detailed descriptions of the control and disposition of soils containing naturally occurring asbestos. Serpentine material placed as fill shall be sufficiently buried in order to prevent erosion by wind or surface water run-off, or exposure to future human activities, such as landscaping or shallow trenches. Additionally, the BAAQMD shall be notified prior to the start of any excavation in areas containing naturally occurring asbestos.	County of San Mateo Planning and Building Department Shall review and oversee implementation of site Health and Safety Plan and Soil Management Plan	Completion of plan prior to grading and compliance with plan during grading	Completion of plan prior to grading and compliance with plan during grading

Impact	Mitigation Measure/Improvement Measure	Monitoring/Reporting Action(s)	Mitigation Timing	Monitoring Schedule
OTHER RESOURCE TOPICS (continued)				
Impact TRANS-1: The proposed project would not result in significant transportation-related impacts.	**Improvement Measure TRANS-1:** The Project Applicant shall prepare and submit a Construction Management Plan that will, among other things, require that all truck movement associated with project construction occur outside the commute peak hours.	County of San Mateo Planning and Building Department Shall review and oversee implementation of Construction Management Plan	Project design and review process	Confirm and document prior to issuance of grading permit
Impact TRANS-2: The proposed project would not result in or increase traffic hazards due to a design feature or incompatible uses.	**Mitigation Measure TRANS-2:** The Project Applicant shall be required to pay for the installation of advisory traffic signs on Ticonderoga Drive in the vicinity of the proposed homes as determined necessary by the County of San Mateo Department of Public Works.	County of San Mateo Department of Public Works Shall collect fee from Project Applicant	Prior to Department of Public Works' final approval of building permits for lots 7 and 8	Complete upon installation of advisory traffic signs
Impact UTIL-1: The proposed project would require hookup to an existing sewage collection system which is at or over capacity, and therefore could potentially result in water quality impacts from sewage overflows.	**Mitigation Measure UTIL-1:** The Project Applicant shall mitigate the project-generated increase in sewer flow such that there is a "zero net increase" in flow during wet weather events, by reducing the amount of existing Inflow and Infiltration (INI) into the Crystal Springs County Sanitation District (District) sewer system. This shall be achieved through the construction of improvements to impacted areas of the sewer system, with construction plans subject to District approval. Construction of improvements, as approved by the District, shall be completed prior to the start of the construction of the residences. In addition, as project sewage will be treated by the City of San Mateo's Wastewater Treatment Plant, the Project Applicant shall submit payment of the City of San Mateo Wastewater Treatment Plant Expansion development impact fee to the City of San Mateo. This fee is based on the number of bedrooms in each residential unit and is calculated at the time of the final plans, using the City's fee schedule in effect at the time of the building permit application.	Crystal Springs County Sanitation District Shall review sewer system improvement plans	Project design and review process	Complete upon construction of sewer system improvements and payment of development impact fee (prior to construction of residences)

APPENDIX B

**Cornerstone Earth Group, Updated Geotechnical Investigation,
Highland Estates Lots 5 through 11,
Ticonderoga Drive/Cobblehill Place/Cowpens Way,
San Mateo California, October 30, 2015**

CORNERSTONE EARTH GROUP

Type of Services	**Updated Geotechnical Investigation**
Project Name	**Highland Estates Lots 5 through 11**
Location	**Ticonderoga Drive/Cobblehill Place/Cowpens Way San Mateo, California**
Client	**Ticonderoga Partners, LLC.**
Client Address	**655 Skyway, Suite 230 San Carlos, California**
Project Number	**230-1-5**
Date	**October 30, 2015**

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CORNERSTONE EARTH GROUP

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CORNERSTONE EARTH GROUP

Type of Services	**Updated Geotechnical Investigation**
Project Name	**Highland Estates Lots 5 through 11**
Location	**Ticonderoga Drive/Cobblehill Place/Cowpens Way San Mateo, California**

SECTION 1: INTRODUCTION

This updated geotechnical report was prepared for the sole use of Ticonderoga Partners LLC for the Highland Estates Lots 5 through 11 project in San Mateo, California. The approximate location of the project sites are shown on the Vicinity Map, Figure 1. For our use, we were provided with the following documents:

- A set of plans for Lots 1 through 11 titled "Highland Estates," prepared by BKF Engineers, Inc., dated January 20, 2010.
- A report titled "Revised Geologic Evaluation, Environmental Impact Report, Highland Estates Residential Development Project, San Mateo County, California," prepared by Treadwell & Rollo, dated August 27, 2009.
- A report titled "Geologic Evaluation, Environmental Impact Report, Highlands Estates Residential Development Project, San Mateo County, California," prepared by Treadwell & Rollo, dated September 23, 2008.
- A report titled "Geotechnical Investigation and Geologic Hazards Review, Four Single-Family Homes, Ticonderoga Drive, San Mateo, California," prepared by TRC Lowney, dated February 7, 2006.
- A report titled "Supplemental Geotechnical Report, Responding to Geotechnical Review Comments for Highland Estates, San Mateo County, California," prepared by Soil Foundation Systems, Inc., dated November 1994.
- A report titled "Geotechnical Investigation Report for Highland Estates, San Mateo, California," prepared by Soil Foundation Systems, Inc., dated July 1993.

1.1 PROJECT BACKGROUND AND PURPOSE

Lots 5 through 11 were once part of a much larger parcel of land known as the "Highland Estates Parcel" located west of Polhemus Road. The vacant, irregularly-shaped parcel consisted of approximately 99-acres of land bounded by existing residential and commercial development in San Mateo County, California. During the past two to three decades, there have been many previous land development proposals and geotechnical/geologic reports prepared for the Highland Estates project site. The current approved land development plan, which consists of 11 lots, is a scaled back version of previous land planning proposals and consists of construction of homes to "infill" undeveloped portions around the perimeter of the large parcel which will remain undeveloped.

Numerous geotechnical and geologic reports have been prepared for the Highland Estates site. The first investigations were performed by Soil Foundation Systems, Inc. (SFSI) in 1990, 1993, and 1994, then more recently by TRC/Lowney Associates in 2006. Mr. K.C. Sohn, G.E., the geotechnical engineer for SFSI is deceased. Mr. Scott Fitinghoff, G.E., principal engineer at Cornerstone Earth Group became the geotechnical engineer for the project after Mr. Sohn's death in 1999 while employed by Lowney Associates and which was acquired by TRC in 2000. In 2008 and 2009, Treadwell and Rollo, Inc. performed a geologic evaluation for the Environmental Impact Report for the project. To maintain continuity of geotechnical engineers for the Highland Estates project, Cornerstone Earth Group accepted the role of geotechnical engineer-of-record for the project. In 2011, Cornerstone Earth Group performed a design-level geotechnical investigation for Lots 1 through 4. The residences on Lots 1 through 4 have been recently constructed.

The purpose of this report is to provide a summary of the previous reports, the results of our supplemental exploration and engineering analysis, and to prepare an updated geotechnical investigation report for Lots 5 through 11 based on grading for the project shown on the plans by BKF Engineers.

1.2 PROJECT DESCRIPTION

Lots 5 through 8 will be constructed on the northern side of Ticonderoga Drive which slopes upward from Ticonderoga Drive with slopes as steep as approximately 2:1 to 2½:1 (H:V). Lots 9 and 10 will be constructed at the end of Cobblehill Place along the approximate crest of a ridge that slopes gently to steeply downward to the east, northeast away from the end of Cobblehill Place. Lot 11 will be constructed at the end of Cowpens Way and generally slopes downward away from the end of Cowpens Way.

Construction at each lot will consist of a multi-level, single-family, wood-framed house designed to step up the hill (Lots 5 through 8) or down the hill (Lots 9 through 11) and follow the natural contours. Driveways and garages are anticipated to be located adjacent to the fronting road. The structures will be supported on drilled pier and grade beam foundations with raised wood or structural concrete slab floors. Significant grading is anticipated for Lots 5 through 8 to mitigate the mapped landsliding. Grading for Lots 9 through 11 is anticipated to potentially include cuts and fills of up to 10 feet. We assume that retaining walls will be built to retain fill adjacent to

garage and lower house walls. Appurtenant utilities, landscaping, driveways, and other improvements necessary for lot development is also planned.

Structural loads are not available at this time, however loads for the structures are anticipated to be typical of these buildings with interior column loads on the order of 5 to15 kips. The proposed layout of the residences is shown on the Site Plan and Geologic Maps, Figure 2A to 2C.

1.3 SCOPE OF SERVICES

Our scope of services was presented in our proposal dated April 20, 2015 and consisted of a site reconnaissance, field and laboratory program for Lot 11 to further evaluate physical and engineering properties of the subsurface soils and bedrock, landslide mitigation plans, engineering analysis to prepare recommendations for site work and grading, building foundations, flatwork, retaining walls, and pavements, and preparation of this report. Brief descriptions of our exploration and laboratory programs for Lot 11 are presented below.

1.4 PREVIOUS INVESTIGATIONS BY OTHERS

Soil Foundation Systems (1993 and 1994), TRC Lowney (2006), and Treadwell & Rollo (2009) performed geotechnical Investigations and geologic feasibility reviews for Lots 5 through 11. This previous work was reviewed and data obtained from the previous investigations was incorporated into our investigation. Data and logs from these prior in investigations are included in Appendix C.

1.5 EXPLORATION PROGRAM

To supplement the previous investigations by others at Lots 5 through 11, our field exploration consisted of one boring drilled on July 28, 2015 with portable Minuteman solid-stem auger drilling equipment. The boring was drilled to a depth of 15 feet. The boring was backfilled with cement grout in accordance with local requirements. The approximate location of our exploratory boring is shown on the Site Plan and Geologic Map, Figure 2C. Details regarding our field program are included in Appendix A.

1.6 LABORATORY TESTING PROGRAM

In addition to visual classification of samples, the laboratory program focused on obtaining data for foundation design and seismic ground deformation estimates. Testing included moisture contents, dry densities, and a Plasticity Index test. Details regarding our laboratory program are included in Appendix B.

1.7 NATURALLY OCCURING ASBESTOS TESTING

We performed testing for naturally occurring asbestos (NOA) on one sample from our Boring EB-1 drilled at Lot 11 close to the previously identified serpentinite found in Soil Foundations Systems nearby borings. The sample from our boring was tested for naturally occurring asbestos (NOA) using Polarized Light Microscopy in accordance with the California Air Resources Board (CARB) Method 435. NOA was not detected. The analytical report is included in Appendix D.

1.8 ENVIRONMENTAL SERVICES

Environmental services were not requested for this project. If environmental concerns are determined to be present during future evaluations, the project environmental consultant should review our geotechnical recommendations for compatibility with the environmental concerns.

SECTION 2: REGIONAL SETTING

2.1 GEOLOGICAL SETTING

The San Francisco peninsula is a relatively narrow band of rock at the north end of the Santa Cruz Mountains separating the Pacific Ocean from the San Francisco Bay. It represents one mountain range in a series of northwesterly-aligned mountains forming the Coast Ranges geomorphic province of California that stretches from the Oregon border nearly to Point Conception. In the San Francisco Bay area, most of the Coast Ranges have developed on a basement of tectonically mixed Cretaceous- and Jurassic-age (70 to 200 million years old) rocks of the Franciscan Complex. Locally, these basement rocks are capped by younger sedimentary and volcanic rocks. Most of the Coast Ranges are covered by younger surficial deposits that reflect geologic conditions for approximately the last million years.

Lateral and vertical movement on the many splays of the San Andreas Fault system and other secondary faults has produced the dominant northwest-oriented structural and topographic trend seen throughout the Coast Ranges today. This trend reflects the boundary between two of the Earth's major tectonic plates: the North American plate to the east and the Pacific plate to the west.

The San Andreas Fault is the dominant structure in the system, nearly spanning the length of California, and capable of producing the highest magnitude earthquakes. Many other sub-parallel or branch faults within the San Andreas system are equally active and nearly as capable of generating large earthquakes. Right-lateral movement dominates these faults, but an increasingly large amount of thrust faulting resulting from compression across the system is now being identified as well.

The San Andreas Fault is located approximately 4,700 feet west of the lots, where it trends northwesterly through Crystal Springs Reservoir. Distances for other nearby active faults are shown in Tables 1a to 1c.

More locally, the site is in an area dominated by bedrock units of the Cretaceous and/or Jurassic Franciscan Complex. Several regional scale geologic maps covering the area have been published of the area including those by Lajole et al. (1974), Leighton (1976), Brabb and Pampeyan (1983), Wentworth et al. (1985), Pampeyan (1994), Brabb et al. (1998) and Brabb et al. (2000) depict similar geologic units underlying the site. Of these published maps Pampeyan's depiction of the bedrock units is consistent with our site observations (see below). The Pampeyan mapping depicts the area of the Highland Estates as underlain by "Sheared rock" ("Fsr") of the Franciscan Complex.

The sheared rock forms an extensive outcrop across the immediate area. No structural trends within the sheared rock are shown on the Pampeyan map. Pampeyan also shows Quaternary surficial deposits ("slope wash, ravine fill and colluvium," "Qsr") overlying the sheared rock on northeast to southeast facing hillsides located about 150 feet to the southeast of the site. Small, isolated outcrops of greenstone occur in the general area but not adjacent to the site. One area of serpentinite was encountered in some of the exploratory borings conducted on Lot 11. This unit is extensive to the south and this occurrence may represent a local interfingering of the two units in the immediate area of Lot 11 and to the south of the Lot.

The following geologic unit descriptions come from Pampeyan (1994). The Holocene deposits (Qsr) are described as "interfingering deposits of colluvium and ravine fill which is unconsolidated to moderately consolidated deposits of sand, silt, clay and rock fragments." The sheared rock is described as "small to large fragments of hard rock in a matrix of seared rock that is derived mostly from shale and sandstone of the Franciscan Complex." The sheared rock is generally "coherent and firm, but soft in places, especially where weathered." Serpentinite is described as; "soft, sheared serpentinite enclosing blocks of hard gray to greenish gray, unsheared serpentinite and ultramafic rocks."

2.2 REGIONAL SEISMICITY

The San Francisco Bay area is recognized by geologists and seismologists as one of the most seismically active regions in the United States. Significant earthquakes occurring in the Bay area are generally associated with crustal movement along well-defined, active, fault zones of the San Andreas Fault system (see Figure 3). The San Andreas Fault generated the great San Francisco earthquake of 1906 and the Loma Prieta earthquake of 1989.

The faults considered capable of generating significant earthquakes are generally associated with the well-defined areas of crustal movement, which trend northwesterly. Tables 1a to 1c below present the State-considered active faults in order of increasing distance within 25 kilometers (16.5 miles) of the lot locations.

Table 1a: Approximate Fault Distances for Lots 5 through 8

Fault Name	Distance	
	(miles)	(kilometers)
San Andreas (1906)	0.8	1.3
Monte Vista-Shannon	7.1	11.5
San Gregorio	8.3	13.4

Table 1b: Approximate Fault Distances for Lots 9 and 10

Fault Name	Distance	
	(miles)	(kilometers)
San Andreas (1906)	0.9	1.4
Monte Vista-Shannon	7.2	11.6
San Gregorio	8.4	13.5

Table 1c: Approximate Fault Distances for Lot 11

Fault Name	Distance	
	(miles)	(kilometers)
San Andreas (1906)	0.8	1.3
Monte Vista-Shannon	7.3	11.8
San Gregorio	8.3	13.3

A regional fault map is presented as Figure 3, illustrating the relative distances of the lots to significant fault zones.

2.3 FUTURE EARTHQUAKE PROBABILITIES

The San Francisco Bay area region is one of the most seismically active areas in the Country. While seismologists cannot predict earthquake events, the U.S. Geological Survey's Working Group on California Earthquake Probabilities 2015 revises earlier estimates from their 2008 (2008, UCERF2) publication. Compared to the previous assessment issued in 2008, the estimated rate of earthquakes around magnitude 6.7 (the size of the destructive 1994 Northridge earthquake) has gone down by about 30 percent. The expected frequency of such events statewide has dropped from an average of one per 4.8 years to about one per 6.3 years. However, in the new study, the estimate for the likelihood that California will experience a magnitude 8 or larger earthquake in the next 30 years has increased from about 4.7% for UCERF2 to about 7.0% for UCERF3.

UCERF3 estimates that each region of California will experience a magnitude 6.7 or larger earthquake in the next 30 years. Additionally, there is a 63 percent chance of at least one magnitude 6.7 or greater earthquake occurring in the Bay Area region between 2007 and 2036. During such an earthquake the danger of fault surface rupture at the site is slight, but very strong ground shaking would occur. A similar level of ground shaking was demonstrated when the 1989 Loma Prieta earthquake caused severe damage in Oakland and San Francisco, more than 50 miles from the fault rupture. Although earthquakes can cause damage at a considerable distance, shaking will be very intense near the fault rupture. Therefore, earthquakes located in urbanized areas of the region have the potential to cause much more damage than the 1989 Loma Prieta earthquake.

SECTION 3: SITE CONDITIONS

3.1 RECENT HISTORY

The larger Highland Estates development is located on the northwest side of Ticonderoga Drive within the western boundary of the City of San Mateo, on unincorporated land in San Mateo County, California. The 1943 and 1946 photographs reveal there was no residential development at or near the site and the eastern slope of the site was covered with shrubs and trees, similar to the present condition. The photographs reveal an apparent old landslide located southeast of the smallest water tower within the property. By the time of the 1956 photographs, the Highland Estates development area had been completely cleared and graded but no homes had been constructed yet. By the fall of 1956, roughly one-third of the homes within the Highlands Estates development had been completed and all the streets had been graded. By 1961, most of the Highland Estates development had been completed. The area proposed for Lots 5 through 11 appears as it does presently, with grasses and scattered oak trees. The 1981 photographs show the site appears as it does today. The photos taken between 1983 and 2005, revealed no changes at the site. An area of shallow groundwater seepage or springing was apparent in the area of the currently proposed Lots 5 through 8, near the mapped contact between sandstone and serpentinite.

3.2 SURFACE DESCRIPTION AND TOPOGRAPHY

The proposed 7-lot development is located on the northeast flank of Pulgas Ridge, a knob of resistant bedrock that rises a few hundred feet above the surrounding hilly terrain. The topography of the specific lots is shown on Figures 2A to 2C. The general area is characterized with rolling terrain and northwest trending ridges and drainages on the peninsula segment of the Santa Cruz Mountains. The Highland Estate area is generally bound to the northwest and northeast by Bunker Hill Drive and Polhemus Road, to the southeast by Ticonderoga Drive and a natural drainage course and undeveloped slope, and to the southwest by developed residential parcels. The lots generally slope moderately steep to very steep, with gradients between approximately 2:1 to 3:1.

The current evaluation applies specifically to Lots 5 through 11. Lots 5 through 8 are currently vacant land located along the north side of Ticonderoga Drive. The lots are bound by residential development to the west and north, undeveloped land to the east, and Ticonderoga

Drive to the south. The lots slope upward fairly steeply from Ticonderoga Drive. Lots 9 and 10 are currently vacant land as well. The lots are bounded by residential developments and Cobblehill Place on the southwest and undeveloped land on the remaining boundaries. The lots are located along the crest of a ridge and generally slope gently to steeply toward the east-northeast away from the end of Cobblehill Place. Lot 11 is also currently vacant land located at the end of Cowpens Way. This lot is bounded by residential development and Cowpens Way to the southwest and undeveloped land on the other sides. The lot generally slopes downward away from the end of Cowpens Way. Slopes on the subject lots are generally steep to very steep, with gradients of approximately 2:1 to 3:1 (horizontal to vertical). The subject residential lots have varied topography and contain a very thick growth of oak and other trees as well as a thick understory growth of shrubs. Site drainage is characterized by uncontrolled sheet-flow down to the southeast. Sheet flow coming off the ridges and hillsides have deposited slope debris and colluvium over the older Franciscan rocks.

3.3 SITE GEOLOGY AND SUBSURFACE CONDITIONS

Prior Investigations of the overall 99 acre Highland Estates development:

Several prior investigations were performed for the development of the larger Highland Estates site. A previous investigation by Soil Foundation Systems, Inc ("SFS"; 1993) and a supplemental investigation (SFS, 1994) of the overall Highland Estates were conducted. They had also included within their report previous subsurface data collected at the site (Test Pit logs) by Berlogar Long and Associates ("BLA") in 1980. The SFS studies included the logging of numerous borings and test pits, laboratory testing and slope stability analyses. Blocks of Graywacke sandstone of up to 2 acres in size were identified in their mapping, which they broke as distinct mapping units. They characterized the 99 acre larger Highland Estates parcel as consisting of Franciscan mélange which contains "isolated monument-like blocks of competent rock (mainly graywacke sandstone) projecting out of the brushy slope." They reportedly encountered serpentinite in three of their borings on Lot 11 but which apparently is mantled at the ground surface by colluvial soils and is not exposed at the ground surface. The bedrock across the development area is generally mantled by colluvium, alluvium, artificial fill and landslides. The landslides were determined to be typically shallow (less than 5 feet thick). Follow-on investigations of Highland Estates were conducted in 2005-06 by TRC Lowney ("Lowney") and in 2009 by Treadwell and Rollo ("T&R"; see below).

Subject Lots 5 through 8:

The geotechnical report of SFS (1993, 1994) included (within Lots 5 through 8) the test pit logs of 8 test pits excavated and logged in proximity of the subject lots by BLA (1980). They encountered Franscican mélange, slide debris and fill on the lots. Lowney in 2005 conducted three test borings on the subject lots. They focused their field investigation in areas underlain by Franciscan mélange. In 2009, Treadwell and Rollo ("T&R") logged three test pits on lots 5 through 8 (TP-1, 2 and 3). The test pits ranged in depth from about 12 and 30 feet beneath the existing ground surface and were excavated to characterize two mapped landslides on these lots. They also compiled all previous consultant's exploratory excavations on these lots and reviewed a series of aerial photos covering the site. They concluded the landslides could be

mitigated through conventional engineering measures and provided recommendations to achieve that end, as well as standard site development guidance.

Lots 9 through 11:

BLA in 1980 had performed 9 test pits in proximity of Lots 9, 10 and 11 (TP-1, TP-20, TP-27, TP-30, TP-31, TP-32, TP-33, TP-34, and TP-39; and included the field data reported by SFS; 1993). Additionally they presented boring logs from the earlier investigation of SFS (1993). They encountered sheared rock as well as local accumulations of artificial fill previously placed during grading of the adjacent subdivision. As previously mentioned, SFS in 1993 encountered serpentinite within three of their borings on Lot 11. In 2009 T&R compiled all previous consultant's exploratory excavations on these lots and reviewed a series of aerial photos covering the site. They encountered no evidence of landsliding on these lots.

On July 28, 2015 we conducted an exploratory boring within the upper portion of Lot 11. Our boring extended to a depth of 15 feet where it was met with practical sampling refusal. We encountered up to 6 feet of undocumented fill overlying colluvium and Franciscan sheared rock. The bedrock consisted of interbedded shale and sandstone. We did not encounter any groundwater. The fill appears to be an accumulation of surplus fill placed as part of the grading for Cowpens Way.

Current Site Reconnaissance:

A reconnaissance of the site and immediate vicinity was performed by our Certified Engineering Geologist on July 28, 2015, for the purpose of observing and recording any changes apparent across the site that might have occurred since the most recent site investigation of 2009. We noted no appreciable changes to the site conditions since the most recent investigations. We noted no evidence of severe erosion or sedimentation at the site, nor did we note any evidence of further slope movements (reference our Site Plan and Geologic Map, Figure 2A to 2C).

3.3.1 Plasticity/Expansion Potential

We performed one Plasticity Index (PI) tests on a representative sample from our boring performed at Lot 11. This test result along with PI tests and boring log and test pit logs from previous investigations were used to evaluate the expansion potential of the onsite materials. The result of our PI test indicated a PI of 22 while PI tests performed by others indicated PIs of 6 to 13. Based on the above, soil materials encountered at the lot locations are anticipated to potentially exhibit moderate expansion potential to wetting and drying cycles.

3.4 GROUND WATER

Ground water was not encountered in our current boring within Lot 11 during drilling; however, the boring was not left open but was immediately backfilled when the boring was completed. Previous borings by SFS (B-14, B-16, and B-17) within the general proximity of Lot 11 that extended to a maximum depth of 42 feet encountered groundwater at depths ranging from about 1 to 10 feet below the surface at the time. SFS installed standpipe piezometers and

concluded the ground water was likely runoff from higher up the ridge that percolated through fractures in the bedrock until encountering impermeable serpentinite, which caused the water to surface. Free ground water was not encountered within TRC Lowney's borings within proximity of Lots 5 through 8 that extended to a maximum depth of 20 feet, however they noted observing seepage of ground water along the cut-slope for Ticonderoga Drive. Treadwell & Rollo noted portions of the landslide material within their test pits at Lots 5 through 8 were saturated with perched water above the landslide gouge. They also mentioned no free ground water was observed within the bedrock below the landslide masses. No free ground water was noted within any explorations in the proximity of Lots 9 and 10.

Ground water is not mapped in the area by the State of California, but is anticipated to be generally deep. However, perched ground water may be encountered in fractured bedrock and overlying soils. Fluctuations in ground water levels occur due to many factors including seasonal fluctuation, underground drainage patterns, regional fluctuations, and other factors.

SECTION 4: GEOLOGIC HAZARDS

4.1 FAULT RUPTURE

Although there are significant faults located within 25 kilometers of the site, no active or potentially active faults are mapped transecting the site. The site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone (known formerly as a Special Studies Zone) (CDMG, 1982). A regional fault map illustrating known active faults relative to the site is presented in Figure 3. We encountered no evidence suggesting active fault surface traces at the site. This is also consistent with the findings of previous consultants in their studies of the Highland Estates subdivision. It is our conclusion that there is a low potential for the occurrence of fault surface rupture (primary or coseismic) to occur at the subject site.

4.2 ESTIMATED GROUND SHAKING

Moderate to severe (design-level) earthquakes can cause strong ground shaking, which is the case for most sites within the Bay Area. A peak ground acceleration (PGA) of 0.983g, 0.976g, and 0.984g for Lots 5 to 8, Lots 9 and 10, and Lot 11, respectively, was estimated for analysis using F_{PGA} x PGA (Equation 11.8-1) as allowed in the 2013 California Building Code. Seismic design criteria values are presented in Section 7.2 of this report. This hazard can be mitigated by designing the buildings in accordance with the current building code.

4.3 LIQUEFACTION POTENTIAL

Liquefaction hazard mapping of the site by the California Geologic Survey has not been completed for the site area. Mapping by the Association of Bay Area Governments (ABAG) indicates that the site is located in an area of very low liquefaction potential.

During strong seismic shaking, cyclically induced stresses can cause increased pore pressures within the soil matrix that can result in liquefaction triggering, soil softening due to shear stress loss, potentially significant ground deformation due to settlement within sandy liquefiable layers

as pore pressures dissipate, and/or flow failures in sloping ground or where open faces are present (lateral spreading) (NCEER 1998). Limited field and laboratory data is available regarding ground deformation due to settlement; however, in clean sand layers settlement on the order of 2 to 4 percent of the liquefied layer thickness can occur. Soils most susceptible to liquefaction are loose, non-cohesive soils that are saturated and are bedded with poor drainage, such as sand and silt layers bedded with a cohesive cap. Our analyses indicate that based on the fairly shallow depth to bedrock and ground water depths, the lots have a low potential for liquefaction which is consistent with the mapping in the area by ABAG.

4.4 LATERAL SPREADING

Lateral spreading is horizontal/lateral ground movement of relatively flat-lying soil deposits towards a free face such as an excavation, channel, or open body of water; typically lateral spreading is associated with liquefaction of one or more subsurface layers near the bottom of the exposed slope. As failure tends to propagate as block failures, it is difficult to analyze and estimate where the first tension crack will form.

There are no open faces within a distance considered susceptible to lateral spreading; therefore, in our opinion, the potential for lateral spreading to affect the site is low.

4.5 SEISMIC SETTLEMENT/UNSATURATED SAND SHAKING

Loose unsaturated sandy soils can settle during strong seismic shaking. In areas of shallow bedrock extending generally to the ground surface, the potential for differential seismic settlement affecting the proposed improvements is low. In landslide repair areas, materials overlying the bedrock will be reengineered and will also have a low potential for differential seismic settlement. In locations of soil or existing fills above the underlying bedrock that will not be reengineered during landslide repair or lot grading activities, there is a potential for differential seismic settlement to occur within the sandier soils. However, as the proposed structures will be supported by drilled pier foundations founded in the underlying bedrock, differential seismic settlement of these soils and fills should not significantly affect the proposed structures.

4.6 LANDSLIDING

The California Geological Survey (CGS) has been producing Seismic Hazard Zone maps for earthquake induced landsliding, however the San Mateo Quadrangle has not been published as of the time of the current study. The site is located within a hilly area with slopes described by Pampeyan (1994) as "unstable, especially when wet," and where small isolated landslides were mapped nearby by Brabb and Pampeyan (1972) and Leighton (1973). The aerial photographs revealed no geomorphic evidence of recent slope movement. We noted the minor slope failures that were previously mapped along Ticonderoga Drive at the site during the site reconnaissance. The interpretive map (landslide susceptibility) published by Brabb et al. (1978) shows the site within an area designated as moderately susceptible to landsliding based on slopes of greater than 30%, but also includes areas with 15% to 30% that are underlain by unstable rock units. Wieczorek et al. (1985) indicates most of the Highlands Estates site is

located in an area mapped as having moderate susceptibility, and the northwest portion of the subdivision is shown as having very low susceptibility to landsliding triggered by a major earthquake. The subject lots are located on the moderate to steep slopes near the crest of Pulgas Ridge, which is underlain at shallow depths by competent sandstone of the Franciscan Complex. We judge the potential for landsliding to be low in the bedrock material and moderate to high in the mapped landslide deposit areas. The existing shallow slope failures are deemed to be the result of slope over steepening associated with the construction of Ticonderoga Drive.

Based on our surface reconnaissance, research of published and unpublished geologic maps and reports, and our review of aerial photographs, no changes in the landslide configurations were noted at or immediately adjacent to the subject lots. Our findings are consistent with the earlier consultant's investigations of the subject Lots 5 through 11. None of the previous consultants' investigations identified landslides at subject Lots 9 through 11. This is consistent with our current findings as well. As determined by T&R, the cutslope failure (landslide) that spans Lot 5 and Lot 6 is 95 feet wide by 55 feet long and was determined to be 7 feet thick and terminates or "toes out" in the slope above Ticonderoga Drive. The landslide that spans Lot 7 and Lot 8 was 160 feet wide by 105 feet long, extends up to about 26 feet deep, and extends beneath Ticonderoga Drive at a depth of about 6 to 7 feet. Detailed descriptions of the landslides were included in the reports by T&R. In 2009 T&R provided landslide mitigation measures for the two landslides. They indicated that the landslide mass that spans Lot 5 and 6 would be removed during the (then) proposed site grading for the building pads and driveways. They indicated the larger landslide that spans Lot 7 and Lot 8 would not be completely mitigated by the (then) proposed grading and therefore recommended it be provided with a fully drained buttress fill. They concluded that a buttress fill embedded into the underlying Franciscan bedrock would provide sufficient stability for the subject lots and for Ticonderoga Drive. Current plans do not appear to fully remove the landslide mass spanning Lot 5 and 6. To address this concern and to supplement T&R's slope stability analysis and landslide mitigation measures for the landslide spanning Lot 7 and 8, we prepared Landslide Mitigation Plans for both landslides (Figures 10 to 13). We summarize T&R slope stability analysis for the landslide spanning Lot 7 and 8 in the section below.

4.7 TREADWELL & ROLLO SLOPE STABILITY ANALYSIS

As discussed in our proposal, since Treadwell & Rollo performed a detailed slope stability evaluation for a fully drained buttress fill landslide repair for the landslide spanning Lot 7 and 8, an additional detailed slope stability evaluation was not included in our scope of work and has not been performed. Additionally, our licensed geotechnical engineer, Scott Fitinghoff, visually observed the test pits performed by Treadwell & Rollo and conferred with their findings and analysis of the slope. We have summarized Treadwell & Rollo's stability analyses in the following sections and provided their model and outputs from their analyses in Appendix C.

4.7.1 Method of Analysis

The stability of a buttress fill repair for the landslide at Lot 7 and 8 was evaluated along the idealized Geologic Cross-Section C-C' (similar to our current Cross-Section B-B'), which was

determined by Treadwell and Rollo's engineering geologist to be the most critical slope from a topographic standpoint as well as appropriately modeling the apparent landslide movement observed in their test pits. A simplified two-dimensional model of the landslide and bedrock profile and a typical buttress fill repair consisting of benches and a keyway cut into the Franciscan bedrock below the existing landslide was developed. The keyway extended 3 feet below the bottom of landslide and the keyway and bench widths were at least 10 feet.

Slope/W (version 6.22) by Geo-Slope International, Ltd. (2004) was used for the analyses and two-dimensional limit equilibrium methods (Modified Bishop, Janbu, and Spencer's Method) were used to compute factors of safety. The program determined the most critical failure surface (lowest factor of safety) with the given parameters. Slopes with a static factor of safety of 1.5 or greater and a pseudo static factor of safety of 1.15 with a horizontal seismic coefficient of 0.10 to 0.15 times gravity (g) was considered to be stable (Seed, 1979).

4.7.2 Soil and Bedrock Engineering Properties

Buttress fill material engineering properties were selected based on results from field investigation, laboratory testing, and engineering judgement. Engineering material properties for the existing fill and colluvium at the top of slope and for the landslide materials below Ticonderoga Drive were selected from published CGS strength parameters from the nearby Mindego Hill Quadrangle. Engineering properties for the Franciscan bedrock below the buttress fill repair were determined from published CGS strength parameters from the City and County of San Francisco. A summary of the soil and bedrock parameters used in the analyses are presented in the table below.

Table 2: Engineering Properties used in Treadwell & Rollo's Slope Stability Analyses

Material Description	Total Unit Weight (pcf)	Effective Cohesion (psf)	Effective Internal Friction Angle (degrees)
Existing Fill	110	500	26.0
Colluvium	120	700	22.0
Buttress Fill	124	60	32.3
Existing Landslide	110	700	11.0
Franciscan Bedrock	135	800	22.0

4.7.3 Ground Water

Ground water was not observed in Treadwell & Rollo's test pit. The proposed buttress was assumed fully drained and the influence of ground water was not included in the analyses.

4.7.4 Static Stability Results

The static analysis minimum factor of safety for the overall repaired slope was approximately 2.37, which was greater than the generally accepted minimum static factor of safety of 1.5.

4.7.5 Pseudo-Static Stability Results

For the pseudo-static analysis, an earthquake was represented as an equivalent horizontal static force, which was determined by multiplying the mass of potential slide material by a horizontal ground acceleration. For a magnitude 7.9 Earthquake along the San Andreas Fault, a peak seismic coefficient of 0.844g was determined in accordance with the 2006 International Building Code, which corresponded to a repeatable acceleration of 0.563g used in the analysis. With the above acceleration, the minimum factor of safety was determined to be less than 1.0 for the overall repaired slope. A seismic force of 0.378g was determined to correspond to a factor of safety of 1.0 (yield analysis).

To further evaluate earthquake shaking effects, the method developed by Bray and Travasaro (2007) was used to estimate the seismic deformation of the repaired slope. For the analysis, the minimum yield acceleration for the repaired slide mass was determined to be approximately 0.378g, the spectral acceleration was determined to be 1.175g for the site, and the slope's initial Fundamental Period (Ts) was calculated to be 0.10 seconds, with a degraded period equal to 0.15 seconds. This slope displacement analysis indicated permanent slope displacements on the order of 8 to 9 centimeters during the peak earthquake event.

Treadwell & Rollo concluded that the above deformation amount was relatively small and that slope failure hazards should be adequately mitigated for the lots by a buttress fill bearing in the underlying bedrock. They noted that the yield coefficient is dependent on the material strengths of the buttress fill materials and that lower strength materials than what was tested would likely cause greater slope deformations. We concur with Treadwell & Rollo's analysis.

4.8 SOIL CREEP AND LOCALIZED SLOPE INSTABILITY

A thin layer of colluvium and/or undocumented fill on the order of 1 to 11 feet thick was identified in our exploration and explorations performed by others above the underlying bedrock in the areas of the proposed residences. Due to the existing slopes within the lot locations ranging up to 3:1 to 2:1 (H:V), the upper few feet of the soil may be susceptible to creep and localized slope instability and should be expected. As a result, structures and retaining walls should be supported on drilled pier foundations designed to resist creep forces.

4.9 FLOODING

Based on our internet search of the Federal Emergency Management Agency (FEMA) flood map public database, the site is located within Zone X, and area of minimal flood hazard. We recommend the project civil engineer be retained to confirm this information.

4.10 NATURALLY OCCURING ASBESTOS

Chrysotile and amphibole asbestos occur naturally in certain geologic settings in the San Francisco Bay area, most commonly in serpentinite and other ultramafic rocks. These are igneous and metamorphic rocks with a high content of magnesium and iron minerals. The most

common type of asbestos is chrysotile, which is commonly found in serpentinite rock formations. When disturbed by construction, grading, quarrying, or surface mining operations, asbestos-containing dust can be generated. Exposure to asbestos can result in lung cancer, mesothelioma, and asbestosis. In July 2001, the California Air Resources Board approved an Asbestos Airborne Toxic Control measure for Construction, Grading, Quarrying, and Surface Mining activities in areas where naturally occurring asbestos (NOA) will likely be found and to provide best dust mitigation measures and practices. These are mountainous areas or areas of shallow bedrock that could be encountered during construction. Regional mapping suggests, and the site specific investigations supports the idea that the dominant rock type at the site is sheared rock. The sheared rock that underlies the majority of the site is unlikely to contain NOA bearing material. Localized outcrops of serpentinite have been observed in portions of the canyon area and serpentinite was encountered within three previous exploratory borings conducted at the site. While we did not observe veins of asbestos of bearing minerals, it is not known if rock masses beneath the ground surface could contain veins of asbestos bearing material and the previous samples collected within borings conducted within serpentinite were not analyzed for NOA. We did however obtain a bulk sample of soil and bedrock from our Boring EB-1 at Lot 11 (at a depth range of 8.5 feet to 15 feet depth) which was subsequently analyzed for NOA. The results indicate no NOA detected. Results are shown in Appendix C. However due to the presence of serpentinite locally at the site, we recommend that random samples be collected during grading operations to test for asbestos if serpentinite is observed.

SECTION 5: CONCLUSIONS

5.1 SUMMARY

From a geotechnical viewpoint, the project is feasible provided the concerns listed below are addressed in the project design. Descriptions of each concern with brief outlines of our recommendations follow the listed concerns.

- Potential for lansliding within Lots 5 through 8
- Potential for soil creep and localized slope instability
- Presence of existing undocumented fills
- Presence of moderately expansive soils
- Differential movement at on-grade to on-structure transitions

5.1.1 Potential for Landsliding within Lots 5 through 8

As mentioned above and documented and analyzed by previous investigations and our firm, two landslides are located within the area of proposed Lots 5 through 8. To supplement prior findings and recommendations, we have provided landslide mitigation plans and details on Figures 10 to 13 for mitigating the identified landslides. In addition to restabilizing the landslide areas, to protect the structures and retaining walls from future slope instability (discussed below) at Lots 5 through 11, proposed structures and retaining walls should be supported on drilled piers. Detailed recommendations for the design of drilled pier foundations are presented in the “Foundations” section of this report.

5.1.2 Potential for Soil Creep and Localized Slope Instability

Outside of the landslide areas identified within Lots 5 through 8, our exploration and explorations by others indicate that a thin layer of colluvium and/or undocumented fill is present above the underlying bedrock in the areas of the proposed residences. This colluvium and/or undocumented fill was identified to be on the order of 1 to 11 feet thick. As existing slopes within the lot locations range up to 3:1 to 2:1 (H:V), we judge the upper few feet of the soil to be susceptible to creep. To address this concern, we recommend that the proposed structures, including site retaining walls be supported on drilled piers designed to resist creep forces. Detailed recommendations for the design of drilled pier foundations are presented in the "Foundations" section of this report.

Another geotechnical concern associated with the presence of colluvium is that concentrated water could cause erosion and localized slope instability. To mitigate this condition and satisfy current storm water requirements, we recommend that the storm water be directed to a concrete lined bio-retention basin. Once the water passes through the bio-retention basin, it should be collected in a solid drainage pipe and conveyed to a dissipater/spreader outlet structure which will spread out the flow across the slope without concentrating the water. Detailed recommendations for the design of the dissipater/spreader structure are presented in the "Earthwork" section of this report.

5.1.3 Presence of Existing Undocumented Fills

Undocumented fill was mapped at the lot locations as shown on the Site Plan and Geologic Map, Figures 2A to 2C. If this fill is left in place during driveway and slab-on-grade grading, it should be removed and replaced as properly compacted engineered fill. Detailed recommendations are presented in the "Earthwork".

5.1.4 Presence of Moderately Expansive Soils

Moderately expansive soils are present at the various lot locations and may be located within the upper portions of the soil profiles following site grading activities. Expansive soils can undergo significant volume change with changes in moisture content. They shrink and harden when dried and expand and soften when wetted. To reduce the potential for damage to the planned structures, slabs-on-grade should have sufficient reinforcement and be supported on a layer of non-expansive fill; footings should extend below the zone of seasonal moisture fluctuation. In addition, it is important to limit moisture changes in the surficial soils by using positive drainage away from buildings as well as limiting landscaping watering. Detailed grading and foundation recommendations addressing this concern are presented in the following sections.

5.1.5 Differential Movement At On-grade to On-Structure Transitions

The proposed structures will be supported by drilled pier foundations and exterior grades and improvements will be supported on-grade. Some of the surficial improvements will transition

from on-grade support to overlying the drilled pier supported structures. Also, some of the surficial improvements will extend above areas of retaining wall backfill for garages and lower levels of the structures. As a result, differential movement will potentially occur between exterior improvements and structures. Concrete flatwork at entrances should be structurally tied to the structure, creating hinged connections, to allow access and limit trip hazards. Additionally, we recommend consideration be given to including subslabs beneath flatwork or pavers that cantilever at least 3 feet beyond retaining walls. If surface improvements are included that are highly sensitive to differential movement, additional measures may be necessary. We also recommend that retaining wall backfill be compacted to 95 percent where surface improvements are planned.

5.2 PLANS AND SPECIFICATIONS REVIEW

We recommend that we be retained to review the geotechnical aspects of the project structural, civil, and landscape plans and specifications, allowing sufficient time to provide the design team with any comments prior to issuing the plans for construction.

5.3 CONSTRUCTION OBSERVATION AND TESTING

As site conditions may vary significantly between the small-diameter borings performed during this investigation, we also recommend that a Cornerstone representative be present to provide geotechnical observation and testing during earthwork and foundation construction. This will allow us to form an opinion and prepare a letter at the end of construction regarding contractor compliance with project plans and specifications, and with the recommendations in our report. We will also be allowed to evaluate any conditions differing from those encountered during our investigation, and provide supplemental recommendations as necessary. For these reasons, the recommendations in this report are contingent of Cornerstone providing observation and testing during construction. Contractors should provide at least a 48-hour notice when scheduling our field personnel.

SECTION 6: EARTHWORK

6.1 SITE DEMOLITION, CLEARING AND PREPARATION

6.1.1 Site Stripping

The lot locations should be stripped of all surface vegetation, and surface and subsurface improvements within the proposed development area. Demolition of existing improvements is discussed in detail below. Surface vegetation and topsoil should be stripped to a sufficient depth to remove all material greater than 3 percent organic content by weight. Based on our site observations, surficial stripping should extend about 3 to 12 inches below existing grade.

6.1.2 Tree and Shrub Removal

Trees and shrubs designated for removal should have the root balls and any roots greater than ½-inch diameter removed completely. Mature trees are estimated to have root balls extending

to depths of 2 to 4 feet, depending on the tree size. Significant root zones are anticipated to extend to the diameter of the tree canopy. Grade depressions resulting from root ball removal should be cleaned of loose material and backfilled in accordance with the recommendations in the "Compaction" section of this report.

6.1.3 Abandonment of Existing Utilities

No utility lines are known to exist within the proposed lots. However, if encountered, all utilities should be completely removed from within planned building areas. For any utility line to be considered acceptable to remain within building areas, the utility line must be completely backfilled with grout or sand-cement slurry (sand slurry is not acceptable), the ends outside the building area capped with concrete, and the trench fills either removed and replaced as engineered fill with the trench side slopes flattened to at least 1:1, or the trench fills are determined not to be a risk to the structure. The assessment of the level of risk posed by the particular utility line will determine whether the utility may be abandoned in place or needs to be completely removed. The contractor should assume that all utilities will be removed from within building areas unless provided written confirmation from both the owner and the geotechnical engineer.

Utilities extending beyond the building area may be abandoned in place provided the ends are plugged with concrete, they do not conflict with planned improvements, and that the trench fills do not pose significant risk to the planned surface improvements.

The risks associated with abandoning utilities in place include the potential for future differential settlement of existing trench fills, and/or partial collapse and potential ground loss into utility lines that are not completely filled with grout. In general, the risk is relatively low for single utility lines less than 4 inches in diameter, and increases with increasing pipe diameter.

6.2 REMOVAL OF EXISTING FILLS

All existing fills should be completely removed from within proposed garage slabs-on-grade, interior slabs-on-grade, and driveway areas and to a lateral distance of at least 2 feet beyond the edge of the improvements or to a lateral distance equal to fill depth below the slab or driveway, whichever is greater. The approximate limits of undocumented fill are shown on Figures 2A to 2C. Existing fills within the location of improvements for Lots 5 to 8 will be removed during site grading operations and landslide repair. The approximate limits of existing fill removal and a corresponding typical keying and benching plan for Lots 9 and 10 are shown on Figures 14 and 15. Typical keying and benching recommendations are provided in Section 6.9. Existing fills should be removed from the driveway and any slab-on-grade locations within Lot 11.

Provided the fills meet the "Material for Fill" requirements below, the fills may be reused when backfilling excavations. If materials are encountered that don't meet the requirements, such as debris, wood, trash, those materials should be screened out of the remaining material and not be reused. Backfill of excavations should be placed in lifts and compacted in accordance with the "Compaction" section below.

6.3 TEMPORARY CUT AND FILL SLOPES

The contractor is responsible for maintaining all temporary slopes and providing temporary shoring where required. Temporary shoring, bracing, and cuts/fills should be performed in accordance with the strictest government safety standards. On a preliminary basis, the upper 10 feet at the site may be classified as OSHA Soil Type B materials. A Cornerstone representative should be retained to confirm the preliminary site classification.

Excavations performed during site demolition and fill removal should be sloped at 3:1 (horizontal:vertical) within the upper 5 feet below building subgrade. Excavations extending more than 5 feet below building subgrade and excavations in pavement and flatwork areas should be slope at a 1:1 inclination unless the OSHA soil classification indicates otherwise.

6.4 SUBGRADE PREPARATION

After site clearing and demolition is complete, and prior to backfilling any excavations resulting from fill removal or demolition, the excavation subgrade and subgrade within areas to receive additional site fills, slabs-on-grade and/or pavements should be scarified to a depth of 6 inches, moisture conditioned, and compacted in accordance with the “Compaction” section below.

6.5 SUBGRADE STABILIZATION MEASURES

Soil subgrade and fill materials, especially soils with high fines contents such as clays and silty soils, can become unstable due to high moisture content, whether from high in-situ moisture contents or from winter rains. As the moisture content increases over the laboratory optimum, it becomes more likely the materials will be subject to softening and yielding (pumping) from construction loading or become unworkable during placement and compaction.

There are several methods to address potentially unstable soil conditions and facilitate fill placement and trench backfill. Some of the methods are briefly discussed below. Implementation of the appropriate stabilization measures should be evaluated on a case-by-case basis according to the project construction goals and the particular site conditions.

6.5.1 Scarification and Drying

The subgrade may be scarified to a depth of 6 to 12 inches and allowed to dry to near optimum conditions, if sufficient dry weather is anticipated to allow sufficient drying. More than one round of scarification may be needed to break up the soil clods.

6.5.2 Removal and Replacement

As an alternative to scarification, the contractor may choose to over-excavate the unstable soils and replace them with dry on-site or import materials. A Cornerstone representative should be present to provide recommendations regarding the appropriate depth of over-excavation,

whether a geosynthethic (stabilization fabric or geogrid) is recommended, and what materials are recommended for backfill.

6.6 MATERIAL FOR FILL

6.6.1 Re-Use of On-site Soils

On-site soils with an organic content less than 3 percent by weight may be reused as general fill. General fill should not have lumps, clods or cobble pieces larger than 6 inches in diameter; 85 percent of the fill should be smaller than 2½ inches in diameter. Minor amounts of oversized material (smaller than 12 inches in diameter) may be allowed provided, the oversized pieces are not allowed to nest together, and the compaction method will allow for loosely placed lifts not exceeding 12 inches. It is noted that excavation of piers and retaining wall cut, and grade beams may result in large rock fragments that require special handling and disposal. The contractor should anticipate handling of this material during construction.

6.6.2 Potential Import Sources

Imported and non-expansive material should be inorganic with a Plasticity Index (PI) of 15 or less. To prevent significant caving during trenching or foundation construction, imported material should have sufficient fines. Samples of potential import sources should be delivered to our office at least 10 days prior to the desired import start date. Information regarding the import source should be provided, such as any site geotechnical reports. If the material will be derived from an excavation rather than a stockpile, potholes will likely be required to collect samples from throughout the depth of the planned cut that will be imported. At a minimum, laboratory testing will include PI tests. Material data sheets for select fill materials (Class 2 aggregate base, ¾-inch crushed rock, quarry fines, etc.) listing current laboratory testing data (not older than 6 months from the import date) may be provided for our review without providing a sample. If current data is not available, specification testing will need to be completed prior to approval.

Environmental and soil corrosion characterization should also be considered by the project team prior to acceptance. Suitable environmental laboratory data to the planned import quantity should be provided to the project environmental consultant; additional laboratory testing may be required based on the project environmental consultant's review. The potential import source should also not be more corrosive than the on-site soils, based on pH, saturated resistivity, and soluble sulfate and chloride testing.

6.7 COMPACTION REQUIREMENTS

All fills, and subgrade areas where fill, slabs-on-grade, and pavements are planned, should be placed in loose lifts 8 inches thick or less and compacted in accordance with ASTM D1557 (latest version) requirements as shown in the table below. In general, clayey soils should be compacted with sheepsfoot equipment and sandy/gravelly soils with vibratory equipment; open-graded materials such as crushed rock should be placed in lifts no thicker than 18 inches and consolidated in place with vibratory equipment. Each lift of fill and all subgrade should be firm

and unyielding under construction equipment loading in addition to meeting the compaction requirements to be approved. The contractor (with input from a Cornerstone representative) should evaluate the in-situ moisture conditions, as the use of vibratory equipment on soils with high moistures can cause unstable conditions. General recommendations for soil stabilization are provided in the "Subgrade Stabilization Measures" section of this report. Where the soil's PI is 20 or greater, the expansive soil criteria should be used.

Table 3: Compaction Requirements

Description	Material Description	Minimum Relative[1] Compaction (percent)	Moisture[2] Content (percent)
General Fill (within upper 5 feet)	On-Site Expansive Soils	87 – 92	>3
	On-Site Low Expansion Soils	90	>1
General Fill (below a depth of 5 feet)	On-Site Expansive Soils	93	>3
	On-Site Low Expansion Soils	95	>1
Basement Wall Backfill	Without Surface Improvements	90	>1
Basement Wall Backfill	With Surface Improvements	93[4]	>1
Trench Backfill	On-Site Expansive Soils	87 – 92	>3
Trench Backfill	On-Site Low Expansion Soils	90	>1
Trench Backfill (upper 6 inches of subgrade)	On-Site Low Expansion Soils	95	>1
Crushed Rock Fill	¾-inch Clean Crushed Rock	Consolidate In-Place	NA
Non-Expansive Fill	Imported Non-Expansive Fill	90	Optimum
Flatwork Subgrade	On-Site Expansive Soils	87 - 92	>3
Flatwork Subgrade	On-Site Low Expansion Soils	90	>1
Flatwork Aggregate Base	Class 2 Aggregate Base[3]	90	Optimum
Pavement Subgrade	On-Site Expansive Soils	87 - 92	>3
Pavement Subgrade	On-Site Low Expansion Soils	90	>1
Pavement Aggregate Base	Class 2 Aggregate Base[3]	95	Optimum
Asphalt Concrete	Asphalt Concrete	95 (Marshall)	NA

1 – Relative compaction based on maximum density determined by ASTM D1557 (latest version)
2 – Moisture content based on optimum moisture content determined by ASTM D1557 (latest version)
3 – Class 2 aggregate base shall conform to Caltrans Standard Specifications, latest edition, except that the relative compaction should be determined by ASTM D1557 (latest version)
4 – Using light-weight compaction or walls should be braced

6.7.1 Construction Moisture Conditioning

Expansive soils can undergo significant volume change when dried then wetted. The contractor should keep all exposed expansive soil subgrade (and also trench excavation side walls) moist until protected by overlying improvements (or trenches are backfilled). If expansive soils are

allowed to dry out significantly, re-moisture conditioning may require several days of re-wetting (flooding is not recommended), or deep scarification, moisture conditioning, and re-compaction.

6.8 TRENCH BACKFILL

Utility lines constructed within public right-of-way should be trenched, bedded and shaded, and backfilled in accordance with the local or governing jurisdictional requirements. Utility lines in private improvement areas should be constructed in accordance with the following requirements unless superseded by other governing requirements.

All utility lines should be bedded and shaded to at least 6 inches over the top of the lines with crushed rock (⅜-inch-diameter or greater) or well-graded sand and gravel materials conforming to the pipe manufacturer's requirements. Open-graded shading materials should be consolidated in place with vibratory equipment and well-graded materials should be compacted to at least 90 percent relative compaction with vibratory equipment prior to placing subsequent backfill materials.

General backfill over shading materials may consist of on-site native materials provided they meet the requirements in the "Material for Fill" section, and are moisture conditioned and compacted in accordance with the requirements in the "Compaction" section.

On hillside sites it is desirable to reduce the potential for water migration into building areas through the granular shading materials. We recommend that a plug of low-permeability clay soil, sand-cement slurry, or lean concrete be placed within trenches just outside where the trenches pass into building areas.

6.8.1 Flexible Utility Connections

The new structures will be supported on pier and grade beam systems. As some utilities will extend from on-grade support to the pier and grade beam supported structures, due to the presence of moderately expansive soils that will expand/heave and contract and the potential for some soil creep due to the sloping grades at the lot locations, consideration should be given to including flexible utility connections that will accommodate 1 to 3 inches of ground movement relative to the buildings.

6.9 PERMANENT CUT AND FILL SLOPES

All permanent cut slopes in soil should have a maximum inclination of 2:1 (horizontal:vertical) for slopes up to 10 feet high; slopes greater than 10 feet should be inclined at no greater than 2.5:1. Un-retained fill slopes constructed on existing slopes steeper than 4:1 should not be allowed on this project unless our office is contacted for review of the proposed slope. Fill slopes constructed on natural slopes 4:1 or flatter should have a maximum inclination of 2:1. Refer to the "Erosion Control" section of this report for a discussion regarding protection of sloped surfaces.

6.9.1 Keyways and Benches

Fill placed on existing ground inclined at 6:1 or greater should be benched into the existing slope and a keyway constructed at the toe of the fill. Benches should be angled slightly into the slope, be spaced vertically at no greater than 4 feet between benches, and be at least 6 feet wide. Depending on the thickness of any existing fill and/or colluvium soil that blankets the bedrock, the benches may need to be widened beyond the minimum width to extend into competent bedrock. The keyway should also be angled slightly into the slope (minimum 2 percent inclination), extend at least 2 feet into suitable bedrock or soil as determined by our staff during construction, and be at least 10 feet wide. Keyway and benching plans and recommendations for the two landslide repair areas of Lots 5 to 8 are shown on Figures 10 to 13. A typical key and benching plan for Lot's 9 and 10 existing fill removal and fill slope placement process is depicted in Figures 14 and 15.

6.9.2 Fill Drainage

A permanent subsurface drainage system consisting of a series of perforated gravity pipes or drainage strips should be constructed between engineered fill placed against a bedrock slope and within all keyways. This system is intended to intercept perched water flowing through the bedrock and transmit it to suitable outlet structures and reduce the potential for hydrostatic pressures building up behind the fills, and causing slope instability. The drain lines should be placed at the back of the keyways and benches. Bench drains should be spaced vertically at no greater than 10 feet. For Lots 9 and 10, bench drains are not anticipated based on the soil conditions disclosed by previous investigations. However, field conditions should be observed at the time of construction and bench drains installed if needed.

Drainage systems should be constructed in small trenches or v-ditches, and consist of a minimum 4-inch-diameter perforated SDR 35 (perforations placed downward), bedded and shaded in Caltrans Class 2 Permeable Material (latest version) or ½- to ¾-inch crushed rock; if crushed rock is used, the rock should be encapsulated in filter fabric. The bedding should be at least 2 inches. Alternatively, geocomposite strip drains may be used. All drainage lines should slope towards suitable outlet structures at an inclination of at least 1 percent. Suitable outlet structures may consist of connecting the drainage lines to a storm drain system, with a sump if required; if the drain lines will outlet overland at the toe of the slope, an appropriate rock spill pad should be provided; the drain lines should not outlet onto the slope. Vertical cleanouts should be provided at all upslope ends of the drainage lines and at all 90-degree bends. Drainage material descriptions and additional details are provided on the Figure 13.

6.9.3 Plan Review and Construction Monitoring

We should be retained to review the grading and sub-drainage plans and we can provide more specific input regarding the location of keyways and fill drainage for the final plans. A Cornerstone representative should be on site during grading and foundation construction. Field modifications to the planned construction may be required based on encountered field conditions. In addition, it has been our experience that cut slopes in the Franciscan Formation bedrock are prone to localized weak zones and sloughing along bedding planes. We

recommend that a Cornerstone engineering geologist observe the condition of all cut slopes and evaluate the potential for localized adverse materials or bedding orientation.

We recommend that the project civil engineer or land surveyor be retained to survey in place all keyways, sub-drainage lines, solid pipes, and cleanouts, and create an as-built plan. This plan will be of use for any future maintenance or repair work.

6.10 SITE DRAINAGE

6.10.1 General Surface Drainage

Surface runoff should not be allowed to flow over the top of or pond at the top or toe of engineered slopes or retaining walls. Ponding should also not be allowed on or adjacent to pavements or concrete flatwork. Surface drainage should be directed towards suitable drainage facilities such as lined v-ditches or drain inlets. Lined v-ditches should be included at the top of slopes and intermediate benches, and at the toe of open space adjacent to planned development. All v-ditches and drain inlets should be sized to accommodate the design storm events for the upslope tributary area. Concrete-lined v-ditches should be reinforced as required and have adequate control and construction joints, and should be constructed neat in excavations; backfill around formed ditches should not be allowed.

Upslope sources of water should be evaluated. If upslope irrigation is present or planned, additional surface and subsurface drainage, or construction of subdrians may be needed to protect site improvements. We should be consulted if this issue will affect the project.

6.10.2 Lot Surface Drainage

Ponding should not be allowed adjacent to building foundations, slabs-on-grade, or pavements. Hardscape surfaces should slope at least 1 percent towards suitable discharge facilities; landscape areas should slope at least 2 percent. Roof runoff should be directed away from building areas. Where minimal side yards are planned (10 feet or less), we recommend that area drains collect surface runoff and transmit the runoff to other suitable landscape drainage facilities to prevent ponding adjacent to building foundations. Landscape drainage such as drain inlets and storm water filtration and/or infiltration trenches should be provided to collect and transmit storm water runoff to project storm drains discharge facilities.

Rainfall runoff from the residences will be piped to a dissipation structure below the residences and spread out across the existing hillslope. The proposed layout of the proposed dissipation structures are shown on Figures 2A to 2C, Site Plan and Geologic Map. As discussed previously, a geotechnical concern associated with the presence of undocumented fill and colluvium is that concentrated water could cause erosion and localized slope instability. To mitigate this condition and satisfy current storm water requirements, we recommend that the storm water be directed to a concrete lined bio-retention basin. Once the water passes through the bio-retention basin, it should be collected in a solid drainage pipe and conveyed to dissipater/spreader outlet structure which will spread out the flow across the slope without concentrating the water. The dissipater/spreader should be at least 10 feet wide and discharge

the water uniformly along the hillside. The outfall should be protected by Rip-Rap rock on Mirafi 700x or equal geotextile fabric.

6.11 PERMANENT EROSION CONTROL MEASURES

Hillside grading will require periodic maintenance after construction to reduce the potential for erosion and sloughing. At a minimum all slopes should be vegetated by hydroseeding or other landscape ground cover. The establishment of vegetation will help reduce runoff velocities, allow some infiltration and transpiration, trap sediment within runoff, and protect the soil from raindrop impact. Depending on the exposed material type and the slope inclination, more aggressive erosion control measures may be needed to protect slopes for one or more winter seasons while vegetation is establishing. For slopes with inclinations of 2:1 (horizontal:vertical) or greater, erosion control may consist of jute netting, straw matting, or erosion control blankets used in combination with hydroseeding.

Both construction and post-construction Storm Water Pollution Prevention Plans (SWPPPs) should be prepared for the project-specific requirements. We recommend that final grading plans be provided for our review.

6.12 CRAWL SPACE SEEPAGE MITIGATION

For structures with raised floor foundation systems, crawl spaces are typically lower than adjacent exterior grades and grade beams are generally poured neat in shallow trenches or constructed at-grade. For this type of foundation system, in our opinion, water accumulation in the crawl space is possible even if adequate surface drainage is provided adjacent to the structure. Although water seepage into the crawl space does not generally affect the foundation from a geotechnical viewpoint, it may have undesirable impacts to the floor system.

To mitigate water seepage into crawl space areas, we recommend either minimizing water from getting into the crawl space, or collecting and discharging the water if it does migrate beneath the house. Listed below are several methods for mitigating crawl space seepage, in order of decreasing effectiveness, in our opinion.

1. Grade crawl spaces to drain to common low points; install area drains or sump pumps at low points to collect and discharge water.

2. Construct a series of shallow drainage channels (4 to 6 inches deep and 6 to12 inches wide) around the perimeter of the crawl space. These channels should also drain toward a common low point; install area drains or sump pumps at low points to collect and discharge water.

3. Install adequate crawl space ventilation to help drying of wet or moist soil.

Due to the complex geologic conditions and unpredictable landscape watering patterns, some minor seepage may still occur, especially if exterior grades are adversely modified by homeowners. Therefore, if desired to further reduce the risk of crawl seepage, Items 2 or 3 may

be used in conjunction with Item 1. We recommend that we review the finished grading and landscaping plans to check for conformance with the above recommendations.

SECTION 7: FOUNDATIONS

7.1 SUMMARY OF RECOMMENDATIONS

In our opinion, the proposed structures may be supported on drilled pier foundations provided the recommendations in the "Earthwork" section and the sections below are followed.

7.2 SEISMIC DESIGN CRITERIA

The project structural design should be based on the 2013 California Building Code (CBC), which provides criteria for the seismic design of buildings in Chapter 16. The "Seismic Coefficients" used to design buildings are established based on a series of tables and figures addressing different site factors, including the soil profile in the upper 100 feet below grade and mapped spectral acceleration parameters based on distance to the controlling seismic source/fault system. Based on previous test pits and borings performed by others, our boring, and review of local geology, the various lot locations are underlain by shallow bedrock and/or soils with an anticipated average SPT "N" value within the upper 100 feet of the surface above 50 blows per foot. Therefore, we have classified the lot locations as Soil Classification C. The mapped spectral acceleration parameters S_S and S_1 were calculated using the USGS computer program *Design Maps*, located at http://geohazards.usgs.gov/designmaps/us/application.php, based on the site coordinates presented below and the site classification. The tables below lists the various factors used to determine the seismic coefficients and other parameters for the various lot locations.

Table 4a: 2013 CBC Site Categorization and Site Coefficients for Lots 5 through 8

Classification/Coefficient	Design Value
Site Class	C
Site Latitude	37.51551°
Site Longitude	-122.33826°
0.2-second Period Mapped Spectral Acceleration[1], S_S	2.561g
1-second Period Mapped Spectral Acceleration[1], S_1	1.231g
Short-Period Site Coefficient – Fa	1.0
Long-Period Site Coefficient – Fv	1.3
0.2-second Period, Maximum Considered Earthquake Spectral Response Acceleration Adjusted for Site Effects - S_{MS}	2.561g
1-second Period, Maximum Considered Earthquake Spectral Response Acceleration Adjusted for Site Effects – S_{M1}	1.600g
0.2-second Period, Design Earthquake Spectral Response Acceleration – S_{DS}	1.708g
1-second Period, Design Earthquake Spectral Response Acceleration – S_{D1}	1.066g
Mapped MCE Geometric Mean Peak Ground Acceleration - PGA	0.983g
Site Coefficient Based on PGA and Site Class - F_{PGA}	1.0

[1]For Site Class B, 5 percent damped.

Table 4b: 2013 CBC Site Categorization and Site Coefficients for Lots 9 and 10

Classification/Coefficient	Design Value
Site Class	C
Site Latitude	37.51662°
Site Longitude	-122.33734°
0.2-second Period Mapped Spectral Acceleration[1], S_S	2.543g
1-second Period Mapped Spectral Acceleration[1], S_1	1.222g
Short-Period Site Coefficient – Fa	1.0
Long-Period Site Coefficient – Fv	1.3
0.2-second Period, Maximum Considered Earthquake Spectral Response Acceleration Adjusted for Site Effects - S_{MS}	2.543g
1-second Period, Maximum Considered Earthquake Spectral Response Acceleration Adjusted for Site Effects – S_{M1}	1.588g
0.2-second Period, Design Earthquake Spectral Response Acceleration – S_{DS}	1.695g
1-second Period, Design Earthquake Spectral Response Acceleration – S_{D1}	1.059g
Mapped MCE Geometric Mean Peak Ground Acceleration - PGA	0.976g
Site Coefficient Based on PGA and Site Class - F_{PGA}	1.0

[1]For Site Class B, 5 percent damped.

Table 4c: 2013 CBC Site Categorization and Site Coefficients for Lot 11

Classification/Coefficient	Design Value
Site Class	C
Site Latitude	37.51683°
Site Longitude	-122.33938°
0.2-second Period Mapped Spectral Acceleration[1], S_S	2.563g
1-second Period Mapped Spectral Acceleration[1], S_1	1.231g
Short-Period Site Coefficient – Fa	1.0
Long-Period Site Coefficient – Fv	1.3
0.2-second Period, Maximum Considered Earthquake Spectral Response Acceleration Adjusted for Site Effects - S_{MS}	2.563g
1-second Period, Maximum Considered Earthquake Spectral Response Acceleration Adjusted for Site Effects – S_{M1}	1.601g
0.2-second Period, Design Earthquake Spectral Response Acceleration – S_{DS}	1.709g
1-second Period, Design Earthquake Spectral Response Acceleration – S_{D1}	1.067g
Mapped MCE Geometric Mean Peak Ground Acceleration - PGA	0.984g
Site Coefficient Based on PGA and Site Class - F_{PGA}	1.0

[1]For Site Class B, 5 percent damped.

7.3 DEEP FOUNDATIONS

Because the residential structures will be located on the existing sloping ground, we recommend all buildings and retaining walls be founded on drilled piers and designed with the parameters recommended below.

7.3.1 Drilled Piers Lots 5 to 8

The proposed structural loads may be supported on drilled, cast-in-place, straight-shaft friction piers with minimum diameters of 16 inches. In pier locations where the existing hillside will be reworked as part of the landslide repair process, the piers should extend to a minimum depth of at least 10 feet below the adjacent grade and at least 5 feet below bottom of the re-compacted fill for the landside area into undisturbed soil or bedrock. Based on our review of cross-sections in the landslide areas, we estimate the minimum depth these piers will be is on the order of 11 feet for Lot 5 and 27 feet for Lot 8. In pier locations where the existing hillside material will likely not be reworked as part of the landslide repair process (generally Lots 6 and 7), the piers should extend to a depth of at least 10 feet below adjacent grade or at least 5 feet into bedrock, whichever is greater. Adjacent pier centers should be spaced at least three diameters apart, otherwise, a reduction for group effects may be required. Grade beams should span between piers and/or pier caps in accordance with structural requirements. Conventional slabs-on-grade for the garages may be used provided the subgrade soils are restrained laterally with retaining

walls of grade beams and subgrade is prepared in accordance with the “Earthwork” section of this report.

In pier locations for Lots 5 to 8, the vertical capacity of the piers may be designed based on an allowable skin friction of 500 psf for combined dead plus live loads based on a factor of safety of 2.0; dead loads should not exceed two-thirds of the allowable capacities. The upper 24 inches of soil should be neglected. The allowable skin friction may be increased by one-third for wind and seismic loads. Frictional resistance to uplift loads may be developed along the pier shafts based on an ultimate frictional resistance of 400 psf; the structural engineer should apply an appropriate factor of safety (such as 1.5) to the ultimate uplift capacity.

Total settlement of individual piers or pier groups of four or less should not exceed ⅔-inch to mobilize static capacities and post-construction differential settlement over a horizontal distance of 30 feet should not exceed ¼-inch due to static loads.

7.3.2 Drilled Piers Lots 9 to 11

The proposed structural loads may be supported on drilled, cast-in-place, straight-shaft friction piers with minimum diameters of 16 inches. The piers should extend to a depth of at least 10 feet below adjacent grade or at least 5 feet into bedrock, whichever is greater. Adjacent pier centers should be spaced at least three diameters apart, otherwise, a reduction for group effects may be required. Grade beams should span between piers and/or pier caps in accordance with structural requirements. Conventional slabs-on-grade for the garages may be used provided the subgrade soils are restrained laterally with retaining walls of grade beams and subgrade is prepared in accordance with the “Earthwork” section of this report.

In pier locations for Lots 9 to 11, the vertical capacity of the piers may be designed based on an allowable skin friction of 500 psf for combined dead plus live loads based on a factor of safety of 2.0; dead loads should not exceed two-thirds of the allowable capacities. The upper 24 inches of soil should be neglected. The allowable skin friction may be increased by one-third for wind and seismic loads. Frictional resistance to uplift loads may be developed along the pier shafts based on an ultimate frictional resistance of 400 psf; the structural engineer should apply an appropriate factor of safety (such as 1.5) to the ultimate uplift capacity.

Total settlement of individual piers or pier groups of four or less should not exceed ⅔-inch to mobilize static capacities and post-construction differential settlement over a horizontal distance of 30 feet should not exceed ¼-inch due to static loads.

7.3.3 Lateral Capacity

Lateral loads exerted on the piers may be resisted by a passive resistance based on an ultimate equivalent fluid pressure of 450 pcf acting against twice the projected area of piers below the pier cap or grade beam within pier groups of two or more and over two pier diameters for single piers. The lateral pressure may increase up to a maximum uniform pressure of 3,000 psf at depth in locations where piers are positioned outside of landslide repair areas. The upper 24 inches of soil should be neglected when determining lateral capacity due to sloping ground

conditions. The piles should also be designed for an equivalent lateral earth pressure of 60 pcf acting over two pier diameters to simulate soil creep on the piers. The structural engineer should apply an appropriate factor of safety to the ultimate passive pressures.

7.3.4 Construction Considerations

The excavation of all drilled shafts should be observed by a Cornerstone representative to confirm the soil profile, verify that the piers extend the minimum depth into suitable materials and that the piers are constructed in accordance with our recommendations and project requirements. The drilled shafts should be straight, dry, and relatively free of loose material before reinforcing steel is installed and concrete is placed. If ground water is encountered and cannot be removed from the excavations prior to concrete placement, drilling slurry or casing may be required to stabilize the shaft and the concrete should be placed using a tremie pipe, keeping the tremie pipe below the surface of the concrete to avoid entrapment of water or drilling slurry in the concrete.

SECTION 8: CONCRETE SLABS AND PEDESTRIAN PAVEMENTS

8.1 INTERIOR SLABS-ON-GRADE

As the Plasticity Index (PI) of the surficial soils ranges up to 22, to reduce the potential for slab damage due to soil heave, the any proposed garage and interior slabs-on-grade should be supported on at least 8 inches of non-expansive fill (NEF) consisting of Class 2 aggregate base. The NEF layer should be constructed over subgrade prepared in accordance with the recommendations in the “Earthwork” section of this report. If moisture-sensitive floor coverings are planned, the recommendations in the “Interior Slabs Moisture Protection Considerations” section below may be incorporated in the project design if desired. If significant time elapses between initial subgrade preparation and slab-on-grade (NEF) construction, the subgrade should be proof-rolled to confirm subgrade stability, and if the soil has been allowed to dry out, the subgrade should be re-moisture conditioned to at least 3 percent over the optimum moisture content.

The structural engineer should determine the appropriate slab reinforcement for the loading requirements and considering the expansion potential of the underlying soils. Consideration should be given to limiting the control joint spacing to a maximum of about 2 feet in each direction for each inch of concrete thickness.

8.2 INTERIOR SLABS MOISTURE PROTECTION CONSIDERATIONS

The following general guidelines for concrete slab-on-grade construction where floor coverings are planned are presented for the consideration by the developer, design team, and contractor. These guidelines are based on information obtained from a variety of sources, including the American Concrete Institute (ACI) and are intended to reduce the potential for moisture-related problems causing floor covering failures, and may be supplemented as necessary based on project-specific requirements. The application of these guidelines or not will not affect the geotechnical aspects of the slab-on-grade performance.

- Place a minimum 10-mil-thick vapor retarder conforming to ASTM E 1745, Class C requirements or better directly below the concrete slab. The vapor retarder should extend to the slab edges and be sealed at all seams and penetrations in accordance with manufacturer's recommendations and ASTM E 1643 requirements.

- A 4-inch-thick capillary break, consisting of ½- to ¾-inch crushed rock with less than 5 percent passing the No. 200 sieve, should be placed below the vapor retarder and consolidated in place with vibratory equipment. The capillary break rock may be considered as the upper 4 inches of the non-expansive fill previously recommended.

- The concrete water:cement ratio should be 0.45 or less. Mid-range plasticizers may be used to increase concrete workability and facilitate pumping and placement.

- Water should not be added after initial batching unless the slump is less than specified and/or the resulting water:cement ratio will not exceed 0.45.

- Polishing the concrete surface with metal trowels is not recommended.

- Where floor coverings are planned, all concrete surfaces should be properly cured.

- Water vapor emission levels and concrete pH should be determined in accordance with ASTM F1869 and F710 requirements and evaluated against the floor covering manufacturer's requirements prior to installation.

8.3 PEDESTRIAN EXTERIOR CONCRETE FLATWORK

Exterior concrete flatwork subject to pedestrian traffic only should be at least 4 inches thick and supported on at least 6 inches of non-expansive fill (NEF) overlying subgrade prepared in accordance with the "Earthwork" recommendations of this report. In addition, the upper 4 inches of the NEF should also meet Class 2 aggregate base requirements. As an alternative, the Class 2 aggregate base can also be increased to the full depth of NEF as recommended above. Flatwork that will be subject to heavier or frequent vehicular loading should be designed in accordance with the recommendations in the "Vehicular Pavements" section below.

To help reduce the potential for uncontrolled shrinkage cracking, adequate expansion and control joints should be included. Consideration should be given to limiting the control joint spacing to a maximum of about 2 feet in each direction for each inch of concrete thickness. Flatwork should be isolated from adjacent foundations or retaining walls except where limited sections of structural slabs are included to help span irregularities in retaining wall backfill at the transitions between at-grade and on-structure flatwork.

SECTION 9: VEHICULAR PAVEMENTS

9.1 ASPHALT CONCRETE

The following asphalt concrete pavement recommendations tabulated below are based on the Procedure 608 of the Caltrans Highway Design Manual, estimated traffic indices for various pavement-loading conditions, and on a design R-value of 5. The design R-value was chosen based on engineering judgment considering the variable surface conditions.

Table 5: Asphalt Concrete Pavement Recommendations, Design R-value = 5

Design Traffic Index (TI)	Asphalt Concrete (inches)	Class 2 Aggregate Base* (inches)	Total Pavement Section Thickness (inches)
4.0	2.5	7.5	10.0
4.5	2.5	9.0	11.5
5.0	3.0	10.0	13.0
5.5	3.0	11.5	14.5
6.0	3.5	12.0	15.5
6.5	4.0	12.0	17.0

*Caltrans Class 2 aggregate base; minimum R-value of 78

Frequently, the full asphalt concrete section is not constructed prior to construction traffic loading. This can result in significant loss of asphalt concrete layer life, rutting, or other pavement failures. To improve the pavement life and reduce the potential for pavement distress through construction, we recommend the full design asphalt concrete section be constructed prior to construction traffic loading. Alternatively, a higher traffic index may be chosen for the areas where construction traffic will be using the pavements.

Asphalt concrete pavements constructed on expansive subgrade where the adjacent areas will not be irrigated for several months after the pavements are constructed may experience longitudinal cracking parallel to the pavement edge. These cracks typically form within a few feet of the pavement edge and are due to seasonal wetting and drying of the adjacent soil. The cracking may also occur during construction where the adjacent grade is allowed to significantly dry during the summer, pulling moisture out of the pavement subgrade. Any cracks that form should be sealed with bituminous sealant prior to the start of winter rains. One alternative to reduce the potential for this type of cracking is to install a moisture barrier at least 24 inches deep behind the pavement curb.

9.2 PORTLAND CEMENT CONCRETE

The exterior Portland Cement Concrete (PCC) pavement recommendations tabulated below are based on methods presented in the Portland Cement Association (PCA) design manual (PCA, 1984). Recommendations for garage slabs-on-grade were provided in the “Concrete Slabs and

Pedestrian Pavements" section above. We have provided a few pavement alternatives as an anticipated Average Daily Truck Traffic (ADTT) was not provided. An allowable ADTT should be chosen that is greater than what is expected for the development.

Table 6: PCC Pavement Recommendations, Design R-value = 5

Allowable ADTT	Minimum PCC Thickness (inches)
0.8	5.0
13	5.5
130	6.0

The PCC thicknesses above are based on a concrete compressive strength of at least 3,500 psi, supporting the PCC on at least 6 inches of Class 2 aggregate base compacted as recommended in the "Earthwork" section, and laterally restraining the PCC with curbs or concrete shoulders. Adequate expansion and control joints should be included. Consideration should be given to limiting the control joint spacing to a maximum of about 2 feet in each direction for each inch of concrete thickness. Due to the expansive soils present, we recommend that the construction and expansion joints be dowelled.

9.3 PAVEMENT CUTOFF

Surface water penetration into the pavement section can significantly reduce the pavement life, due to the expansive clays. While quantifying the life reduction is difficult, a normal 20-year pavement design could be reduce to less than 10 years; therefore, increased long-term maintenance may be required.

It would be beneficial to include a pavement cut-off, such as deepened curbs, redwood-headers, or "Deep-Root Moisture Barriers" that are keyed at least 4 inches into the pavement subgrade. This will help limit the additional long-term maintenance.

SECTION 10: RETAINING WALLS

10.1 STATIC LATERAL EARTH PRESSURES

The structural design of any site retaining wall should include resistance to lateral earth pressures that develop from the soil behind the wall, any undrained water pressure, and surcharge loads acting behind the wall. Provided a drainage system is constructed behind the wall to prevent the build-up of hydrostatic pressures as discussed in the section below, we recommend that the walls be designed for the following pressures:

Table 7: Recommended Lateral Earth Pressures

Sloping Backfill Inclination (horizontal:vertical)	Lateral Earth Pressure*	
	Unrestrained – Cantilever Wall	Restrained – Braced Wall
Level	45 pcf	45 pcf + 8H
3:1	55 pcf	55 pcf + 8H
2½:1	60 pcf	60 pcf + 8H
2:1	65 pcf	65 pcf + 8H
Additional Surcharge Loads	1/3 of vertical loads at top of wall	½ of vertical loads at top of wall

* Lateral earth pressures are based on an equivalent fluid pressure
** H is the distance in feet between the bottom of footing and top of retained soil

In our opinion, garage and basement walls should be designed as restrained walls. If adequate drainage cannot be provided behind the wall, an additional equivalent fluid pressure of 40 pcf should be added to the values above for both restrained and unrestrained walls for the portion of the wall that will not have drainage. Damp proofing or waterproofing of the walls may be considered where moisture penetration and/or efflorescence are not desired.

10.2 SEISMIC LATERAL EARTH PRESSURES

The 2013 CBC states that lateral pressures from earthquakes should be considered in the design of basements and retaining walls. We reviewed the seismic earth pressures for the proposed basement walls using procedures generally based on the Mononobe-Okabe method. Because the walls will likely be in the 10 to 12 feet in height, and peak ground accelerations are greater than 0.40g, we checked the result of the seismic increment when added to the recommended active earth pressure against the recommended fixed wall earth pressures. Because the basement walls are restrained, or will act as restrained walls, and will be designed for 45 pcf (equivalent fluid pressure) plus a uniform earth pressure of 8H psf, based on current recommendations for seismic earth pressures (Lew et al., SEAOC 2010), it appears that active earth pressures plus a seismic increment do not exceed the fixed wall earth pressures. Therefore, in our opinion, an additional seismic increment above the design earth pressures is not required as long as the basement walls are designed for the restrained wall earth pressures recommended above.

We also checked the result of the seismic increment for cantilevered (unrestrained) walls. The seismic increment again does not exceed the unrestrained wall earth pressures. Therefore, in our opinion, an additional seismic increment above the design earth pressures is not required as long as the cantilever walls are designed for the unrestrained wall earth pressures recommended above.

10.3 WALL DRAINAGE

Adequate drainage should be provided by a subdrain system behind all walls. This system should consist of a 4-inch minimum diameter perforated pipe placed near the base of the wall

(perforations placed downward). For walls adjacent to habitable living areas, we recommend that the wall subdrain be placed at least 12 inches below the bottom of the adjacent interior floor slab. The pipe should be bedded and backfilled with Class 2 Permeable Material per Caltrans Standard Specifications, latest edition. The permeable backfill should extend at least 12 inches out from the wall and to within 2 feet of outside finished grade. Alternatively, ½-inch to ¾-inch crushed rock may be used in place of the Class 2 Permeable Material provided the crushed rock and pipe are enclosed in filter fabric, such as Mirafi 140N or approved equivalent. The upper 2 feet of wall backfill should consist of compacted on-site soil. The subdrain outlet should be connected to a free-draining outlet or sump.

Miradrain, Geotech Drainage Panels, or equivalent drainage matting can be used for wall drainage as an alternative to the Class 2 Permeable Material or drain rock backfill. Horizontal strip drains connecting to the vertical drainage matting may be used in lieu of the perforated pipe and crushed rock section. The vertical drainage panel should be connected to the perforated pipe or horizontal drainage strip at the base of the wall, or to some other closed or through-wall system such as the TotalDrain system from AmerDrain. Sections of horizontal drainage strips should be connected with either the manufacturer's connector pieces or by pulling back the filter fabric, overlapping the panel dimples, and replacing the filter fabric over the connection. At corners, a corner guard, corner connection insert, or a section of crushed rock covered with filter fabric must be used to maintain the drainage path.

Drainage panels should terminate 18 to 24 inches from final exterior grade. The Miradrain panel filter fabric should be extended over the top of and behind the panel to protect it from intrusion of the adjacent soil.

10.4 BACKFILL

Where surface improvements will be located over the retaining wall backfill, backfill placed behind the walls should be compacted to at least 93 percent relative compaction using light compaction equipment. Where no surface improvements are planned, backfill should be compacted to at least 90 percent. If heavy compaction equipment is used, the walls should be temporarily braced. Based on the current plans, we understand that v-ditches are planned behind the retaining walls, which we highly recommend.

10.5 FOUNDATIONS

Retaining walls may be supported on drilled piers designed in accordance with the recommendations presented in the "Foundations" section of this report.

SECTION 11: LIMITATIONS

This report, an instrument of professional service, has been prepared for the sole use of Ticonderoga Partners, LLC specifically to support the design of the Highland Estates Lots 5 through 11 project in San Mateo, California. The opinions, conclusions, and recommendations presented in this report have been formulated in accordance with accepted geotechnical

engineering practices that exist in Northern California at the time this report was prepared. No warranty, expressed or implied, is made or should be inferred.

Recommendations in this report are based upon the soil and ground water conditions encountered during our subsurface exploration and information provided in previous investigations by others at the proposed lot locations. If variations or unsuitable conditions are encountered during construction, Cornerstone must be contacted to provide supplemental recommendations, as needed.

Ticonderoga Partners, LLC may have provided Cornerstone with plans, reports and other documents prepared by others. Ticonderoga Partners, LLC understands that Cornerstone reviewed and relied on the information presented in these documents and cannot be responsible for their accuracy.

Cornerstone prepared this report with the understanding that it is the responsibility of the owner or his representatives to see that the recommendations contained in this report are presented to other members of the design team and incorporated into the project plans and specifications, and that appropriate actions are taken to implement the geotechnical recommendations during construction.

Conclusions and recommendations presented in this report are valid as of the present time for the development as currently planned. Changes in the condition of the property or adjacent properties may occur with the passage of time, whether by natural processes or the acts of other persons. In addition, changes in applicable or appropriate standards may occur through legislation or the broadening of knowledge. Therefore, the conclusions and recommendations presented in this report may be invalidated, wholly or in part, by changes beyond Cornerstone's control. This report should be reviewed by Cornerstone after a period of three (3) years has elapsed from the date of this report. In addition, if the current project design is changed, then Cornerstone must review the proposed changes and provide supplemental recommendations, as needed.

An electronic transmission of this report may also have been issued. While Cornerstone has taken precautions to produce a complete and secure electronic transmission, please check the electronic transmission against the hard copy version for conformity.

Recommendations provided in this report are based on the assumption that Cornerstone will be retained to provide observation and testing services during construction to confirm that conditions are similar to that assumed for design, and to form an opinion as to whether the work has been performed in accordance with the project plans and specifications. If we are not retained for these services, Cornerstone cannot assume any responsibility for any potential claims that may arise during or after construction as a result of misuse or misinterpretation of Cornerstone's report by others. Furthermore, Cornerstone will cease to be the Geotechnical-Engineer-of-Record if we are not retained for these services.

SECTION 12: REFERENCES

Association of Bay Area Governments (ABAG), 2011, Interactive Liquefaction Hazard Map: http://quake.abag.ca.gov/liquefaction/

Brabb, E.E., and Pampeyan, D.L., 1983, Geologic Map of San Mateo County, California, U.S. Geological Survey, Miscellaneous Investigations Series Map I-1257-A, scale 1:62,500.

Brabb, E.E., and Olson, J.A., 1986, Map Showing Faults and Earthquake Epicenters in San Mateo County, California, Miscellaneous Investigations Series Map I-1257F, scale 1:62,500.

Brabb, E.E., Graymer, R. W., and Jones, D. L., 1998, Geology of the Onshore Part of San Mateo County, California, U.S. Geological Survey, Open File Report 98137, scale 1:62,500.

California Building Code, 2013, Structural Engineering Design Provisions, Vol. 2.

California Department of Conservation Division of Mines and Geology, 1998, Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada, International Conference of Building Officials, February, 1998.

California Division of Mines and Geology (2008), “Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117A, September.

California Geological Survey, 1974, State of California Seismic Hazard Zones, San Mateo 7.5-Minute Quadrangle, California.

Earth System Consultants. 1993, Highland Estates Project, Geotechnical Review, San Mateo, California, unpublished consultant's report.

Federal Emergency Management Administration (FEMA), 2012, California, Panel #06081C0165E.

Leighton and Associates Geotechnical Engineers, 1976, Geotechnical Hazards Synthesis Map for San Mateo County, sheet 1 of 5, scale 1: 24,000.

Lew, M. et al, 2010, Seismic Earth Pressures on Deep Building Basements, Proceedings, SEAOC Convention, Indian Wells, CA.

Lowney Associates. 2002, Geotechnical Feasibility, Highland Estates Residential Development, San Mateo, California, unpublished consultant's report.

Martin, G.R., and Lew, M. (1999), “Recommended Procedures for Implementation of DMG Special Publication 117 Guidelines for Analyzing and Mitigating Liquefaction Hazards in California,” Southern California Earthquake Center, University of Southern California, March.

Pampeyan, Earl H., 1993, Geologic Map of the Palo Alto and Part of the Redwood Point 7-1/2' Quadrangles, San Mateo and Santa Clara Counties, California, U. S. Geological Survey, Miscellaneous Investigation Series, Map I-2371.

Portland Cement Association, 1984, Thickness Design for Concrete Highway and Street Pavements: report.

Soil Foundation Systems, 1990, Preliminary Geologic/Geotechnical Investigation Report for Highland Estates, San Mateo, California, unpublished consultant's report.

Soil Foundation Systems Inc, 1993, Geotehnical Investigation Report for Highland Estates, San Mateo, County California, unpublished consultant's report.

Soil Foundation Systems Inc, 1994, Supplemental Geotechnical Report responding to Geotechnical Review Comments for Highland Estates, San Mateo County, California, unpublished consultant's report.

State of California Department of Transportation, 2008, Highway Design Manual, July 1, 2008.

TRC Lowney, 2006, Geotechnical Investigation and Geologic Hazards Review, Four Single Family Homes, Ticonderoga Drive, San Mateo County, California, Report No. 1291-2B, February 7.

Treadwell & Rollo, 2008, Geologic Evaluation Environmental Impact Report, Highlands Estates Residential Development Project, San Mateo County, California, Project No. 4872.01, September 23.

Treadwell & Rollo, 2009, Revised Geologic Evaluation Environmental Impact Report, Highland Estates Residential Development Project, San Mateo County, California, Report No. 4872.02, August 27.

United States Geological Survey, 2014, U.S. Seismic Design Maps, revision date June 23, available at http://geohazards.usgs.gov/designmaps/us/application.php.

Wentworth, C.M., Ellen, S. D., Frizzell, V. A. Jr. and Schlocker, J., 1985, Map of Hillside Materials and Description of Their Engineering Character, San Mateo County, California, U.S. Geological Survey, Miscellaneous Investigations Series, Map 112570,scale 1:62,500.

Weiczorek, G.F., Wilson, R.C., and Harp, E.L., 1985, Map Showing Slope Stability During Earthquakes in San Mateo County, California, U.S. Geological Survey Miscellaneous Investigations Series Map I-1257-E, scale 1:62,500.

Working Group on California Earthquake Probabilities, 2008, Uniform California Youd, T.L. and Hoose, S.N., 1978, Historic Ground Failures in Northern California Triggered by Earthquakes, United States Geologic Survey Professional Paper 993.

Working Group on California Earthquake Probabilities, 2015, The Third Uniform California Earthquake Rupture Forecast, Version 3 (UCERF), U.S. Geological Survey Open File Report 2013-1165 (CGS Special Report 228). KMZ files available at: www.scec.org/ucerf/images/ucerf3_timedep_30yr_probs.kmz

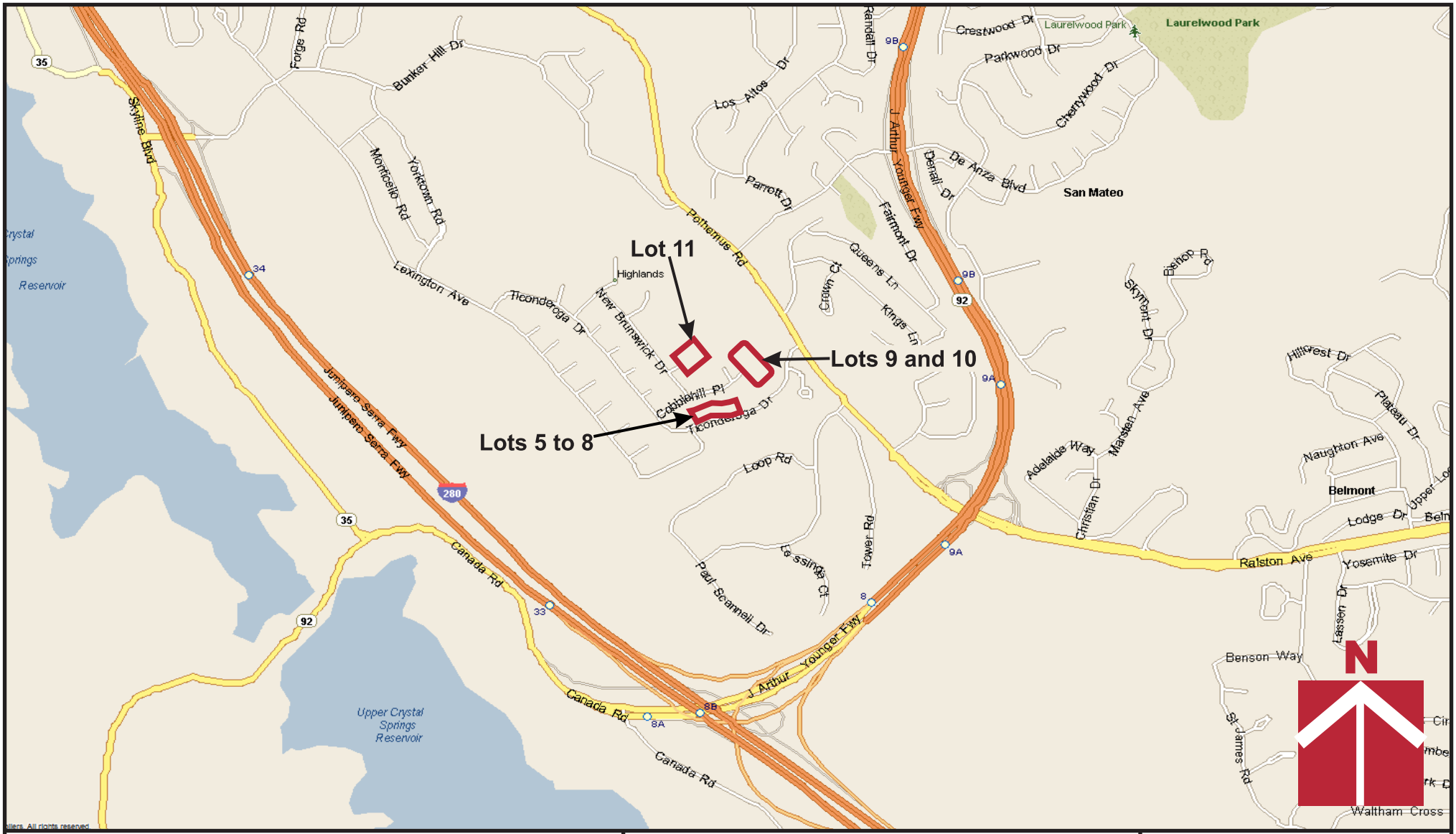
Youd, T.L. and Idriss, I.M., et al, 1997, Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils: National Center for Earthquake Engineering Research, Technical Report NCEER - 97-0022, January 5, 6, 1996.

Youd et al., 2001, “Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils,” ASCE Journal of Geotechnical and Geoenvironmental Engineering, Vo. 127, No. 10, October, 2001.

Aerial Photographs

Geomorphic features on the following aerial photographs were interpreted at the U.S. Geological Survey in Menlo Park as part of this investigation:

Date	Flight	Frames	Scale	Type
October 11, 1943	DDB	2B-111, 112, 56, 57	1:20,000	Black & White
July 29, 1946	GS-CP	2-136, 137	1:20,000	Black & White
May 27, 1956	DDB	1R-89, 90	1:20,000	Black & White
April 18, 1968	GS-VBZJ	1-204, 205	1:30,000	Black & White
May 8, 1973	3567	3-117, 118, 119	1:12,000	Black & White
June 25, 1974	Area 9	9-20	1:20,000	Natural color

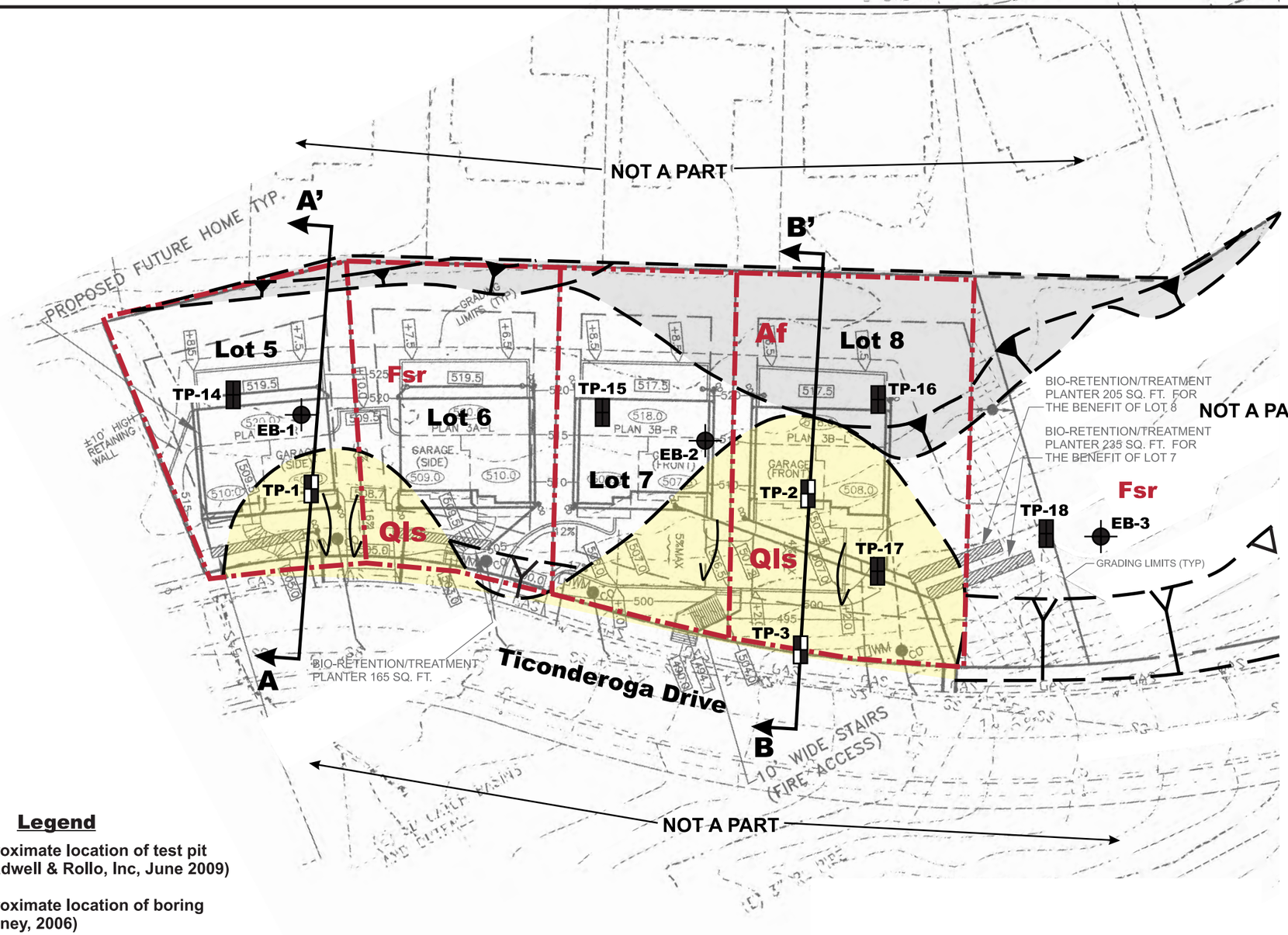


CORNERSTONE EARTH GROUP

Vicinity Map

Highland Estates - Lots 5 to 11
San Mateo County, CA

Project Number	230-1-5
Figure Number	Figure 1
Date	September 2015
Drawn By	RRN



Legend

- TP-1 — Approximate location of test pit (Treadwell & Rollo, Inc, June 2009)
- EB-1 — Approximate location of boring (Lowney, 2006)
- TP-14 — Approximate location of test pit (Berloger, Long and Associates, 1980)
- A A' — Geologic section (see Figures 5 and 6)
- Geologic contact (dashed where approximate)
- Cut slope
- Fill slope
- Fill
- Landslide

Geologic Units

- **Af** — Artificial fill
- **Qls** — Landslide deposits (Holocene and Pleistocene)
- **Fsr** — Franciscan sheared rock

Note: Colluvium not shown

Base by BKF Engineering, "Preliminary Grading & Utility Plan - Sheet 3", dated 2/2/2010

0 50 100
APPROXIMATE SCALE (FEET)

Project Number 230-1-5
Figure Number Figure 2A
Drawn By RRN
Date September 2015

Site Plan and Geologic Map (Lots 5 to 8)

Highland Estates - Lots 5 to 11
San Mateo County, CA

CORNERSTONE EARTH GROUP

BIO-RETENTION/TREATMENT PLANTER 220 SQ. FT.

PROPOSED SD OUTFALL w/ ENERGY DISSIPATOR

NOT A PART

PROPOSED FUTURE HOME (TYP)

BIO-RETENTION/TREATMENT PLANTER 240 SQ. FT.

C'

D'

TP-39

TP-27

GRADING LIMITS (TYP)

TP-31

TP-32

TP-34

Fsr

Lot 9

TP-30

PLAN 5

501.5

TP-33

GARAGE

TP-1

Af

Lot 10

PLAN 4

GARAGE

Fsr

TP-20

±10' HIGH RETAINING WALL

B-6

C

D

#40 BUCKEYE

NOT A PART

RADIUS FROM EX SIGN (PER SMC FIRE)

EX STREET SIGN

Cobblehill Place

Woodcreek Court

Legend

- B-14 — Approximate location of test boring (Soil Foundation Systems, Inc., 1993)
- TP-34 — Approximate location of test pit (Berloger, Long and Associates, 1980)
- C C' — Geologic section (see Figures 7 and 8)
- Geologic contact (dashed where approximate)
- Fill slope
- Fill

Geologic Units

- Af — Artificial fill
- Fsr — Franciscan sheared rock

Note: Colluvium not shown

Base by BKF Engineering, "Preliminary Grading & Utility Plan - Sheet 4", dated 2/2/2010

0 40 80

APPROXIMATE SCALE (FEET)

Project Number 230-1-5

Figure Number Figure 2B

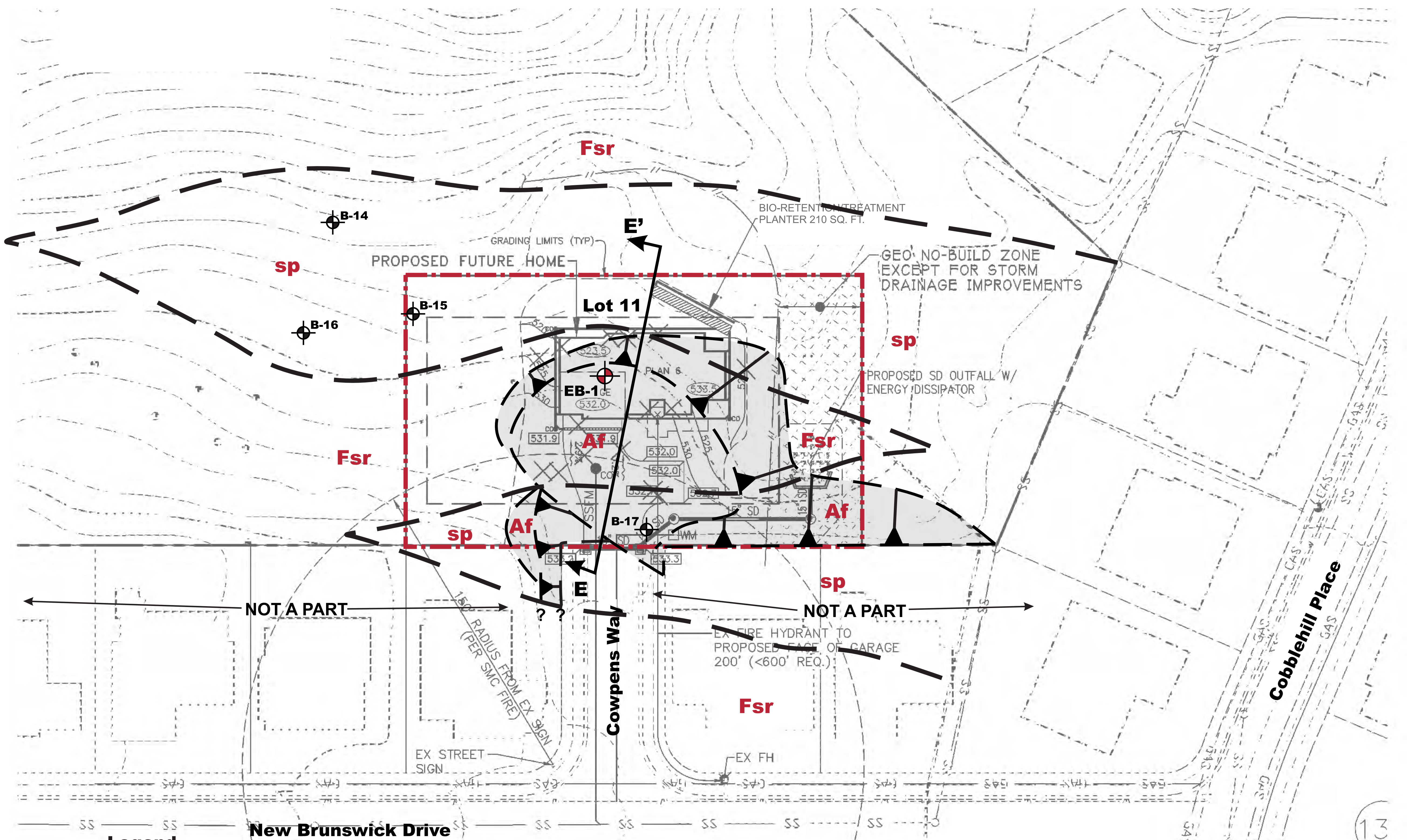
Drawn By RRN

Date September 2015

Site Plan and Geologic Map (Lots 9 and 10)

Highland Estates - Lots 5 to 11
San Mateo County, CA

CORNERSTONE EARTH GROUP



Legend

- EB-1 — Approximate location of exploratory boring (EB) (By Cornerstone)
- B-14 — Approximate location of test boring (Soil Foundation Systems, Inc., 1993)
- E E' — Geologic section (see Figure 9)
- Geologic contact (dashed where approximate)
- Fill slope
- Fill

Geologic Units

- **Af** Artificial fill
- **sp** Jurassic serpentinite
- **Fsr** Franciscan sheared rock

Note: Colluvium not shown

0 50 100

APPROXIMATE SCALE (FEET)

Base by BKF Engineering, "Preliminary Grading & Utility Plan - Sheet 5", dated 2/2/2010

Site Plan and Geologic Map (Lot 11)

Highland Estates - Lots 5 to 11
San Mateo County, CA

Project Number 230-1-5

Figure Number Figure 2C

Date September 2015

Drawn By RRN

CORNERSTONE EARTH GROUP

SITE

DISCONTINUITY

STRUCTURAL DISCONTINUITY

Geologic Time Scale			Years Before Present (Approx.)	Fault Symbol	Recency of Movement	DESCRIPTION	
						ON LAND	OFFSHORE
Quaternary	Late Quaternary	Historic				Displacement during historic time (e.g. San Andreas fault 1906). Includes areas of known fault creep.	
		Holocene	200		? ?	Displacement during Holocene time.	Fault offsets seafloor sediments or strata of Holocene age.
	Early Quaternary	Pleistocene	11,700		? ?	Faults showing evidence of displacement during late Quaternary time.	Fault cuts strata of Late Pleistocene age.
			700,000		?	Undivided Quaternary faults - most faults in this category show evidence of displacement during the last 1,600,000 years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age.	Fault cuts strata of Quaternary age.
Pre-Quaternary			1,600,000'			Faults without recognized Quaternary displacement or showing evidence of no displacement during Quaternary time. Not necessarily inactive.	Fault cuts strata of Pliocene or older age.
			4.5 billion (Age of Earth)				

N

0 5 10

APPROXIMATE SCALE (MILES)

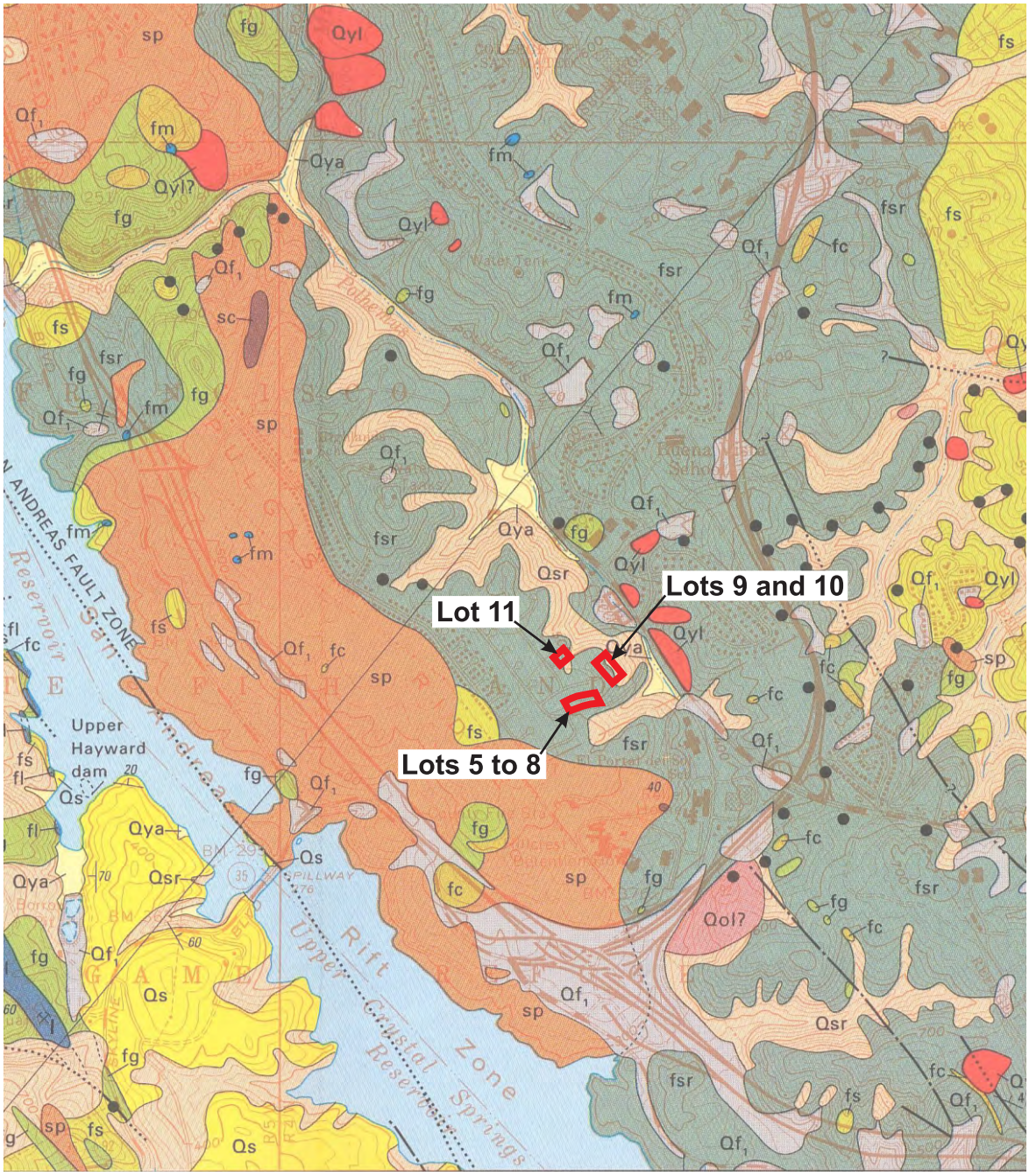
Base by California Geological Survey - 2010 Fault Activity Map of California (Jennings and Bryant, 2010)

Regional Fault Map

Highland Estates - Lots 5 to 11
San Mateo, CA

Project Number	Figure Number	Date	Drawn By
230-1-5	Figure 3	September 2015	RRN

CORNERSTONE EARTH GROUP



Geologic Units

Qya Younger alluvium (Holocene)

Qsr Slope wash, ravine fill, and colluvium (Holocene)

fsr Sheared rock

Explanation

Contact- dashed where approximate, dotted where concealed

Fault- dashed where approximate, dotted where concealed, queried where uncertain

N

0 2000 4000

APPROXIMATE SCALE (FEET)

Base: USGS, Geologic Map of the Montara Mountain and San Mateo 7.5' Quadrangle, San Mateo County, California, by Pampeyan, 1994

CORNERSTONE EARTH GROUP

Vicinity Geologic Map

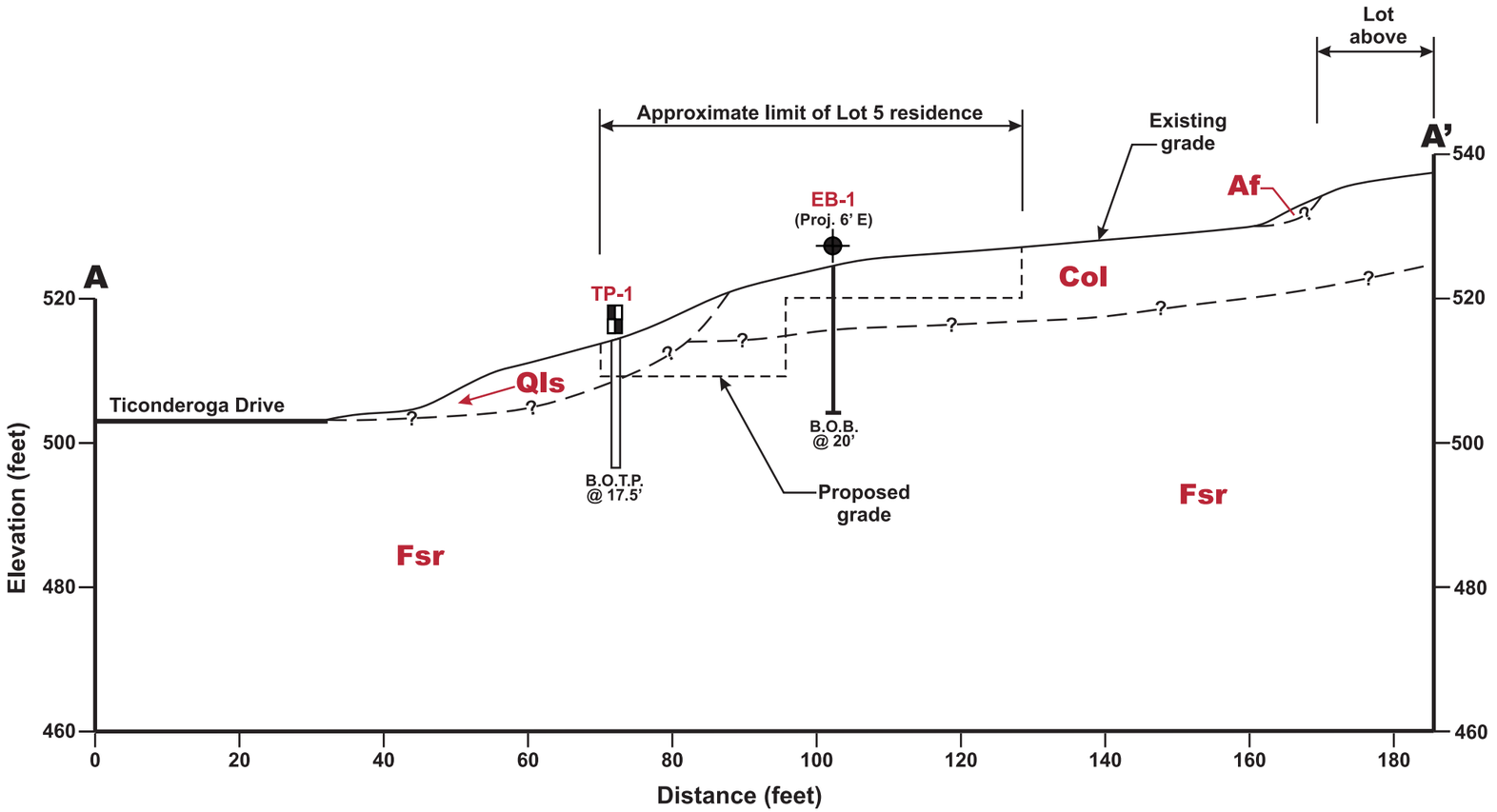
Highland Estates - Lots 5 to 11
San Mateo County, CA

Project Number: 230-1-5

Figure Number: Figure 4

Date: September 2015

Drawn By: RRN



Section A-A'

(View Looking Southwest)
1"=20' H:V

Explanation

Geologic Units

- **Af** Artificial fill
- **Col** Colluvium
- **Qls** Landslide deposits (Holocene and Pleistocene)
- **Fsr** Franciscan sheared rock

Symbols

- TP-1 Approximate location of test pit (Treadwell & Rollo, Inc, June 2009)
- EB-1 Approximate location of boring (Lowney, 2006)
- —?— Geologic contact (Approximate where dashed)

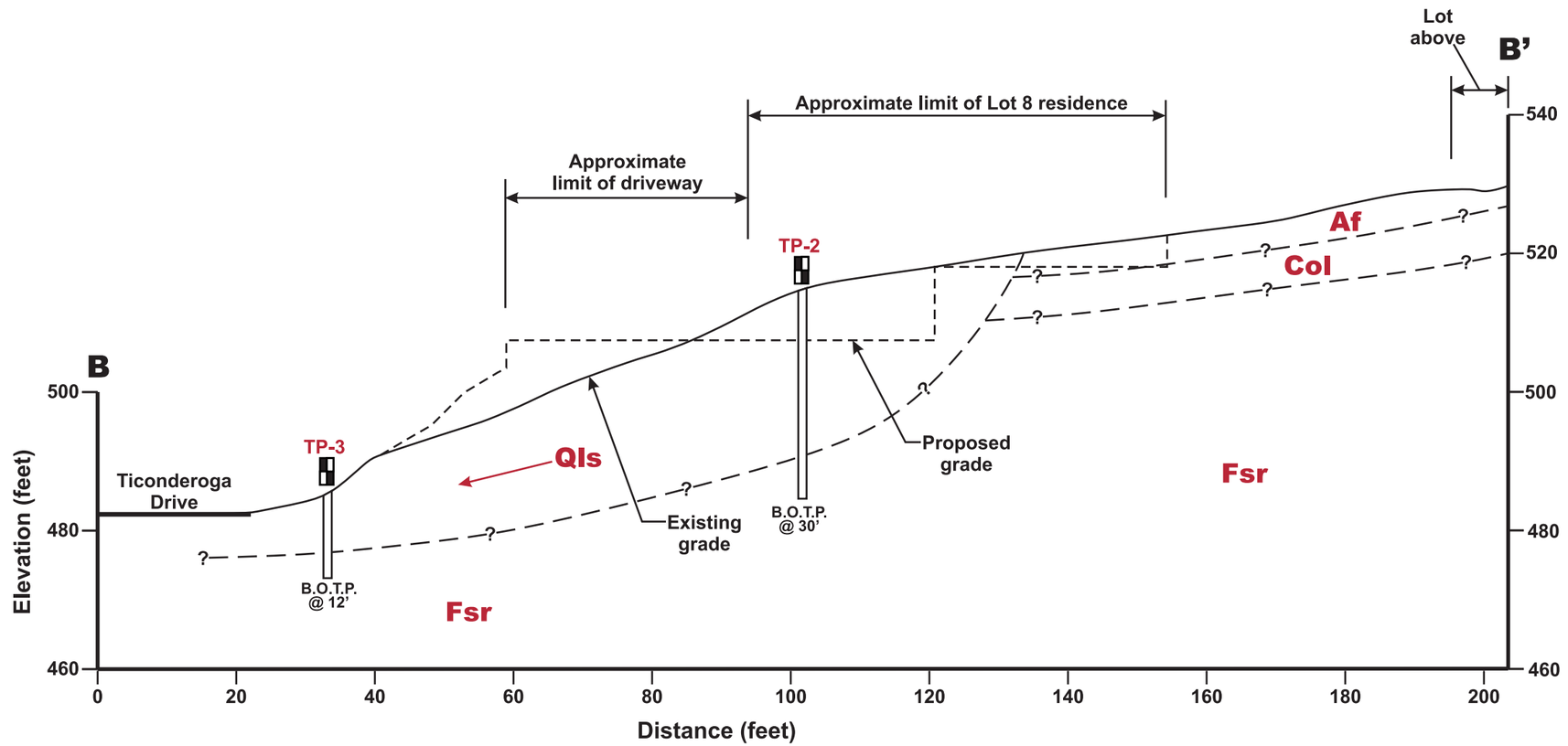
Notes:
1) Topographical information provided by BKF Engineering, "Preliminary Grading & Utility Plan - Sheet 3", dated 2/2/2010.
2) Surficial fills associated with existing pavements, landscaping or utilities are not shown.
3) The subsurface profile is conceptual and is based on limited subsurface data obtained from widely spaced explorations. Actual subsurface conditions may vary significantly between explorations.
4) See Figure 2A for location of cross section.

Project Number 230-1-5
Figure Number Figure 5
Date September 2015
Drawn By RRN

Geologic Cross Section A-A'

Highland Estates - Lots 5 to 11
San Mateo County, CA

CORNERSTONE EARTH GROUP



Section B-B'

(View Looking Southwest)
1"=20' H:V

Explanation

Geologic Units

- **Af** Artificial fill
- **Col** Colluvium
- **Qls** Landslide deposits (Holocene and Pleistocene)
- **Fsr** Franciscan sheared rock

Symbols

- TP-1 Approximate location of test pit (Treadwell & Rollo, Inc, June 2009)
- —?— Geologic contact (Approximate where dashed)

Notes:
1) Topographical information provided by BKF Engineering, "Preliminary Grading & Utility Plan - Sheet 3", dated 2/2/2010.
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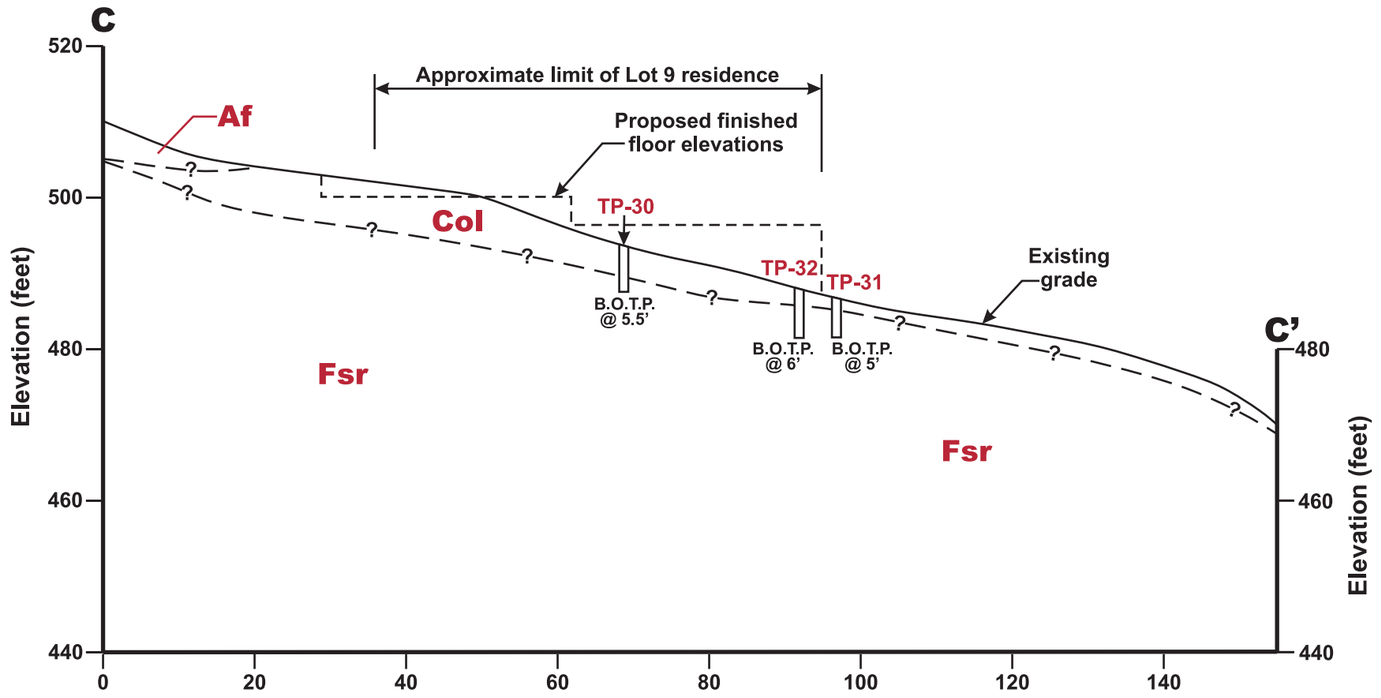
4) See Figure 2A for location of cross section.

Project Number 230-1-5
Figure Number Figure 6
Drawn By RRN
Date September 2015

Geologic Cross Section B-B'

Highland Estates - Lots 5 to 11
San Mateo County, CA

CORNERSTONE EARTH GROUP



Section C-C'

(View Looking North)
1"=20' H:V

Explanation

Geologic Units

Af	Artificial fill
Col	Colluvium
Fsr	Franciscan sheared rock

Symbols

TP-30	Approximate location of test pit (Berloger, Long and Associates, 1980)
—?—	Geologic contact (Approximate where dashed)

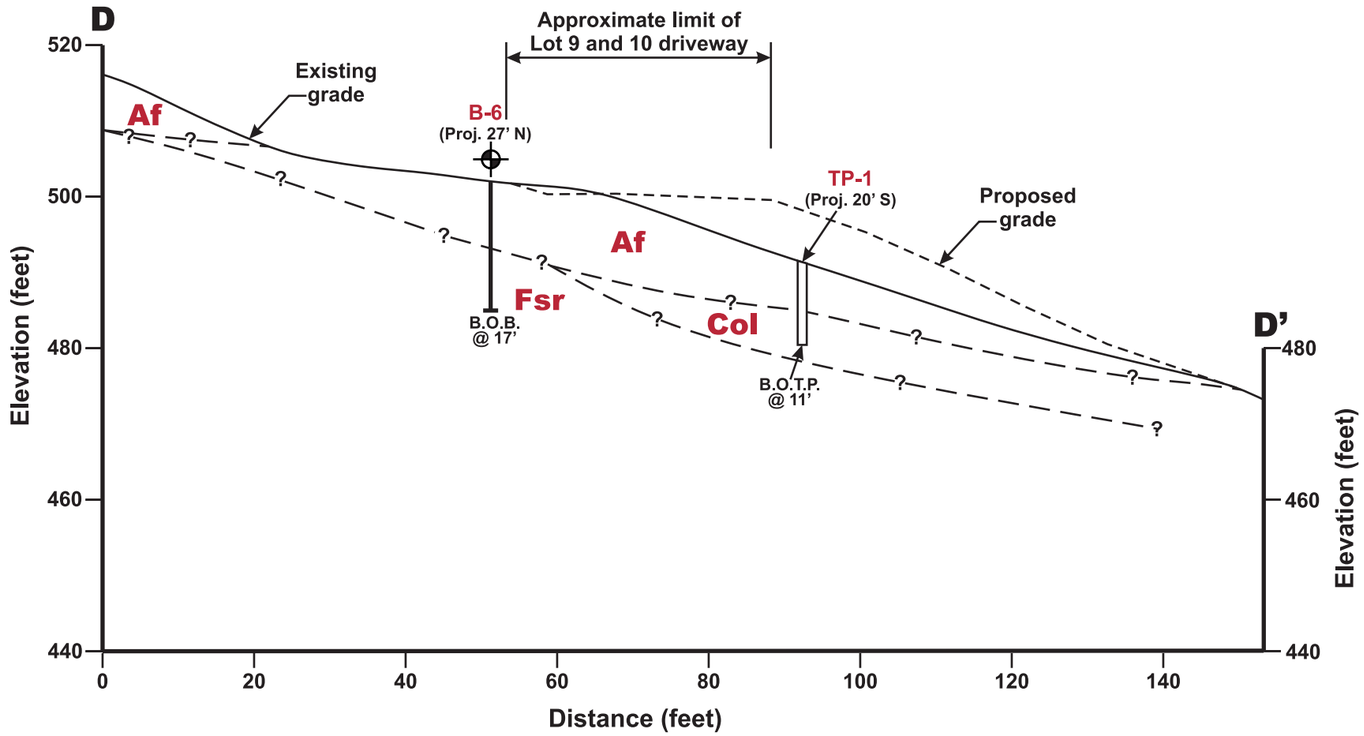
Notes:
1) Topographical information provided by BKF Engineering, "Preliminary Grading & Utility Plan - Sheet 4", dated 2/2/2010.
2) Surficial fills associated with existing pavements, landscaping or utilities are not shown.
3) The subsurface profile is conceptual and is based on limited subsurface data obtained from widely spaced explorations. Actual subsurface conditions may vary significantly between explorations.
4) See Figure 2B for location of cross section.

Project Number 230-1-5
Figure Number Figure 7
Date September 2015
Drawn By RRN

Geologic Cross Section C-C'

Highland Estates - Lots 5 to 11
San Mateo County, CA

CORNERSTONE EARTH GROUP



Section D-D'

(View Looking North)
1"=20' H:V

Explanation

Geologic Units

Af Artificial fill

Col Colluvium

Fsr Franciscan sheared rock

Symbols

TP-1 Approximate location of test pit (Berloger, Long and Associates, 1980)

B-6 Approximate location of test boring (Soil Foundation Systems, Inc., 1993)

—?— Geologic contact (Approximate where dashed)

Notes:
1) Topographical information provided by BKF Engineering, "Preliminary Grading & Utility Plan - Sheet 4", dated 2/2/2010.
2) Surficial fills associated with existing pavements, landscaping or utilities are not shown.
3) The subsurface profile is conceptual and is based on limited subsurface data obtained from widely spaced explorations. Actual subsurface conditions may vary significantly between explorations.
4) See Figure 2B for location of cross section.

Project Number 230-1-5

Figure Number Figure 8

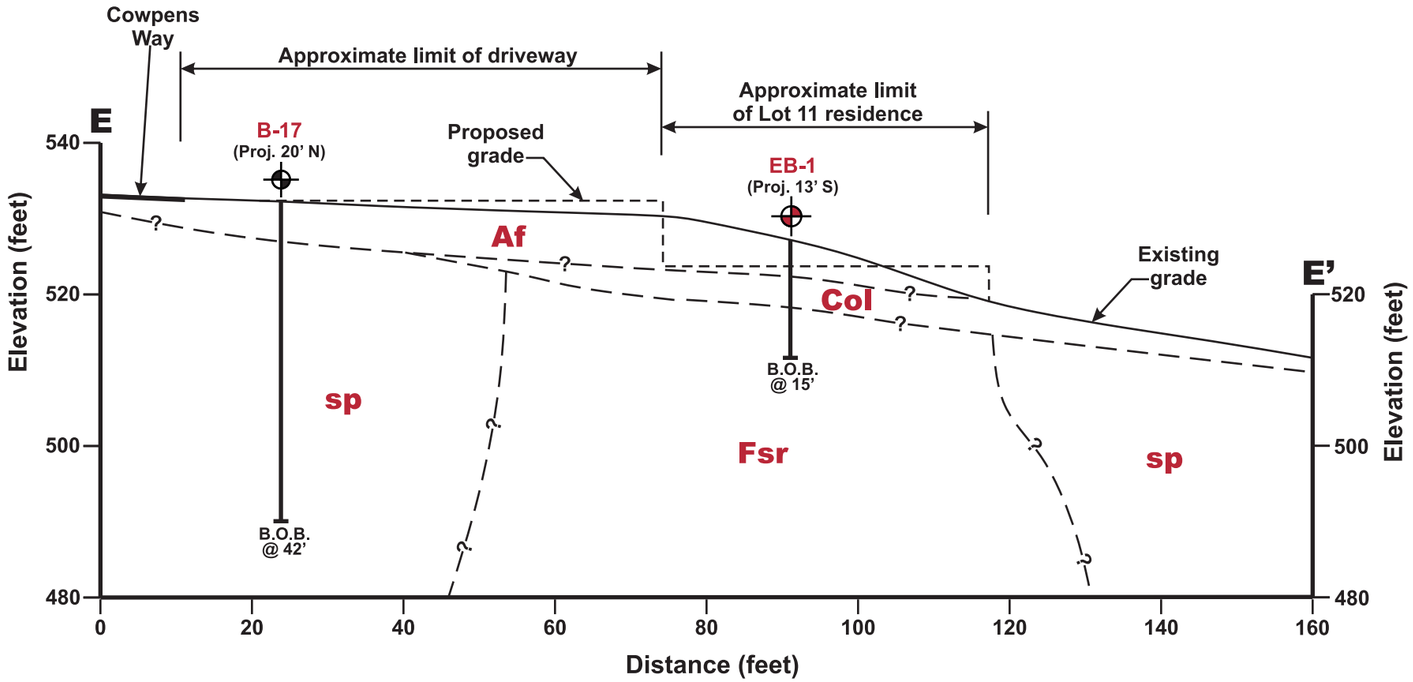
Date September 2015

Drawn By RRN

Geologic Cross Section D-D'

Highland Estates - Lots 5 to 11
San Mateo County, CA

CORNERSTONE EARTH GROUP



Section E-E'

(View Looking North)
1"=20' H:V

Explanation

Geologic Units

- **Af** Artificial fill
- **Col** Colluvium
- **Fsr** Franciscan sheared rock
- **sp** Jurassic serpentinite

Symbols

- EB-1 — Approximate location of exploratory boring (EB)
- B-14 — Approximate location of test boring (Soil Foundation Systems, Inc., 1993)
- —?— Geologic contact (Approximate where dashed)

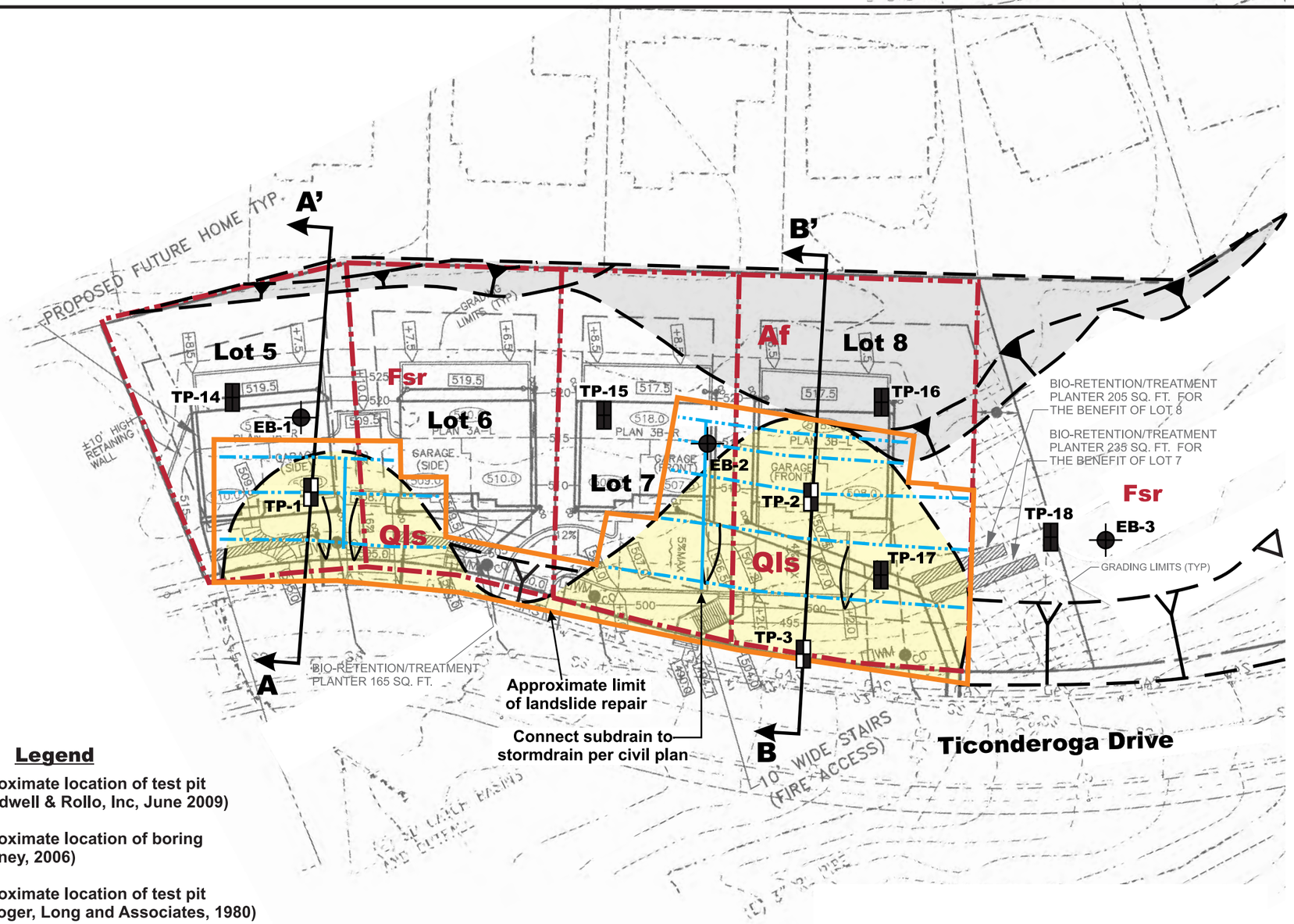
Notes:
1) Topographical information provided by BKF Engineering, "Preliminary Grading & Utility Plan - Sheet 5", dated 2/2/2010.
2) Surficial fills associated with existing pavements, landscaping or utilities are not shown.
3) The subsurface profile is conceptual and is based on limited subsurface data obtained from widely spaced explorations. Actual subsurface conditions may vary significantly between explorations.
4) See Figure 2C for location of cross section.

Project Number 230-1-5
Figure Number Figure 9
Drawn By RRN
Date September 2015

Geologic Cross Section E-E'

Highland Estates - Lots 5 to 11
San Mateo County, CA

CORNERSTONE EARTH GROUP



Legend

- TP-1 — Approximate location of test pit (Treadwell & Rollo, Inc, June 2009)
- EB-1 — Approximate location of boring (Lowney, 2006)
- TP-14 — Approximate location of test pit (Berloger, Long and Associates, 1980)
- A A' — Geologic section (see Figures 5 and 6)
- Geologic contact (dashed where approximate)
- Cut slope
- Fill slope
- Fill
- Landslide
- Subdrain
- Solid pipe

Geologic Units

- **Af** Artificial fill
- **Qls** Landslide deposits (Holocene and Pleistocene)
- **Fsr** Franciscan sheared rock

Note: Colluvium not shown

N

0 50 100

APPROXIMATE SCALE (FEET)

Base by BKF Engineering, "Preliminary Grading & Utility Plan - Sheet 3", dated 2/2/2010

The undersigned Geotechnical Engineer has performed a geotechnical investigation at the site including performing field investigation, laboratory testing, engineering analysis, and report preparation as described in the October 30, 2015 report by Cornerstone Earth Group, Inc. for the project. The geotechnical aspects of these plan sheets have been prepared and reviewed by the undersigned Geotechnical Engineer and are based upon Limitations described in the Geotechnical Investigation report. These plans are not a stand-alone document and should be considered as part of the geotechnical investigation report. The geotechnical design aspects in these plans are contingent upon a Geotechnical Engineer and Engineering Geologist observing certain aspects of the project grading. These plans are subject to modification and revision during construction based on the field conditions encountered.

REGISTERED PROFESSIONAL ENGINEER SCOTT E. FITINGHOFF NO. 2379 Exp. 06/30/16 GEOTECHNICAL STATE OF CALIFORNIA

10/30/15

Scott E. Fitinghoff, P.E., G.E.

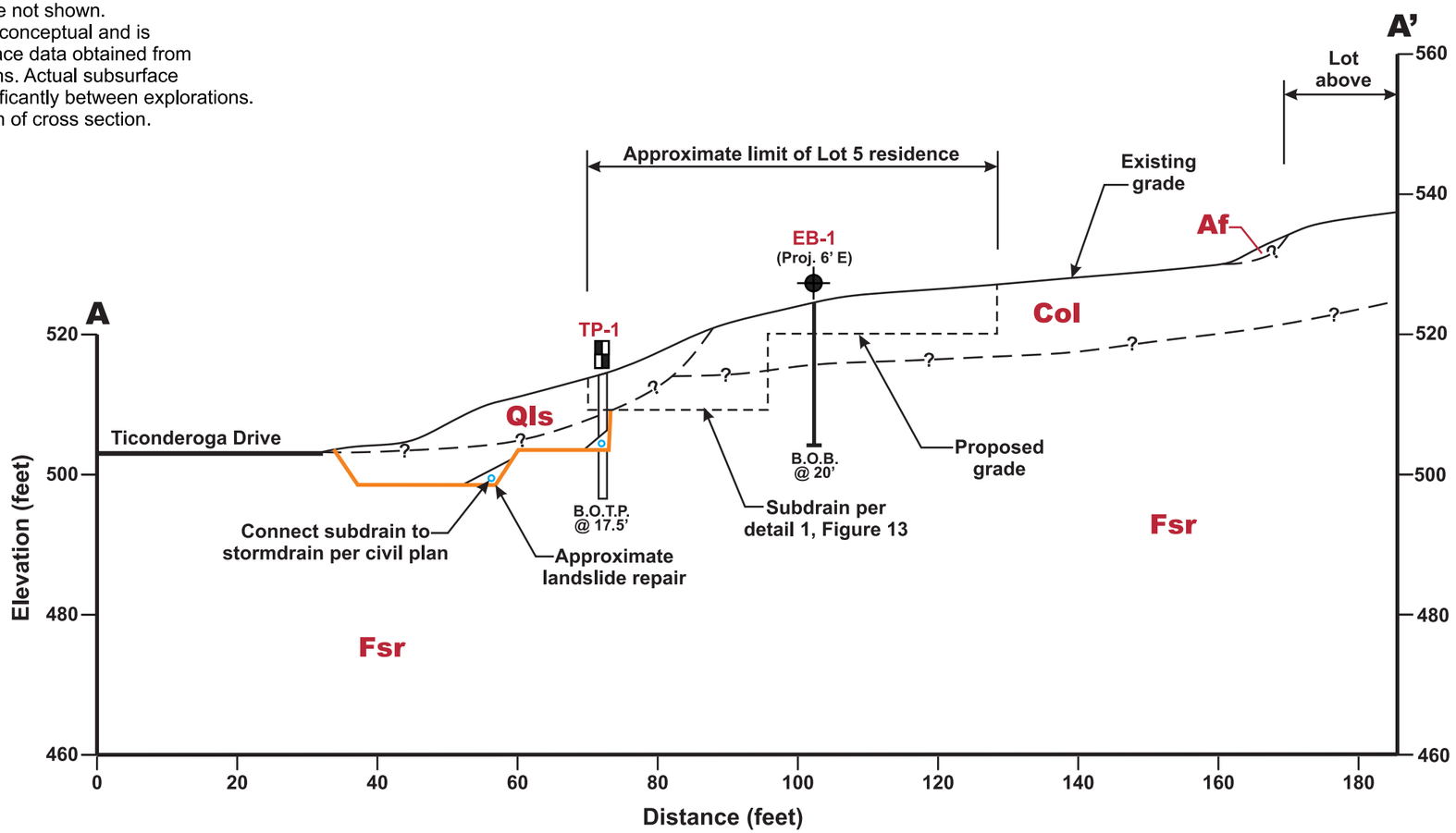
Project Number	Figure Number	Drawn By
230-1-5	Figure 10	RRN
	Date	October 2015

Geotechnical Mitigation Plan (Lots 5 to 8)

Highland Estates - Lots 5 to 11
San Mateo County, CA

CORNERSTONE EARTH GROUP

Notes:
1) Topographical information provided by BKF Engineering, “Preliminary Grading & Utility Plan - Sheet 3”, dated 2/2/2010.
2) Surficial fills associated with existing pavements, landscaping or utilities are not shown.
3) The subsurface profile is conceptual and is based on limited subsurface data obtained from widely spaced explorations. Actual subsurface conditions may vary significantly between explorations.
4) See Figure 10 for location of cross section.



Section A-A’

(View Looking Southwest)
1”=20’ H:V

Explanation

Geologic Units

Af	Artificial fill
Col	Colluvium
Qls	Landslide deposits (Holocene and Pleistocene)
Fsr	Franciscan sheared rock

Symbols

TP-1	Approximate location of test pit (Treadwell & Rollo, Inc, June 2009)
EB-1	Approximate location of boring (Lowney, 2006)
—?—	Geologic contact (Approximate where dashed)

The undersigned Geotechnical Engineer has performed a geotechnical investigation at the site including performing field investigation, laboratory testing, engineering analysis, and report preparation as described in the October 30, 2015 report by Cornerstone Earth Group, Inc. for the project. The geotechnical aspects of these plan sheets have been prepared and reviewed by the undersigned Geotechnical Engineer and are based upon Limitations described in the Geotechnical Investigation report. These plans are not a stand-alone document and should be considered as part of the geotechnical investigation report. The geotechnical design aspects in these plans are contingent upon a Geotechnical Engineer and Engineering Geologist observing certain aspects of the project grading. These plans are subject to modification and revision during construction based on the field conditions encountered.

REGISTERED PROFESSIONAL ENGINEER SCOTT E. FITINGHOFF NO. 2379 Exp. 06/30/16 GEOTECHNICAL STATE OF CALIFORNIA

10/30/15
Scott E. Fitinghoff, P.E., G.E.

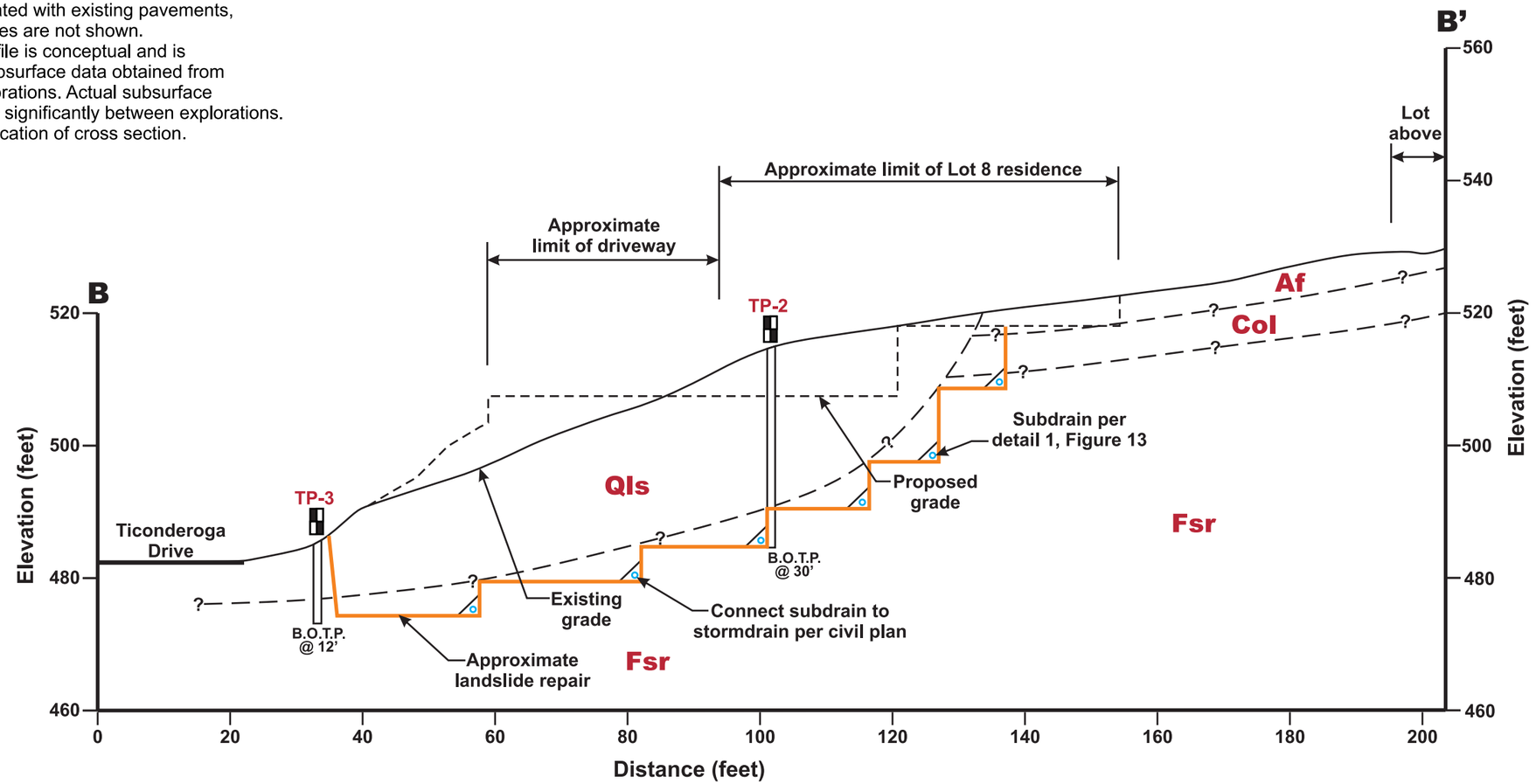
Project Number 230-1-5
Figure Number Figure 11
Drawn By RRN
Date October 2015

Geotechnical Mitigation Cross Section A-A’

Highland Estates - Lots 5 to 11
San Mateo County, CA

CORNERSTONE EARTH GROUP

Notes:
1) Topographical information provided by BKF Engineering, “Preliminary Grading & Utility Plan - Sheet 3”, dated 2/2/2010.
2) Surficial fills associated with existing pavements, landscaping or utilities are not shown.
3) The subsurface profile is conceptual and is based on limited subsurface data obtained from widely spaced explorations. Actual subsurface conditions may vary significantly between explorations.
4) See Figure 10 for location of cross section.



Section B-B’

(View Looking Southwest)
1”=20’ H:V

Explanation

Geologic Units

Af Artificial fill

Col Colluvium

Qls Landslide deposits (Holocene and Pleistocene)

Fsr Franciscan sheared rock

Symbols

TP-1 Approximate location of test pit (Treadwell & Rollo, Inc, June 2009)

—?— Geologic contact (Approximate where dashed)

The undersigned Geotechnical Engineer has performed a geotechnical investigation at the site including performing field investigation, laboratory testing, engineering analysis, and report preparation as described in the October 30, 2015 report by Cornerstone Earth Group, Inc. for the project. The geotechnical aspects of these plan sheets have been prepared and reviewed by the undersigned Geotechnical Engineer and are based upon Limitations described in the Geotechnical Investigation report. These plans are not a stand-alone document and should be considered as part of the geotechnical investigation report. The geotechnical design aspects in these plans are contingent upon a Geotechnical Engineer and Engineering Geologist observing certain aspects of the project grading. These plans are subject to modification and revision during construction based on the field conditions encountered.

REGISTERED PROFESSIONAL ENGINEER SCOTT E. FITINGHOFF NO. 2379 Exp. 06/30/16 GEOTECHNICAL STATE OF CALIFORNIA

10/30/15

Scott E. Fitinghoff, P.E., G.E.

Project Number 230-1-5

Figure Number Figure 12

Drawn By RRN

Date October 2015

Geotechnical Mitigation Cross Section B-B’

Highland Estates - Lots 5 to 11
San Mateo County, CA

CORNERSTONE EARTH GROUP

DRAINAGE MATERIAL

Alternative 1

Class 2 Permeable Material
(Caltrans Standard Specs, latest edition)

Material shall consist of clean, coarse sand and gravel or crushed stone, conforming to the following gradation requirements:

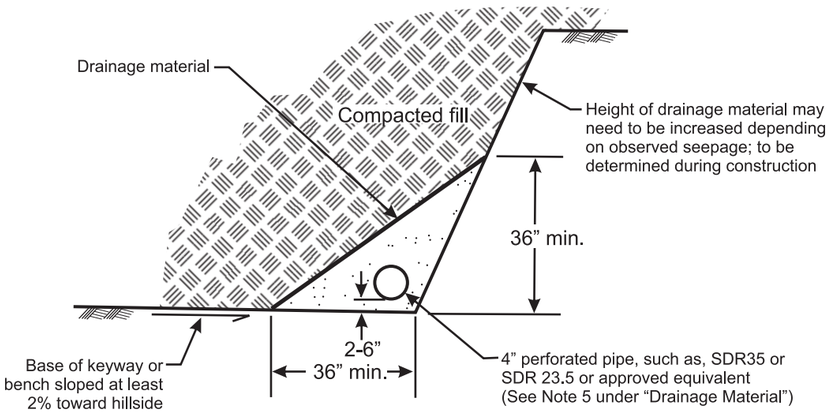
Sieve Size	% Passing Sieve
1”	100
3/4”	90-100
3/8”	40-100
#4	25-40
#8	18-33
#30	5-15
#50	0-7
#200	0-3

Alternative 2

1 /2- to 3/4- inch Clean Crushed Rock or Gravel Wrapped in Filter Fabric

All non-woven filter fabric shall meet the following minimum average roll values unless otherwise specified by Cornerstone Earth Group

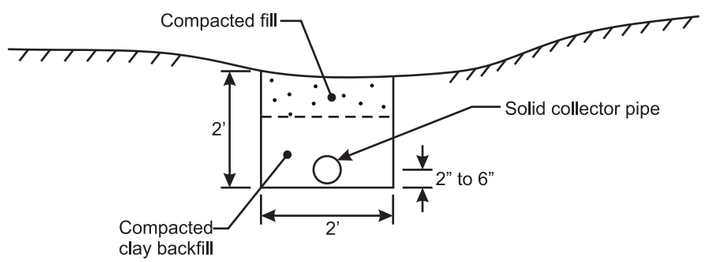
Grab Strength (ASTM D-4632):	180 lbs.
Mass Per Unit Area (ASTM D-4751):	5 oz/yd
Apparent Opening Size (ASTM D-4751):	70-100 U.S. std. sieve
Flow Rate (ASTM D-4491):	80 gal/min/ft
Puncture Strength (ASTM D-4833):	80 lbs.



Detail 1 - Typical Bench and Keyway Subdrain

Not to scale

Notes:
1. 1% fall (minimum) along all keyways, benches and subdrain lines.
2. All perforated pipe placed perforations down.
3. All pipe joints shall be glued.
4. All subdrains should be discharged to a free draining outlet approved by the Civil Engineer.
5. Subdrain pipe (perforated or solid connector) should consist of SDR-35 PVC pipe when placed in fills less than 30 feet deep. SDR-23.5 PVC pipe should be used when fill is greater than 30 feet deep.
6. Use 4” perforated pipe on keyway or benches.
7. Use 6” solid pipe for collector pipes or 6” perforated pipe (Detail 2)
8. Pipe fittings for clean-outs and other 90° bends in the subdrain system (except the connection between the 4” perforated pipes and 6” collection pipes) should be “Sweep 90’s” or other approved equivalent.
9. Contractor to provide all incidental fittings in their bid price to construct the subdrain system. Not all incidental fittings are shown on these plans.
10. Final subdrain layout and placement to be determined by geotechnical engineer at time of construction.



Detail 2 - Solid Collector Pipe
Detail at Cross Section A-A’ and B-B’

Not to scale

Notes:
1. Swale in this area may have active seepage during construction.
2. Collector pipe should be 6” perforated pipe, such as SDR-35 or SDR-23.5 or approved equivalent (See Detail 1 Note 5 under “Drainage Material”)
3. Pipe fittings for clean-outs and other 90° bends in the subdrain system (except the connection between the 4” perforated pipes and 6” collection pipes) should be “Sweep 90’s” or other approved equivalent.
4. Contractor to provide all incidental fittings in their bid price to construct the subdrain system. Not all incidental fittings are shown on these plans.
5. Final subdrain layout and placement to be determined by geotechnical engineer at time of construction.

The undersigned Geotechnical Engineer has performed a geotechnical investigation at the site including performing field investigation, laboratory testing, engineering analysis, and report preparation as described in the October 30, 2015 report by Cornerstone Earth Group, Inc. for the project. The geotechnical aspects of these plan sheets have been prepared and reviewed by the undersigned Geotechnical Engineer and are based upon Limitations described in the Geotechnical Investigation report. These plans are not a stand-alone document and should be considered as part of the geotechnical investigation report. The geotechnical design aspects in these plans are contingent upon a Geotechnical Engineer and Engineering Geologist observing certain aspects of the project grading. These plans are subject to modification and revision during construction based on the field conditions encountered.

REGISTERED PROFESSIONAL ENGINEER SCOTT E. FITINGHOFF NO. 2379 Exp. 06/30/16 GEOTECHNICAL STATE OF CALIFORNIA

10/30/15

Scott E. Fitinghoff, P.E., G.E.

Project Number 230-1-5

Figure Number Figure 13

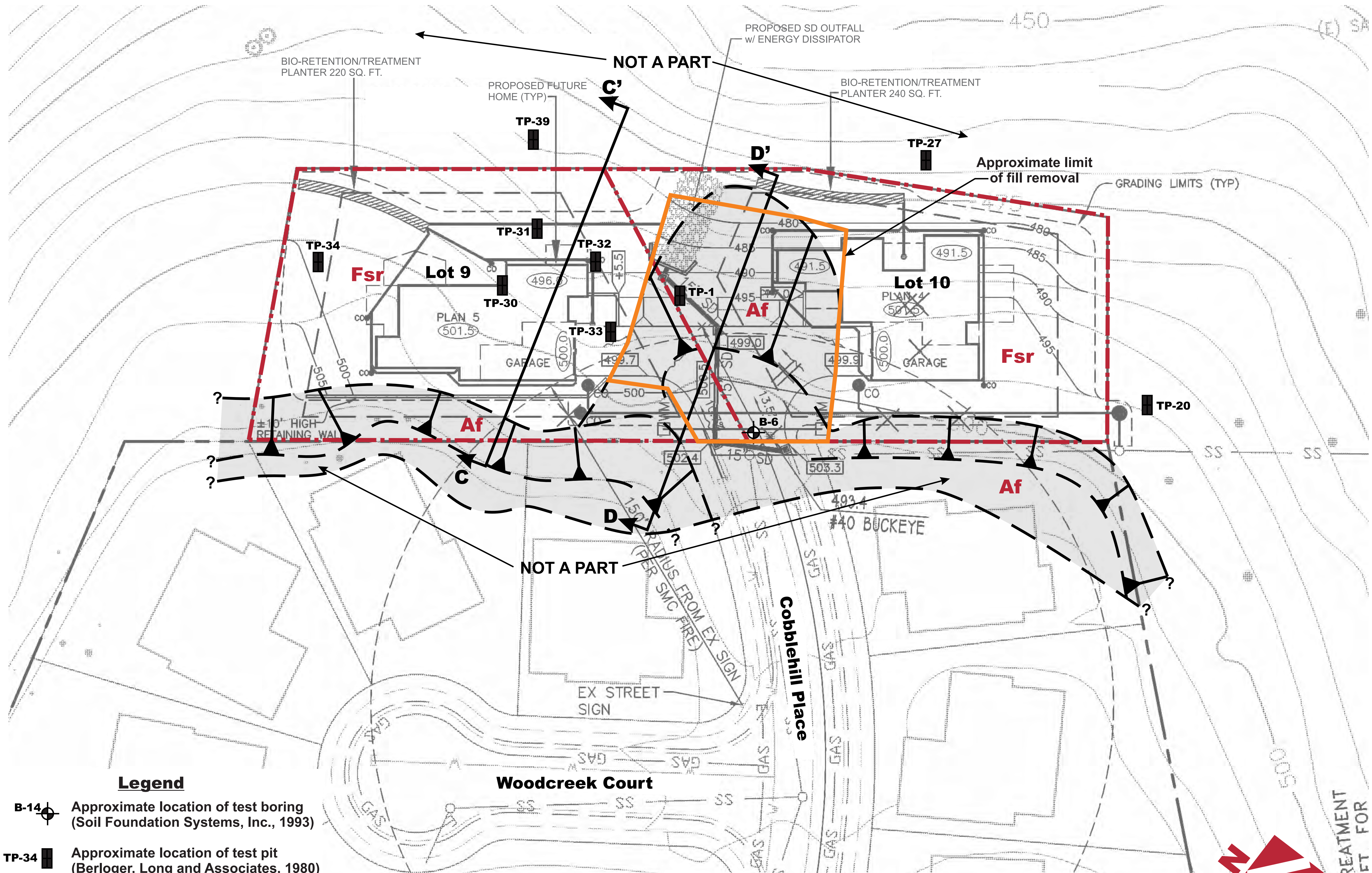
Drawn By RRN

Date October 2015

Geotechnical Mitigation Details

Highland Estates - Lots 5 to 11
San Mateo County, CA

CORNERSTONE EARTH GROUP



Legend

B-14 Approximate location of test boring (Soil Foundation Systems, Inc., 1993)

TP-34 Approximate location of test pit (Berloger, Long and Associates, 1980)

C C' Geologic section (see Figures 7 and 8)

Geologic contact (dashed where approximate)

Fill slope

Fill

Geologic Units

Af Artificial fill

Fsr Franciscan sheared rock

Note: Colluvium not shown

0 40 80

APPROXIMATE SCALE (FEET)

Base by BKF Engineering, "Preliminary Grading & Utility Plan - Sheet 4", dated 2/2/2010

Keying and Benching Plan (Lots 9 and 10)

Highland Estates - Lots 5 to 11
San Mateo County, CA

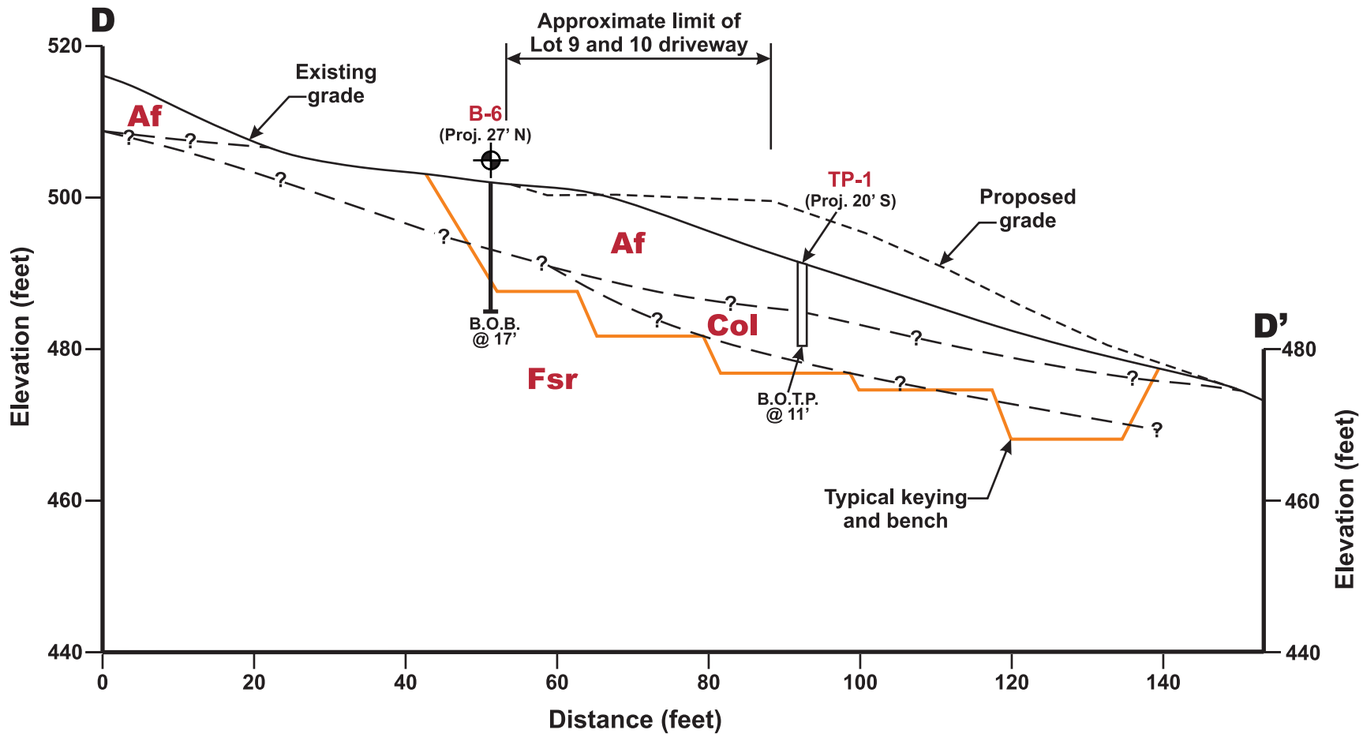
CORNERSTONE EARTH GROUP

Project Number 230-1-5

Figure Number Figure 14

Date October 2015

Drawn By RRN



Section D-D'

(View Looking North)
1"=20' H:V

Explanation

Geologic Units

- **Af** Artificial fill
- **Col** Colluvium
- **Fsr** Franciscan sheared rock

Symbols

- **TP-1** Approximate location of test pit (Berloger, Long and Associates, 1980)
- **B-6** Approximate location of test boring (Soil Foundation Systems, Inc., 1993)
- —?— Geologic contact (Approximate where dashed)

Notes:
1) Topographical information provided by BKF Engineering, "Preliminary Grading & Utility Plan - Sheet 4", dated 2/2/2010.
2) Surficial fills associated with existing pavements, landscaping or utilities are not shown.
3) The subsurface profile is conceptual and is based on limited subsurface data obtained from widely spaced explorations. Actual subsurface conditions may vary significantly between explorations.
4) See Figure 14 for location of cross section.

Project Number 230-1-5
Figure Number Figure 15
Date October 2015
Drawn By RRN

Keying and Benching Cross Section D-D'

Highland Estates - Lots 5 to 11
San Mateo County, CA

CORNERSTONE EARTH GROUP

APPENDIX A: FIELD INVESTIGATION

The field investigation consisted of a surface reconnaissance and a subsurface exploration program using limited-access, solid-stem auger drilling equipment. One 4-inch-diameter exploratory boring was drilled on July 28, 2015 to a depth of 15 feet. The approximate location of the exploratory boring is shown on Site Plan and Geologic Map, Figure 2C. The soils encountered were continuously logged in the field by our representative and described in accordance with the Unified Soil Classification System (ASTM D2488). Boring logs, as well as a key to the classification of the soil and bedrock, are included as part of this appendix.

The boring location was approximated using existing site boundaries, a tape measure, and other site features as references. The boring elevation was not determined. The location of the boring should be considered accurate only to the degree implied by the method used.

Representative soil and bedrock samples were obtained from the boring at selected depths. All samples were returned to our laboratory for evaluation and appropriate testing. The standard penetration resistance blow counts were obtained by dropping a 140-pound hammer through a 30-inch free fall. The 2-inch O.D. split-spoon sampler was driven 18 inches and the number of blows was recorded for each 6 inches of penetration (ASTM D1586). 2.5-inch I.D. samples were obtained using a Modified California Sampler driven into the soil with the 140-pound hammer previously described. Unless otherwise indicated, the blows per foot recorded on the boring log represent the accumulated number of blows required to drive the last 12 inches. The various samplers are denoted at the appropriate depth on the boring log.

Field tests included an evaluation of the unconfined compressive strength of the soil samples using a pocket penetrometer device. The results of these tests are presented on the individual boring logs at the appropriate sample depths.

The attached boring log and related information depict subsurface conditions at the locations indicated and on the date designated on the log. Subsurface conditions at other locations may differ from conditions occurring at this boring location. The passage of time may result in altered subsurface conditions due to environmental changes. In addition, any stratification lines on the log represent the approximate boundary between soil types and the transition may be gradual.

UNIFIED SOIL CLASSIFICATION (ASTM D-2487-98)

MATERIAL TYPES	CRITERIA FOR ASSIGNING SOIL GROUP NAMES			GROUP SYMBOL	SOIL GROUP NAMES & LEGEND
COARSE-GRAINED SOILS >50% RETAINED ON NO. 200 SIEVE	GRAVELS >50% OF COARSE FRACTION RETAINED ON NO 4. SIEVE	CLEAN GRAVELS <5% FINES	Cu>4 AND 1<Cc<3	GW	WELL-GRADED GRAVEL
			Cu>4 AND 1>Cc>3	GP	POORLY-GRADED GRAVEL
		GRAVELS WITH FINES >12% FINES	FINES CLASSIFY AS ML OR CL	GM	SILTY GRAVEL
			FINES CLASSIFY AS CL OR CH	GC	CLAYEY GRAVEL
	SANDS >50% OF COARSE FRACTION PASSES ON NO 4. SIEVE	CLEAN SANDS <5% FINES	Cu>6 AND 1<Cc<3	SW	WELL-GRADED SAND
			Cu>6 AND 1>Cc>3	SP	POORLY-GRADED SAND
		SANDS AND FINES >12% FINES	FINES CLASSIFY AS ML OR CL	SM	SILTY SAND
			FINES CLASSIFY AS CL OR CH	SC	CLAYEY SAND
FINE-GRAINED SOILS >50% PASSES NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT<50	INORGANIC	PI>7 AND PLOTS>"A" LINE	CL	LEAN CLAY
			PI>4 AND PLOTS<"A" LINE	ML	SILT
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OL	ORGANIC CLAY OR SILT
	SILTS AND CLAYS LIQUID LIMIT>50	INORGANIC	PI PLOTS >"A" LINE	CH	FAT CLAY
			PI PLOTS <"A" LINE	MH	ELASTIC SILT
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OH	ORGANIC CLAY OR SILT
HIGHLY ORGANIC SOILS		PRIMARILY ORGANIC MATTER, DARK IN COLOR, AND ORGANIC ODOR		PT	PEAT

OTHER MATERIAL SYMBOLS

- Poorly-Graded Sand with Clay
- Clayey Sand
- Sandy Silt
- Artificial/Undocumented Fill
- Poorly-Graded Gravelly Sand
- Topsoil
- Well-Graded Gravel with Clay
- Well-Graded Gravel with Silt
- Sand
- Silt
- Well Graded Gravelly Sand
- Gravelly Silt
- Asphalt
- Boulders and Cobble

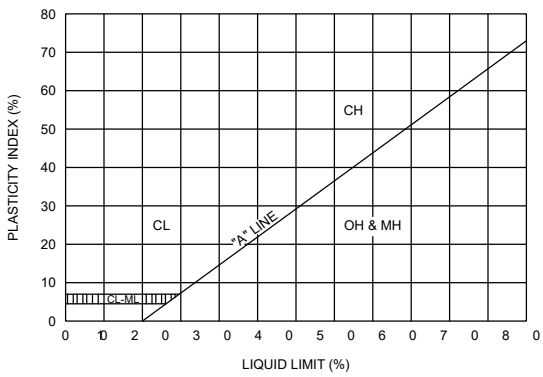
SAMPLER TYPES

- SPT
- Modified California (2.5" I.D.)
- Rock Core
- Shelby Tube
- No Recovery
- Grab Sample

ADDITIONAL TESTS

CA	-	CHEMICAL ANALYSIS (CORROSIVITY)	PI	-	PLASTICITY INDEX
CD	-	CONSOLIDATED DRAINED TRIAXIAL	SW	-	SWELL TEST
CN	-	CONSOLIDATION	TC	-	CYCLIC TRIAXIAL
CU	-	CONSOLIDATED UNDRAINED TRIAXIAL	TV	-	TORVANE SHEAR
DS	-	DIRECT SHEAR	UC	-	UNCONFINED COMPRESSION
PP	-	POCKET PENETROMETER (TSF)	(1.5)	-	(WITH SHEAR STRENGTH IN KSF)
(3.0)	-	(WITH SHEAR STRENGTH IN KSF)			
RV	-	R-VALUE	UU	-	UNCONSOLIDATED UNDRAINED TRIAXIAL
SA	-	SIEVE ANALYSIS: % PASSING #200 SIEVE			
	-	WATER LEVEL			

PLASTICITY CHART



PENETRATION RESISTANCE
(RECORDED AS BLOWS / FOOT)

SAND & GRAVEL		SILT & CLAY		
RELATIVE DENSITY	BLOWS/FOOT*	CONSISTENCY	BLOWS/FOOT*	STRENGTH** (KSF)
VERY LOOSE	0 - 4	VERY SOFT	0 - 2	0 - 0.25
LOOSE	4 - 10	SOFT	2 - 4	0.25 - 0.5
MEDIUM DENSE	10 - 30	MEDIUM STIFF	4 - 8	0.5 - 1.0
DENSE	30 - 50	STIFF	8 - 15	1.0 - 2.0
VERY DENSE	OVER 50	VERY STIFF	15 - 30	2.0 - 4.0
		HARD	OVER 30	OVER 4.0

* NUMBER OF BLOWS OF 140 LB HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1-3/8 INCH I.D.) SPLIT-BARREL SAMPLER THE LAST 12 INCHES OF AN 18-INCH DRIVE (ASTM-1586 STANDARD PENETRATION TEST).

** UNDRAINED SHEAR STRENGTH IN KIPS/SQ. FT. AS DETERMINED BY LABORATORY TESTING OR APPROXIMATED BY THE STANDARD PENETRATION TEST, POCKET PENETROMETER, TORVANE, OR VISUAL OBSERVATION.

CORNERSTONE EARTH GROUP

LEGEND TO SOIL DESCRIPTIONS

Figure Number A-1

HARDNESS

1. **Soft** – Reserved for plastic material alone.
2. **Low hardness** – Can be gouged deeply or carved easily with a knife blade.
3. **Moderately hard** – Can be readily scratched by a knife blade: scratch leaves a heavy trace of dust and is readily visible after the powder has been blown away.
4. **Hard** – Can be scratched with difficulty: scratch produces little powder and is often faintly visible.
5. **Very hard** – Cannot be scratched with knife blade: leaves a metallic streak.

STRENGTH

1. **Plastic** or very low strength.
2. **Friable –** Crumbles easily by rubbing with fingers.
3. **Weak –** An unfractured specimen of such material will crumble under light hammer blows.
4. **Moderately strong –** Specimen will withstand a few heavy hammer blows before breaking.
5. **Strong –** Specimen will withstand a few heavy ringing blows and will yield with difficulty only dust and small flying fragments.
6. **Very strong –** Specimen will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments.

WEATHERING – The physical and chemical disintegration and decomposition of rocks and minerals by natural processes such as oxidation, reduction, hydration, solution, carbonation, and freezing and thawing.

D. Deep – Moderate to complete mineral decomposition: extensive disintegration: deep and thorough discoloration: many fractures, all extensively coated or filled with oxides, carbonates and/or clay or silt.

M. Moderate – Slight change or partial decomposition of minerals: little disintegration: cementation little to unaffected. Moderate to occasionally intense discoloration. Moderately coated fractures.

L. Little – No megascopic decomposition of minerals: little or no effect on normal cementation. Slight and intermittent, or localized discoloration. Few stains or fracture surfaces.

F. Fresh – Unaffected by weathering agents. No disintegration or discoloration. Fractures usually less numerous than joints.

FRACTURING

Intensity	Size of Pieces in Feet
Very little fractured	Greater than 4.0
Occasionally fractured	1.0 to 4.0
Moderately fractured	0.5 to 1.0
Closely fractured	0.1 to 0.5
Intensely fractured	0.05 to 0.1
Crushed	Less than 0.05

BEDDING OF SEDIMENTARY ROCKS

Splitting Property	Thickness	Stratification
Massive	Greater than 4.0 feet	very thick-bedded
Blocky	2.0 to 4.0 feet	thick-bedded
Slabby	0.2 to 2.0 feet	thin-bedded
Flaggy	0.05 to 0.2 feet	very thin-bedded
Shaly or Platy	0.01 to 0.05 feet	laminated
Papery	less than 0.01 feet	thinly laminated

BORING NUMBER EB-1

CORNERSTONE EARTH GROUP

PROJECT NAME Highland Estates Lot 11
PROJECT NUMBER 230-1-5
PROJECT LOCATION San Mateo County, CA

DATE STARTED 7/28/15 **DATE COMPLETED** 7/28/15
GROUND ELEVATION _____ **BORING DEPTH** 15 ft.
DRILLING CONTRACTOR Cenozoic Drilling Inc.
LATITUDE _____ **LONGITUDE** _____
DRILLING METHOD Minuteman, 4 inch Solid Flight Auger
GROUND WATER LEVELS:
LOGGED BY CSH
▽ **AT TIME OF DRILLING** Not Encountered
NOTES _____
▼ **AT END OF DRILLING** Not Encountered

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf (○ HAND PENETROMETER, △ TORVANE, ● UNCONFINED COMPRESSION, ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL; 1.0 2.0 3.0 4.0)
	0		**Clayey Sand (SC) [Fill]** medium dense, moist, brown, fine sand, some fine to coarse subangular to subrounded gravel Liquid Limit = 40, Plastic Limit = 18	26	MC-1	109	10	22		
				23	MC-2	83	18			
				30	MC-3	87	12			
	5			35	MC					
			Sandy Lean Clay (CL) [Colluvium] very stiff, moist, dark gray brown, fine sand, some fine subangular to subrounded gravel, moderate plasticity	29	SPT-5		16			>4.5 ○
			Sandstone - Franciscan Complex [Fsr] low hardness, weak, deep weathering, yellowish gray, fine to medium sand	46	MC-6	119	10			
	10		**Shale - Franciscan Complex [Fsr]** low hardness, weak, deep weathering, dark gray to brown, some interbedded sandstone	45	SPT-7		8			
				60	SPT-8		10			
			Sandstone - Franciscan Complex [Fsr] low hardness, weak, deep weathering, yellowish gray, fine to medium sand	67	SPT-9		9			
	15		Bottom of Boring at 15.0 feet.							
	20									
	25									

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 8/12/15 13:23 - P:\DRAFTING\GINT FILES\230-1-5 HIGHLAND EST LOT 11.GPJ

APPENDIX B: LABORATORY TEST PROGRAM

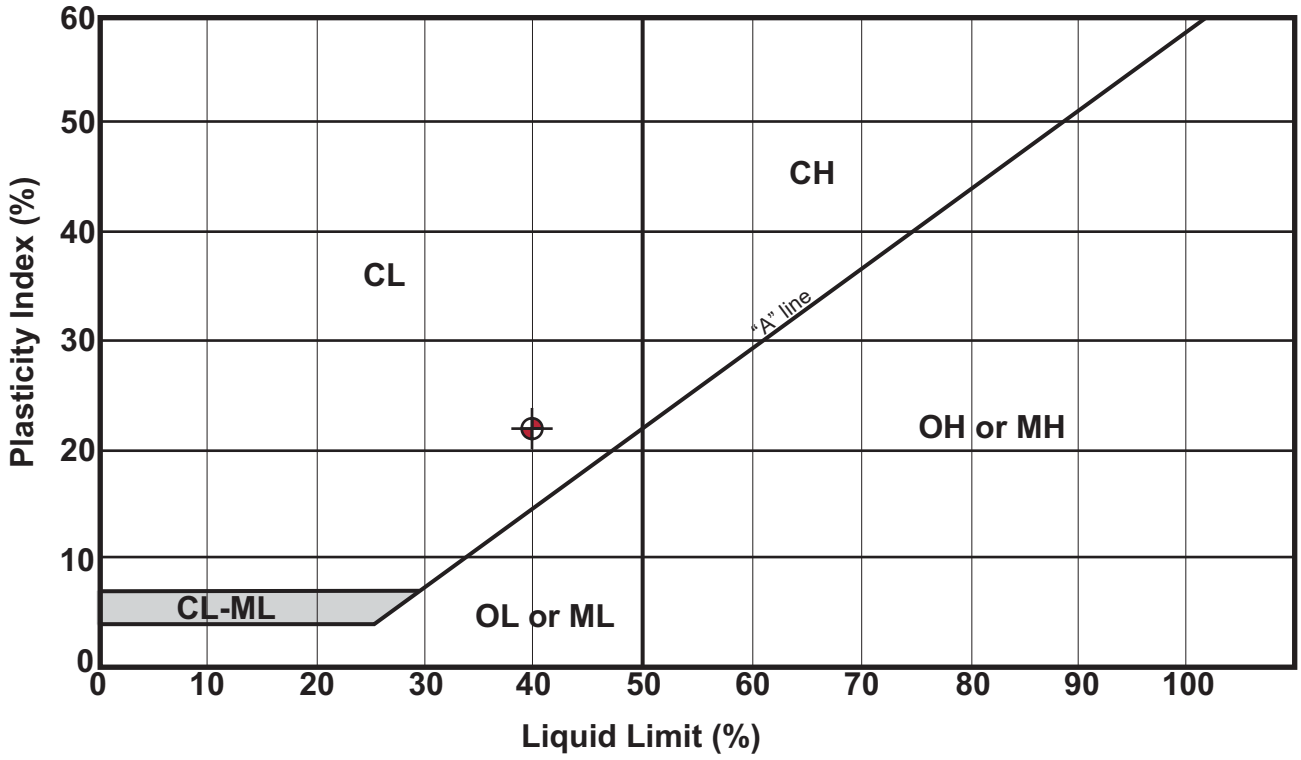
The laboratory testing program was performed to evaluate the physical and mechanical properties of the soils retrieved from the site to aid in verifying soil classification.

Moisture Content: The natural water content was determined (ASTM D2216) on 8 samples of the materials recovered from the borings. These water contents are recorded on the boring logs at the appropriate sample depths.

Dry Densities: In place dry density determinations (ASTM D2937) were performed on 4 samples to measure the unit weight of the subsurface soils. Results of these tests are shown on the boring logs at the appropriate sample depths.

Plasticity Index: One Plasticity Index determination (ASTM D4318) was performed on a sample of the subsurface soil to measure the range of water contents over which this material exhibits plasticity. The Plasticity Index was used to classify the soil in accordance with the Unified Soil Classification System and to evaluate the soil expansion potential. Results of this test are shown on the boring log at the appropriate sample depth.

Plasticity Index (ASTM D4318) Testing Summary



Symbol	Boring No.	Depth (ft)	Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	Passing No. 200 (%)	Group Name (USCS - ASTM D2487)
⊕	EB-1	1.0	10	40	18	22	—	Clayey Sand (SC) (CL fines) [Fill]

CORNERSTONE EARTH GROUP

Plasticity Index Testing Summary

Highland Estates Lot 11
San Mateo, CA

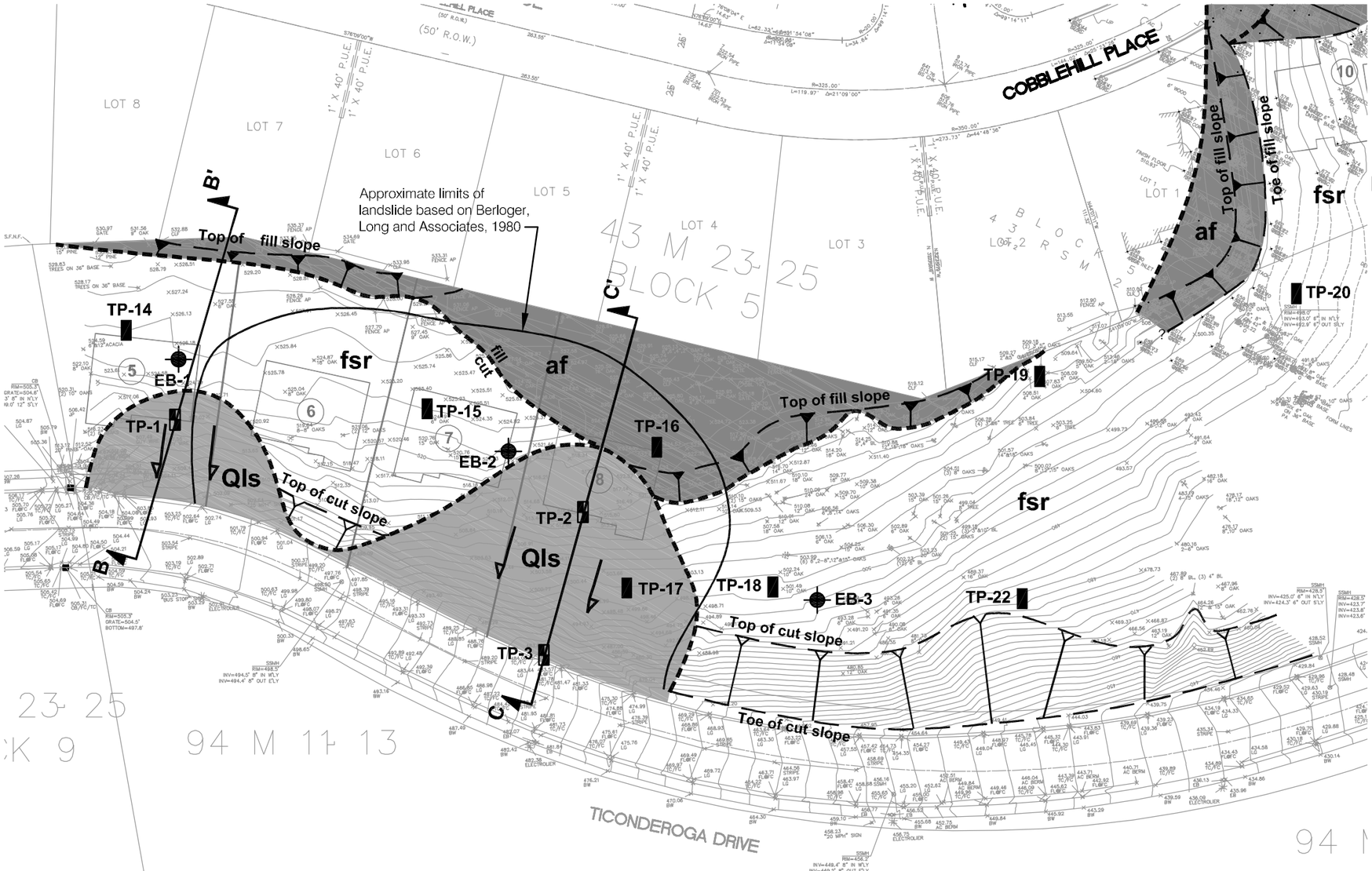
Project Number: 230-1-5

Figure Number: Figure B1

Date: August 2015

Drawn By: FLL

APPENDIX C: TREADWELL & ROLLO STABILITY ANALYSIS OUTPUT



EXPLANATION

- TP-1 — Approximate location of test pit by Treadwell & Rollo, Inc., June 2009
- EB-1 — Approximate location of boring by Lowney, 2005
- TP-14 — Approximate location of test pit by Berloger, Long and Associates, 1980
- B B' — Idealized subsurface profile
- af — Artificial fill
- fsr — Franciscan Melange
- Qls — Landslide
- Cut slope
- Fill slope
- Direction of landslide
- (5) — Proposed lot number

0 60 Feet
Approximate scale

Reference: Base map from a site plan titled "Highland Estates - Ticonderoga, Partial Topopgrahic Survey, by BKF, dated 05/13/09.

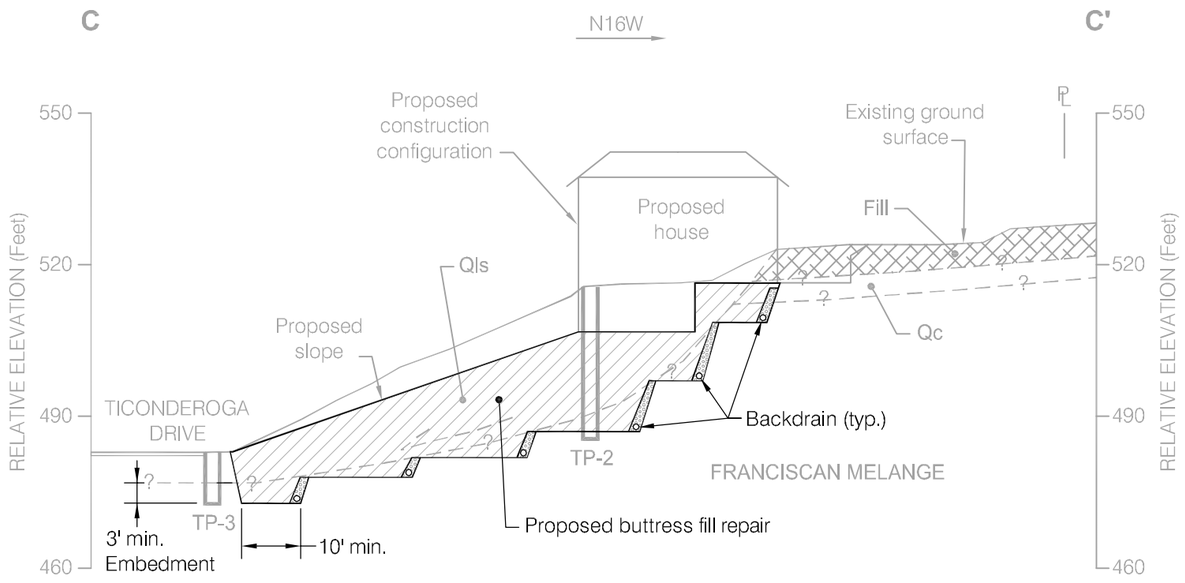
R:\Trgraphics\4800's\4872.02\4872.02 Site Plan and Engineering Geo Map.dwg 8/27/09

HIGHLAND ESTATES
San Mateo County, California

SITE PLAN AND ENGINEERING GEOLOGIC MAP 2

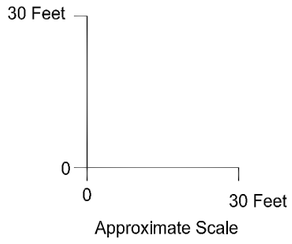
Date 07/06/09	Project No. 4872.02	Figure 2b

Treadwell&Rollo



Notes:
1. The above profile represents a generalized soil cross section interpreted from widely spaced test pits and borings. Soil deposits may vary in type, strength, and other important properties between points of exploration.

2. Cross-sections based on our site reconnaissance, topographic surveys by BKF Engineers, Inc., others.



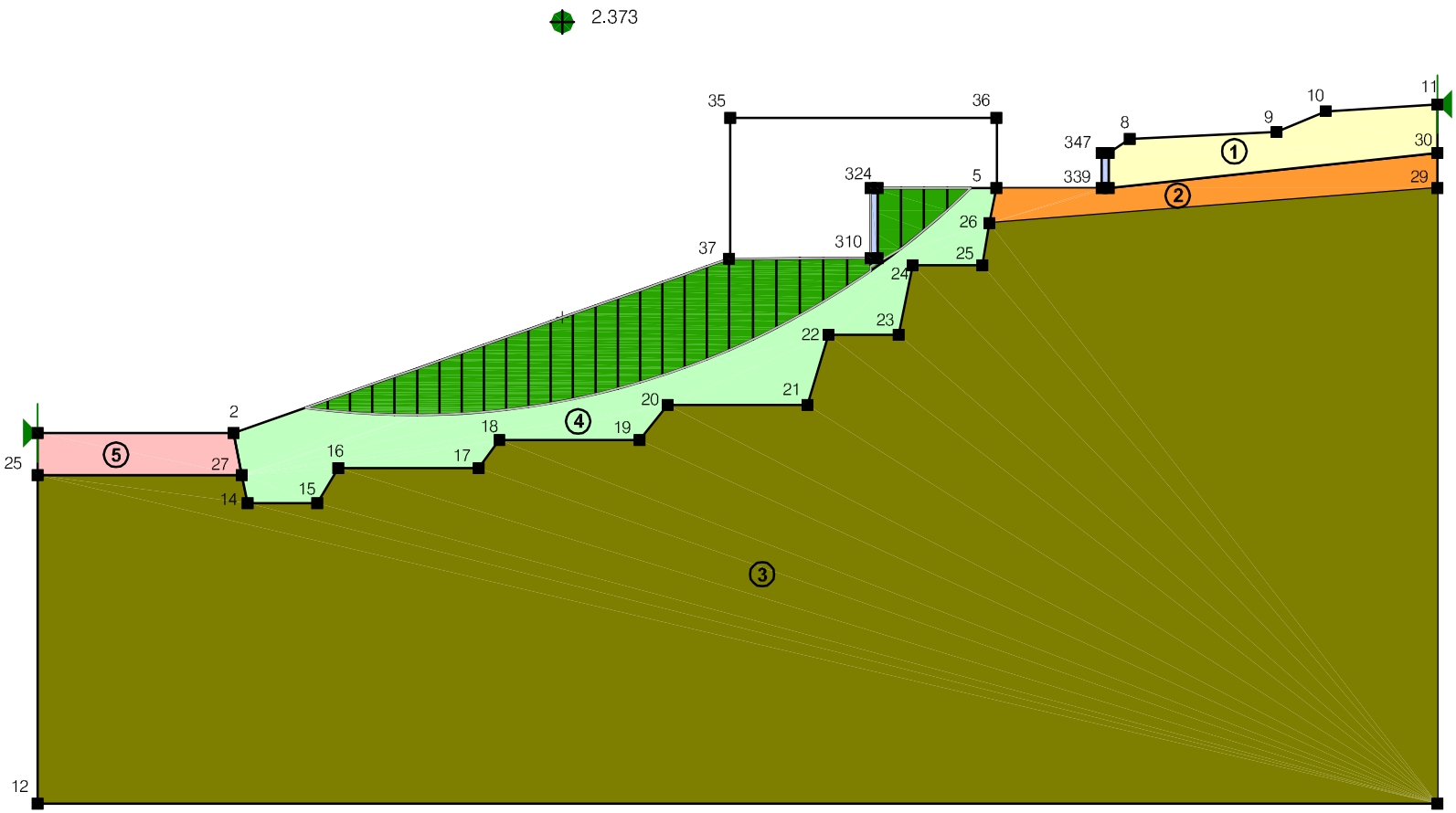
HIGHLAND ESTATES
San Mateo County, California

PROPOSED BUTTRESS FILL REPAIR SUBSURFACE PROFILE

Date 08/18/09	Project No. 4872.02	Figure C-1

Treadwell&Rollo

R:\Trgraphics\4800's\4872.02\4872.02 Proposed Buttress Fill Repair Subsurface Profile.dwg 8/27/09



Material #: 1
Description: Existing Fill
Model: MohrCoulomb
Wt: 110
Cohesion: 500
Phi: 26

Material #: 2
Description: Colluvium
Model: MohrCoulomb
Wt: 120
Cohesion: 700
Phi: 22

Material #: 3
Description: Franciscan Melange
Model: MohrCoulomb
Wt: 135
Cohesion: 800
Phi: 22

Material #: 4
Description: Proposed Buttress Fill
Model: MohrCoulomb
Wt: 124
Cohesion: 60
Phi: 32.3

Material #: 5
Description: Landslide Deposits
Model: MohrCoulomb
Wt: 110
Cohesion: 700
Phi: 11

HIGHLAND ESTATES
San Mateo County, California

Treadwell&Rollo

STATIC SLOPE STABILITY ANALYSIS

Date 08/21/09	Project No. 4872.02	Figure C-2

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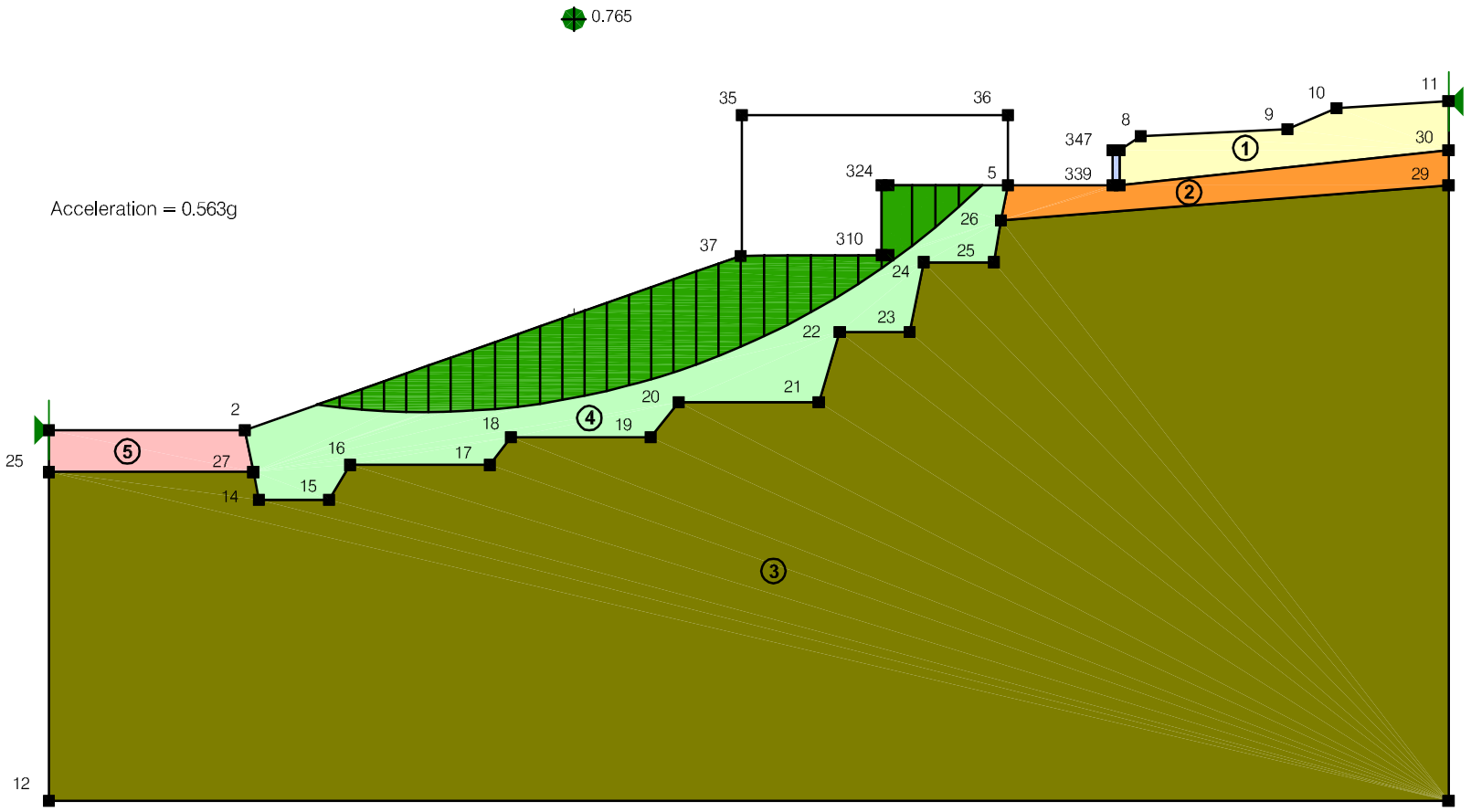

Material #: 1
Description: Existing Fill
Model: MohrCoulomb
Wt: 110
Cohesion: 500
Phi: 26

Material #: 2
Description: Colluvium
Model: MohrCoulomb
Wt: 120
Cohesion: 700
Phi: 22

Material #: 3
Description: Franciscan Melange
Model: MohrCoulomb
Wt: 135
Cohesion: 800
Phi: 22

Material #: 4
Description: Proposed Buttress Fill
Model: MohrCoulomb
Wt: 124
Cohesion: 60
Phi: 32.3

Material #: 5
Description: Landslide Deposits
Model: MohrCoulomb
Wt: 110
Cohesion: 700
Phi: 11

HIGHLAND ESTATES
San Mateo County, California

Treadwell&Rollo

PSEUDO-STATIC SLOPE STABILITY ANALYSIS

Date 08/21/09	Project No. 4872.02	Figure C-3

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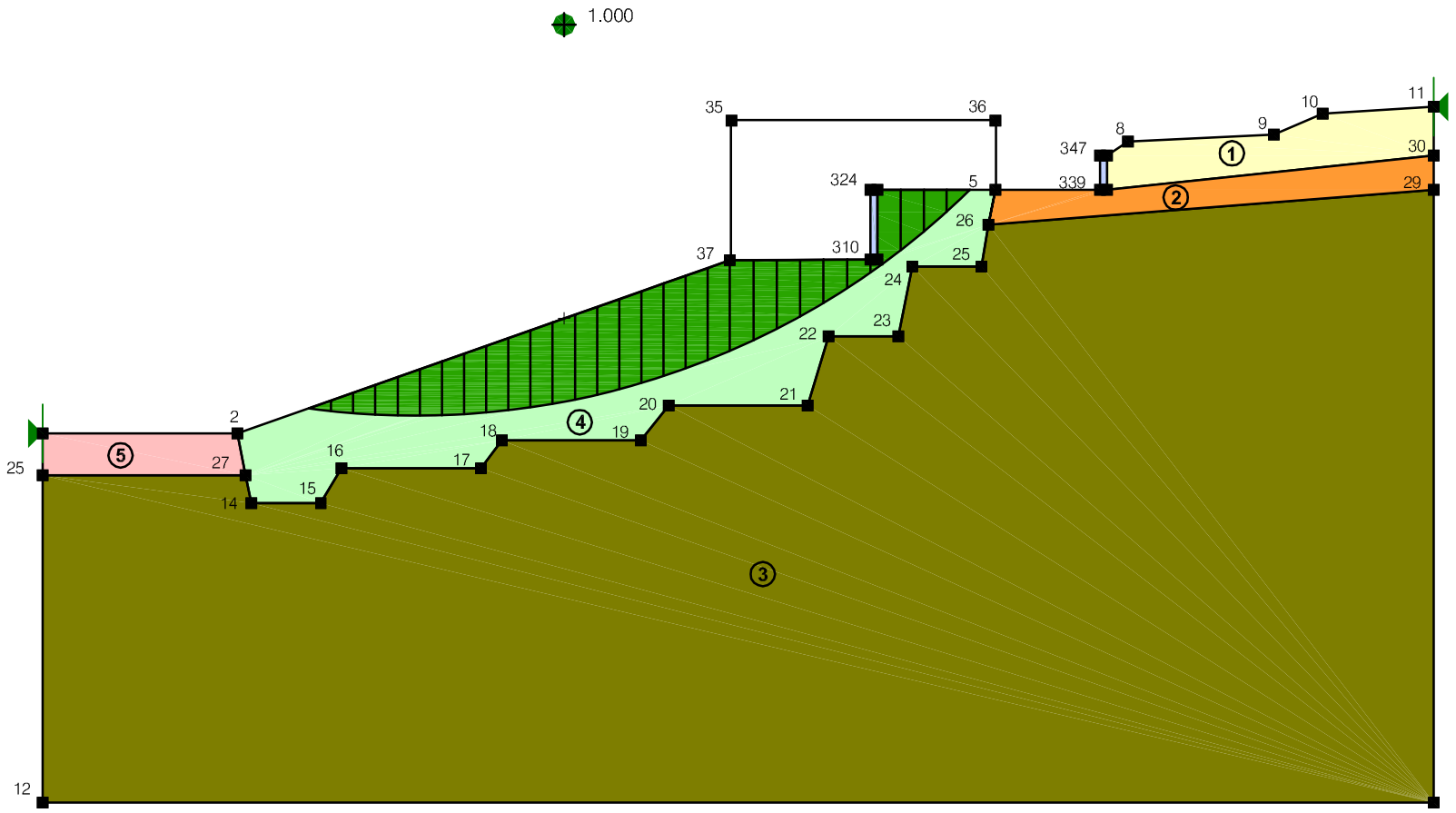

Material #: 1
Description: Existing Fill
Model: MohrCoulomb
Wt: 110
Cohesion: 500
Phi: 26

Material #: 2
Description: Colluvium
Model: MohrCoulomb
Wt: 120
Cohesion: 700
Phi: 22

Material #: 3
Description: Franciscan Melange
Model: MohrCoulomb
Wt: 135
Cohesion: 800
Phi: 22

Material #: 4
Description: Proposed Buttress Fill
Model: MohrCoulomb
Wt: 124
Cohesion: 60
Phi: 32.3

Material #: 5
Description: Landslide Deposits
Model: MohrCoulomb
Wt: 110
Cohesion: 700
Phi: 11

HIGHLAND ESTATES
San Mateo County, California

Treadwell&Rollo

YIELD SLOPE STABILITY ANALYSIS

Date 08/21/09	Project No. 4872.02	Figure C-4

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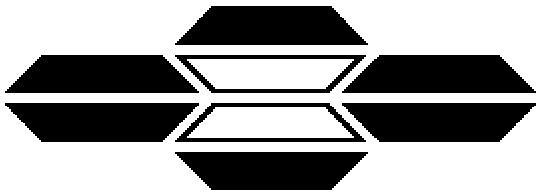
APPENDIX D: SITE ASBESTOS EVALUATION



ASBESTOS TEM LABORATORIES, INC.

CARB Method 435
Polarized Light Microscopy
Analytical Report

Laboratory Job # 1206-00077

630 Bancroft Way
Berkeley, CA 94710
(510) 704-8930
FAX (510) 704-8429

ASBESTOS TEM LABORATORIES, INC

CA DPH ELAP
Lab No. 1866

NVLAP Lab Code: 101891-0
Berkeley, CA

Oct/05/2015

Matt Schaffer
Cornerstone Earth Group, Inc.
1259 Oakmead Parkway
Sunnyvale, CA 94085

RE: LABORATORY JOB # 1206-00077
Polarized light microscopy analytical results for 1 bulk sample(s).
Job Site: 230-1-5
Job No.: Highland Estates Lots 5-11

Enclosed please find the bulk material analytical results for one or more samples submitted for asbestos analysis. The analyses were performed in accordance with the California Air Resources Board (ARB) Method 435 for the determination of asbestos in serpentine aggregate samples.

Prior to analysis, samples are logged-in and all data pertinent to the sample recorded. The samples are checked for damage or disruption of any chain-of-custody seals. A unique laboratory ID number is assigned to each sample. A hard copy log-in sheet containing all pertinent information concerning the sample is generated. This and all other relevant paper work are kept with the sample throughout the analytical procedures to assure proper analysis.

Sample preparation follows a standard CARB 435 prep method. The entire sample is dried at 135-150 C and then crushed to ~3/8" gravel size using a Bico Chipmunk crusher. If the submitted sample is >1 pint, the sample was split using a 1/2" riffle splitter following ASTM Method C-702-98 to obtain a 1 pint aliquot. The entire 1 pint aliquot, or entire original sample, is then pulverized in a Bico Braun disc pulverizer calibrated to produce a nominal 200 mesh final product. If necessary, additional homogenization steps are undertaken using a 3/8" riffle splitter. Small aliquots are collected from throughout the pulverized material to create three separate microsope slide mounts containing the appropriate refractive index oil. The prepared slides are placed under a polarizing light microscope where standard mineralogical techniques are used to analyze the various materials present, including asbestos. If asbestos is identified and of less than 10% concentration by visual area estimate then an additional five sample mounts are prepared. Quantification of asbestos concentration is obtained using the standard CAL ARB Method 435 point count protocol. For samples observed to contain visible asbestos of less than 10% concentration, a point counting techinique is used with 50 points counted on each of eight sample mounts for a total of 400 points. The data is then compiled into standard report format and subjected to a thorough quality assurance check before the information is released to the client.

While the CARB 435 method has much to commend it, there are a number of situations where it fails to provide sufficient accuracy to make a definitive determination of the presence/absence of asbestos and/or an accurate count of the asbestos concentration present in a given sample. These problems include, but are not limited to, 1) statistical uncertainty with samples containing <1% asbestos when too few particles are counted, 2) definitive identification and discrimination between various fibrous amphibole minerals such as tremolite/actinolite/hornblende and the "Libby amphiboles" such as tremolite/winchite/richterite/arfvedsonite, and C) small asbestiform fibers which are near or below the resolution limit of the PLM microscope such as those found in various California coast range serpentine bodies. In these cases, further analysis by transmission electron microscopy is recommended to obtain a more accurate result.

Sincerely Yours,

Lab Manager
ASBESTOS TEM LABORATORIES, INC.

--- These results relate only to the samples tested and must not be reproduced, except in full, without the approval of the laboratory. ---

POLARIZED LIGHT MICROSCOPY
CARB 435 ANALYTICAL REPORT

Contact: Matt Schaffer

Address: Cornerstone Earth Group, Inc.
1259 Oakmead Parkway
Sunnyvale, CA 94085

Samples Submitted: 1

Samples Analyzed: 1

Job Site / No. Highland Estates Lots 5-11
230-1-5

Report No. **336724**
Date Submitted: Sep-30-15
Date Reported: Oct-05-15

SAMPLE ID	POINTS COUNTED	ASBESTOS %	ASBESTOS TYPE	LOCATION / DESCRIPTION
EB-1 (8.5-15)		**<0.25%**	**None Detected**	Soil/Bedrock
Lab ID # 1206-00077-001	**400** - Total Points			No Asbestos Detected - ARB Exception I
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			

QC Reviewer _____ **Analyst** Jo Ann Hunter

ASBESTOS TEM LABORATORIES CHAIN OF CUSTODY – *www.asbestostemlabs.com*

CALIFORNIA: 630 Bancroft Way, Berkeley, CA 94710 Phone (510) 704-8930 Fax (510) 704-8429
NEVADA: 1350 Freeport Blvd. #104, Sparks, NV 89431 Phone (775) 359-3377 Fax (775) 359-2798

Please print and send completed CoC with your samples. If you wish to email CoC, send the form as an attachment to Berkeley <coc@asbestostemlabs.com > or Reno <sehrlich@asbestostemlabs.com>.

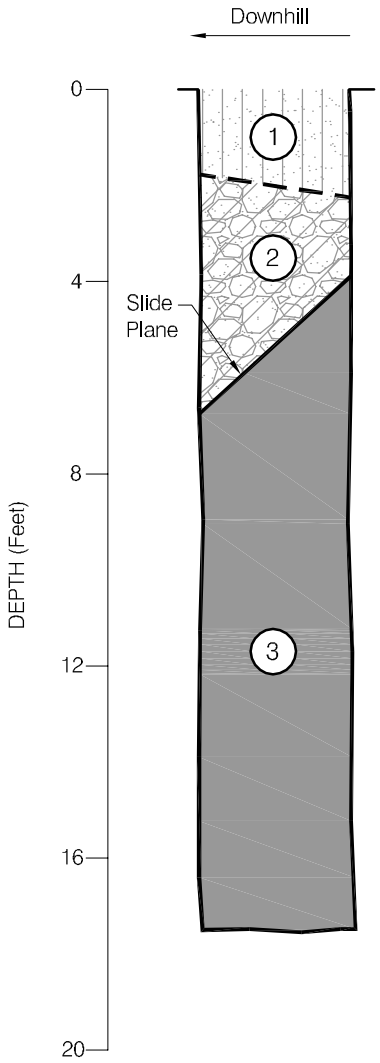
Company: Cornerstone Earth Group				*Contact:* Matt Schaffer				*Phone/Fax:* 408-515-3734				*Email:* mschaffer@cornerstoneearth.com			
Address. 1259 Oakmead Parkway				*City:* Sunnyvale				*State:* CA *Zip:* 94085				*Country:* United States			
Job Site: Highland Estates Lots 5-11								*Job No:* 230-1-5				*P.O. No:*			
Reporting	☐ Fax	☐ Phone	■ Email	☐ Mail	☐ FTP	☐ EDD/State Form	☐ Verbal	☐ Pickup	**Billing**	☐ Fax	■ Email	☐ Mail	☐ Pre-Paid	☐ 3rd Party	
Results Due:*	☐ 2 hr	☐ 4 hr	☐ 6 hr	☐ 8 hr	☐ 24 hr	☐ 48 hr	■ 3 day	☐ 4 day	☐ 5 day	[redacted]	☐ Time due:____	* Contact lab to confirm TAT			
Asbestos Air	☐ PCM (NIOSH 7400A	☐ TEM AHERA	☐ TEM CARB Mod. AHERA	☐ TEM EPA Yamate Level	☐ TEM NIOSH 7402, Issue 2	☐ ISO 10312	☐ ISO 13794								
Asbestos Bulk	☐ PLM Standard (EPA 600/R-93-1	☐ PLM 400 PC	☐ PLM 1000 PC	☐ PLM 400 PC Grav. Red.	☐ PLM 1000 PC Grav. Red.	☐ TEM EPA Qualitative	☐ TEM EPA Quantitatve								
	☐ TEM Chatfield (Semi-Quant)	☐ PLM Vermiculite Attic Insulation	☐ Custom Analysis: Type:												
Asbestos Soils	☐ CARB 435 Prep Only	■ CARB 435 PLM 400 PC	☐ CARB 435 PLM 1000 PC	☐ EPA Soil Screening Qualitative	☐ TEM EPA/CARB Quantitative										
Asbestos Dust	☐ ASTM D-5755 Fiber Count	☐ ASTM D-5756 Wt. %	☐ ASTM D-5756 Mass	☐ ASTM D-6480-99 Dust Wipe	☐ Total Particulates (Grav.)										
Asbestos Water	☐ 100.2 Potable Drinking Water	☐ 100.1 Non Potable Water													
Lead	☐ Paint Chips	☐ Dust Wipe	☐ Air Cassette	☐ Soil	Lead Waste Characterization:	☐ TTLC	☐ STLC	☐ TCLP							
Sample Storage	*☐ No Test, Hold Sample Until: _____	*☐ Post Test, Hold Sample Until: _____													
Custom Order	☐ Reanalysis by:_____	☐ Sensitivity: _____	☐ Composite	☐ Other:											

Sample #	Sample Type	Date Collected	Time On	Time Off	Total Time (min)	Flow Rate (lpm) On	Flow Rate (lpm) Off	Flow Rate (lpm) Average	Volume or Area Sampled	8 Hour TWA Requested	Description
EB-1(8.5-15')	Soil/Bulk	7/28/15								☐	
										☐	
										☐	
										☐	
										☐	
										☐	
										☐	
										☐	
										☐	
										☐	
										☐	
										☐	
										☐	

Submitted By Matt Schaffer		**Received By**	
Date/Time Submitted	9-30-15 / 1300	**Date/Time Received**	9/30/15 / 13:00
Submitted By		**Received By**	
Date/Time Submitted	9/30/15 1410	**Date/Time Received**	

*All samples will be held for 3 months from the date of receipt at ATEM. Additional sample storage time may be obtained through ATEM Customer Service

APPENDIX E: SELECTED PREVIOUS INVESTIGATION BORING AND TEST PIT LOGS



1 SANDY SILTY (ML)
dark grayish brown (10YR 4/2), firm to stiff, dry, scattered sand and angular gravel to 1-inch diameter, abundant roots and rootlets
[TOPSOIL - DISPLACED]

2 CLAYEY SAND with GRAVEL (SC)
olive gray (5Y 4/2), medium dense, firable, moist, scattered serpentinite fragments within a clayey sand matrix, fine-to medium-grained, sub-rounded ***[LANDSLIDE DEBRIS]***

3 Melange
very dark gray (5Y 3.1), predominantly sheared shale with scattered zones that are highly decomposed to silt and clay, discontinuous highly plastic clay seams throught, moist to wet ***[FRANCISCAN ASSEMBLAGE]***

0 4 Feet
Approximate scale

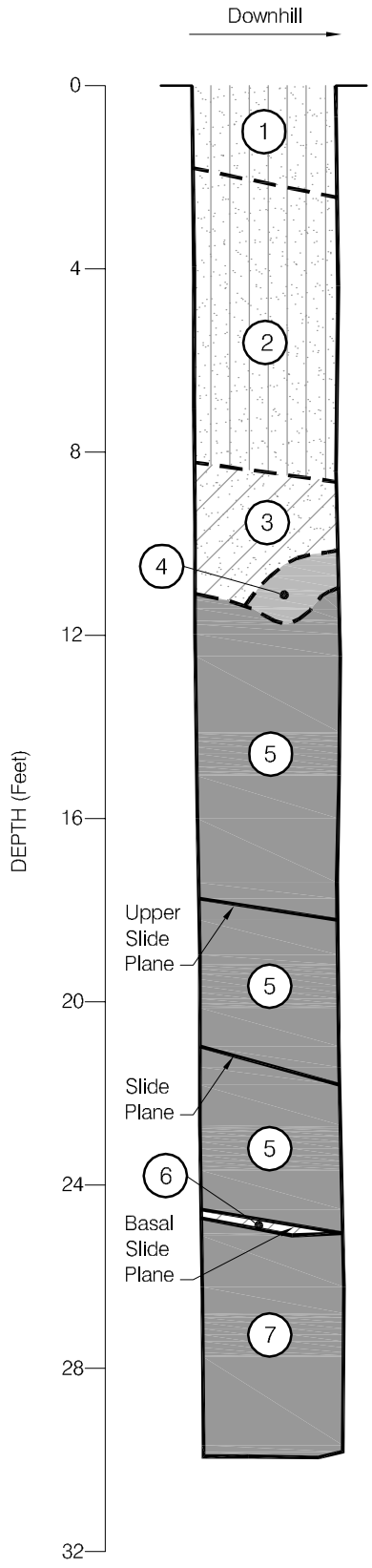
HIGHLAND ESTATES
San Mateo County, California

LOG OF TEST PIT
TP-1

Treadwell&Rollo

Date 08/25/09	Project No. 4872.02	Figure A-1

R:\Trgraphics\4800's\4872.02\4872.02 Log of Test Pits 1 to 3.dwg 8/27/09



1 SANDY SILTY (ML)
dark grayish brown (10YR 4/2), stiff, dry, scattered small desiccation cracks, abundant roots and rootlets, scattered sub-rounded gravel up to 1-inch diameter ***[FILL]***

2 SANDY SILT (ML)
very dark grayish brown (10YR 3.2), homogeneous, firm, slightly moist, slightly oxidized, scattered roots and organics
[BURIED TOPSOIL - DISPLACED]

3 CLAYEY SAND (SC) dark yellowish brown (10YR 4/4), mottled with dark grayish brown (10YR 4/2), dense, dry to slightly moist, fine-to very fine-grained, homogeneous, trace organics ***[COLLUVIUM - DISPLACED]***

4 SANDSTONE
pale olive (5Y 6/3), very dense to indurated, well cemented, fine-grained, well graded, sub-rounded ***[COLLUVIUM - DISPLACED]***

5 Melange
greenish black (GLEY2 5B 2.5/1), predominantly sheared shale and angular serpentinite fragments within highly plastic clay matirx, moist to wet, heterogeneous with sub-parallel slip surfaces and discontinuous clay seams throughout ***[BEDROCK - DISPLACED]***

6 CLAY (CH)
greenish gray (GLEY 1 5GY 6/1) to light greenish gray (GLEY 1 5GY 7/1), homogeneous, highly plastic, wet to saturated, 1 to 1 1/2-inch thick , continuous ***[SLIDE GOUGE]***

7 Melange
very dark gray (GLEY 1 N 3/1), very dense, low hardness, predominantly sheared clay, slightly moist, 10 - 15-inches plastic clay around rock fragements ***[FRANCISCAN ASSEMBLAGE]***

0 4 Feet
Approximate scale

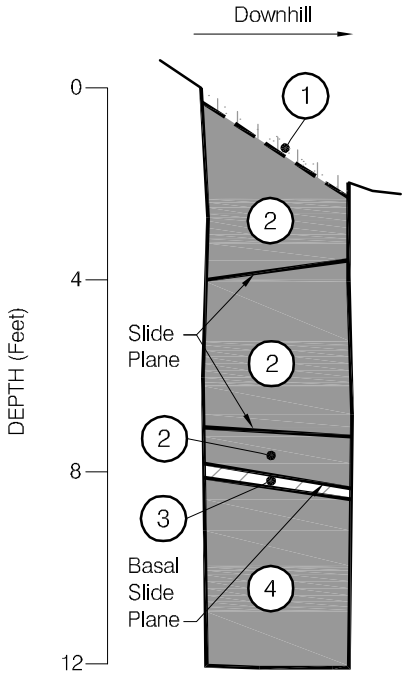
HIGHLAND ESTATES
San Mateo County, California

LOG OF TEST PIT
TP-2

Treadwell&Rollo

Date 08/25/09	Project No. 4872.02	Figure A-2

R:\Trgraphics\4800's\4872.02\4872.02 Log of Test Pits 1 to 3.dwg 8/27/09



1 SANDY SILT (ML)
very dark grayish brown (10YR 3.2), homogeneous, firm, slightly moist, slightly oxidized, scattered roots and organics ***[TOPSOIL - DISPLACED]***

2 Melange
greenish black (GLEY2 5B 2.5/1), predominantly sheared shale and angular serpentinite fragments within highly plastic clay matirx, moist to wet, heterogeneous with sub-parallel slip surfaces and discontinuous clay seams throughout ***[BEDROCK - DISPLACED]***

3 CLAY (CH)
greenish gray (GLEY 1 5GY 6/1) to light greenish gray (GLEY 1 5GY 7/1), homogeneous, highly plastic, wet to saturated, 1 to 1 1/2-inch thick , continuous ***[SLIDE GOUGE]***

4 Melange
very dark gray (GLEY 1 N 3/1), very dense, low hardness, predominantly sheared clay, slightly moist, 10 - 15-inches plastic clay around rock fragements ***[FRANCISCAN ASSEMBLAGE]***

0 4 Feet
Approximate scale

HIGHLAND ESTATES
San Mateo County, California

LOG OF TEST PIT
TP-3

Treadwell&Rollo

Date 08/06/09	Project No. 4872.02	Figure A-3

R:\Trgraphics\4800's\4872.02\4872.02 Log of Test Pits 1 to 3.dwg 8/27/09

EXPLORATORY BORING: EB-1

Sheet 1 of 1

DRILL RIG: MINUTE MAN
BORING TYPE: 4 INCH FLIGHT AUGER
LOGGED BY: BM
START DATE: 3-9-05 FINISH DATE: 3-9-05

PROJECT NO: 1291-2B
PROJECT: TICONDEROGA DRIVE
LOCATION: SAN MATEO, CA
COMPLETION DEPTH: 20.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
		SURFACE ELEVATION: 525 FT. (+/-)						
525.0	0	**LEAN CLAY WITH SAND (CL) [COLLUVIUM]** very stiff, moist, brown with reddish brown mottles, fine sand, some fine and coarse gravel, low plasticity	CL	17		14	101	
				14		21	100	
519.8	5	**LEAN CLAY (CL) [COLLUVIUM]** medium stiff to stiff, moist, gray, some fine and coarse gravel, moderate plasticity	CL					
517.0		**SANDSTONE [FRANCISCAN FORMATION (fsr)]** moderately to severely weathered, very soft, olive to brown		18		11	127	
	10		fsr					
	15			27		8		
		completely weathered, soft with hard seams, gray with bluish gray mottles		32		25	93	
505.0	20	Bottom of Boring at 20 feet						
	25							
	30							

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
NO FREE GROUND WATER ENCOUNTERED

LA CORP.GDT 2/2/06 MV* FLL

TRC Lowney

EXPLORATORY BORING: EB-2

Sheet 1 of 1

DRILL RIG: MINUTE MAN
BORING TYPE: 4 INCH FLIGHT AUGER
LOGGED BY: BM
START DATE: 3-8-05 FINISH DATE: 3-8-05

PROJECT NO: 1291-2B
PROJECT: TICONDEROGA DRIVE
LOCATION: SAN MATEO, CA
COMPLETION DEPTH: 20.0 FT.

This log is a part of a report by TRC Lowney, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
		SURFACE ELEVATION: 524 FT. (+/-)						
524.0	0	LEAN CLAY WITH SAND (CL) [LANDSLIDE DEPOSIT] stiff, moist to wet, brown, fine sand, some fine and coarse gravel, low plasticity	CL	8		21	90	
	5			9		22		
517.0		SANDSTONE [FRANCISCAN FORMATION (fsr)] moderately to severely weathered, soft, dark brown, friable, some clay seams	fsr	50/6"		5	113	
	10			24		7		
	15			19				
		Plasticity Index = 13, Liquid Limit = 29		47		10		
504.0	20	Bottom of Boring at 20 feet						
	25							
	30							

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
NO FREE GROUND WATER ENCOUNTERED

LA CORP GDT 2/8/06 MV FLL

TRC Lowney

EXPLORATORY BORING: EB-3

Sheet 1 of 1

DRILL RIG: MINUTE MAN
BORING TYPE: 4 INCH FLIGHT AUGER
LOGGED BY: BM
START DATE: 3-8-05 FINISH DATE: 3-8-05

PROJECT NO: 1291-2B
PROJECT: TICONDEROGA DRIVE
LOCATION: SAN MATEO, CA
COMPLETION DEPTH: 20.0 FT.

This log is a part of a report by Lowney Associates, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (FT)	DEPTH (FT)	SOIL LEGEND	MATERIAL DESCRIPTION AND REMARKS	SOIL TYPE	PENETRATION RESISTANCE (BLOWS/FT.)	SAMPLER	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	PERCENT PASSING NO. 200 SIEVE
			SURFACE ELEVATION: 500 FT. (+/-)						
500.0	0		**LEAN CLAY WITH SAND (CL) [LANDSLIDE DEPOSIT]** medium stiff, moist to wet, brown, fine sand, some fine and coarse gravel, trace organics, low plasticity	CL	13		20	100	
496.5	5		**SANDY LEAN CLAY (CL) [COLLUVIUM]** very stiff, moist, gray, fine to coarse sand, some fine and coarse gravel, low plasticity	CL	24		13	113	
491.5	10		**SANDSTONE [FRANCISCAN FORMATION (fsr)]** moderate to severely weathered, soft, dark brown, friable, some fine sand	fsr	50/3"		6	124	
					49				
					59		8		
					32				
	15		increasing clay						
			abruptly severely weathered silty yellowish olive graywacke		55		3		
480.0	20		Bottom of Boring at 20 feet						
	25								
	30								

Undrained Shear Strength (ksf)
○ Pocket Penetrometer
△ Torvane
● Unconfined Compression
▲ U-U Triaxial Compression
1.0 2.0 3.0 4.0

GROUND WATER OBSERVATIONS:
NO FREE GROUND WATER ENCOUNTERED

LA CORP.GDT 2/2/06 MV* FLL

TRC Lowney

File No. S22-634-2
July 20, 1993

EXPLORATORY BORING LOG						LABORATORY TESTS								
Sample Number	Depth, feet	Boring Log	Unified Soil Classification System Symbols	Description	Standard Penetration Test, blows/foot	Moisture Content, %	Dry Density, p.c.f.	Unconfined Compressive Strength, k.s.f.	Direct Shear Test "c", k.s.f.	Direct Shear Test "φ", degrees	Liquid Limit, %	Plasticity Index, %	Triaxial Compression	
Boring No. B-6						Date of Drilling: 7/20/92								
	2			Fill, clayey Silt, dark brown-gray (Q_{af})										
	4													
	6													
6-1	8			mottled with med. gray clay & SS inclusions	* 43	16.5	119.4		1.2	15				
	10			Shale/Siltstone clay gouge, purple tinted gray-brown cuttings, damp, hard										
6-2	12			Claystone, sandy, purple blue, becoming blue-gray (F_m)	* 51	11.1	123.2						x	
	14													
	16			becoming blocky, slightly weathered										
				Bottom at 17 feet										
Boring No. B-7						Date of Drilling: 7/20/92								
	2			Colluvium, sandy clayey Silt, tan-brown, sl. damp, loose										
	4			Siltstone, moderately weathered, pale yellowish brown, sheared, damp, soft (stiff clayey Silt) (F_m)										
7-1	8				* 50/5"	11.5	106.3							
	10													
	12			Graywacke Sandstone, sl. weathered, sl. damp, hard (S_s)										
	14													
				Bottom at 15 feet										

Plate 9 - Logs of Test Borings: B-6 & B-7

SOIL FOUNDATION SYSTEMS, INC.

File No. S22-634-2
July 20, 1993

EXPLORATORY BORING LOG						LABORATORY TESTS								
Sample Number	Depth, feet	Boring Log	Unified Soil Classification System Symbols	Description	Standard Penetration Test, blows/foot	Moisture Content, %	Dry Density, p.c.f.	Unconfined Compressive Strength, k.s.f.	Direct Shear Test "c", k.s.f.	Direct Shear Test "φ", degrees	Liquid Limit, %	Plasticity Index, %		
Boring No. B-14						Date of Drilling: 7/30/92								
				▼ (W/L: 17:30, 7/30/92) Silty Clay, black										
	2			sheared Serpentine, sev. weathered, blue-gray,										
14-1	4			moist (poor sample)	**18	13.4	-				34	12		
	6			(Sp)										
	8			Clay gouge zone										
				sheared Serpentine, sl.										
14-2	10			damp	**27	11.8								
	12			(Sp)										
	14			massive, blocky										
	16			Note: ** denotes penetration resistance of Standard penentrometer driven with a 70-pound hammer dropping a distance of 30 inches.										
	18			Note: this hole drilled with portable rig										
				Bottom at 19 feet										
Boring No. B-15						Date of Drilling: 7/24/92								
				clayey Silt, dark brown to black, damp, sl. organic										
	2			Serpentine, very severely to severely weathered, silty Clay, pale green-gray, with angular fragments (Sp)										
	4			very hard at 7'										
	6			Bottom at 8 feet										
				Note: this hole drilled with portable rig										

Plate 14 - Logs of Test Borings: B-14 & B-15

SOIL FOUNDATION SYSTEMS, INC.

File No. S22-634-2
July 20, 1993

EXPLORATORY BORING LOG						LABORATORY TESTS							
Sample Number	Depth, feet	Boring Log	Unified Soil Classification System Symbols	Description	Standard Penetration Test, blows/foot	Moisture Content, %	Dry Density, p.c.f.	Unconfined Compressive Strength, k.s.f.	Direct Shear Test "c", k.s.f.	Direct Shear Test "φ", degrees	Liquid Limit, %	Plasticity Index, %	
Boring No. B-16						Date of Drilling: 7/30/92							
				silty Clay, dark brown									
	2			sl. organic									
	4			▼ (W/L: 11:00; 7/30/92)									
				sheared Serpentine, very severely weathered, silty									
16-1	6			Clay with serpentine fragments, pale green-gray ***	10	28.6	95.9		0.4	25			
	8												
	10			(Sp)									
16-2	12			***	22	11.8	107.3		0.5	38			
	14												
	16			becoming hard									
	18												
16-3				(Sample not recovered) ***	18								
				Bottom at 20 feet									

Note: *** denotes penetration resistance of 2-½ I.D. sampler driven with a 70-pound hammer dropping a distance of 30 inches.

Note: This hole drilled with a portable rig

Plate 15 - Log of Test Boring: B-16

SOIL FOUNDATION SYSTEMS, INC.

File No. S22-634-2
July 20, 1993

EXPLORATORY BORING LOG						LABORATORY TESTS								
Sample Number	Depth, feet	Boring Log	Unified Soil Classification System Symbols	Description	Standard Penetration Test, blows/foot	Moisture Content, %	Dry Density, p.c.f.	Unconfined Compressive Strength, k.s.f.	Direct Shear Test "C", k.s.f.	Direct Shear Test "φ", degrees	Liquid Limit, %	Plasticity Index, %	Triaxial Compression	
Boring No. B-17						Date of Drilling: 7/20/92								
				Fill, silty Clay, dark brown to green-black										
	4			▼ (W/L: 16:00; 7/20/92)										
				Serpentine, very severely weathered										
17-1	8				*83	11.6	126.1						x	
				▼ (W/L: 10:00; 7/20/92)										
	12			sheared Serpentine, mod. weathered, blue-gray, moist										
17-2					*25	11.8	132.5						x	
	16													
17-3				(Sp)	*48	9.5	129.9				20	4	x	
	20													
	24													
17-4	28			Clay gouge zone	*40	11.4	120.5							
	32			sheared Serpentine, sl. weathered, dark gray, sl. damp										
	36			(stiff silty Clay with serpentine fragments)										
17-5					*100+	10.4	122.3							
				Bottom at 42 feet										

Note: * denotes penertation resistance of 2½-inch I.D. sampler driven with a 140-pound hammoer dropping a distance of 30 inches.

Plate 16 - Log of Test Boring: B-17

SOIL FOUNDATION SYSTEMS, INC.

Job No. 805-10

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-1	0-6	Fill: heterogeneous mixture of sandy clay and gravelly clay, brown and light brown, damp, medium stiff, (W < PL), some gravels to 6" across; a 5/8" diameter cable at 4'; base marked by 2" to 3" brown organic material.
	6-7½	Soil: sandy clay, brown, damp (W < PL), medium to low plasticity, soft in upper few inches, then medium stiff, minor angular fragments of sandstone.
	7½-11	Subsoil: gravelly clay, brown, damp (W < PL), medium to low plasticity, gravels > 4" across comprise approximately 50 percent of this material, and percentage increasing with depth to possible bedrock at the bottom of the test pit.
		Total depth 11 feet; no free groundwater.
TP-2	0-1½	Soil: sandy clay, brown, damp (W < PL), medium to low plasticity, soft in upper few inches, then medium stiff, minor angular fragments of sandstone.
	1½-3	Subsoil: sandy clay with gravel, light brown, damp (W < PL), medium plasticity; increasing gravels with depth, fragments of sandstone commonly 1' to 3' across.
		Total depth 3 feet; no free groundwater.
TP-3	0-1½	Soil: sandy clay, brown, damp (W < PL), medium to low plasticity, soft in upper few inches, then medium stiff, minor angular fragments of sandstone.
	1½-6½	Subsoil: sandy clay with gravel, grading to gravelly clay or bedrock at depth, light brown, damp (W < PL), fragments of sandstone generally < 3" across.
		Total depth 6½'; no free groundwater.

Job No. 805-10

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-4	0-3½	Soil: sandy clay, brown, slightly damp (W < PL), medium to low plasticity, soft, with gravelly clay 3" thick at the base; contact with underlying subspil approximately 25° downhill, no shearing observed.
	3½-6	Subsoil: sandy clay with gravel, grading to gravelly clay or bedrock at depth, light brown, damp (W < PL), fragments of sandstone generally <3" across.
		Total depth 6 feet; no free groundwater.
TP-5	0-2	Soil: sandy clay, brown, damp (W < PL), medium to low plasticity, soft in upper few inches, then medium stiff, minor angular fragments of sandstone.
	2-4½	Subsoil: sandy clay to gravelly clay, light brown, slightly damp (W < PL), gravels generally <3" across.
	4½-5	Bedrock: sandstone, fine- to medium-grained, light gray to light brown, micaceous, massive, very well indurated; generally breaks into pieces 6" to 3'.
		Total depth 5 feet; no free groundwater.
TP-6	0-4½	Soil?: silty gravel, dark brown, moist (W ≥ PL), fragments of sandstone generally 6" across; very hard digging.
		Total depth 4½ feet; no free groundwater.

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-7	0-6½	Soil: sandy clay, brown, damp (W<PL), medium to low plasticity, soft in upper few inches, then medium stiff, minor angular fragments of sandstone.
	6½-10½	Talus: sandy gravel with minor clay, light brown, fragments of sandstone 6" to 1' across in sandy matrix, generally loose.
	10½-12	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 1" across.
		Total depth 12 feet; no free groundwater.
TP-8	0-2	Soil: sandy clay, brown, damp (W<PL), medium to low plasticity, soft in upper few inches, then medium stiff, minor angular fragments of sandstone.
	2-5	Colluvium?: clayey sand, brownish orange, damp (W<PL), friable.
	5-7½	Landslide shear zone?: clay to sandy clay, dark gray, moist (W≥PL), stiff, high plasticity.
	7½-10½	Colluvium?: clayey sand as above between 2 and 5 feet.
		Total depth 10½'; no free groundwater.
TP-9	0-2	Soil: sandy clay, brown, damp (W<PL), medium to low plasticity, soft in upper few inches, then medium stiff, minor angular fragments of sandstone.
	2-5	Colluvium?: clayey sand, brownish orange, damp (W<PL), friable.
	5-8	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 1" across.
		Total depth 8'; no free groundwater.

Job No. 805-10

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-10	0-1½	Soil: sandy clay, brown, damp (W<PL), medium to low plasticity, soft in upper few inches, then medium stiff, minor angular fragments of sandstone.
	1½-4	Bedrock: sandstone, fine- to medium-grained, light gray to light brown, micaceous, massive, very well indurated; generally breaks into pieces 6" to 3'.
		Total depth 4'; no free groundwater.
TP-11	0-1	Soil: sandy clay, brown, damp (W<PL), medium to low plasticity, soft in upper few inches, then medium stiff, minor angular fragments of sandstone.
	1-3½	Bedrock: sandstone, fine- to medium-grained, light gray to light brown, micaceous, massive, very well indurated; generally breaks into pieces 6" to 3'.
		Total depth 3½'; no free groundwater.
TP-12	0-2	Soil: sandy clay, brown, damp (W<PL), medium to low plasticity, soft in upper few inches, then medium stiff, minor angular fragments of sandstone.
	2-4	Bedrock: sandstone, fine- to medium-grained, light gray to light brown, micaceous, massive, very well indurated; generally breaks into pieces 6" to 3'.
		Total depth 4'; no free groundwater.

Job No. 805-10

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-13	0-2	Soil: sandy clay, brown, damp (M<PL), medium to low plasticity, soft in upper few inches, then medium stiff, minor angular fragments of sandstone.
	2-3½	Bedrock: sandstone, fine- to medium-grained, light gray to light brown, micaceous, massive, very well indurated; generally breaks into pieces 6" to 2'.
		Total depth 3½'; no free groundwater.
TP-14	0-4½	Soil: sandy clay, dark brown, damp (M<PL), firm to 2½', low plasticity; medium stiff below 2½'.
	4½-6	Subsoil: silty clay with minor sand, gray, damp to moist (M≥PL), medium stiff to stiff, high plasticity.
	6-7	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 2" across.
		Total depth 7'; no free groundwater.
TP-15	0-2½	Fill?: sandy clay, mottled dark brown and reddish-brown, slightly damp (M<PL), medium stiff to stiff, medium plasticity, layered structure (horizontal).
	2½-4	Soil: sandy clay, dark brown, damp (M<PL), firm to 3½', low plasticity; medium stiff below 3½'.
	4-5½	Subsoil: silty clay with minor sand, gray, damp to moist (M≥PL), medium stiff to stiff, high plasticity.
	5½-7	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 2" across.
		Total depth 7'; no free groundwater.

Job No. 805-10

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-16	0-6	Fill: sandy clay as in TP-15; mottled light and dark brown, damp (M≤PL), and soft in top 2'; dark gray to dark brown, firm to very stiff, slightly damp (M<PL) below 2'.
	6-9	Soil: sandy clay, dark brown, damp (M<PL), firm to 7', low plasticity; medium stiff below 7'.
	9-10½	Subsoil: silty clay with minor sand, gray, damp to moist (M≥PL), medium stiff to stiff, high plasticity.
	10½-11½	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 1" across.
		Total depth 11½'; no free groundwater.
TP-17	0-2	Soil: silty clay with minor sand, gray, damp to moist (M<PL), medium stiff to stiff, high plasticity, soft in top foot.
	2-5½	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 1" across. Damp from 2 to 3½' (M<PL), slightly damp (M≤PL) below 3½'; large block of very fractured but hard greenstone at 5'.
		Total depth 5½'; no free groundwater.

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-18	0-1½	Soil: sandy clay, brown, damp (W<PL), medium to low plasticity, soft in upper few inches, then medium stiff, minor angular fragments of sandstone.
	1½-2	Subsoil: sandy clay with gravel, grading to gravelly clay or bedrock at depth, light brown, damp (W<PL), fragments of sandstone generally ≤3" across.
	2-5	Bedrock: sandstone, fine- to medium-grained, light gray to light brown, micaceous, massive, very well indurated; generally breaks into pieces 6" to 1½'.
		Total depth 5'; no free groundwater.
TP-19	0-1	Soil: sandy clay, dark brown, damp (W<PL), medium stiff, low plasticity.
	1-2	Subsoil: silty clay with minor sand, gray, damp to moist (W≥PL), medium stiff to stiff, high plasticity.
	2-5	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 2" across.
		Total depth 5'; no free groundwater.
TP-20	0-1½	Soil: sandy clay, dark brown, damp (W<PL), medium stiff, low plasticity.
	1½-5	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 1" across.
		Total depth 5'; no free groundwater.

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-21	0-1	Soil: sandy clay, dark brown, damp (W<PL), medium stiff, low plasticity.
	1-2	Subsoil: silty clay with minor sand, gray, damp to moist (W≥PL), medium stiff to stiff, high plasticity.
	2-6½	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 3" across, damp (W<PL).
		Total depth 6½'; no free groundwater.
TP-22	0-2½	Soil: sandy clay, dark brown, damp (W<PL), firm to 2½', low plasticity; medium stiff below 2½'.
	2½-3	Subsoil: silty clay with minor sand, gray, damp to moist (W≥PL), medium stiff to stiff, high plasticity.
	3-8½	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 3" across.
		Total depth 8½'; no free groundwater.
TP-23	0-4	Soil: sandy clay, dark brown, damp (W<PL), firm to 2½', low plasticity; medium stiff below 2½'.
	4-7	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 1" across, a 6" steel pipe 5½' deep headed toward a man-hole.
		Total depth 7'; no free groundwater.

Job No. 805-10

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-24	0-1	Soil: sandy clay, dark brown, damp (W<PL), medium stiff, low plasticity.
	1-6	Colluvium: sandy clay, dark brown, slightly damp (W<PL), medium stiff to stiff, medium to high plasticity.
	6-9	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 1" across.
		Total depth 9'; no free groundwater.
TP-25	0-4	Soil: sandy clay, dark brown, damp (W<PL), medium stiff, low plasticity.
	4-8½	Bedrock: sandstone, fine- to medium-grained, light gray to light brown, micaceous, massive, very well indurated; generally breaks into pieces 6" to 2'.
		Total depth 8½'; no free groundwater.
TP-26	0-4	Soil: sandy clay, dark brown, damp (W<PL), medium stiff, low plasticity.
	4-11	Colluvium: sandy clay, dark brown, slightly damp (W<PL), medium stiff to stiff, medium to high plasticity, with increasing gravel to bottom.
		Total depth 11'; no free groundwater.

Job No. 805-10

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-27	0-3	Soil: sandy clay, dark brown, damp (W<PL), firm to 2', low plasticity; medium stiff below 2'.
	3-5	Subsoil: silty clay with minor sand, gray, damp to moist (W≥PL), medium stiff to stiff, high plasticity.
	5-10½	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 1" across, moist to very moist (W>PL).
		Total depth 10½'; no free groundwater.
TP-28	0-3	Soil: sandy clay, dark brown, damp (W<PL), medium stiff, low plasticity.
	3-6	Colluvium: sandy clay, dark brown, slightly damp (W<PL), medium stiff to stiff, medium to high plasticity, with dispersed gravel and layers of gravel.
	6-11	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 1" across, slightly damp (W<PL); contact with overlying colluvium is oriented downhill about 23 degrees and is distinct, no shearing observed.
		Total depth 11'; no free groundwater.

Job No. 805-10

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-29	0-2	Soil: sandy clay, dark brown, damp (W<PL), medium stiff to 1½, low plasticity.
	2-5	Colluvium?: sandy clay, dark brown, slightly damp (W<PL), firm to stiff, medium to high plasticity.
	5-8½	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 3" across, slightly damp (W<PL).
		Total depth 8½'; no free groundwater.
TP-30	0-2	Soil: sandy clay, dark brown, damp (W<PL), firm to 1, low plasticity; medium stiff below 1'.
	2-3½	Subsoil: sandy clay with gravel, grading to gravelly clay or bedrock at depth, light brown, damp (W<PL), fragments of sandstone generally <3" across.
	3½-5½	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 2" across, slightly damp (M<PL).
		Total depth 5½'; no free groundwater.
TP-31	0-1	Soil: sandy clay, dark brown, damp (W<PL), medium stiff, low plasticity.
	1-5	Bedrock: sandstone, fine- to medium-grained, light gray to light brown, micaceous, massive, very well indurated; generally breaks into pieces 6" to 2'.
		Total depth 5'; no free groundwater.

Job No. 805-10

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-32	0-1½	Soil: sandy clay, dark brown, damp (W<PL), medium stiff, low plasticity.
	1½-6	Bedrock: contact between sandstone and Franciscan sheared rock, sandstone to west.
		Total depth 6'; no free groundwater.
TP-33	0-1½	Soil: sandy clay, dark brown, damp (W<PL), firm to 1', low plasticity; medium stiff below 1'.
	1½-9	Colluvium: sandy clay, light brown, moist (W>PL), medium to high plasticity; gray, with common organic material below 6', low plasticity.
	9-12½	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 3" across.
		Total depth 12½'; no free groundwater.
TP-34	0-1½	Soil: sandy clay, dark brown, damp (W<PL), medium stiff, low plasticity.
	1½-4	Bedrock: sandstone, fine- to medium-grained, light gray to light brown, micaceous, massive, very well indurated; generally breaks into pieces 6" to 1½'.
		Total depth 4'; no free groundwater.

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-35	0-2½	Soil: gravelly silt with some clay, abundant organic material; dark brown, slightly damp (W<PL), low plasticity, soft; gravels to 1' across.
	2½-8½	Colluvium: gravelly clay, light brown, slightly damp (W<PL), medium to low plasticity, medium stiff.
	8½-18½	Talus: sandy gravel with minor clay, light brown, slightly damp, very loose; gravels all subangular sandstone commonly 6" to 8" across, but some 2' to 3'.
		Total depth 18½'; no free groundwater.
TP-36	0-3	Soil: gravelly silt with some clay, abundant organic material; dark brown, slightly damp (W<PL), low plasticity, soft; gravels to 1' across.
	3-6½	Colluvium and Talus: sandy gravel with minor clay to gravelly clay.
	6½-8½	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 1" across, slightly damp (W<PL).
		Total depth 8½'; no free groundwater.

Job No. 805-10

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-37	0-3	Soil: gravelly silt with some clay, abundant organic material; dark brown, slightly damp (W<PL), low plasticity, soft; gravels to 1' across.
	3-12	Talus: sandy gravel with minor clay, light brown, slightly damp, very loose; gravels all subangular sandstone commonly 6" to 8" across, but some 2' to 3'.
TP-38	0-3	Soil: sandy clay, dark brown, damp (W<PL), firm to 2½', low plasticity; medium stiff below 2½'.
	3-4	Colluvium: gravelly clay, light brown, slightly damp (W<PL), medium to low plasticity, medium stiff.
	4-6	Bedrock: sandstone, fine- to medium-grained, light gray to light brown, micaceous, massive, very well indurated; generally breaks into pieces 6" to 1½'.
		Total depth 6'; no free groundwater.
TP-39	0-2½	Soil: sandy clay with minor gravel.
	2½-9	Bedrock: sheared sandstone, probably intermediate between sandstone as in TP-18 and Franciscan sheared rock as in TP-7.
		Total depth 9'; no free groundwater.

Job No. 805-10

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-40	0-1½	Soil: sandy clay, dark brown, damp (W<PL), firm to 1', low plasticity; medium stiff below 1'.
	1½-3	Bedrock: sandstone, fine- to medium-grained, light gray to light brown, micaceous, massive, very well indurated; generally breaks into pieces 6" to 18".
		Total depth 3'; no free groundwater.
TP-41	0-3	Soil: sandy clay with gravel.
	3-8	Talus: sandy gravel with minor clay, light brown, slightly damp, very loose; gravels all subangular sandstone commonly 6" to 8" across, but some 2' to 3'.
		Total depth 8'; no free groundwater.
TP-42	0-3	Soil: sandy clay with gravel.
	3-6	Colluvium: gravelly clay, light brown, slightly damp (W<PL), medium to low plasticity, medium stiff.
	6-10	Bedrock: sandstone, fine- to medium-grained, light gray to light brown, micaceous, massive, very well indurated; generally breaks into pieces 6" to 2'.
		Total depth 10'; no free groundwater.

Job No. 805-10

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-43	0-3	Soil: sandy clay with minor gravel.
	3-5½	Colluvium: gravelly clay with some large boulders.
	5½-7½	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 1" across, damp (W≤PL).
		Total depth 7½'; no free groundwater.
TP-44	0-2½	Soil: sandy clay, dark brown, damp (W<PL), firm to 2½', low plasticity; medium stiff below 2½'.
	2½-5	Colluvium: sandy clay with minor gravel, light brown, slightly damp (W<PL), medium to high plasticity.
	5-8½	Bedrock: sandstone, medium- to coarse-grained, light brown, slightly damp, poorly indurated, friable, broken into pieces 3/4" to 2"; easily excavated.
		Total depth 8½'; no free groundwater.
TP-45	0-2	Soil: sandy clay, dark brown, damp (W<PL), firm to 1', low plasticity; medium stiff below 1'.
	2-11	Colluvium: sandy clay, dark brown, slightly damp (W<PL), firm to stiff, medium to high plasticity.
		Total depth 11'; no free groundwater.

Berlogar Lone & Associates

Job No. 805-10

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-46	0-3	Soil: sandy clay, dark brown, damp (W<PL), firm to 2½', low plasticity; medium stiff below 2½'.
	3-9	Colluvium: sandy clay with minor gravel.
	9-11	Bedrock (in place?): sandstone, fine- to medium grained, light gray to light brown, micaceous, massive, very well indurated; generally breaks into pieces 6" to 3'.
		Total depth 11'; no free groundwater.
TP-47	0-4½	Soil: sandy clay, dark brown, damp (W<PL), firm to 2½', low plasticity; medium stiff below 2½'.
	4½-6	Alluvium: sandy clay with large gravel up to 3' across, light brown, moist (W≥PL), high plasticity.
	6-12	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 1' across.
		Total depth 12'; free groundwater at 6'.

Job No. 805-10

TEST PIT LOGS

Test Pit Number	Depth (ft.)	Description
TP-48	0-2½	Soil: sandy clay with gravel.
	2½-7	Talus: sandy clay with large gravel up to 3' across.
	7-9	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 1' across.
		Total depth 9'; no free groundwater.
TP-49	0-2	Soil: sandy clay, dark brown, damp (W<PL), firm to 2½', low plasticity; medium stiff below 2½'.
	2-6	Talus: sandy clay with large gravels.
	6-8	Bedrock: Franciscan sheared rock, dark gray, dominantly slickensided and sheared clay with subrounded inclusions up to 1' across.
		Total depth 8'; no free groundwater.

APPENDIX C

BKF Engineers, Inc., Civil Improvement Plan Lots – Lots 5 through 8, September 18, 2018

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IMPROVEMENT PLANS FOR

HIGHLAND ESTATES - LOT 5 TICONDEROGA DRIVE

COUNTY OF SAN MATEO, CALIFORNIA

EARTHWORK

CUT	1,740	CY
SLOPE MITIGATION EXPORT CREDIT	520	CY
FILL	0	CY
NET	1,220	CY CUT

EARTHWORK NOTES:

1. THE QUANTITIES SHOWN ABOVE EXCLUDE EARTHWORK FROM GEOTECHNICAL SLOPE REMEDIATION ACTIVITIES PER CONDITION OF APPROVAL ITEM NO. 4.M, INCLUDING SITE STRIPPING, EARTHWORK SWELLING AND SHRINKAGE FACTORS ASSOCIATED WITH GEOTECHNICAL SLOPE REMEDIATION MITIGATION.

2. THE EARTHWORK QUANTITIES SHOWN ABOVE ARE IN-PLACE QUANTITIES AND HAVE BEEN ESTIMATED BY THE ENGINEER WITH THE FOLLOWING ASSUMPTIONS:

   A. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR SITE STRIPPINGS.
   B. THE UNIT PAD SECTION IS ASSUMED TO BE A 12" THICK CONCRETE SECTION.
   C. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR FILL SHRINKAGE FACTORS.
   D. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR UTILITY TRENCHING AND SPOILS.
   E. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR SOIL STABILIZATION FACTORS AND LANDSCAPING PLANTING SOILS.
   F. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR RETAINING WALLS AND BUILDING FOOTINGS AND BACKFILL.

2. ACTUAL QUANTITIES MAY VARY DUE TO FIELD CONDITIONS OR CONSTRUCTION TECHNIQUES. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES BASED UPON APPROVED PLANS AND INDEPENDENT CALCULATIONS.

LEGEND

EXISTING

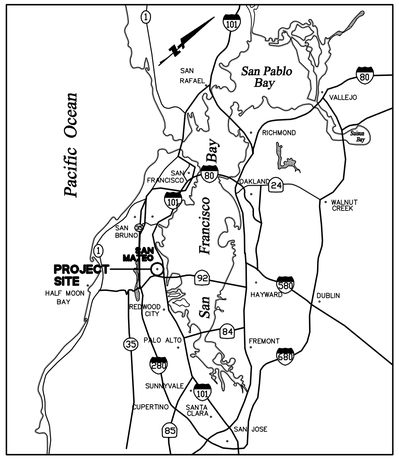
- EXISTING PROPERTY LINE BOUNDRY
- SS — SS — EXISTING SANITARY SEWER W/MANHOLE
- EXISTING STORM DRAIN DRAIN W/ MANHOLE
- V — V — EXISTING WATERLINE
- EXISTING CATCH BASIN
- GAS — GAS — GAS — EXISTING GAS LINE
- ALL UTILITIES ARE APPROXIMATELY LOCATED

PROPOSED

- PROPOSED PROPERTY LINE BOUNDRY
- SS — SANITARY SEWER W/ MANHOLE
- STORM DRAIN W/ MANHOLE & CATCH BASIN
- W — FH — WATER LINE W/ FIRE HYDRANT
- GAS — GAS MAIN
- ETC — UNDERGROUND ELECTRIC, TELEPHONE, & C.A.T.V.
- S.D.E. — STORM DRAIN EASEMENT
- S.S.E. — SANITARY SEWER EASEMENT
- 509.3 / #4 OAK — EXISTING TREE & ELEVATION (TREE NO. REFERS TO TREE IDENTIFICATION TAG PER (TREE REPORT PREPARED BY HABITAT RESTORATION GROUP)
- 509.3 / #3 OAK — INDICATES TREE TO BE REMOVED
- L.W. — LEATHERWOOD BUSH
- EUC. — EUCALYPTUS TREE
- P.O.C. — POINT OF CONNECTION
- FDZ — FIRE DEFENSE ZONE
- FLOW-THROUGH PLANTER. PROPOSED FOR TREATMENT OF ROOF AND DRIVEWAY STORM WATER RUNOFF.

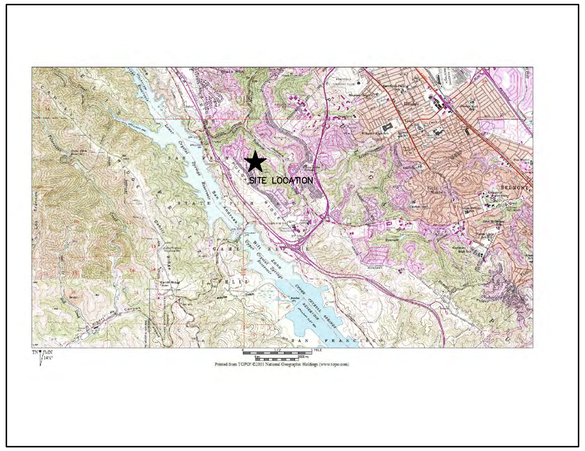
ABBREVIATIONS

AC	ASPHALTIC CONCRETE	L	LENGTH
BEG	BEGINNING	LF	LINEAR FEET
BL	BAY LAUREL	LG	LIP OF GUTTER
BLDG COR	BUILDING CORNER	NIC	NOT IN CONTRACT
BOT	BOTTOM	O	OAK TREE
BOW	GRADE AT BOTTOM OF WALL	P	PEPPER TREE
BW	BACK OF WALK	PD	PLANNED DEVELOPMENT
CB	CATCH BASIN	PINE	PINE TREE
CL	CENTERLINE	PUE	PUBLIC UTILITY EASEMENT
CLF	CHAIN LINK FENCE	PVC	POLYVINYL CHLORIDE PIPE
CMP	CORRUGATED METAL PIPE	RCP	REINFORCED CONCRETE PIPE
CO	CLEANOUT	RDW	REDWOOD TREE
CONC	CONCRETE	RET WALL	RETAINING WALL
CU	COPPER	ROW	RIGHT OF WAY
DG	DECOMPOSED GRANITE	RPB	REDUCED PRESSURE BACKFLOW
DI	DRAIN INLET	RWL	RAIN WATER LEADER
DW	DOMESTIC WATER	S	SLOPE
EG	EXISTING GRADE	SD	STORM DRAIN
EP	EDGE OF PAVEMENT	SDCB	STORM DRAIN CATCH BASIN
EUC	EUCALYPTUS TREE	SDCO	STORM DRAIN CLEANOUT
EX, (E)	EXISTING	SDDI	STORM DRAIN DROP INLET
FC, FOC	FACE OF CURB	SDMH	STORM DRAIN MANHOLE
FF	FINISH FLOOR	SS	SANITARY SEWER
FG	FINISH GRADE	SSCO	SANITARY SEWER CLEAN OUT
FL	FLOW LINE	SSMH	SANITARY SEWER MANHOLE
FNC	FENCE	T	TREE
FTP	FLOW THROUGH PLANTER	TC	TOP OF CURB
FW	FIRE WATER	TOE	TOE OF SLOPE
GB	GRADE BREAK	TOP	TOP OF SLOPE
GFF	GARAGE FINISH FLOOR	TOW	TOP OF WALL
GM	GAS METER	TYP	TYPICAL
GND	GROUND SHOT	UB	UTILITY BOX
GR	GRATE	VC	VERTICAL CURVE
GRAVEL	EDGE OF GRAVEL ROAD	VCP	VITRIFIED CLAY PIPE
GW	GUY WIRE	W	WATER
INV	INVERT	WM	WATER METER
JP	JOINT POLE	WV	WATER VALVE



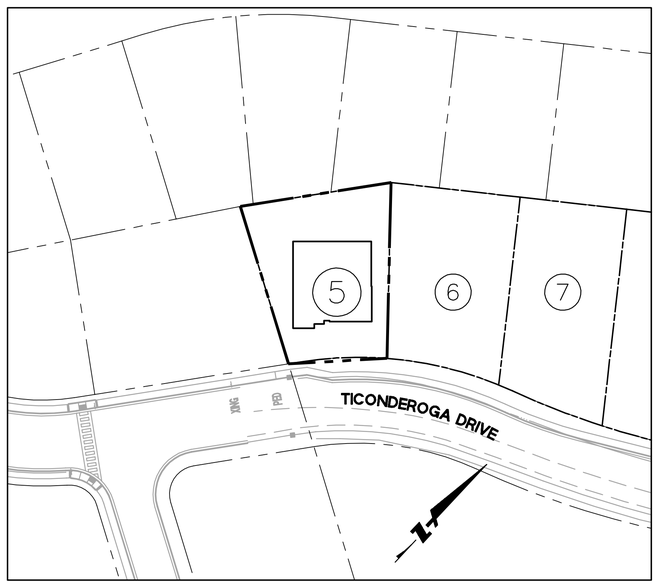
VICINITY MAP

NTS



LOCATION MAP

NTS



SITE PLAN

SCALE: 1" = 50'

PROJECT DATA

LOT AREA:	10,191 SF
EXISTING LAND USE:	UNDEVELOPED LAND
PROPOSED USE:	RESIDENTIAL (LOT 5)
EXISTING ZONE:	RMD – RESOURCE MANAGEMENT DISTRICT
PROPOSED ZONE:	R-1
PROPOSED USE:	1 RESIDENTIAL LOT
OWNER:	TICONDEROGA PARTNERS, A CALIFORNIA LIMITED LIABILITY CORPORATION C/O THE CHAMBERLAIN GROUP 655 SKYWAY, SUITE 230 SAN CARLOS, CA 94070 (650) 595-5582 ATTN: JACK CHAMBERLAIN
DEVELOPER:	THE CHAMBERLAIN GROUP 655 SKYWAY, SUITE 230 SAN CARLOS, CA 94070 (650) 595-5582 ATTN: JACK CHAMBERLAIN
CIVIL ENGINEER:	BKF ENGINEERS 255 SHORELINE DRIVE, SUITE 200 REDWOOD CITY, CA 94065 (650) 482-6300
GEOTECHNICAL ENGINEER:	CORNERSTONE EARTH GROUP 1259 OAKMEAD PARKWAY SUNNYVALE, CA 94085 (408) 245-4600
WATER SUPPLY:	CAL WATER SERVICE 341 N. DELAWARE STREET SAN MATEO, CA 94401-1808 (650) 343-1808
SEWAGE DISPOSAL:	CITY OF SAN MATEO & CRYSTAL SPRINGS COUNTY SANITATION DISTRICT
GAS & ELECTRIC	PG&E
TELEPHONE:	AT&T
FIRE PROTECTION:	CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION
CABLE:	COMCAST
STORM DRAINAGE:	COUNTY OF SAN MATEO CITY OF SAN MATEO
TOPOGRAPHIC BASE MAP:	AERO-GEODIC CORP. JOB NO. 950168 DATE OF PHOTOGRAPHY 9/18/87
EROSION CONTROL POINT OF CONTACT:	NOEL CHAMBERLAIN, NEXGEN BUILDERS INC. 225 DEMETER STREET EAST PALO ALTO, CA 94303 PHONE #: (650) 322-5800 CELL #: (650) 444-3089 EMAIL: noel@nexgenbuilders.com

SHEET INDEX

ENGINEER'S STATEMENT

THESE IMPROVEMENT PLANS HAVE BEEN PREPARED UNDER MY DIRECTION.

ROLAND N.V. HAGA — DATE
R.C.E NO. 43971
BKF ENGINEERS

REGISTERED PROFESSIONAL ENGINEER — ROLAND N.V. HAGA — No. C043971 — CIVIL — STATE OF CALIFORNIA

ENGINEER OF WORK

I HEREBY DECLARE THAT I AM THE CIVIL ENGINEER OF WORK FOR THIS PROJECT AND THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THIS PROJECT AS DEFINED IN SECTION 6703 OF THE STATE OF CALIFORNIA, BUSINESS & PROFESSIONAL CODES, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

JONATHAN TANG — DATE
P.E. NO. 67726
BKF ENGINEERS

REGISTERED PROFESSIONAL ENGINEER — JONATHAN TANG — No. C67726 — CIVIL — STATE OF CALIFORNIA

255 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
PHONE: (650) 482-6300
FAX: (650) 482-6399

BKF ENGINEERS / SURVEYORS / PLANNERS

HIGHLAND ESTATES
LOT 5 IMPROVEMENT PLANS
TITLE SHEET
SAN MATEO COUNTY CALIFORNIA
CITY OF SAN MATEO

Revisions	No.

Date	09/11/2018
Scale	NTS
Design	JT
Drawn	LE
Approved	RH
Job No	950168-20

Sheet Number:
C5.10
OF

© BKF ENGINEERS

NOTES:

I. GENERAL NOTES

1. WORK SHALL CONFORM TO THE COUNTY OF SAN MATEO PUBLIC WORKS STANDARD DRAWINGS FOR PUBLIC IMPROVEMENTS, REVISED SEPTEMBER 2007 AND THE SAN MATEO COUNTY SEWER AND SANITATION DISTRICTS STANDARD SPECIFICATIONS, DATED JUNE 1995.
2. PERFORM WORK IN CONFORMANCE WITH THE RECOMMENDATION OF THE PROJECT GEOTECHNICAL ENGINEERING REPORT TITLED "UPDATED GEOTECHNICAL INVESTIGATION, HIGHLAND ESTATES LOTS 5 THROUGH 11, TICONDEROGA DRIVE/COBBLEHILL PLACE/COWPENS WAY, SAN MATEO COUNTY, CALIFORNIA" PREPARED BY CORNERSTONE EARTH GROUP, DATED OCTOBER 30, 2015. GRADING WORK WILL BE SUBJECT TO APPROVAL OF GEOTECHNICAL ENGINEER.
3. ARRANGE FOR REQUIRED INSPECTIONS BY COUNTY ENGINEER. NO DELAY OF WORK CLAIM WILL BE ALLOWED DUE TO CONTRACTOR'S FAILURE TO ARRANGE FOR REQUIRED COUNTY INSPECTIONS IN ADVANCE. PROVIDE NOTICE TO COUNTY ENGINEER A MINIMUM OF 2 WORKING DAYS IN ADVANCE OF REQUIRED INSPECTIONS.
4. REVISIONS TO THESE PLANS MUST BE REVIEWED AND APPROVED IN WRITING BY ENGINEER, WHO WILL OBTAIN APPROVAL FROM COUNTY ENGINEER PRIOR TO CONSTRUCTION OF AFFECTED ITEMS. REVISIONS SHALL BE ACCURATELY SHOWN ON REVISED PLANS, WHICH SHALL BE REVIEWED AND APPROVED BY THE ENGINEER AND COUNTY ENGINEER PRIOR TO INSTALLATION OF THE IMPROVEMENTS.
5. REPLACE OR REPAIR EXISTING UTILITIES, IMPROVEMENTS OR FEATURES DAMAGED, REMOVED, OR DISTURBED BY CONSTRUCTION TO THEIR ORIGINAL CONDITION, WHETHER SHOWN ON PLANS OR NOT.
6. REPLACE STREET MONUMENTS, LOT CORNERS PIPES AND OTHER PERMANENT MONUMENTS DISTURBED DURING CONSTRUCTION. MONUMENTS SHALL BE SET BY A SURVEYOR REGISTERED IN THE STATE OF CALIFORNIA.
7. PREPARE TRAFFIC CONTROL PLAN AND OBTAIN APPROVAL FROM COUNTY ENGINEER BEFORE COMMENCING WORK. PROVIDE FLAG MEN, CONES, BARRICADES AND OTHER TRAFFIC CONTROL MEASURES NECESSARY TO PROVIDE SAFE LANE CLOSURE IN CONFORMANCE WITH CALTRANS STANDARDS AND AS APPROVED BY COUNTY ENGINEER.
8. PEDESTRIAN TRAFFIC CONTROL TO BE PROVIDED WHEN EXISTING SIDEWALKS CANNOT BE MAINTAINED DURING CONSTRUCTION.
9. DO NOT LEAVE TRENCHES OPEN OVERNIGHT IN EXISTING STREET AREAS. BACKFILL OR COVER OPEN TRENCHES AT THE END OF WORK EVERY WORK DAY.
10. PREPARE SHORING PLAN AND SUBMIT TO THE COUNTY ENGINEER FOR REVIEW AND APPROVAL. ADEQUATELY SHORE EXCAVATIONS TO PREVENT EARTH FROM SLIDING OR SETTLING AND TO PROTECT EXISTING ADJACENT IMPROVEMENTS FROM DAMAGE. DAMAGE RESULTING FROM A LACK OF ADEQUATE SHORING SHALL BE THE CONTRACTOR'S RESPONSIBILITY. PROVIDE SHORING IN CONFORMANCE WITH APPLICABLE CONSTRUCTION SAFETY ORDERS OF THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY AND OSHA WHERE EXCAVATIONS ARE 5 FEET OR MORE IN DEPTH.
11. IMPLEMENT CONSTRUCTION DUST CONTROL MEASURES TO REDUCE PARTICULATE GENERATION TO A LESS THAN SIGNIFICANT LEVEL. PROVIDE DUST CONTROL IN CONFORMANCE WITH BAY AREA AIR QUALITY MANAGEMENT DISTRICT MINIMUM REQUIREMENTS. IMPLEMENT THE FOLLOWING CONSTRUCTION PRACTICES EXCEPT WHEN IT IS RAINING.
    - 11.A. WATER ACTIVE EXTERIOR SOIL AREAS AT LEAST TWICE DAILY.
    - 11.B. COVER TRUCKS HAULING SOIL, SAND AND OTHER LOOSE MATERIAL OR PROVIDE 2 FEET OF FREEBOARD.
    - 11.C. PAVE, APPLY WATER THREE TIMES DAILY OR APPLY NON-TOXIC SOIL STABILIZER ON UNPAVED ACCESS ROADS, PARKING AREAS AND STAGING AREAS.
    - 11.D. SWEEP PAVED ACCESS ROADS, PARKING AREAS AND STAGING AREAS DAILY.
    - 11.E. APPLY HYDROSEED OR NON-TOXIC SOIL STABILIZER TO INACTIVE CONSTRUCTION AREAS.
    - 11.F. ENCLOSE, COVER, WATER TWICE DAILY OR APPLY NON-TOXIC SOIL STABILIZER TO EXPOSED SOIL STOCKPILES.
    - 11.G. INSTALL SANDBAGS AND OTHER EROSION CONTROL MEASURES TO PREVENT SILT RUNOFF TO PUBLIC ROADWAYS.
    - 11.H. LIMIT TRAFFIC SPEED ON UNPAVED ROADS TO 15 MPH.
    - 11.I. REPLANT VEGETATION IN DISTURBED AREAS AS QUICKLY AS POSSIBLE.
12. KEEP STREETS CLEAN OF DIRT, MUD AND OTHER CONSTRUCTION DEBRIS. CLEAN AND SWEEP STREETS ON A DAILY BASIS DURING THE WORK WEEK.
13. SHOULD IT APPEAR THAT THE WORK IS NOT SUFFICIENTLY DETAILED OR SPECIFIED IN CONSTRUCTION DOCUMENTS, NOTIFY ENGINEER AND OBTAIN CLARIFICATION BEFORE PROCEEDING WITH WORK IN QUESTION.
14. CONSTRUCTION STAKING SHALL BE DONE BY A CIVIL ENGINEER OR LAND SURVEYOR REGISTERED IN THE STATE OF CALIFORNIA.
15. IF BKF ENGINEERS IS RETAINED TO PROVIDE CONSTRUCTION STAKING SERVICES, CONTRACTOR WILL BE PROVIDED WITH ONE SET OF SURVEY STAKES FOR LAYOUT PURPOSES. PRESERVE AND PROTECT THESE STAKES UNTIL THEY ARE NO LONGER NEEDED. RESTAKING SHALL BE AT CONTRACTOR'S EXPENSE.
16. MATCH EXISTING PAVEMENT, CURB AND GUTTER, SIDEWALK, ADJACENT LANDSCAPE AND OTHER IMPROVEMENTS WITH SMOOTH TRANSITION TO AVOID ABRUPT OR APPARENT CHANGES IN GRADES, CROSS SLOPES, LOW SPOTS OR HAZARDOUS CONDITIONS.
17. VISIT SITE TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND OVERALL PROJECT REQUIREMENT PRIOR TO BIDDING PROJECT.
18. OBTAIN AND PAY FOR PERMITS AND LICENSES AS REQUIRED TO PERFORM WORK WITHIN THE COUNTY OF SAN MATEO PRIOR TO START OF WORK. PERMITS MAY INCLUDE ENCROACHMENT PERMIT FOR WORK WITHIN COUNTY RIGHT-OF-WAY AND GRADING/UTILITY PERMIT.
19. CONTRACTOR IS RESPONSIBLE FOR TRAFFIC AND PEDESTRIAN CONTROL DURING CONSTRUCTION.
20. OBTAIN APPROVAL OF IMPORT SOIL MATERIAL FROM GEOTECHNICAL ENGINEER PRIOR TO DISTRIBUTING MATERIAL OVER SITE.
21. PROTECT ADJOINING PREMISES, TREES, LANDSCAPING, UTILITIES, SIDEWALKS, STREETS AND OTHER FEATURES FROM DAMAGE BY CONTRACTOR'S OPERATIONS. REPAIR, REPLACE OR CLEAN ADJOINING PREMISES, TREES, LANDSCAPING, UTILITIES, SIDEWALKS, STREETS AND OTHER FEATURES TO SATISFACTION OF OWNER.
22. MAINTAIN AND MANAGE CONSTRUCTION MATERIALS, EQUIPMENT AND VEHICLES AT THE CONSTRUCTION SITE.
23. NOTIFY COUNTY ENGINEER A MINIMUM OF 24 HOURS PRIOR TO STARTING WORK ON OFF-SITE DRAINAGE AND SEWER FACILITIES, GRADING, PAVING, OR WORK IN THE COUNTY RIGHT-OF-WAY.
24. MAKE EFFORTS TO MINIMIZE CONSTRUCTION NOISE.
    - 24.A. MAINTAIN EQUIPMENT USED ON SITE IN GOOD MECHANICAL CONDITION TO MINIMIZE NOISE CREATED BY FAULTY OR POORLY MAINTAINED ENGINE, DRIVE-TRAIN AND OTHER COMPONENTS.
    - 24.B. EQUIPMENT EXCEEDING 110 DBA MEASURED 25 FEET FROM THE PIECE OF EQUIPMENT WILL NOT BE ALLOWED ON SITE.
    - 24.C. SELECT APPROPRIATE EQUIPMENT TO MINIMIZE NOISE GENERATION. USE THE FOLLOWING TECHNIQUES TO MINIMIZE NOISE GENERATION SUBJECT TO EQUIPMENT AVAILABILITY AND COST CONSIDERATIONS. USE SCRAPERS AS MUCH AS POSSIBLE FOR EARTH REMOVAL, RATHER THAN NOISIER LOADERS AND HAUL TRUCKS. USE BACKHOES FOR BACKFILLING AS IT IS QUIETER THAN DOZERS OR LOADERS. USE MOTOR GRADERS RATHER THAN BULLDOZERS FOR FINAL GRADING.

II. EXISTING CONDITIONS

1. EXISTING TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS IS BASED UPON A FIELD TOPOGRAPHIC SURVEY OF THE PROJECT SITE BY BKF ENGINEERS, DATED JUNE 2009. ACTUAL CONDITIONS ENCOUNTERED ON SITE MAY VARY FROM THOSE SHOWN ON THE PLANS. CONTRACTOR SHALL REVIEW CONSTRUCTION DOCUMENTS AND CONDUCT THEIR OWN INVESTIGATIONS TO UNDERSTAND AND VERIFY EXISTING CONDITIONS AT THE SITE.
2. EXISTING SUBSURFACE IMPROVEMENTS AND UTILITIES SHOWN ON THESE PLANS WERE TAKEN FROM RECORD INFORMATION KNOWN TO THE ENGINEER AND FIELD SURVEY OF ABOVE GRADE FEATURES. THESE PLANS ARE NOT MEANT TO BE A FULL CATALOG OF EXISTING SUBSURFACE CONDITIONS. CONDUCT FIELD INVESTIGATION TO VERIFY THE LOCATIONS AND ELEVATIONS OF EXISTING SUBSURFACE IMPROVEMENTS AND UTILITIES, WHETHER SHOWN ON PLANS OR NOT, PRIOR TO START OF EXCAVATION. IF DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THESE PLANS ARE DISCOVERED, NOTIFY ENGINEER IMMEDIATELY AND REQUEST DISCREPANCY BE RESOLVED.
3. VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION AFFECTING UTILITIES. POTHOLE WHERE NEEDED TO VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES.
4. CONTACT USA (UNDERGROUND SERVICES ALERT) AT 1-800-227-2600, AND AFFECTED UTILITY COMPANIES A MINIMUM OF 2 WORKING DAYS PRIOR TO STARTING WORK TO REQUEST UTILITIES BE MARKED.

III. DEMOLITION

1. REMOVE FROM SITE AND DISPOSE OF IN LAWFUL MANNER EXISTING STRUCTURES, UTILITIES, AND OTHER FEATURES NOT REMOVED DURING DEMOLITION OR ROUGH GRADING AND ENCOUNTERED DURING WORK ON SITE.
    - 1.A. REMOVE WOOD OR CONCRETE STRUCTURES, SLABS, FOOTINGS, GRADE BEAMS, DECKS, DOCKS, AND OTHER SIMILAR STRUCTURES.
    - 1.B. REMOVE LANDSCAPING, UTILITIES AND IRRIGATION LINES AS SPECIFIED BY GEOTECHNICAL ENGINEER.
    - 1.C. REMOVE ABANDONED IN-GROUND STRUCTURES, SUCH AS CULVERTS, UTILITY VAULTS, AND FOUNDATIONS AS SPECIFIED BY GEOTECHNICAL ENGINEER.

IV. DEWATERING

1. DEWATER AREAS COVERED WITH STANDING WATER PRIOR TO PLACEMENT OF FILL.
2. DISPOSE OF WATER FROM DEWATERING OPERATION IN CONFORMANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

V. UTILITIES

1. DO NOT OPERATE WATER VALVES OR OTHER WATER DISTRICT FACILITIES. REQUIRED OPERATION WILL BE PERFORMED BY UTILITY DISTRICT PERSONNEL ONLY. NOTIFY UTILITY DISTRICT 2 WORKING DAYS PRIOR TO REQUIRING FACILITY OPERATION.
2. PROVIDE MINIMUM 12 INCH VERTICAL CLEARANCE BETWEEN ADJACENT UTILITY PIPES AT UTILITY CROSSINGS UNLESS OTHERWISE NOTED.
3. COMPLETE ELECTRIC, GAS, TELEPHONE, CABLE AND OTHER JOINT TRENCH WORK IN CONFORMANCE WITH THE REQUIREMENTS OF THE RESPECTIVE UTILITY PROVIDER. NOTIFY UTILITY PROVIDER MINIMUM 2 WORKING DAYS PRIOR TO COMMENCING WORK. IF EXISTING WATER, SEWER, GAS OR OTHER UTILITY SERVICES ARE DISTURBED OR DAMAGED DURING CONSTRUCTION, NOTIFY UTILITY OWNER IMMEDIATELY.
4. PROTECT UTILITIES FROM DAMAGE CAUSED BY CONTRACTOR'S WORK.
5. PROVIDE UTILITY STRUCTURES IN PAVED AREAS SUITABLE FOR H-20 LOADING.
6. PIPE LENGTHS SHOWN ON PLANS ARE FOR ENGINEERING CALCULATIONS ONLY AND ARE NOT INTENDED AS BID QUANTITIES OR FOR ORDERING MATERIALS.
7. CONSTRUCT GRAVITY FLOW UTILITIES FROM DOWNSTREAM CONNECTION POINT TO UPSTREAM TERMINUS.
8. COORDINATE WITH COUNTY OF SAN MATEO AND CRYSTAL SPRINGS SANITATION DISTRICT FOR INSPECTION OF WORK ON DISTRICT FACILITIES.
9. ALL WATER LATERALS AND SERVICES SHALL BE INSTALLED TO THE STANDARDS OF THE CALIFORNIA WATER SERVICE COMPANY. EXISTING WATER MAINS OR LATERALS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AND TESTED TO THE SATISFACTION OF THE WATER COMPANY.

VI. EARTHWORK AND GRADING

1. OFF-SITE IMPORT FILL MATERIAL SHALL CONFORM TO THE SPECIFICATIONS AND THE REQUIREMENTS OF THE GEOTECHNICAL REPORT.
2. TOPSOIL, ROOTS, VEGETABLE MATTER, TRASH AND DEBRIS WILL NOT BE CONSIDERED ACCEPTABLE FILL MATERIAL.
3. REMOVE DEBRIS FROM AREAS OF EARTHWORK PRIOR TO PLACING FILL OR STARTING GRADING OPERATIONS.
4. PLACE AND COMPACT FILL MATERIAL AS RECOMMENDED IN GEOTECHNICAL REPORT. PLACE FILL MATERIAL IN MAXIMUM 8 INCH UNCOMPACTED THICKNESS. COMPACTION BY FLOODING, PONDING OR JETTING WILL NOT BE PERMITTED.
5. CONTRACTOR SHALL MAKE HIS OWN DETERMINATION OF EARTHWORK QUANTITIES.

VII RECORD DRAWINGS

1. KEEP ACCURATE RECORD OF THE FINAL LOCATION, ELEVATION AND DESCRIPTION OF WORK ON A COPY OF THE FINAL APPROVED CONSTRUCTION DOCUMENTS. NOTE THE LOCATIONS AND ELEVATIONS OF EXISTING IMPROVEMENTS ENCOUNTERED THAT VARY FROM THE LOCATIONS SHOWN ON THE IMPROVEMENT PLANS. PROVIDE COPY OF RECORD INFORMATION TO OWNER AT COMPLETION OF PROJECT AND WHEN REQUESTED.

VII. STATEMENT OF RESPONSIBILITY

1. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD BOTH DESIGN PROFESSIONAL AND THE COUNTY OF SAN MATEO HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF EITHER THE DESIGN PROFESSIONAL OR THE COUNTY OF SAN MATEO, RESPECTIVELY.

IX. UNAUTHORIZED CHANGES AND USES

1. THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND REQUIRE WRITTEN APPROVAL OF THE COUNTY ENGINEER AND THE PREPARER OF THESE PLANS.

X. DRAWING LANGUAGE

1. NOTES AND CALLOUTS ON DRAWINGS MAY USE IMPERATIVE LANGUAGE. REQUIREMENTS EXPRESSED IMPERATIVELY ARE TO BE PERFORMED BY THE CONTRACTOR UNLESS NOTED OTHERWISE.

CONDITIONS OF APPROVAL NOTES

CONSTRUCTION NOTES

1. THE FIRST PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY. THE REMAINDER OF CONSTRUCTION EQUIPMENT (70 PERCENT), WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL BE REQUIRED TO USE EMULSIFIED FUELS.
2. THE SECOND PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 2 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY AND 50 PERCENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS. THE REMAINING 20 PERCENT OF CONSTRUCTION EQUIPMENT, WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL USE EMULSIFIED FUELS.
3. FOR ALL LARGER VEHICLES, INCLUDING CEMENT MIXERS OR OTHER DEVICES THAT MUST BE DELIVERED BY LARGE TRUCKS, VEHICLES SHALL BE EQUIPPED WITH CARB LEVEL THREE VERIFIED CONTROL DEVICES.
4. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY.
5. COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR REQUIRE ALL TRUCKS TO MAINTAIN AT LEAST TWO FEET OF FREEBOARD.
6. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY NON-TOXIC SOIL STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.
7. SWEEP DAILY (WITH WATER SWEEPERS) ALL PAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.
8. SWEEP PUBLIC STREETS ADJACENT TO CONSTRUCTION SITES DAILY (WITH WATER SWEEPERS) IF VISIBLE SOIL MATERIAL IS CARRIED ONTO THE STREETS.
9. HYDROSEED OR APPLY NON-TOXIC SOIL STABILIZERS TO INACTIVE CONSTRUCTION AREAS (PREVIOUSLY GRADED AREAS INACTIVE FOR TEN DAYS OR MORE).
10. ENCLOSE, COVER, WATER TWICE DAILY, OR APPLY NON-TOXIC SOIL BINDERS TO EXPOSED STOCKPILES (DIRT, SAND, ETC.). LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.
11. LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.
12. INSTALL SANDBAGS OR OTHER EROSION CONTROL MEASURES TO PREVENT SILT RUNOFF TO PUBLIC ROADWAYS.
13. REPLANT VEGETATION IN DISTURBED AREAS AS SOON AS POSSIBLE.
14. INSTALL WHEEL WASHERS FOR ALL EXITING TRUCKS OR WASH OFF THE TIRES OR TRACKS OF ALL TRUCKS AND EQUIPMENT LEAVING THE CONSTRUCTION SITE.
15. INSTALL WIND BREAKS AT THE WINDWARD SIDES OF THE CONSTRUCTION AREAS.
16. SUSPEND EXCAVATION AND GRADING ACTIVITIES WHEN WIND (AS INSTANTANEOUS GUSTS) EXCEEDS 25 MILES PER HOUR.

NOISE NOTES

1. EQUIPMENT AND TRUCKS USED FOR PROJECT GRADING AND CONSTRUCTION WOULD UTILIZE THE BEST AVAILABLE NOISE CONTROL TECHNIQUES (E.G., IMPROVED EXHAUST MUFFLERS, EQUIPMENT REDESIGN, USE OF INTAKE SILENCERS, DUCTS, ENGINE ENCLOSURES, AND ACOUSTICALLY-ATTENUATING SHIELDS OR SHROUDS) IN ORDER TO MINIMIZE CONSTRUCTION NOISE IMPACTS.
2. EQUIPMENT USED FOR PROJECT GRADING AND CONSTRUCTION WOULD BE HYDRAULICALLY OR ELECTRICALLY POWERED IMPACT TOOLS (E.G., JACK HAMMERS AND PAVEMENT BREAKERS) WHEREVER POSSIBLE TO AVOID NOISE ASSOCIATED WITH COMPRESSED AIR EXHAUST FROM PNEUMATICALLY-POWERED TOOLS. COMPRESSED AIR EXHAUST SILENCERS WOULD BE USED ON OTHER EQUIPMENT. OTHER QUIETER PROCEDURES WOULD BE USED SUCH AS DRILLING RATHER THAN IMPACT EQUIPMENT WHENEVER FEASIBLE.
3. THE GRADING AND CONSTRUCTION ACTIVITY WOULD BE KEPT TO THE HOURS OF 7:00 AM TO 7:00 PM, MONDAY THROUGH FRIDAY. SATURDAY HOURS (8:00 AM TO 5:00 PM) ARE PERMITTED UPON THE DISCRETION OF COUNTY APPROVAL BASED ON INPUT FROM NEARBY RESIDENTS AND BUSINESSES. SATURDAY CONSTRUCTION (8:00 AM TO 5:00 PM) WOULD BE ALLOWED ONCE THE BUILDINGS ARE FULLY ENCLOSED. NOISE GENERATING GRADING AND CONSTRUCTION ACTIVITIES SHALL NOT OCCUR AT ANY TIME ON SUNDAYS, THANKSGIVING AND CHRISTMAS.
4. RESIDENTIAL PROPERTY OWNERS WITHIN 200 FEET OF PLANNED CONSTRUCTION AREAS SHALL BE NOTIFIED OF THE CONSTRUCTION SCHEDULE IN WRITING, PRIOR TO CONSTRUCTION; THE PROJECT SPONSOR SHALL DESIGNATE A "DISTURBANCE COORDINATOR" WHO SHALL BE RESPONSIBLE FOR RESPONDING TO ANY LOCAL COMPLAINTS REGARDING CONSTRUCTION NOISE; THE COORDINATOR (WHO MAY BE AN EMPLOYEE OF THE DEVELOPER OR GENERAL CONTRACTOR) SHALL DETERMINE THE CAUSE OF THE COMPLAINT AND SHALL REQUIRE THAT REASONABLE MEASURES WARRANTED TO CORRECT THE PROBLEM BE IMPLEMENTED; A TELEPHONE NUMBER OF THE NOISE DISTURBANCE COORDINATOR SHALL BE CONSPICUOUSLY POSTED AT THE CONSTRUCTION SITE FENCE AND ON THE NOTIFICATION SENT TO NEIGHBORS ADJACENT TO THE SITE.

ASBESTOS NOTES

1. IF NATURALLY OCCURRING ASBESTOS IS IDENTIFIED AT THE SITE, A SITE HEALTH AND SAFETY (H&S) PLAN INCLUDING METHODS FOR CONTROL OF AIRBORNE DUST SHALL BE PREPARED. THIS PLAN SHALL BE REVIEWED AND APPROVED BY THE COUNTY OF SAN MATEO PRIOR TO GRADING IN AREAS UNDERLAIN BY SERPENTINE-BEARING SOILS OR BEDROCK AND NATURALLY OCCURRING ASBESTOS. THE H&S PLAN SHALL STRICTLY CONTROL DUST-GENERATING EXCAVATION AND COMPACTION OF MATERIAL CONTAINING NATURALLY OCCURRING ASBESTOS. THE PLAN SHALL ALSO IDENTIFY SITE-MONITORING ACTIVITIES DEEMED NECESSARY DURING CONSTRUCTION (E.G., AIR MONITORING). WORKER MONITORING SHALL ALSO BE PERFORMED AS APPROPRIATE. THE PLAN SHALL DEFINE PERSONAL PROTECTION METHODS TO BE USED BY CONSTRUCTION WORKERS. ALL WORKER PROTECTION AND MONITORING SHALL COMPLY WITH PROVISIONS OF THE MINING SAFETY AND HEALTH ADMINISTRATION (MSHA) GUIDELINES, CALIFORNIA DIVISION OF OCCUPA-TIONAL SAFETY AND HEALTH (DOSH), AND THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
2. IF NATURALLY OCCURRING ASBESTOS IS FOUND AT THE SITE, A SOIL MANAGEMENT PLAN SHALL BE DEVELOPED AND APPROVED BY THE COUNTY PLANNING DEPARTMENT TO PROVIDE DETAILED DESCRIPTIONS OF THE CONTROL AND DISPOSITION OF SOILS CONTAINING NATURALLY OCCURRING ASBESTOS. SERPENTINE MATERIAL PLACED AS FILL SHALL BE SUFFICIENTLY BURIED IN ORDER TO PREVENT EROSION BY WIND OR SURFACE WATER RUNOFF, OR EXPOSURE TO FUTURE HUMAN ACTIVITIES, SUCH AS LANDSCAPING OR SHALLOW TRENCHES. ADDITIONALLY, THE BAAQMD SHALL BE NOTIFIED PRIOR TO THE START OF ANY EXCAVATION IN AREAS CONTAINING NATURALLY OCCURRING ASBESTOS.

GRADING NOTES

1. NO GRADING SHALL BE ALLOWED DURING THE WINTER SEASON (OCTOBER 15 TO APRIL 30) TO AVOID POTENTIAL SOIL EROSION UNLESS APPROVED, IN WRITING, BY THE COMMUNITY DEVELOPMENT DIRECTOR. THE PROPERTY OWNERS SHALL SUBMIT A LETTER TO THE CURRENT PLANNING SECTION, AT LEAST TWO WEEKS PRIOR TO COMMENCEMENT OF GRADING, STATING THE DATE WHEN GRADING WILL BEGIN.

TREE PROTECTION NOTES

1. THE APPLICANT SHALL ESTABLISH AND MAINTAIN TREE PROTECTION ZONES THROUGHOUT THE ENTIRE LENGTH OF THE PROJECT. TREE PROTECTION ZONES SHALL BE DELINEATED USING 4-FOOT TALL ORANGE PLASTIC FENCING SUPPORTED BY POLES POUNDED INTO THE GROUND, LOCATED AS CLOSE TO THE DRIPLINES AS POSSIBLE WHILE STILL ALLOWING ROOM FOR CONSTRUCTION/GRADING TO SAFELY CONTINUE. THE APPLICANT SHALL MAINTAIN TREE PROTECTION ZONES FREE OF EQUIPMENT AND MATERIALS STORAGE AND SHALL NOT CLEAN ANY EQUIPMENT WITHIN THESE AREAS. SHOULD ANY LARGE ROOTS OR LARGE MASSES OF ROOTS NEED TO BE CUT, THE ROOTS SHALL BE INSPECTED BY A CERTIFIED ARBORIST OR REGISTERED FORESTER PRIOR TO CUTTING. ANY ROOT CUTTING SHALL BE MONITORED BY AN ARBORIST OR FORESTER AND DOCUMENTED. ROOTS TO BE CUT SHOULD BE SEVERED CLEANLY WITH A SAW OR TOPPERS. NORMAL IRRIGATION SHALL BE MAINTAINED, BUT OAKS SHOULD NOT NEED SUMMER IRRIGATION. THE ABOVE INFORMATION SHALL BE ON-SITE AT ALL TIMES.

VEGETATION REMOVAL/REPLACEMENT NOTES

1. VEGETATION REMOVED IN AREAS OUTSIDE OF BUILDING FOOTPRINTS, DRIVEWAYS, AND CONSTRUCTION ACCESS AREAS SHALL BE REPLACED WITH DROUGHT-TOLERANT, NON-INVASIVE PLANTS, IMMEDIATELY AFTER GRADING IS COMPLETE IN THAT AREA. PRIOR TO THE ISSUANCE OF ANY BUILDING PERMITS, THE APPLICANT SHALL SUBMIT PHOTOGRAPHS DEMONSTRATING COMPLIANCE WITH THIS CONDITION TO THE CURRENT PLANNING SECTION, SUBJECT TO REVIEW AND APPROVAL BY THE COMMUNITY DEVELOPMENT DIRECTOR.
2. THE APPLICANT SHALL REPLACE ALL VEGETATION REMOVED IN ALL AREAS NOT COVERED BY CONSTRUCTION WITH DROUGHT-TOLERANT, NON-INVASIVE PLANTS, ONCE CONSTRUCTION IS COMPLETED. PRIOR TO THE CURRENT PLANNING SECTION'S FINAL APPROVAL OF ANY BUILDING PERMIT, THE APPLICANT SHALL SUBMIT PHOTOGRAPHS DEMONSTRATING COMPLIANCE WITH THIS CONDITION, SUBJECT TO REVIEW AND APPROVAL BY THE COMMUNITY DEVELOPMENT DIRECTOR.

DUST CONTROL NOTES

1. ALL GRADED SURFACES AND MATERIALS, WHETHER FILLED, EXCAVATED, TRANSPORTED OR STOCKPILED, SHALL BE WETTED, PROTECTED OR CONTAINED IN SUCH A MANNER AS TO PREVENT ANY SIGNIFICANT NUISANCE FROM DUST, OR SPILLAGE UPON ADJOINING WATER BODY, PROPERTY, OR STREETS. EQUIPMENT AND MATERIALS ON THE SITE SHALL BE USED IN SUCH A MANNER AS TO AVOID EXCESSIVE DUST. A DUST CONTROL PLAN MAY BE REQUIRED AT ANYTIME DURING THE COURSE OF THE PROJECT.
2. A DUST PALLIATIVE SHALL BE APPLIED TO THE SITE WHEN REQUIRED BY THE COUNTY. THE TYPE AND RATE OF APPLICATION SHALL BE RECOMMENDED BY THE SOILS ENGINEER AND APPROVED BY THE DEPARTMENT OF PUBLIC WORKS, THE PLANNING AND BUILDING DEPARTMENT'S GEOTECHNICAL SECTION, AND THE REGIONAL WATER QUALITY CONTROL BOARD.

DISCOVERY OF HUMAN REMAINS NOTE

1. THE APPLICANT AND CONTRACTORS MUST BE PREPARED TO CARRY OUT THE REQUIREMENTS OF CALIFORNIA STATE LAW WITH REGARD TO THE DISCOVERY OF HUMAN REMAINS DURING CONSTRUCTION, WHETHER HISTORIC OR PREHISTORIC. IN THE EVENT THAT ANY HUMAN REMAINS ARE ENCOUNTERED DURING SITE DISTURBANCE, ALL GROUND-DISTURBING WORK SHALL CEASE IMMEDIATELY AND THE COUNTY CORONER SHALL BE NOTIFIED IMMEDIATELY. IF THE CORONER DETERMINES THE REMAINS TO BE NATIVE AMERICAN, THE NATIVE AMERICAN HERITAGE COMMISSION SHALL BE CONTACTED WITHIN 24 HOURS. A QUALIFIED ARCHAEOLOGIST, IN CONSULTATION WITH THE NATIVE AMERICAN HERITAGE COMMISSION, SHALL RECOMMEND SUBSEQUENT MEASURES FOR DISPOSITION OF THE REMAINS.

GEOTECHNICAL INSPECTION NOTE

1. PRIOR TO ISSUANCE OF BUILDING PERMITS, THE PROJECT GEOTECHNICAL CONSULTANT SHALL FIELD INSPECT (AND INVESTIGATE, AS NEEDED) ALL PROPOSED DRAINAGE DISCHARGE LOCATIONS AND VERIFY THAT PROPOSED DRAINAGE DESIGNS ARE ACCEPTABLE FROM A SLOPE STABILITY/EROSION PERSPECTIVE OR RECOMMEND APPROPRIATE MODIFICATIONS.

MITIGATION AQ-1

1. THE PROJECT APPLICANT SHALL REQUIRE THAT THE FOLLOWING BAAQMD RECOMMENDED AND ADDITIONAL PM10 REDUCTION PRACTICES BE IMPLEMENTED BY INCLUDING THEM IN THE CONTRACTOR CONSTRUCTION DOCUMENTS: THE FIRST PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY. THE REMAINDER OF CONSTRUCTION EQUIPMENT (70 PERCENT), WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL BE REQUIRED TO USE EMULSIFIED FUELS.
2. THE SECOND PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 2 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY AND 50 PERCENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS. THE REMAINING 20 PERCENT OF CONSTRUCTION EQUIPMENT, WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL USE EMULSIFIED FUELS.
3. FOR ALL LARGER VEHICLES, INCLUDING CEMENT MIXERS OR OTHER DEVICES THAT MUST BE DELIVERED BY LARGE TRUCKS, VEHICLES SHALL BE EQUIPPED WITH CARB LEVEL THREE VERIFIED CONTROL DEVICES.
4. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY.
2. COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR REQUIRE ALL TRUCKS TO MAINTAIN AT LEAST TWO FEET OF FREEBOARD.
3. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY NON-TOXIC SOIL STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.
4. SWEEP DAILY (WITH WATER SWEEPERS) ALL PAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.
5. SWEEP PUBLIC STREETS ADJACENT TO CONSTRUCTION SITES DAILY (WITH WATER SWEEPERS) IF VISIBLE SOIL MATERIAL IS CARRIED ONTO THE STREETS.
6. HYDROSEED OR APPLY NON-TOXIC SOIL STABILIZERS TO INACTIVE CONSTRUCTION AREAS (PREVIOUSLY GRADED AREAS INACTIVE FOR TEN DAYS OR MORE).
7. ENCLOSE, COVER, WATER TWICE DAILY, OR APPLY NON-TOXIC SOIL BINDERS TO EXPOSED STOCKPILES (DIRT, SAND, ETC.). LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.
8. LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.
9. INSTALL SANDBAGS OR OTHER EROSION CONTROL MEASURES TO PREVENT SILT RUNOFF TO PUBLIC ROADWAYS.
10. REPLANT VEGETATION IN DISTURBED AREAS AS SOON AS POSSIBLE.
11. INSTALL WHEEL WASHERS FOR ALL EXITING TRUCKS OR WASH OFF THE TIRES OR TRACKS OF ALL TRUCKS AND EQUIPMENT LEAVING THE CONSTRUCTION SITE.
12. INSTALL WIND BREAKS AT THE WINDWARD SIDES OF THE CONSTRUCTION AREAS.
13. SUSPEND EXCAVATION AND GRADING ACTIVITIES WHEN WIND (AS INSTANTANEOUS GUSTS) EXCEEDS 25 MILES PER HOUR.

MITIGATION NOI-1

1. THE PROJECT APPLICANT SHALL REQUIRE THAT THE FOLLOWING NOISE REDUCTION PRACTICES BE IMPLEMENTED BY INCLUDING THEM IN THE CONTRACTOR CONSTRUCTION DOCUMENTS:
2. EQUIPMENT AND TRUCKS USED FOR PROJECT GRADING AND CONSTRUCTION WOULD UTILIZE THE BEST AVAILABLE NOISE CONTROL TECHNIQUES (E.G., IMPROVED EXHAUST MUFFLERS, EQUIPMENT REDESIGN, USE OF INTAKE SILENCERS, DUCTS, ENGINE ENCLOSURES, AND ACOUSTICALLY-ATTENUATING SHIELDS OR SHROUDS) IN ORDER TO MINIMIZE CONSTRUCTION NOISE IMPACTS.
3. EQUIPMENT USED FOR PROJECT GRADING AND CONSTRUCTION WOULD BE HYDRAUL- ICALLY OR ELECTRICALLY POWERED IMPACT TOOLS (E.G., JACK HAMMERS AND PAVEMENT BREAKERS) WHEREVER POSSIBLE TO AVOID NOISE ASSOCIATED WITH COMPRESSED AIR EXHAUST FROM PNEUMATICALLY-POWERED TOOLS. COMPRESSED AIR EXHAUST SILENCERS WOULD BE USED ON OTHER EQUIPMENT. OTHER QUIETER PROCEDURES WOULD BE USED SUCH AS DRILLING RATHER THAN IMPACT EQUIPMENT WHENEVER FEASIBLE.
4. THE GRADING AND CONSTRUCTION ACTIVITY WOULD BE KEPT TO THE HOURS OF 7:00 AM TO 7:00 PM, MONDAY THROUGH FRIDAY. SATURDAY HOURS (8:00 AM TO 5:00 PM) ARE PERMITTED UPON THE DISCRETION OF COUNTY APPROVAL BASED ON INPUT FROM NEARBY RESIDENTS AND BUSINESSES. SATURDAY CONSTRUCTION (8:00 AM TO 5:00 PM) WOULD BE ALLOWED ONCE THE BUILDINGS ARE FULLY ENCLOSED. NOISE GENERATING GRADING AND CONSTRUCTION ACTIVITIES SHALL NOT OCCUR AT ANY TIME ON SUNDAYS, THANKSGIVING AND CHRISTMAS.
5. RESIDENTIAL PROPERTY OWNERS WITHIN 200 FEET OF PLANNED CONSTRUCTION AREAS SHALL BE NOTIFIED OF THE CONSTRUCTION SCHEDULE IN WRITING, PRIOR TO CONSTRUCTION; THE PROJECT SPONSOR SHALL DESIGNATE A "DISTURBANCE COORDI- NATOR" WHO SHALL BE RESPONSIBLE FOR RESPONDING TO ANY LOCAL COMPLAINTS REGARDING CONSTRUCTION NOISE; THE COORDINATOR (WHO MAY BE AN EMPLOYEE OF THE DEVELOPER OR GENERAL CONTRACTOR) SHALL DETERMINE THE CAUSE OF THE COMPLAINT AND SHALL REQUIRE THAT REASONABLE MEASURES WARRANTED TO CORRECT THE PROBLEM BE IMPLEMENTED; A TELEPHONE NUMBER OF THE NOISE DISTURBANCE COORDINATOR SHALL BE CONSPICUOUSLY POSTED AT THE CONSTRUCTION SITE FENCE AND ON THE NOTIFICATION SENT TO NEIGHBORS ADJACENT TO THE SITE.

BENCHMARK:

THE PROJECT BENCHMARK IS THE TOP OF AN IRON PIPE, ELEVATION OF 538.23, LOCATED WITHIN A MONUMENT BOX AT THE INTERSECTION OF THE CENTERLINES OF COBBLEHILL PLACE AND NEW BRUNSWICK DRIVE IN SAN MATEO, CALIFORNIA. THE ELEVATION SHOWN IN BASED UPON A SURVEY BY BKF ENGINEERS IN MARCH OF 2011 AND IS BASED UPON AN ASSUMED ELEVATION.

BASIS OF BEARINGS:

THE BEARING NORTH 76° 09' 00" EAST OF THE CENTERLINE OF COBBLE HILL PLACE AS SHOWN ON TRACT MAP NO. 723, THE HIGHLANDS, RECORDED ON AUGUST 26TH, 1955, IN VOLUME 43 OF MAPS AT PAGES 23-25, SAN MATEO COUNTY RECORDS.

811

Know what's **below.**
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ROLAND N.V. HAGA
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STATE OF CALIFORNIA

HIGHLAND ESTATES
LOT 5 IMPROVEMENT PLANS
GENERAL NOTES

CITY OF SAN MATEO
SAN MATEO COUNTY
CALIFORNIA

No.	Revisions

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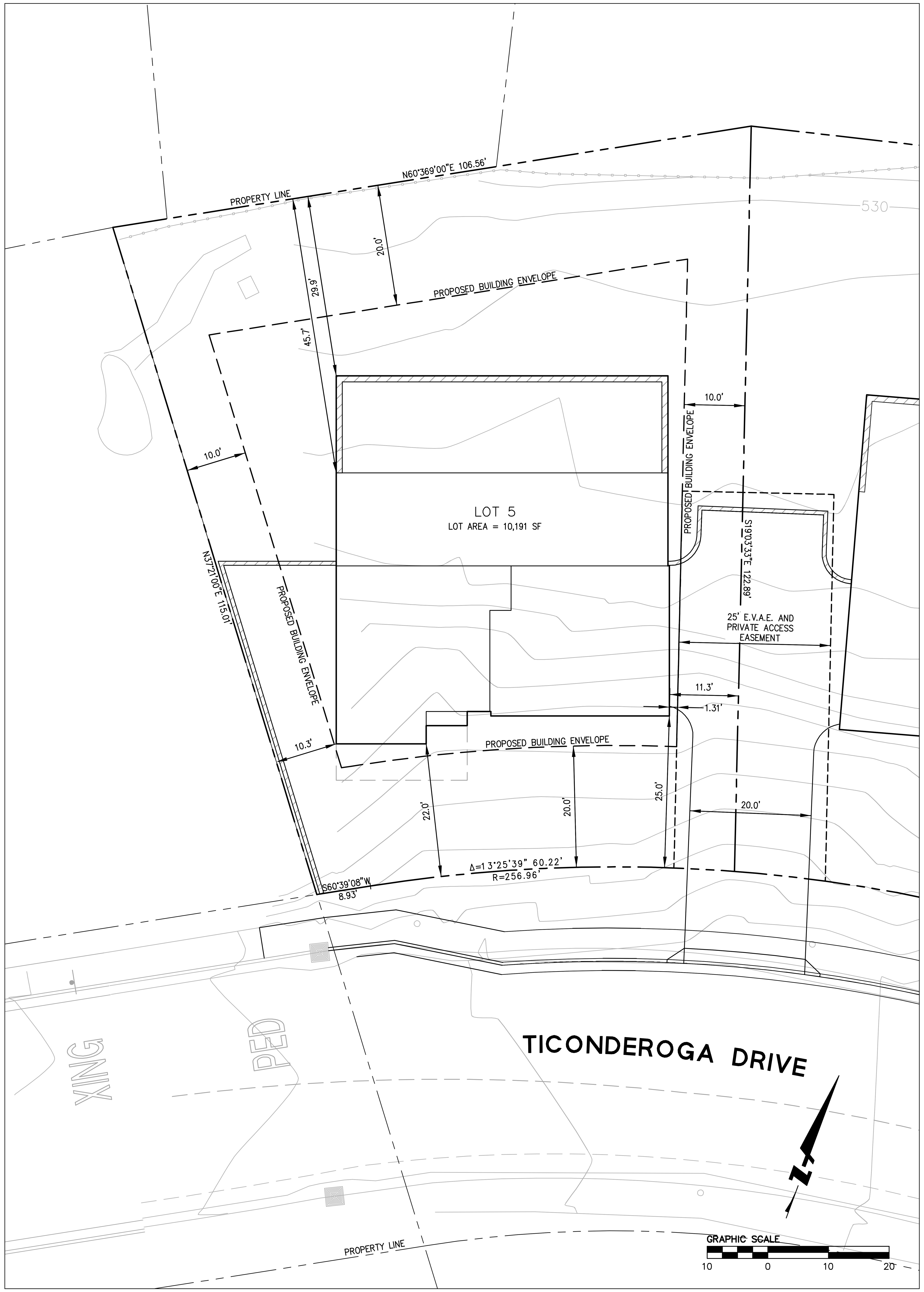
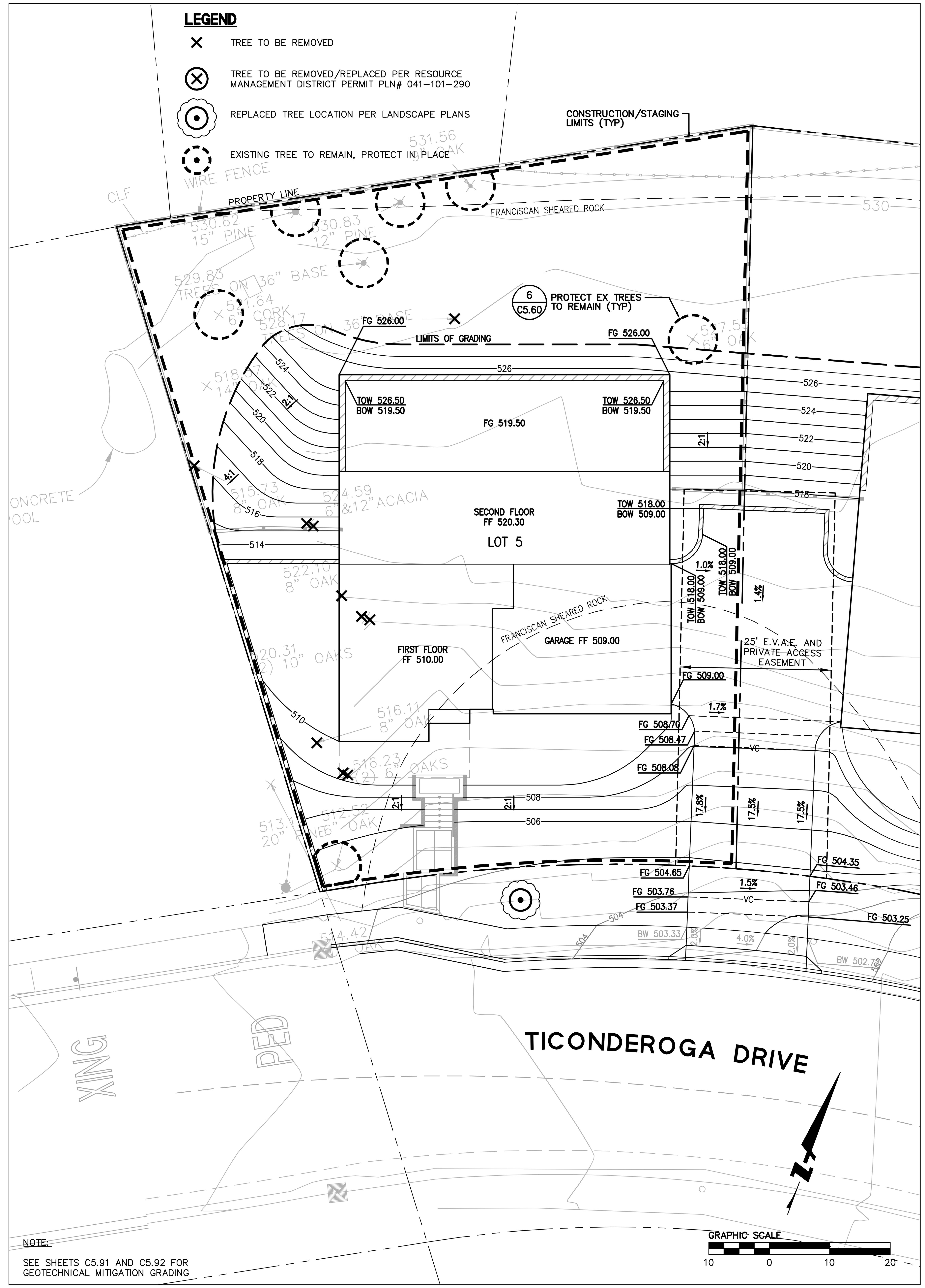


LOT 5
SITE PLAN
SCALE: 1"=10'



NOTE:
SEE SHEETS C5.91 AND C5.92 FOR GEOTECHNICAL MITIGATION GRADING

LOT 5
CLEARING, CONSTRUCTION, AND GRADING PLAN
SCALE: 1"=10'

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HIGHLAND ESTATES
LOT 5 IMPROVEMENT PLANS
SITE & CLEARING, CONSTRUCTION AND GRADING PLANS

CITY OF SAN MATEO — SAN MATEO COUNTY — CALIFORNIA

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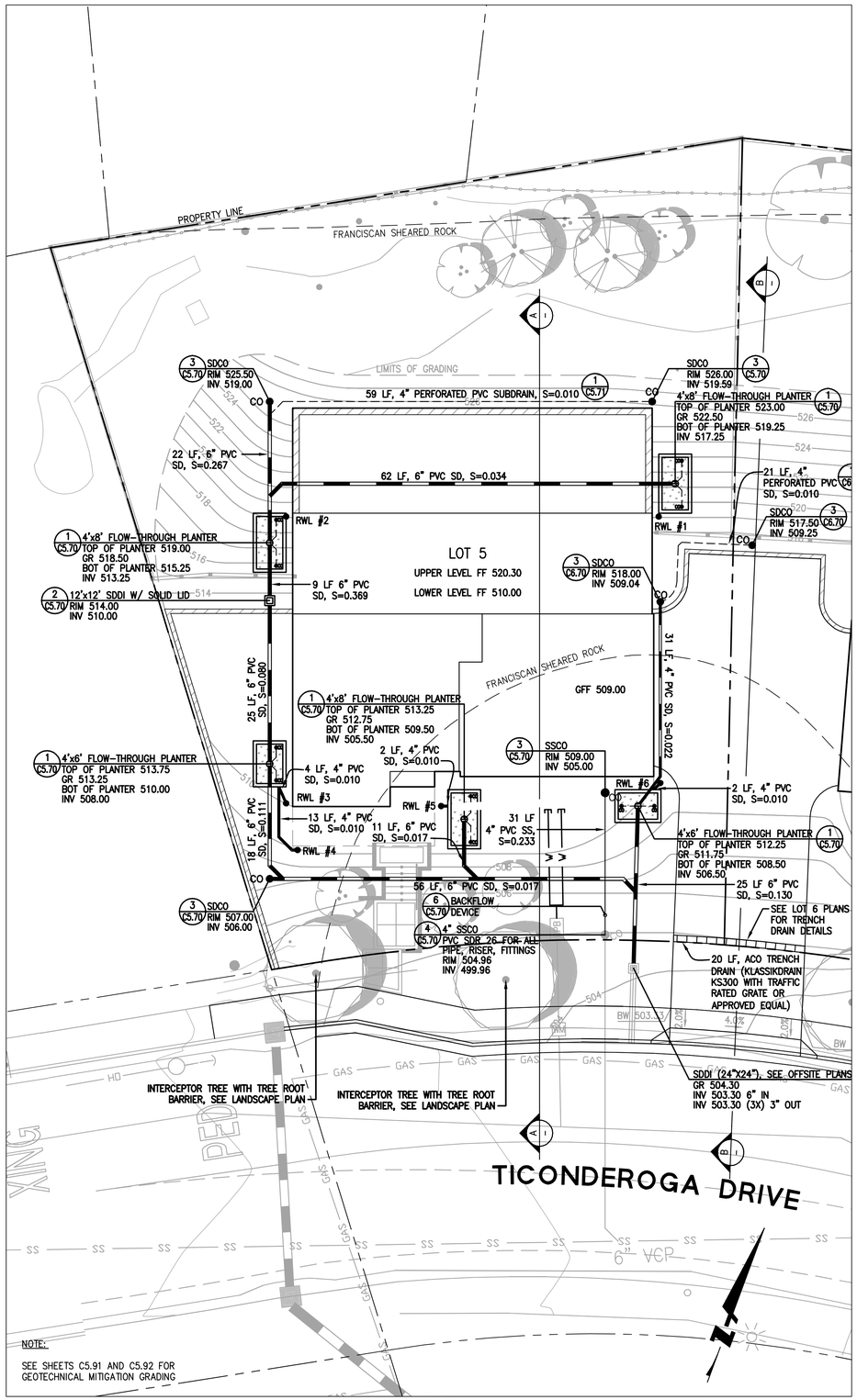
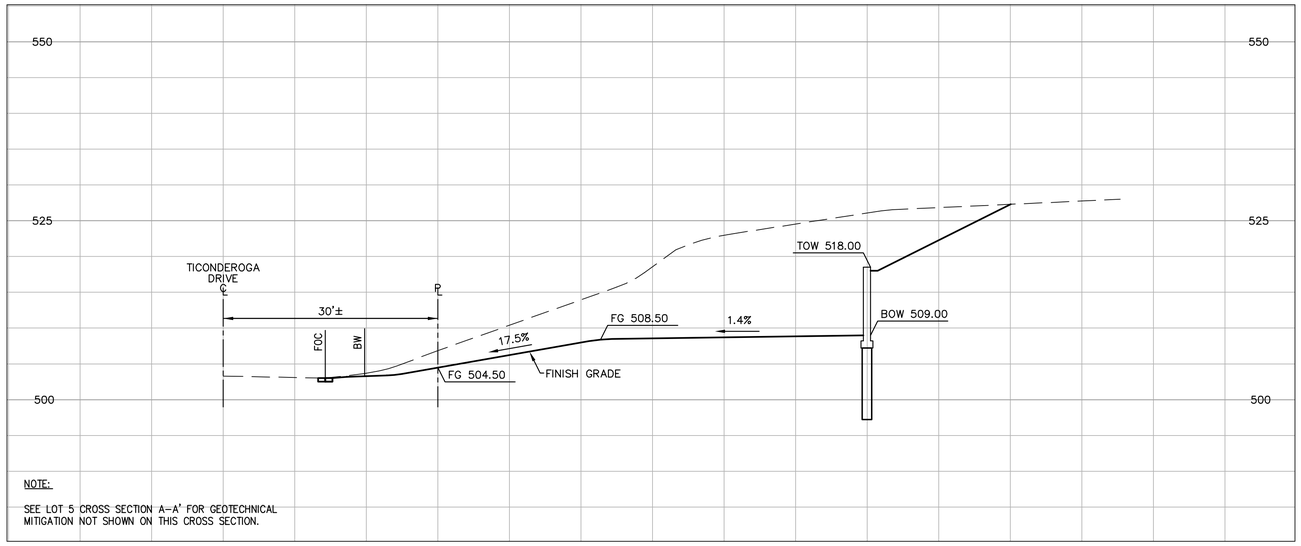


LOT 5
UTILITY PLAN
SCALE: 1"=10'

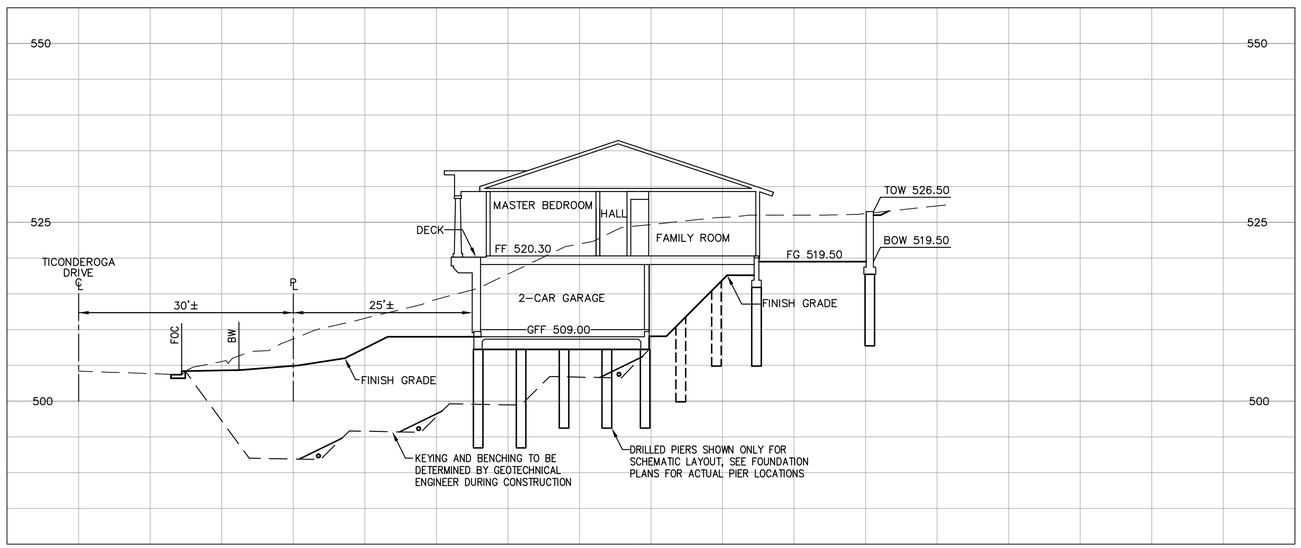
GRAPHIC SCALE
10 0 10 20



LOT 5
CROSS SECTION B-B
SCALE: 1"=10'

NOTES:

1. PER THE GEOTECHNICAL REPORT, UNDOCUMENTED FILL WAS MAPPED AT LOT 5 AND IF THIS FILL IS TO BE LEFT IN PLACE DURING HOUSE AND DRIVEWAY GRADING, IT SHOULD BE REMOVED AND REPLACED AS PROPERLY COMPACTED ENGINEERED FILL.
2. PER THE GEOTECHNICAL REPORT, ALL EXISTING FILLS SHOULD BE COMPLETELY REMOVED FROM WITHIN PROPOSED HOUSE FOOTPRINT AND DRIVEWAY AREAS AND TO A LATERAL DISTANCE OF AT LEAST 5 FEET BEYOND THE EDGE OF THE IMPROVEMENTS OR AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER. ANY EXCESS MATERIAL SHALL BE DISPOSED OF OFF-SITE IN A LAWFUL MANNER.
3. PER THE GEOTECHNICAL REPORT, GEOTECHNICAL MITIGATION GRADING WILL BE PERFORMED ON LOT 5, SEE SHEETS C5.91 AND C5.92 FOR GRADING DETAILS OF THE MITIGATION
4. PER THE GEOTECHNICAL REPORT, ALL BUILDING AND RETAINING WALLS SHOULD BE SUPPORTED ON DRILLED PIERS. THE FOUNDATION SHOWN ON THIS PLAN ARE SCHEMATIC. REFER TO THE PROJECT STRUCTURAL PLANS FOR DETAILS ON THE DRILLED PIERS.



LOT 5
CROSS SECTION A-A
SCALE: 1"=10'

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HIGHLAND ESTATES
LOT 5 IMPROVEMENT PLANS
UTILITY PLAN AND CROSS SECTION

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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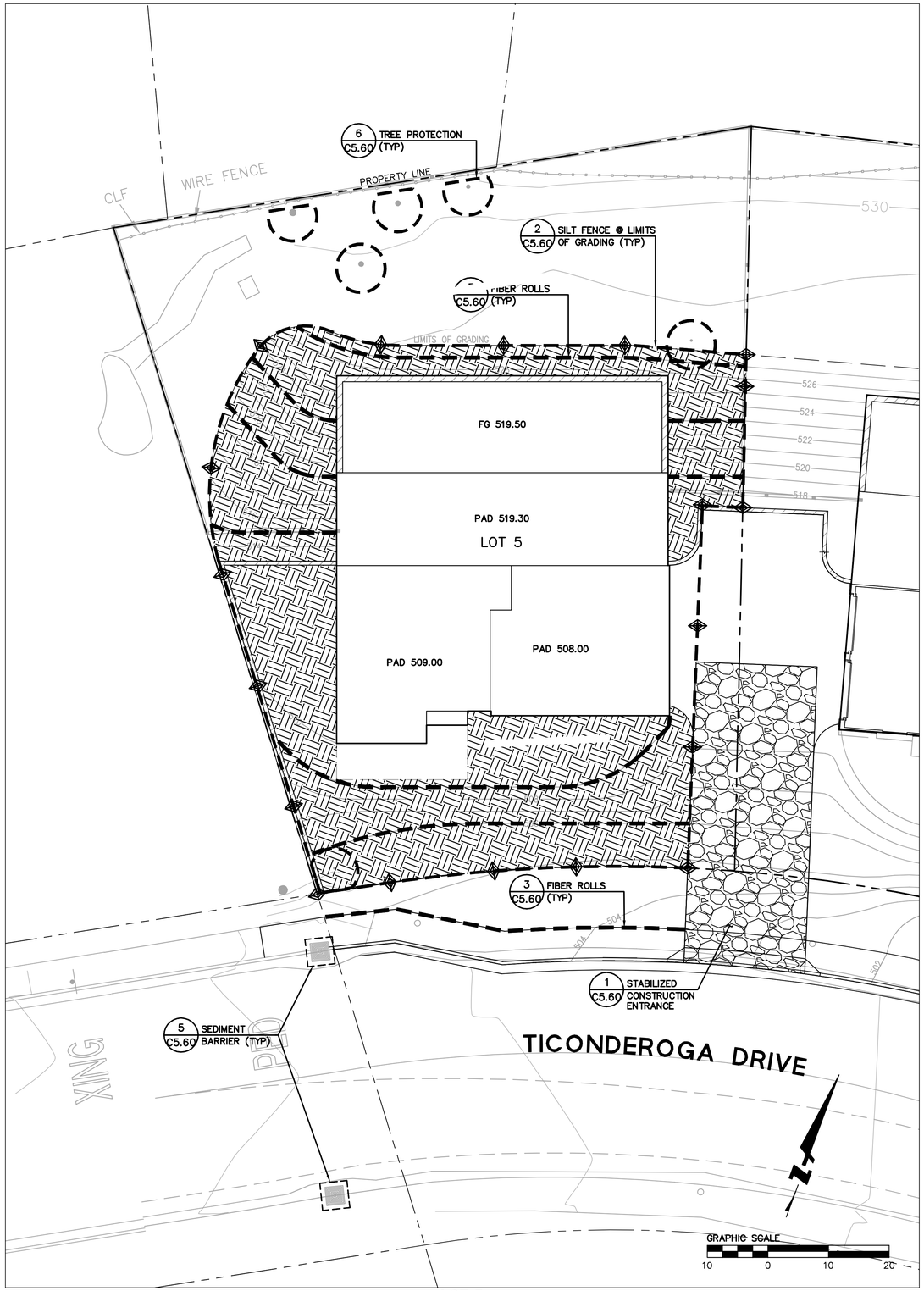
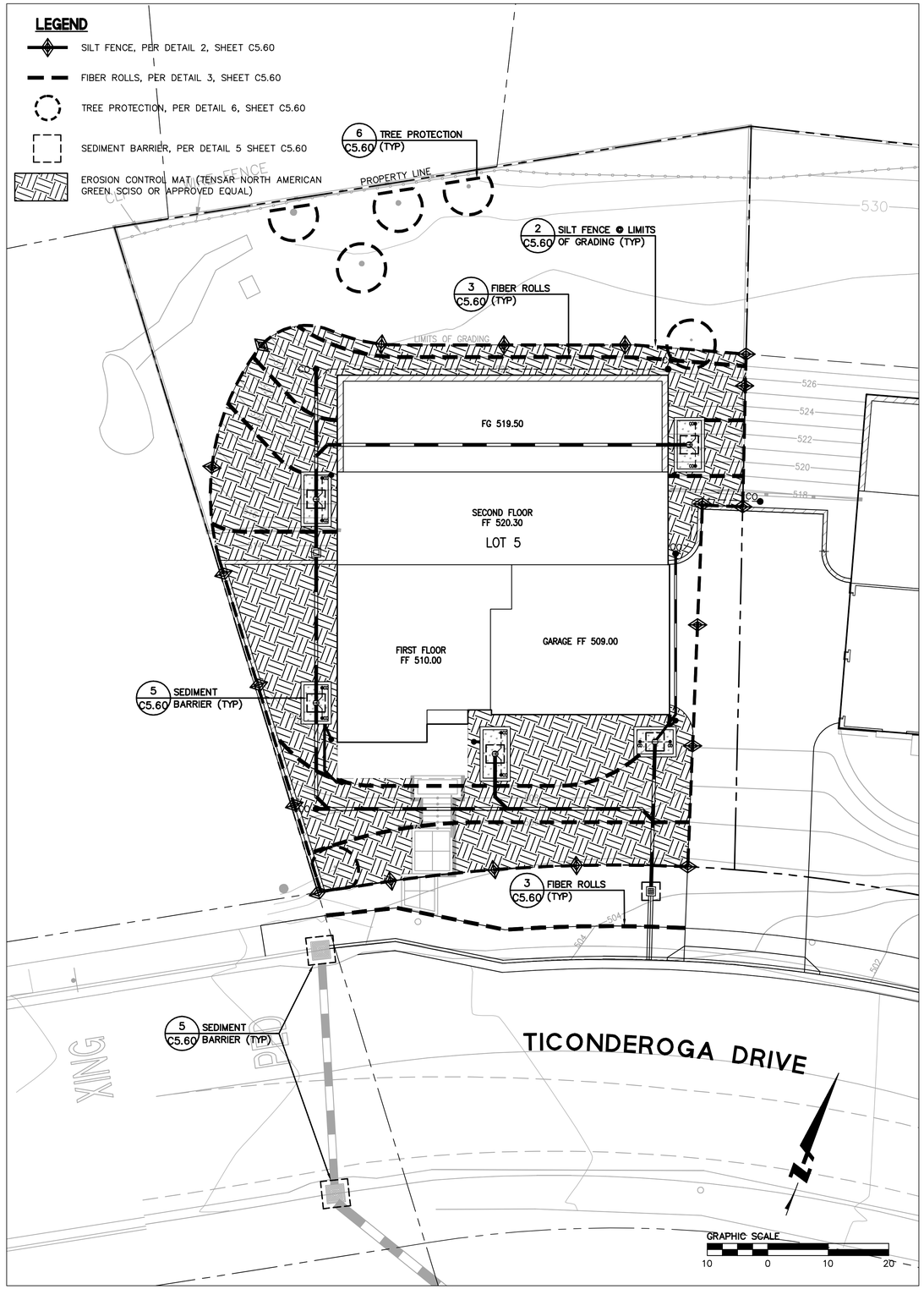


LOT 5
GRADING AND RETAINING WALL EROSION CONTROL PLAN
SCALE: 1"=10'

LEGEND

- SILT FENCE, PER DETAIL 2, SHEET C5.60
- FIBER ROLLS, PER DETAIL 3, SHEET C5.60
- TREE PROTECTION, PER DETAIL 6, SHEET C5.60
- SEDIMENT BARRIER, PER DETAIL 5 SHEET C5.60
- EROSION CONTROL MAT (TENSAR NORTH AMERICAN GREEN SC150 OR APPROVED EQUAL)



LOT 5
FOUNDATION AND CONSTRUCTION EROSION CONTROL PLAN
SCALE: 1"=10'

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REGISTERED PROFESSIONAL ENGINEER MATTHEW T. HAYA No. 0043971 CIVIL STATE OF CALIFORNIA

HIGHLAND ESTATES
LOT 5 IMPROVEMENT PLANS
EROSION CONTROL PLANS

CITY OF SAN MATEO
SAN MATEO COUNTY
CALIFORNIA

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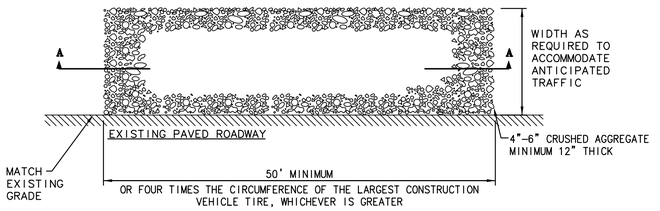
EROSION CONTROL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2. ALTHOUGH SPECIFIC LOCATIONS FOR SEDIMENT CONTROL FACILITIES ARE SHOWN ON THESE PLANS, IT IS INTENDED THIS EROSION CONTROL PLAN BE MODIFIED WHEN NECESSARY TO MEET FIELD CONDITIONS. BASIN AND TRAP SIZES AND ELEVATIONS MAY BE ADJUSTED AS LONG AS THE MINIMUM AREAS AND DEPTHS FOR SEDIMENT SETTLING AND STORAGE ARE NOT REDUCED.
3. THE INTENT OF THESE PLANS IS TO PROVIDE THE INITIAL CONCEPT FOR INTERIM EROSION CONTROL. THE CONTRACTOR SHALL UPDATE THE PLANS TO REFLECT CHANGING SITE CONDITIONS. PLAN UPDATES SHALL BE BASED UPON GENERAL SURVEY DATA. EROSION CONTROL EFFECTIVENESS SHALL ALSO BE MONITORED AND THE PLANS UPGRADED AS REQUIRED TO PREVENT SIGNIFICANT QUANTITIES OF SEDIMENT FROM ENTERING THE DOWNSTREAM DRAINAGE SYSTEM.
4. THIS PLAN MAY NOT COVER ALL THE SITUATIONS THAT ARISE DURING CONSTRUCTION DUE TO UNANTICIPATED FIELD CONDITIONS. IN GENERAL, THE CONTRACTOR IS RESPONSIBLE FOR KEEPING THE STORM RUN OFF FROM LEAVING THE SITE. FIBER ROLLS, SAND BAGS, AND SILT FENCES SHALL BE USED BY THE CONTRACTOR ON AN AS NEEDED BASIS TO INHIBIT SILT FROM LEAVING THE SITE AND ENTERING THE STORM DRAIN SYSTEM. ALL EXISTING, TEMPORARY, OR PERMANENT CATCH BASINS SHALL USE ONE OF THE SEDIMENT BARRIERS SHOWN.
5. THE CONTRACTOR WILL BE LIABLE FOR ANY AND ALL DAMAGES TO PUBLIC AND/OR PRIVATE OWNED AND MAINTAINED ROAD CAUSED BY THE CONTRACTOR'S GRADING ACTIVITIES, AND WILL BE RESPONSIBLE FOR THE CLEANUP OF ANY MATERIAL SPILLED ON ANY PUBLIC ROAD ON THE HAUL ROUTE. ADJACENT PUBLIC ROADS SHALL BE CLEANED AT THE END OF EACH WORKING DAY.
6. BEST MANAGEMENT PRACTICES SHALL BE OPERABLE YEAR AROUND.
7. DURING THE RAINY SEASON, ALL PAVED AREAS ARE TO BE KEPT CLEAR OF EARTH MATERIAL AND DEBRIS. THE SITE IS TO BE MAINTAINED SO AS TO MINIMIZE SEDIMENT-LADEN RUNOFF TO ANY STORM DRAIN SYSTEM.
8. ALL EROSION CONTROL FACILITIES MUST BE INSPECTED AND REPAIRED DAILY DURING THE RAINY SEASON. ALL SLOPES SHALL BE REPAIRED AS SOON AS POSSIBLE WHEN DAMAGED.
9. THE FIRST PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY. THE REMAINDER OF CONSTRUCTION EQUIPMENT (70 PERCENT), WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL BE REQUIRED TO USE EMULSIFIED FUELS.
10. THE SECOND PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 2 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY AND 50 PERCENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS. THE REMAINING 20 PERCENT OF CONSTRUCTION EQUIPMENT, WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL USE EMULSIFIED FUELS.
11. FOR ALL LARGER VEHICLES, INCLUDING CEMENT MIXERS OR OTHER DEVICES THAT MUST BE DELIVERED BY LARGE TRUCKS, VEHICLES SHALL BE EQUIPPED WITH CARB LEVEL THREE VERIFIED CONTROL DEVICES.
12. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY.
13. COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR REQUIRE ALL TRUCKS TO MAINTAIN AT LEAST TWO FEET OF FREEBOARD.
14. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY NON-TOXIC SOIL STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.
15. SWEEP DAILY (WITH WATER SWEEPERS) ALL PAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.
16. SWEEP PUBLIC STREETS ADJACENT TO CONSTRUCTION SITES DAILY (WITH WATER SWEEPERS) IF VISIBLE SOIL MATERIAL IS CARRIED ONTO THE STREETS.
17. HYDROSEED OR APPLY NON-TOXIC SOIL STABILIZERS TO INACTIVE CONSTRUCTION AREAS (PREVIOUSLY GRADED AREAS INACTIVE FOR TEN DAYS OR MORE).
18. TEMPORARY AND PERMANENT SLOPES GREATER THAN 3 FEET SHALL BE SEEDED UNLESS ALTERNATIVE MEASURES ARE USED.
19. SEED MIX FOR REVEGETATION AND HYDROSEEDING:
    NORTHERN CALIFORNIA COVER MIX BY ACBRIGHT OR EQUAL

    30% BLUE WILDRYE
    30% MEADOW BARLEY
    20% ZORRO FESCUE
    10% PURPLE NEEDLE GRASS
    10% CALIFORNIA NATIVE WILDFLOWERS

    APPLY AT 40 POUNDS PER ACRE MINIMUM
20. ENCLOSE, COVER, WATER TWICE DAILY, OR APPLY NON-TOXIC SOIL BINDERS TO EXPOSED STOCKPILES (DIRT, SAND, ETC.). LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.
21. DISPOSAL AREAS FOR SEDIMENT TO BE DETERMINED IN FIELD. WHEN MATERIAL IS STOCKPILED, IT SHALL BE SURROUNDED BY A SILT FENCE/FIBER ROLLS.
22. LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.
23. INSTALL SANDBAGS OR OTHER EROSION CONTROL MEASURES TO PREVENT SILT RUNOFF TO PUBLIC ROADWAYS.
24. REPLANT VEGETATION IN DISTURBED AREAS AS SOON AS POSSIBLE.
25. INSTALL WHEEL WASHERS FOR ALL EXITING TRUCKS OR WASH OFF THE TIRES OR TRACKS OF ALL TRUCKS AND EQUIPMENT LEAVING THE CONSTRUCTION SITE.
26. INSTALL WIND BREAKS AT THE WINDWARD SIDES OF THE CONSTRUCTION AREAS.
27. SUSPEND EXCAVATION AND GRADING ACTIVITIES WHEN WIND (AS INSTANTANEOUS GUSTS) EXCEEDS 25 MILES PER HOUR.
28. NO GRADING SHALL BE ALLOWED DURING THE WINTER SEASON (OCTOBER 1 TO APRIL 30) TO AVOID POTENTIAL SOIL EROSION UNLESS APPROVED, IN WRITING, BY THE COMMUNITY DEVELOPMENT DIRECTOR. THE PROPERTY OWNERS SHALL SUBMIT A LETTER TO THE CURRENT PLANNING SECTION, AT LEAST TWO WEEKS PRIOR TO COMMENCEMENT OF GRADING, STATING THE DATE WHEN GRADING WILL BEGIN.
29. STABILIZE ALL DENUDED AREAS AND MAINTAIN EROSION CONTROL MEASURES CONTINUOUSLY BETWEEN OCTOBER 1 AND APRIL 30. STABILIZING SHALL INCLUDE BOTH PROACTIVE MEASURES, SUCH AS THE PLACEMENT OF STRAW BALES OR COIR NETTING, AND PASSIVE MEASURES, SUCH AS MINIMIZING VEGETATION REMOVAL AND REVEGETATING DISTURBED AREAS WITH VEGETATION THAT IS COMPATIBLE WITH THE SURROUNDING ENVIRONMENT.
30. STORE, HANDLE, AND DISPOSE OF CONSTRUCTION MATERIALS AND WASTES PROPERLY, SO AS TO PREVENT THEIR CONTACT WITH STORMWATER.
31. CONTROL AND PREVENT THE DISCHARGE OF ALL POTENTIAL POLLUTANTS, INCLUDING PAVEMENT CUTTING WASTES, PAINTS, CONCRETE, PETROLEUM PRODUCTS, CHEMICALS, WASH WATER OR SEDIMENTS, AND NON-STORMWATER DISCHARGES TO STORM DRAINS AND WATERCOURSES.
32. USE SEDIMENT CONTROLS OR FILTRATION TO REMOVE SEDIMENT WHEN DEWATERING SITE AND OBTAINING ALL NECESSARY PERMITS.
33. AVOID CLEANING, FUELING, OR MAINTAINING VEHICLES ON-SITE, EXCEPT IN A DESIGNATED AREA WHERE WASH WATER IS CONTAINED AND TREATED.
34. DELINEATE WITH FIELD MARKERS CLEARING LIMITS, SETBACKS, AND DRAINAGE COURSES.
35. PROTECT ADJACENT PROPERTIES AND UNDISTURBED AREAS FROM CONSTRUCTION IMPACTS USING VEGETATIVE BUFFER STRIPS, SEDIMENT BARRIERS OR FILTERS, DIKES, MULCHING, OR OTHER MEASURES AS APPROPRIATE.
36. PERFORM CLEARING AND EARTH-MOVING ACTIVITIES ONLY DURING DRY WEATHER.
37. LIMIT AND TIME APPLICATIONS OF PESTICIDES AND FERTILIZERS TO PREVENT POLLUTED RUNOFF.
38. LIMIT CONSTRUCTION ACCESS ROUTES AND STABILIZE DESIGNATED ACCESS POINTS.
39. ALL GRADED SURFACES AND MATERIALS, WHETHER FILLED, EXCAVATED, TRANSPORTED OR STOCKPILED, SHALL BE WETTED, PROTECTED OR CONTAINED IN SUCH A MANNER AS TO PREVENT ANY SIGNIFICANT NUISANCE FROM DUST, OR SPILLAGE UPON ADJOINING WATER BODY, PROPERTY, OR STREETS. EQUIPMENT AND MATERIALS ON THE SITE SHALL BE USED IN SUCH A MANNER AS TO AVOID EXCESSIVE DUST. A DUST CONTROL PLAN MAY BE REQUIRED AT ANYTIME DURING THE COURSE OF THE PROJECT.
40. A DUST PALLIATIVE SHALL BE APPLIED TO THE SITE WHEN REQUIRED BY THE COUNTY. THE TYPE AND RATE OF APPLICATION SHALL BE RECOMMENDED BY THE SOILS ENGINEER AND APPROVED BY THE DEPARTMENT OF PUBLIC WORKS, THE PLANNING AND BUILDING DEPARTMENT'S GEOTECHNICAL SECTION, AND THE REGIONAL WATER QUALITY CONTROL BOARD.
41. IF NO WORK HAS PROGRESSED FOR A PERIOD OF 6-WEEKS, FINAL DRAINAGE AND EROSION CONTROL IMPROVEMENTS SHALL BE INSTALLED IN ACCORDANCE WITH AN APPROVED WINTERIZATION PLAN.
42. PADS SHALL BE GRADED TO MINIMIZE STANDING WATER. SPECIFIC LOCATIONS REQUIRING SUPPLEMENTAL GRADING TO ACHIEVE ACCEPTABLE DRAINAGE SHALL BE DETERMINED BY THE CONSTRUCTION MANAGER. ALL SPOILS AND SOIL STOCKPILES REMAINING ON SITE SHALL BE ENCIRCLED BY SILT FENCES/FIBER ROLLS.
43. STUBBED OUT ENDS OF PARTIALLY COMPLETED SUBDRAINS SHALL BE WRAPPED WITH AN APPROVED FABRIC TO PREVENT SOIL AND DEBRIS FROM ENTERING THE PIPE.
44. HAUL ROADS ARE CURRENTLY NOT SHOWN ON THE PLANS. EROSION CONTROL MEASURES SHALL BE TAKEN TO MINIMIZE EROSION RELATED TO HAUL ROADS.
45. GRADING SCHEDULE SHALL BE SUBMITTED FOR APPROVAL TO SAN MATEO COUNTY PUBLIC WORKS BY AUGUST 15.
46. EROSION CONTROL POINT OF CONTACT:
    NOEL CHAMBERLAIN, NEXGEN BUILDERS INC.
    225 DEMETER STREET
    EAST PALO ALTO, CA 94303
    PHONE #: 650-322-5800
    CELL #: 650-444-3089
    EMAIL: noel@nexgenbuilders.com
47. SHOULD IT APPEAR THAT THE EROSION CONTROL PLAN, OR ANY OTHER MATTER THERETO, IS NOT SUFFICIENTLY DETAILED OR EXPLAINED ON THESE PLANS, THE CONTRACTOR SHALL CONTACT THE BKF PROJECT ENGINEER AT (650) 482-6300 FOR SUCH FURTHER EXPLANATIONS AS MAY BE NECESSARY.
48. AREAS DELINEATED ON PLANS FOR PARKING, CLEARING & GRUBBING, STORAGE, ETC. SHALL NOT BE ENLARGED OR "RUN OVER."
49. CONSTRUCTION SITES ARE REQUIRED TO HAVE EROSION CONTROL MATERIALS ON-SITE DURING THE "OFF-SEASON."
50. DUST CONTROL IS REQUIRED YEAR-ROUND.
51. EROSION CONTROL MATERIALS SHALL BE STORED ON-SITE.
52. USE OF PLASTIC SHEETING BETWEEN OCTOBER 1ST AND APRIL 30TH IS NOT ACCEPTABLE, UNLESS FOR USE ON STOCKPILES WHERE THE STOCKPILE IS ALSO PROTECTED WITH FIBER ROLLS CONTAINING THE BASE OF THE STOCKPILE.
53. TREE PROTECTION SHALL BE IN PLACE BEFORE ANY GRADING, EXCAVATING OR GRUBBING IS STARTED.

ALL EROSION CONTROL MEASURES SHALL BE IN PLACE BY OCTOBER 1ST THROUGH APRIL 30TH AND MAINTAINED DURING ALL PHASES OF CONSTRUCTION.



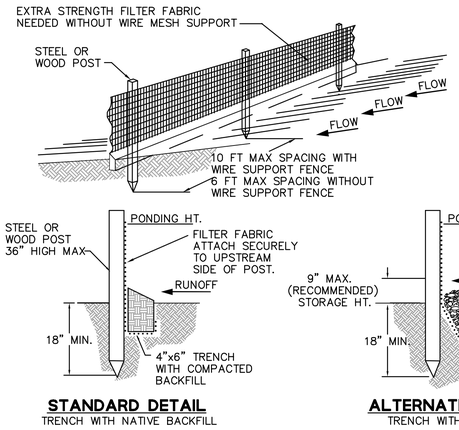
PLAN
NTS

SECTION A-A
NTS

NOTES:

1. ALL CONSTRUCTION ENTRANCES SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USE TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAYS SHALL BE REMOVED IMMEDIATELY.
2. WHEELS SHALL BE CLEAN PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAYS. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE THROUGH USE OF INLET PROTECTION (E.G. SAND BAGS OR OTHER APPROVED METHODS).
3. THE MATERIAL FOR CONSTRUCTION OF THE PAD SHALL BE 4" TO 6" STONE.
4. THE THICKNESS OF THE PAD SHALL NOT BE LESS THAN 12".
5. THE WIDTH OF THE PAD SHALL NOT BE LESS THAN THE FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
6. THE LENGTH OF THE PAD SHALL NOT BE LESS THAN 50'.

1 – STABILIZED CONSTRUCTION ENTRANCE
NTS



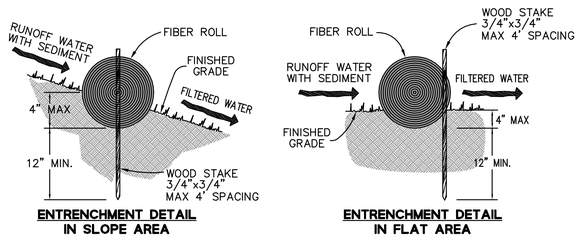
NOTES:

1. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
2. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
3. SILT FENCE SHALL BE PLACED ON SLOPE TO MAXIMIZE PONDING EFFICIENCY.

STANDARD DETAIL
TRENCH WITH NATIVE BACKFILL

ALTERNATE DETAIL
TRENCH WITH GRAVEL

2 – SILT FENCE
NTS



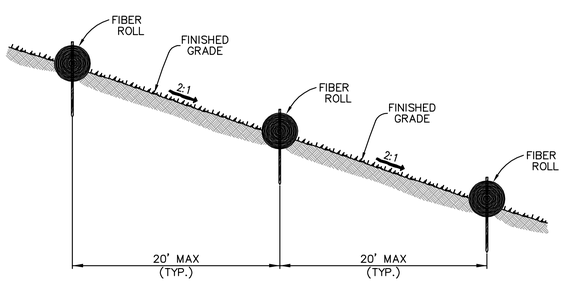
ENTRENCHMENT DETAIL IN SLOPE AREA

ENTRENCHMENT DETAIL IN FLAT AREA

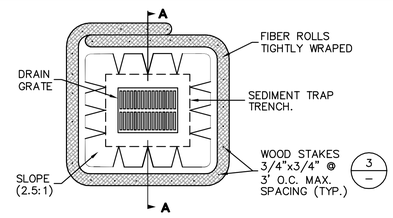
NOTES:

1. FIBER ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3" TO 4" DEEP, DUG ON CONTOUR.
2. ADJACENT ROLLS SHALL TIGHTLY ABUT.
3. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND FIBER ROLL.

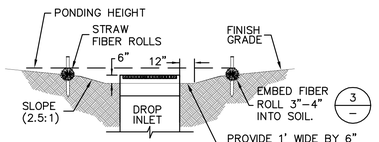
3 – FIBER ROLL
NTS



4 – FIBER ROLL INSTALLATION ON SLOPE
(TIME FRAME: BETWEEN FINAL PAVING OPERATIONS AND PROJECT COMPLETION)
NTS



PLAN VIEW

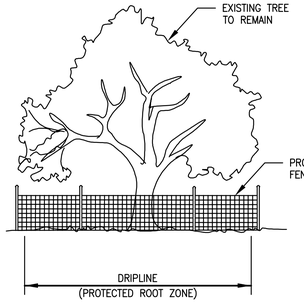


SECTION A-A

NOTES:

1. PLACE FIBER ROLLS AROUND THE INLET CONSISTENT WITH BASIN SEDIMENT BARRIER DETAIL ON THIS SHEET. (FIBER ROLLS ARE TUBES MADE FROM STRAW BOUND W/ PLASTIC NETTING. THEY ARE APPROX. 8" DIA. AND 20 – 30 FT. LONG.)
2. FIBER ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE FIBER ROLL IN A TRENCH, 3" – 4" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND FIBER ROLL.
3. THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BY-PASSING THE INLET. EXCAVATION OF A BASIN ADJACENT TO THE DROP INLET OR A TEMPORARY DIKE ON THE DOWNSLOPE OF THE STRUCTURE MAY BE NECESSARY.

5 – SEDIMENT BARRIER
(TIME FRAME: AREA DRAINS – BETWEEN AREA DRAIN INSTALLATION AND PROJECT COMPLETION
CURB INLETS – BETWEEN CURB INLET INSTALLATION AND FINAL PAVING OPERATIONS)
NTS



TREE PROTECTION FENCE

NOTES:

1. THE APPLICANT SHALL ESTABLISH AND MAINTAIN TREE PROTECTION ZONES THROUGHOUT THE ENTIRE LENGTH OF THE PROJECT.
2. TREE PROTECTION ZONES SHALL BE DELINEATED USING 4-FOOT TALL ORANGE PLASTIC FENCING SUPPORTED BY POLES POUNDED INTO THE GROUND, LOCATED AS CLOSE TO THE DRIPLINES AS POSSIBLE WHILE STILL ALLOWING ROOM FOR CONSTRUCTION/GRADING TO SAFELY CONTINUE.
3. THE APPLICANT SHALL MAINTAIN TREE PROTECTION ZONES FREE OF EQUIPMENT AND MATERIALS STORAGE AND SHALL NOT CLEAN ANY EQUIPMENT WITHIN THESE AREAS.
4. SHOULD ANY LARGE ROOTS OR LARGE MASSES OF ROOTS NEED TO BE CUT, THE ROOTS SHALL BE INSPECTED BY A CERTIFIED ARBORIST OR REGISTERED FORESTER PRIOR TO CUTTING. ANY ROOT CUTTING SHALL BE MONITORED BY AN ARBORIST OR FORESTER AND DOCUMENTED.
5. ROOTS TO BE CUT SHOULD BE SEVERED CLEANLY WITH A SAW OR TOPPERS.
6. NORMAL IRRIGATION SHALL BE MAINTAINED, BUT OAKS SHOULD NOT NEED SUMMER IRRIGATION.
7. THE ABOVE INFORMATION SHALL BE ON-SITE AT ALL TIMES.

6 – TREE PROTECTION FENCE
NTS

CALIFORNIA STORMWATER QUALITY ASSOCIATION (CASQA) STANDARD DETAIL REFERENCES

(CALIFORNIA STORMWATER BMP HANDBOOK CONSTRUCTION, DATED NOVEMBER 2009)

NOTE: ALTHOUGH SPECIFIC LOCATIONS FOR SPECIFIC BMPS ARE SHOWN ON THESE PLANS, IT IS INTENDED FOR THE CONTRACTOR TO APPLY APPROPRIATE BMPS WHEN NECESSARY TO MEET FIELD CONDITIONS.

EROSION CONTROL BMPS:

- EC-1 SCHEDULING
- EC-2 PRESERVATION OF EXISTING VEGETATION
- EC-3 HYDRAULIC MULCH
- EC-4 HYDROSEEDING
- EC-5 SOIL BINDERS
- EC-6 STRAW MULCH
- EC-7 GEOTEXTILES & MATS
- EC-8 WOOD MULCHING
- EC-9 EARTH DIKES AND DRAINAGE SWALES
- EC-10 VELOCITY DISSIPATION DEVICES
- EC-11 SLOPE DRAINS
- EC-12 STREAMBANK STABILIZATION
- EC-14 COMPOST BLANKETS
- EC-15 SOIL PREPARATION/ROUGHENING
- EC-16 NON-VEGETATIVE STABILIZATION

TEMPORARY SEDIMENT CONTROL BMPS:

- SE-1 SILT FENCE
- SE-2 SEDIMENT BASIN
- SE-3 SEDIMENT TRAP
- SE-4 CHECK DAM
- SE-5 FIBER ROLLS
- SE-6 GRAVEL BAG BERM
- SE-7 STREET SWEEPING AND VACUUMING
- SE-8 SANDBAG BARRIER
- SE-9 STRAW BALE BARRIER
- SE-10 STORM DRAIN INLET PROTECTION
- SE-11 ACTIVE TREATMENT SYSTEMS
- SE-12 TEMPORARY SILT DIKE
- SE-13 COMPOST SOCKS AND BERMS
- SE-14 BIOFILTER BAGS

WIND EROSION CONTROL BMPS:

- WE-1 WIND EROSION CONTROL

TEMPORARY TRACKING CONTROL BMPS:

- TC-1 STABILIZED CONSTRUCTION ENTRANCE/EXIT
- TC-2 STABILIZED CONSTRUCTION ROADWAY
- TC-3 ENTRANCE/OUTLET TIRE WASH

NON-STORMWATER MANAGEMENT BMPS:

- NS-1 WATER CONSERVATION PRACTICES
- NS-2 DEWATERING OPERATIONS
- NS-3 PAVING AND GRINDING OPERATIONS
- NS-4 TEMPORARY STREAM CROSSING
- NS-5 CLEAR WATER DIVERSION
- NS-6 ILLICIT CONNECTION/DISCHARGE
- NS-7 POTABLE WATER/IRRIGATION
- NS-8 VEHICLE AND EQUIPMENT CLEANING
- NS-9 VEHICLE AND EQUIPMENT FUELING
- NS-10 VEHICLE AND EQUIPMENT MAINTENANCE
- NS-11 PILE DRIVING OPERATIONS
- NS-12 CONCRETE CURING
- NS-13 CONCRETE FINISHING
- NS-14 MATERIAL AND EQUIPMENT USE
- NS-15 DEMOLITION ADJACENT TO WATER
- NS-16 TEMPORARY BATCH PLANTS

WASTE MANAGEMENT & MATERIALS POLLUTION CONTROL BMPS:

- WM-1 MATERIAL DELIVERY AND STORAGE
- WM-2 MATERIAL USE
- WM-3 STOCKPILE MANAGEMENT
- WM-4 SPILL PREVENTION AND CONTROL
- WM-5 SOLID WASTE MANAGEMENT
- WM-6 HAZARDOUS WASTE MANAGEMENT
- WM-7 CONTAMINATED SOIL MANAGEMENT
- WM-8 CONCRETE WASTE MANAGEMENT
- WM-9 SANITARY/SEPTIC WASTE MANAGEMENT
- WM-10 LIQUID WASTE MANAGEMENT

255 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
PHONE: (650) 482-6300
FAX: (650) 482-6399

BKF ENGINEERS | SURVEYORS | PLANNERS

REGISTERED PROFESSIONAL ENGINEER M.T. HAYA No. 043971 CIVIL STATE OF CALIFORNIA

HIGHLAND ESTATES
LOT 5 IMPROVEMENT PLANS
EROSION CONTROL DETAILS AND NOTES

CITY OF SAN MATEO — SAN MATEO COUNTY — CALIFORNIA

No.	Revisions

Date 05/10/2018
Scale AS SHOWN
Design JT
Drawn LE
Approved RH
Job No 950168-20

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REDWOOD CITY CALIFORNIA

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DATE: 6/95
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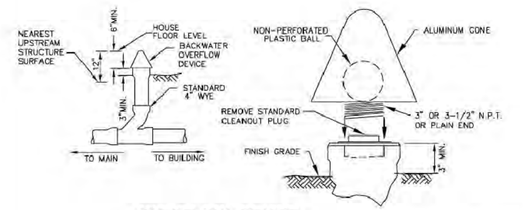
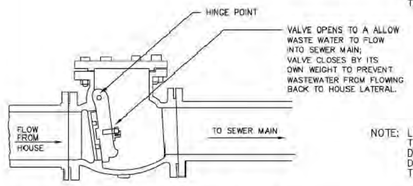


OVERFLOW DEVICE

NOTE: LOCATION OF DEVICE TO APPROVAL OF DISTRICT AND BUILDING DEPARTMENT PRIOR TO INSTALLATION



NOTE: LOCATION OF DEVICE TO APPROVAL OF DISTRICT AND BUILDING DEPARTMENT PRIOR TO INSTALLATION

BACKFLOW DEVICE

OVERFLOW AND BACKFLOW DEVICE DETAIL

C-9

SAN MATEO COUNTY DEPARTMENT OF PUBLIC WORKS
REDWOOD CITY CALIFORNIA

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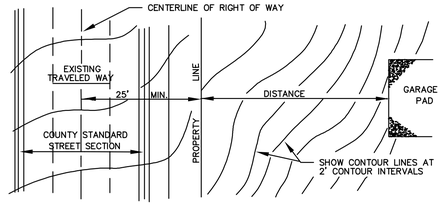
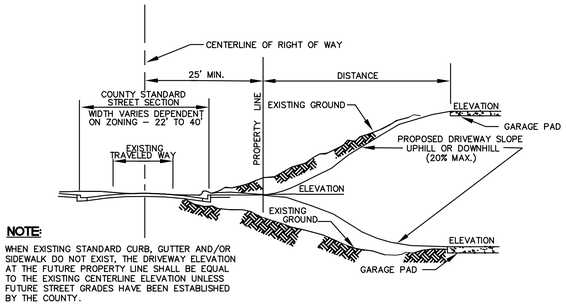


DRIVEWAY PLAN VIEW



NOTE:
WHEN EXISTING STANDARD CURB, GUTTER AND/OR SIDEWALK DO NOT EXIST, THE DRIVEWAY ELEVATION AT THE FUTURE PROPERTY LINE SHALL BE EQUAL TO THE EXISTING CENTERLINE ELEVATION UNLESS FUTURE STREET GRADES HAVE BEEN ESTABLISHED BY THE COUNTY.

DRIVEWAY PROFILE VIEW

D-7

SAN MATEO COUNTY DEPARTMENT OF PUBLIC WORKS
REDWOOD CITY CALIFORNIA

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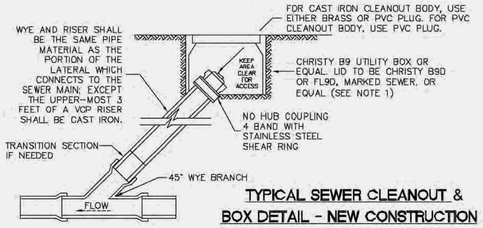
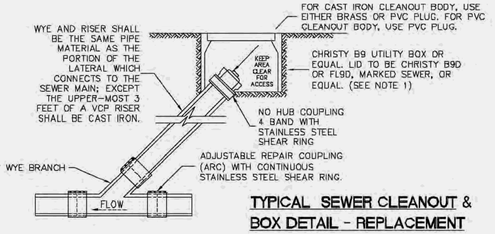


TYPICAL SEWER CLEANOUT & BOX DETAIL - NEW CONSTRUCTION



TYPICAL SEWER CLEANOUT & BOX DETAIL - REPLACEMENT

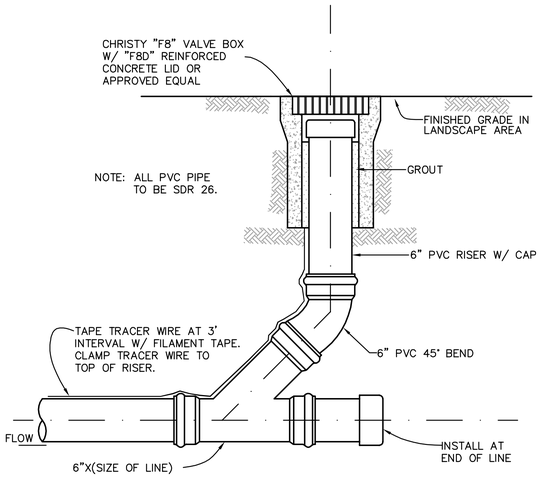
NOTES:
1. WHEN BOX IS SUBJECT TO TRAFFIC LOADING, PROVIDE CAST IRON LID.
2. BOX TO BE PLACED SUCH THAT CLEANOUT CAP CAN BE EASILY REMOVED. SEE ILLUSTRATION.
3. PROPERTY OWNER IS RESPONSIBLE FOR MAINTAINING LATERAL FROM THE PROPERTY STRUCTURE TO DISTRICT MAIN. DISTRICT PROVIDES COURTESY SERVICE FROM DISTRICT STANDARD PROPERTY LINE CLEANOUT TO THE MAIN.
4. SDR-26 WYE, RISER, CLEANOUT BODY AND CAP CAN BE USED ONLY WHEN LATERAL FROM PROPERTY LINE TO MAIN LINE IS REPLACED WITH SDR-26.
5. WHEN ENTIRE LATERAL IS REPLACED, LATERAL FROM PROPERTY LINE CLEANOUT TO MAIN LINE SHALL HAVE A 14-1-UF GUAGE MINIMUM SINGLE CONDUCTOR TRACER WIRE TAPED TO THE ENTIRE LENGTH OF THE PIPE.

CONSTRUCTION OF A STANDARD CLEANOUT REQUIRES MULTIPLE INSPECTIONS BY DISTRICT PERSONEL:
1. FIRST INSPECTION - TO INSPECT WYE AND RISER. WYE AND RISER MUST BE EXPOSED.
2. SECOND INSPECTION - TO INSPECT PLACEMENT OF BOX, LID AND LOCATION OF CLEANOUT WITHIN BOX .

C-3

6 SAN MATEO COUNTY OVERFLOW AND BACKFLOW DEVICE DETAIL

NTS

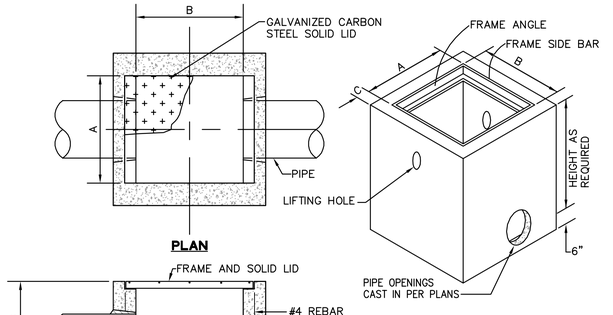


3 CLEANOUT

NTS

5 SAN MATEO COUNTY DRIVEWAY PLAN AND PROFILE VIEWS

NTS



CENTRAL PRECAST

MODEL	A	B	C
CP1212	12	12	4
CP2424	24	24	5

NOTES:
1. DROP INLET SHALL BE CENTRAL PRECAST OR APPROVED EQUAL.
2. AN ENGINEERED PRECAST DROP INLET UNIT CAN BE USED AS AN ALTERNATE.

2 DROP INLET

NTS

4 SAN MATEO COUNTY TYPICAL SEWER CLEANOUT & BOX DETAIL

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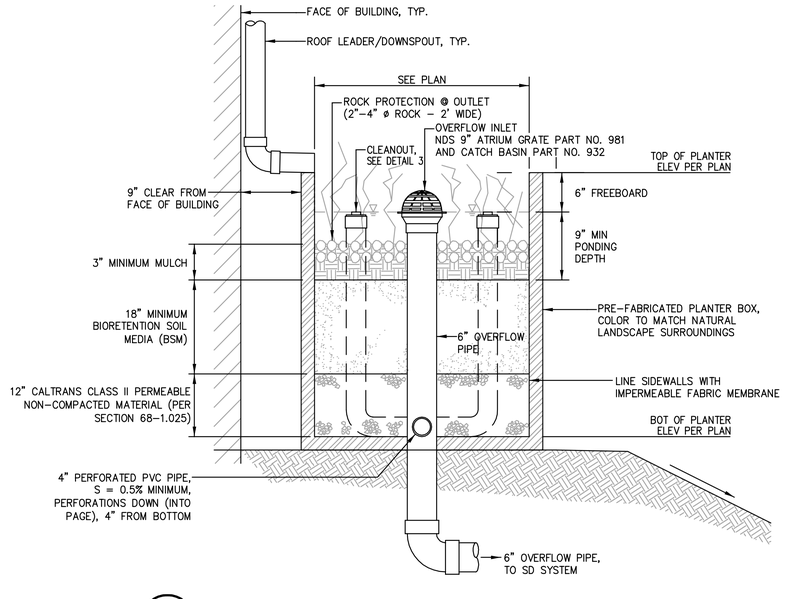

1 FLOW-THROUGH PLANTER (FTP)

BKF ENGINEERS
255 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
PHONE: (650) 482-6300
FAX: (650) 482-6399
ENGINEERS | SURVEYORS | PLANNERS

REGISTERED PROFESSIONAL ENGINEER NATHAN R. MATA No. 084971 CIVIL STATE OF CALIFORNIA

HIGHLAND ESTATES
LOT 5 IMPROVEMENT PLANS
CONSTRUCTION DETAILS

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

Revisions

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SCALE: NONE
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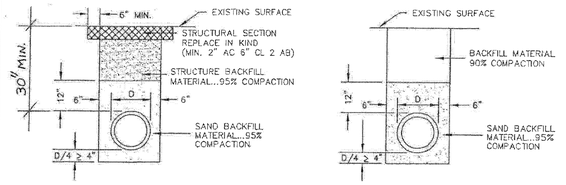


TYPE A (IN ROADWAY)

TYPE B (OUTSIDE ROADWAY)

NOTES

1. SAND.... MATERIAL FREE FROM ORGANIC MATTER AND CLAY WITH A SIEVE GRADATION BY WEIGHT AS FOLLOWS:

SIEVE SIZE	% PASSING SIEVE
No. 4	100
No. 200	0–5

2. STRUCTURE BACKFILL MATERIAL... MATERIAL WITH SAND EQUIVALENT NOT LESS THAN 20 AND SIEVE GRADATION BY WEIGHT AS FOLLOWS:

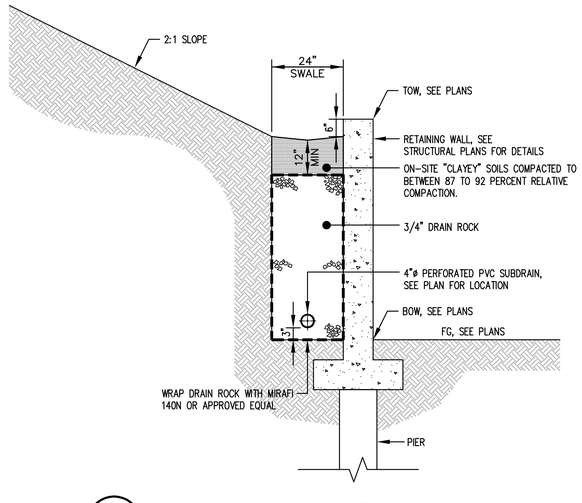
SIEVE SIZE	% PASSING SIEVE
3"	100
No. 4	35–100
No. 30	20–100

3. BACKFILL MATERIAL... MATERIAL FROM EXCAVATION, FREE FROM STONES OR LUMPS EXCEEDING 3 INCHES GREATEST DIMENSION, ORGANIC MATTER, OR OTHER UNSATISFACTORY MATERIAL.

STANDARD TRENCH BACKFILL AND BEDDING DETAIL

W–10

2 – SAN MATEO COUNTY STANDARD TRENCH BACKFILL & BEDDING DETAIL
NTS



1 – SUBDRAIN
NTS

BKF ENGINEERS
255 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
PHONE: (650) 482-6300
FAX: (650) 482-6399
ENGINEERS | SURVEYORS | PLANNERS

REGISTERED PROFESSIONAL ENGINEER
SUNWHAN TANG
No. 067726
CIVIL
STATE OF CALIFORNIA

HIGHLAND ESTATES
LOT 5 IMPROVEMENT PLANS
CONSTRUCTION DETAILS

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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OF

DRAWING NAME: K:\Eng95\950168\dwg\CD\Lot_5\C5.71-HECDDT.DWG
PLOT DATE: 09-11-18 PLOTTED BY: holt

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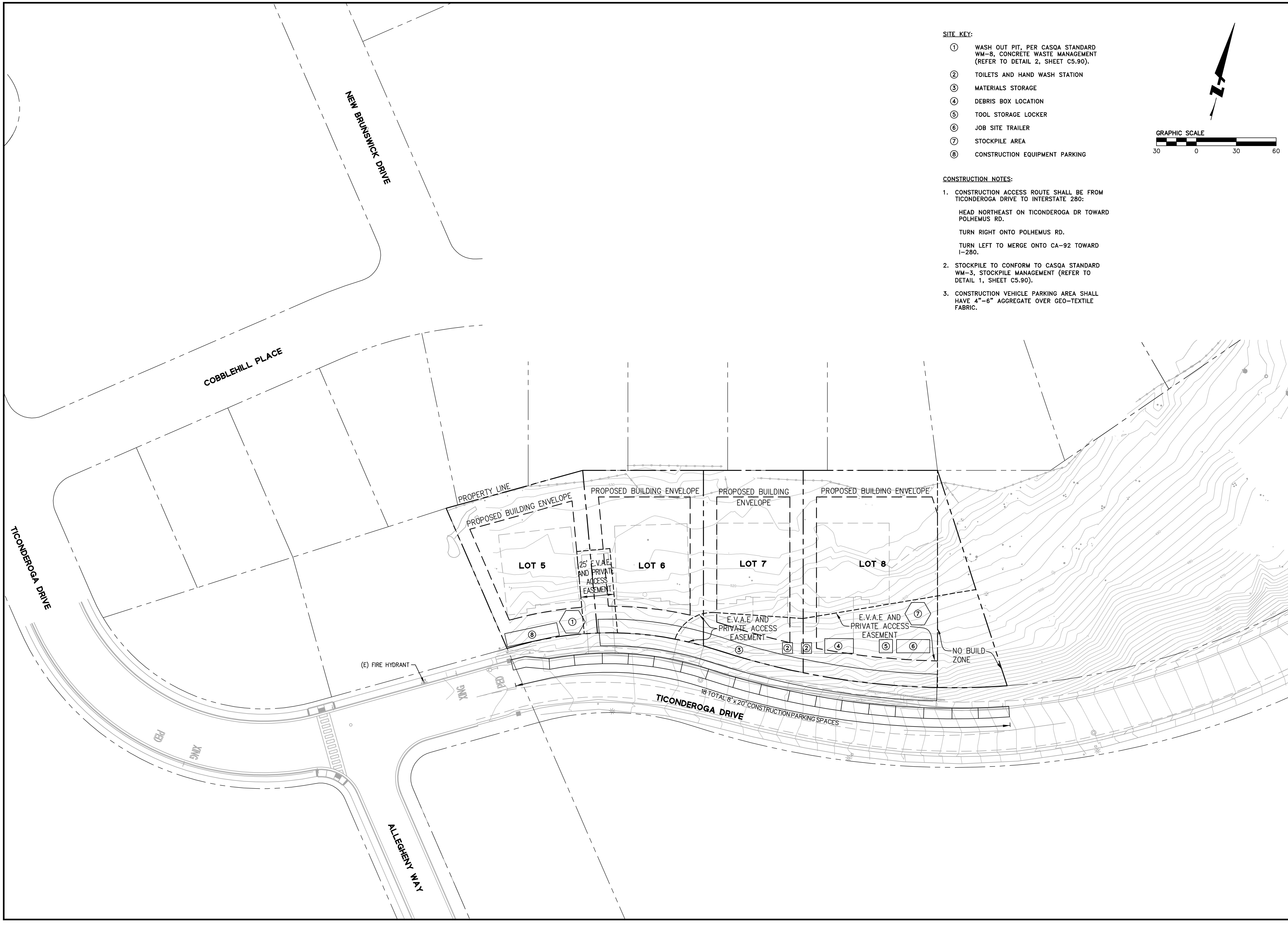

SITE KEY:

1. WASH OUT PIT, PER CASQA STANDARD WM-8, CONCRETE WASTE MANAGEMENT (REFER TO DETAIL 2, SHEET C5.90).
2. TOILETS AND HAND WASH STATION
3. MATERIALS STORAGE
4. DEBRIS BOX LOCATION
5. TOOL STORAGE LOCKER
6. JOB SITE TRAILER
7. STOCKPILE AREA
8. CONSTRUCTION EQUIPMENT PARKING

CONSTRUCTION NOTES:

1. CONSTRUCTION ACCESS ROUTE SHALL BE FROM TICONDEROGA DRIVE TO INTERSTATE 280:

   HEAD NORTHEAST ON TICONDEROGA DR TOWARD POLHEMUS RD.

   TURN RIGHT ONTO POLHEMUS RD.

   TURN LEFT TO MERGE ONTO CA-92 TOWARD I-280.
2. STOCKPILE TO CONFORM TO CASQA STANDARD WM-3, STOCKPILE MANAGEMENT (REFER TO DETAIL 1, SHEET C5.90).
3. CONSTRUCTION VEHICLE PARKING AREA SHALL HAVE 4"-6" AGGREGATE OVER GEO-TEXTILE FABRIC.

BKF ENGINEERS / SURVEYORS / PLANNERS
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HIGHLAND ESTATES LOT 5 IMPROVEMENT PLANS LOGISTICS PLAN

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

Revisions

No.

Date	05/10/2018
Scale	1"=30'
Design	JT
Drawn	LE
Approved	RH
Job No	950168-20

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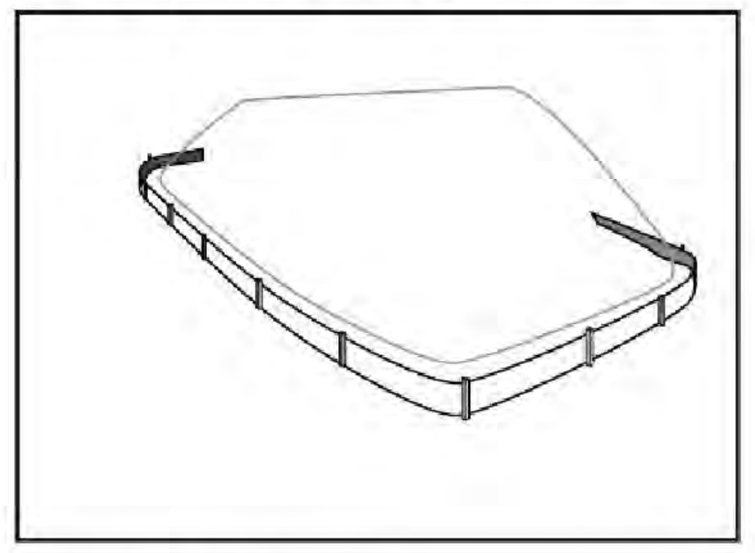
Stockpile Management WM-3



Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☒
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ Primary Category
☒ Secondary Category

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives
None

Description and Purpose
Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, soil amendments, sand, paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called "cold mix" asphalt), and pressure treated wood.

Suitable Applications
Implement in all projects that stockpile soil and other loose materials.

Limitations
- Plastic sheeting as a stockpile protection is temporary and hard to manage in windy conditions. Where plastic is used, consider use of plastic tarps with nylon reinforcement which may be more durable than standard sheeting.
- Plastic sheeting can increase runoff volume due to lack of infiltration and potentially cause perimeter control failure.
- Plastic sheeting breaks down faster in sunlight.
- The use of plastic materials should be avoided when feasible and photodegradable plastics should not be used.

Implementation
Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

Stockpile Management WM-3

- On larger sites, a minimum of 50 ft separation from concentrated flows of stormwater, drainage courses, and inlets is recommended.
- All stockpiles are required to be protected immediately if they are not scheduled to be used within 14 days.
- Protect all stockpiles from stormwater run-on using temporary perimeter sediment barriers such as compost berms (SE-13), temporary silt dikes (SE-12), fiber rolls (SE-5), silt fences (SE-1), sandbags (SE-8), gravel bags (SE-6), or biofilter bags (SE-14). Refer to the individual fact sheet for each of these controls for installation information.
- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information, see WE-1, Wind Erosion Control.
- Manage stockpiles of contaminated soil in accordance with WM-7, Contaminated Soil Management.
- Place bagged materials on pallets and under cover.
- Ensure that stockpile coverings are installed securely to protect from wind and rain.
- Some plastic covers withstand weather and sunlight better than others. Select cover materials or methods based on anticipated duration of use.

Protection of Non-Active Stockpiles
Non-active stockpiles of the identified materials should be protected further as follows:

Soil stockpiles
- Cover and project soil stockpiles with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- Consider temporary vegetation for topsoil piles that will be stockpiled for extended periods.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub base
- Provide covers and protect these stockpiles with a temporary perimeter sediment barrier at all times.

Stockpiles of "cold mix"
- Cover cold mix stockpiles and place them on plastic sheeting (or comparable material) and surround the stockpiles with a berm all times.

Stockpiles of fly ash, stucco, hydrated lime
- Cover stockpiles of materials that may raise the pH of runoff (i.e., basic materials) with plastic and surround the stockpiles with a berm at all times.

Stockpile Management WM-3

Stockpiles/Storage of wood (Pressure treated with chromated copper arsenate or ammoniacal copper zinc arsenate)
- Cover treated wood with plastic sheeting (or comparable material) and surround with a berm at all times.

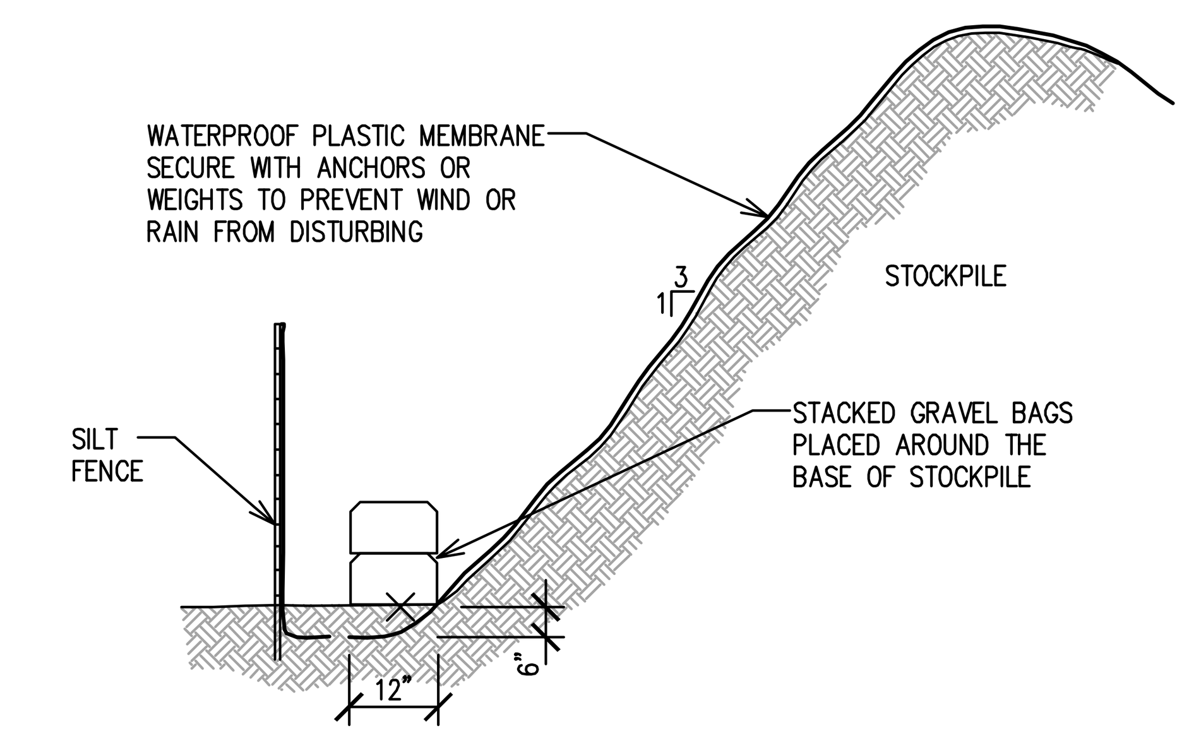
Protection of Active Stockpiles
Active stockpiles of the identified materials should be protected as follows:
- All stockpiles should be covered and protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" and treated wood, and basic materials should be placed on and covered with plastic sheeting or comparable material and surrounded by a berm prior to the onset of precipitation.
- The downstream perimeter of an active stockpile should be protected with a linear sediment barrier or berm and runoff should be diverted around or away from the stockpile on the upstream perimeter.

Costs
For cost information associated with stockpile protection refer to the individual erosion or sediment control BMP fact sheet considered for implementation (For example, refer to SE-1 Silt Fence for installation of silt fence around the perimeter of a stockpile.)

Inspection and Maintenance
- Stockpiles must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- It may be necessary to inspect stockpiles covered with plastic sheeting more frequently during certain conditions (for example, high winds or extreme heat).
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.
- Sediment shall be removed when it reaches one-third of the barrier height.

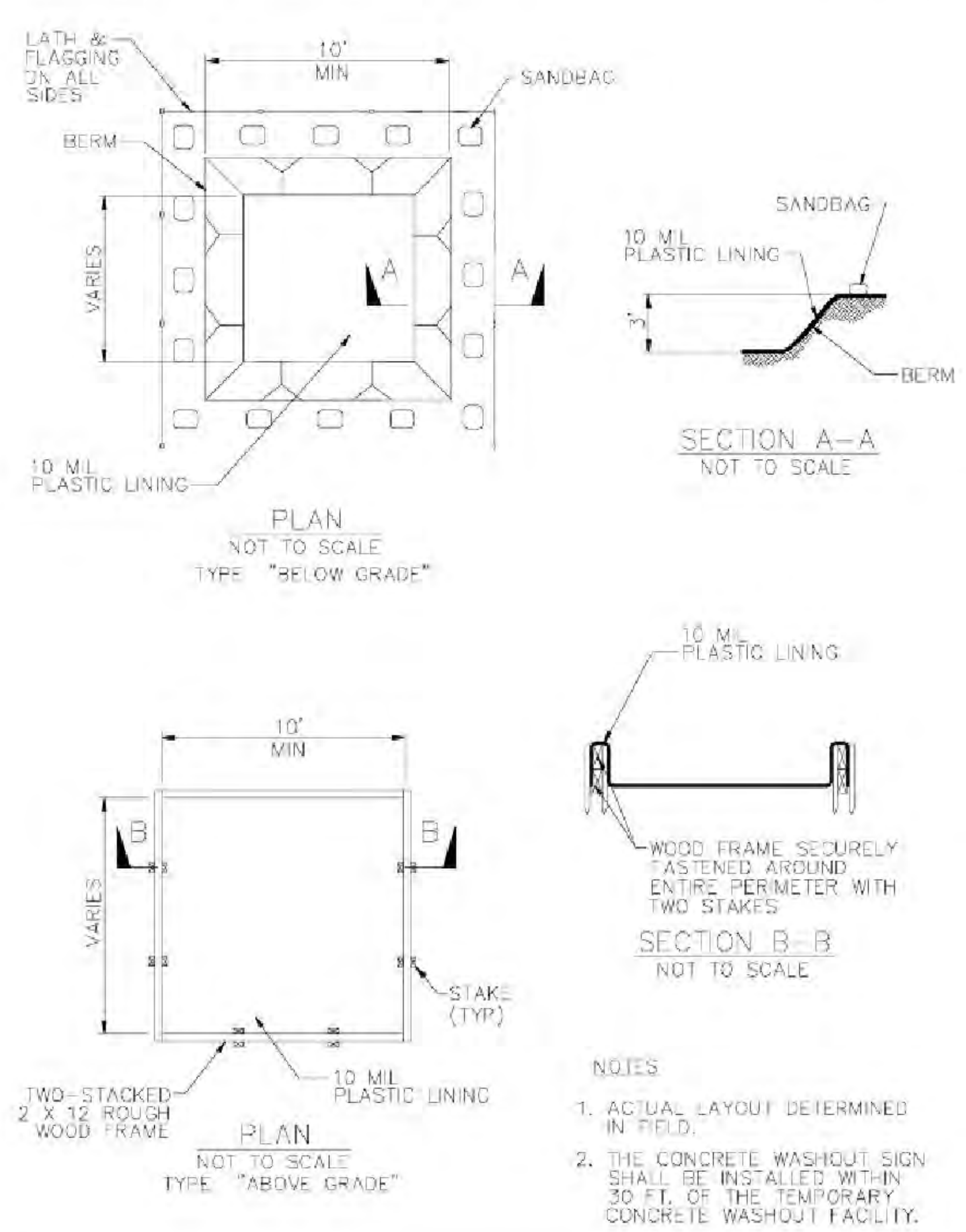
References
Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

WM-3 – STOCKPILE MANAGEMENT
NTS

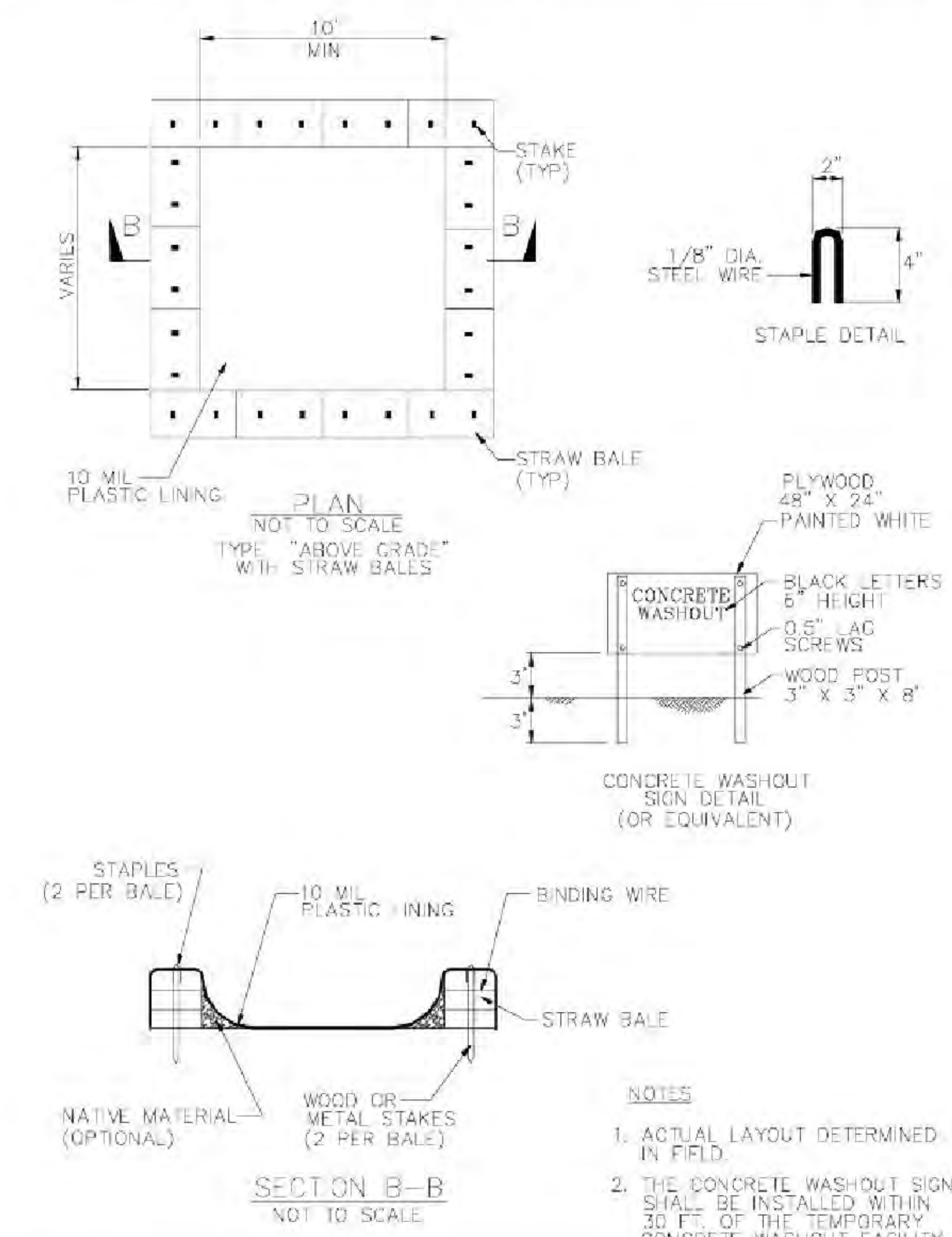


1 — **STOCKPILE COVERING**
(PER CASQA STANDARD WM-3, STOCKPILE MANAGEMENT, SEE LEFT)
NTS

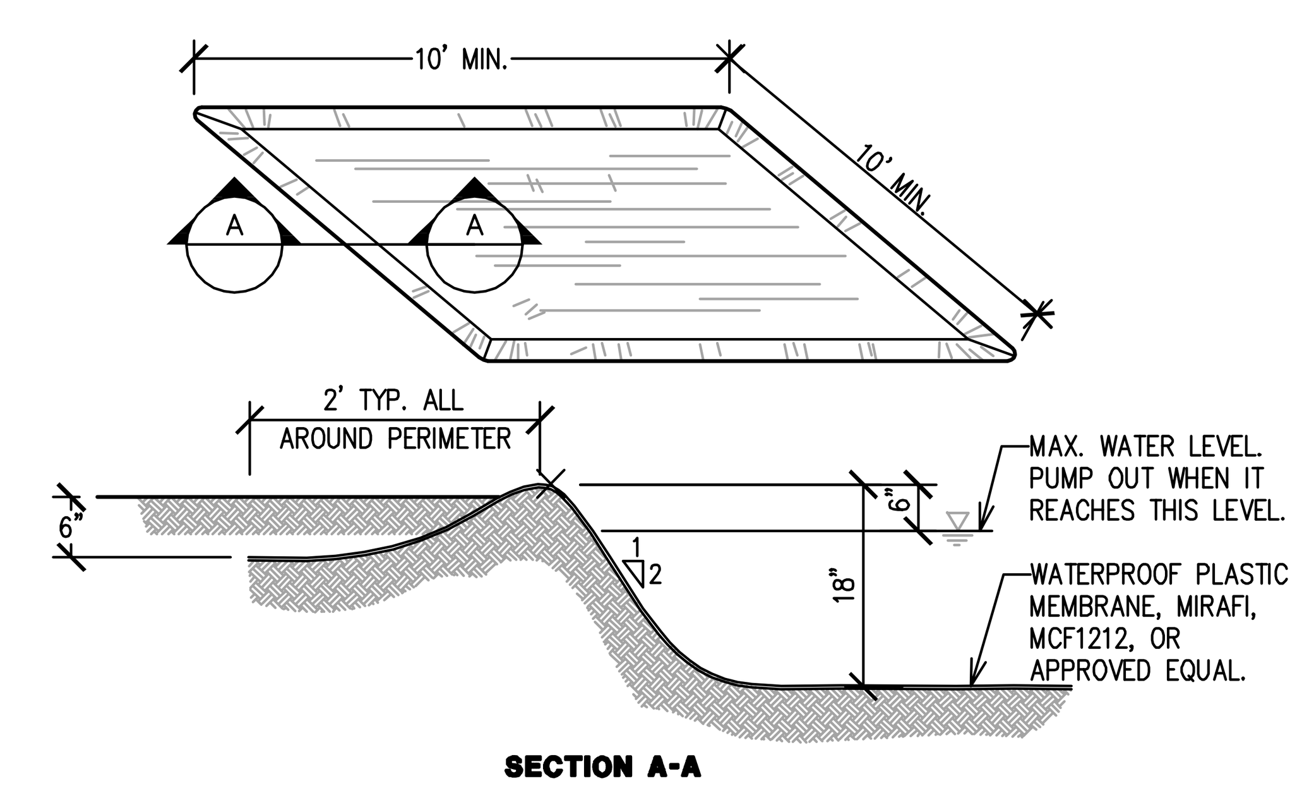
Concrete Waste Management WM-8



Concrete Waste Management WM-8



WM-8 – CONCRETE WASTE MANAGEMENT
NTS



2 — **TEMPORARY WASHOUT PIT**
(PER CASQA STANDARD WM-8, CONCRETE WASTE MANAGEMENT, SEE LEFT)
NTS

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HIGHLAND ESTATES
LOT 5 IMPROVEMENT PLANS
CASQA STANDARD DETAILS
CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

Revisions | No.

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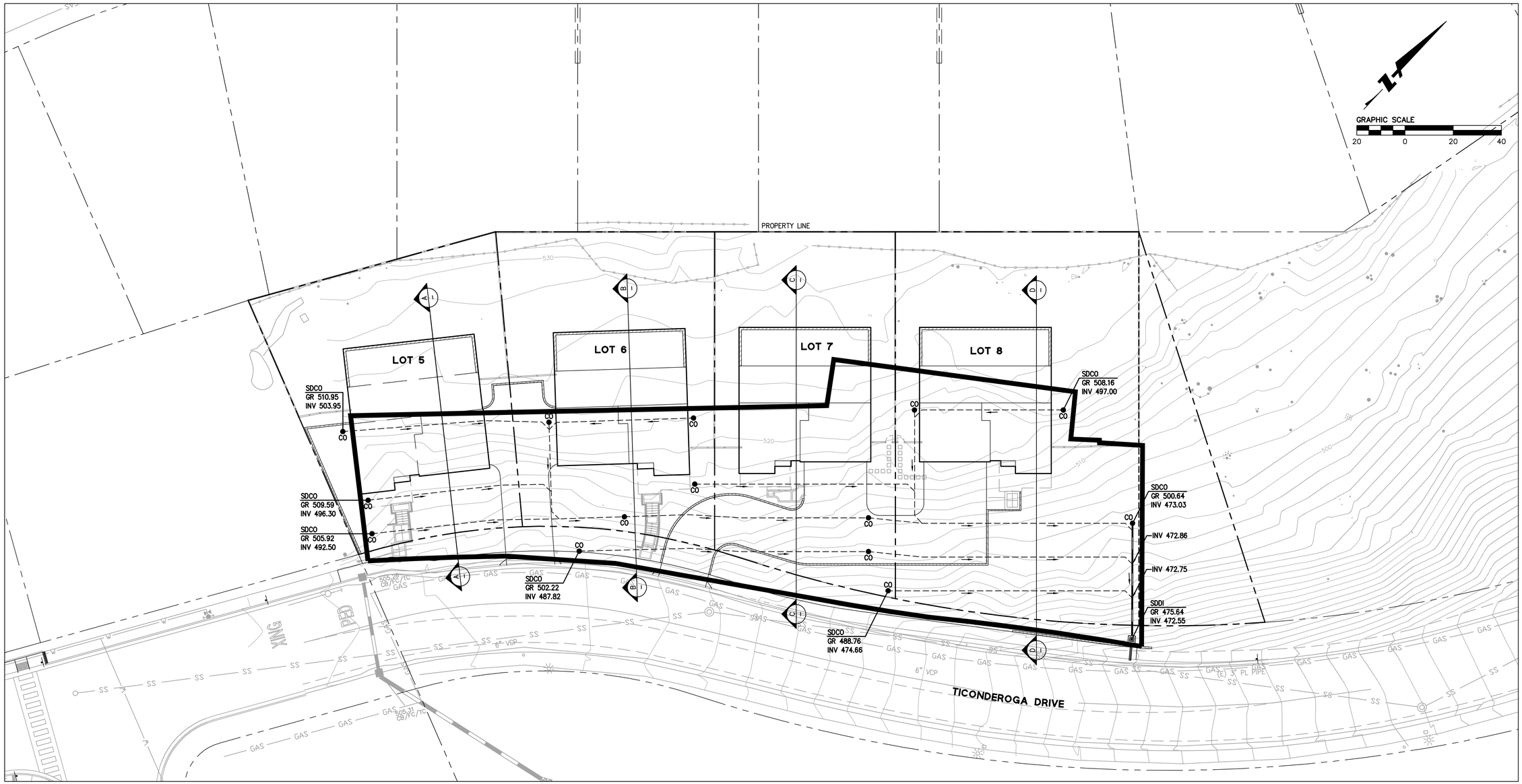

LEGEND

AREA OF GEOTECHNICAL MITIGATION GRADING (SEE GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION).

4" PERFORATED SUBDRAIN FOR KEYWAY. NOTE THE FINAL LOCATIONS OF THE SUBDRAIN WILL BE DETERMINED BY CORNERSTONE DURING CONSTRUCTION, ARROW IS ANTICIPATED DIRECTION OF FLOW

BKF HAS PREPARED THESE PLANS BASED ON CORNERSTONE EARTH GROUP GEOTECHNICAL INVESTIGATION AND RECOMMENDATIONS.

REGISTERED PROFESSIONAL ENGINEER
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No. C67726
CIVIL
STATE OF CALIFORNIA

JONATHAN TANG, P.E.

THE UNDERSIGNED GEOTECHNICAL ENGINEER HAS PERFORMED A GEOTECHNICAL INVESTIGATION AT THE SITE INCLUDING PERFORMING FIELD INVESTIGATION, LABORATORY TESTING, ENGINEERING ANALYSIS, AND REPORT PREPARATION AS DESCRIBED IN THE OCTOBER 30, 2015 REPORT BY CORNERSTONE EARTH GROUP, INC. FOR THE PROJECT. THE GEOTECHNICAL ASPECTS OF THESE PLAN SHEETS HAVE BEEN PREPARED AND REVIEWED BY THE UNDERSIGNED GEOTECHNICAL ENGINEER AND ARE BASED UPON LIMITATIONS DESCRIBED IN THE GEOTECHNICAL INVESTIGATION REPORT. THESE PLANS ARE NOT A STAND-ALONE DOCUMENT AND SHOULD BE CONSIDERED AS PART OF THE GEOTECHNICAL INVESTIGATION REPORT. THE GEOTECHNICAL DESIGN ASPECTS IN THESE PLANS ARE CONTINGENT UPON A GEOTECHNICAL ENGINEER AND ENGINEERING GEOLOGIST OBSERVING CERTAIN ASPECTS OF THE PROJECT GRADING. THESE PLANS ARE SUBJECT TO MODIFICATION AND REVISION DURING CONSTRUCTION BASED ON THE FIELD CONDITIONS ENCOUNTERED.

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HIGHLAND ESTATES
LOT 5 IMPROVEMENT PLANS
GEOTECHNICAL MITIGATION PLAN (LOTS 5 TO 8)

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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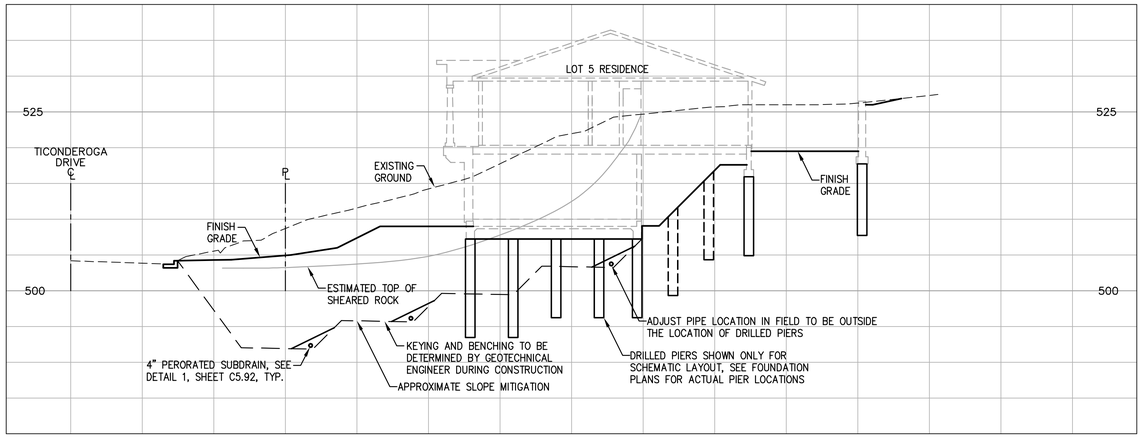

A-A CROSS SECTION
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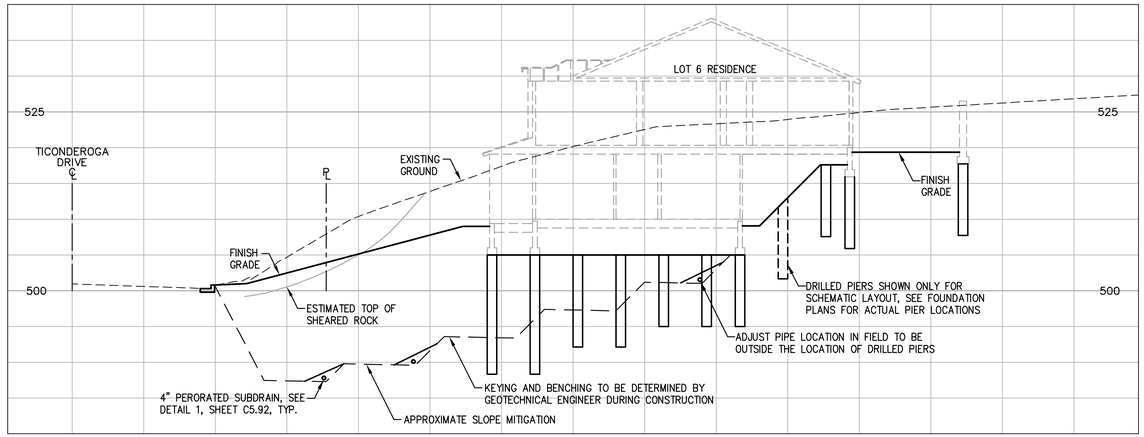

B-B CROSS SECTION
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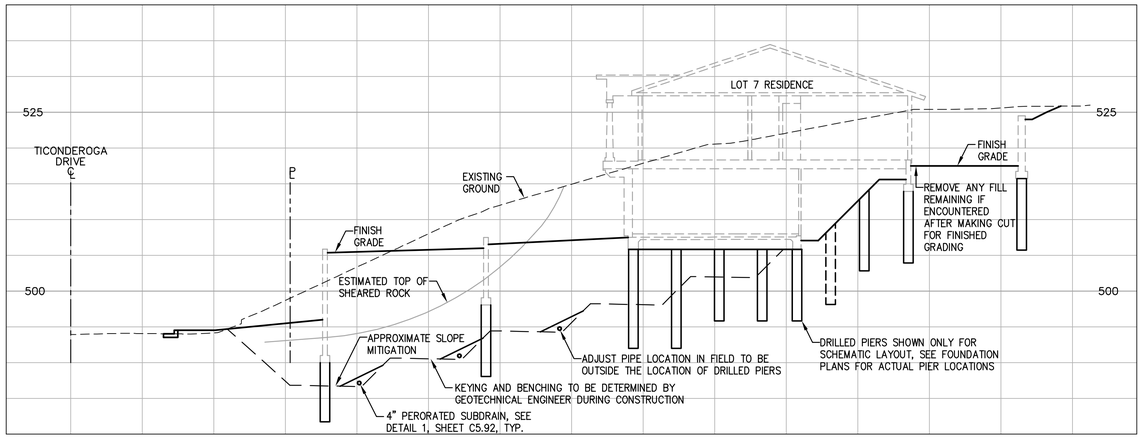


C-C CROSS SECTION
SCALE: 1"=10'

DRAINAGE MATERIAL

ALTERNATIVE 1

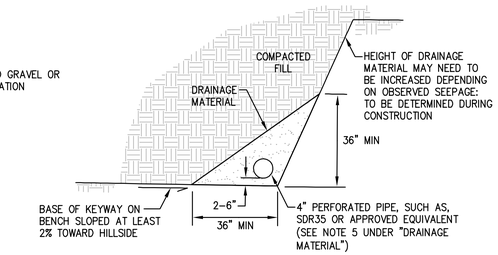
CLASS 2 PERMEABLE MATERIAL
(CALTRANS STANDARD SPECS LATEST EDITION)
MATERIAL SHALL CONSIST OF CLEAN, COARSE SAND AND GRAVEL OR CRUSHED STONE, CONFORMING TO THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE SIZE	% PASSING SIEVE
1"	100
3/4"	90–100
3/8"	40–100
#4	25–40
#8	18–33
#30	5–15
#50	0–7
#200	0–3

ALTERNATIVE 2

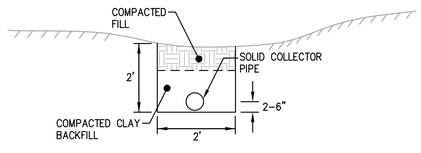
1/2 – TO 3/4– INCH CLEAN CRUSHED ROCK OR GRAVEL WRAPPED IN FILTER FABRIC
ALL NON–WOVEN FILTER FABRIC SHALL MEET THE FOLLOWING MINIMUM AVERAGE ROLL VALUES UNLESS OTHERWISE SPECIFIED BY CORNERSTONE EARTH GROUP

GRAB STRENGTH (ASTM D–4632):	180 LBS.
MASS PER UNIT AREA (ASTM D–4751):	5 OZ/YD
APPARENT OPENING SIZE (ASTM D–4751):	70–100 U.S. STD. SIEVE
FLOW RATE (ASTM D–4491):	80 GAL/MIN/FT
PUNCTURE STRENGTH (ASTM D–4833):	80 LBS.



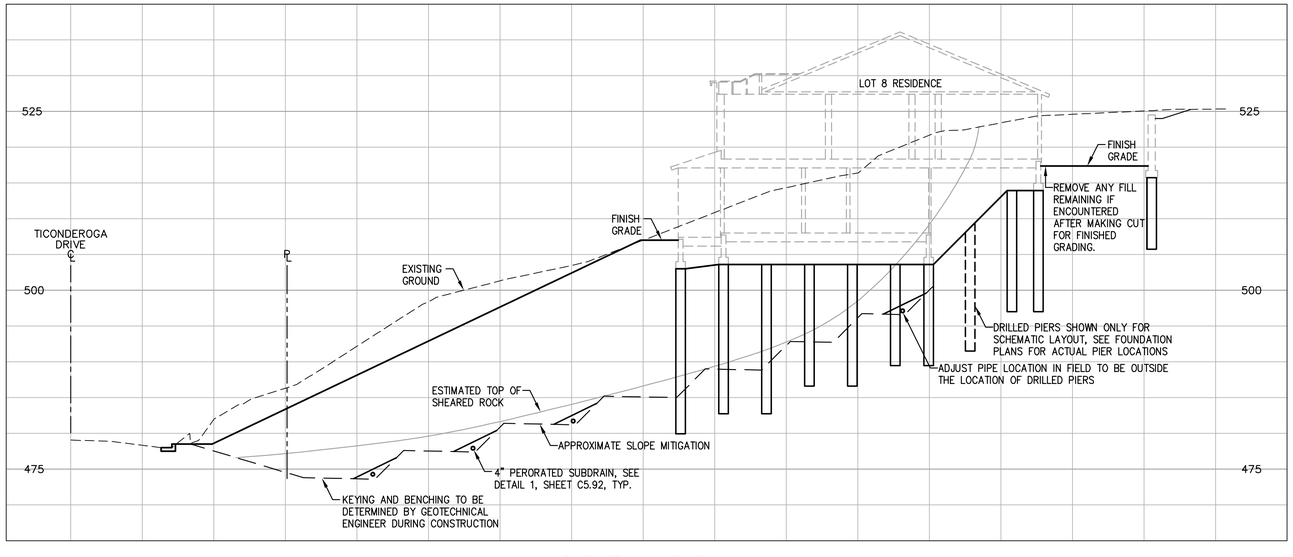
DETAIL 1 – TYPICAL BENCH AND KEYWAY SUBDRAIN
NTS

NOTES:
1. 1% FALL (MINIMUM) ALONG ALL KEYWAYS, BENCHES ANDSUBDRAIN LINES.
2. ALL PERFORATED PIPE PLACED PERFORATIONS DOWN.
3. ALL PIPE JOINTS SHALL BE GLUED.
4. ALL SUBDRAINS SHOULD BE DISCHARGED TO A FREE DRAINING OUTLET APPROVED BY THE CIVIL ENGINEER.
5. SUBDRAIN PIPE (PERFORATED OR SOLID CONNECTOR) SHOULD CONSIST OF SDR–35 PVC PIPE WHEN PLACED IN FILLS LESS THAN 30 FEET DEEP.
6. USE 4" PERFORATED PIPE ON KEYWAY OR BENCHES.
7. USE 6"SOLID PIPE FOR COLLECTOR PIPES OR 6" PERFORATED PIPE (DETAIL 2)
8. PIPE FITTINGS FOR CLEAN–OUTS AND OTHER 90° BENDS IN THE SUBDRAIN SYSTEM (EXCEPT THE CONNECTION BETWEEN THE 4"PERFORATED PIPES AND 6"COLLECTION PIPES) SHOULD BE "SWEEP 90'S" OR OTHER APPROVED EQUIVALENT.
9. CONTRACTOR TO PROVIDE ALL INCIDENTAL FITTINGS IN THEIR BID PRICE TO CONSTRUCT THE SUBDRAIN SYSTEM. NOT ALL INCIDENTAL FITTINGS ARE SHOWN ON THESE PLANS.
10. FINAL SUBDRAIN LAYOUT AND PLACEMENT TO BE DETERMINED BY GEOTECHNICAL ENGINEER AT TIME OF CONSTRUCTION. A SUBDRAIN SHOULD NOT CONFLICT WITH DRILLED PIERS.



NOTES:
1. THIS AREA MAY HAVE ACTIVE SEEPAGE DURING CONSTRUCTION.
2. COLLECTOR PIPE SHOULD BE 6" PERFORATED PIPE, SUCH AS SDR–35 OR SDR–23.5 OR APPROVED EQUIVALENT (SEE DETAIL 1 NOTE 5 UNDER "DRAINAGE MATERIAL")
3. PIPE FITTINGS FOR CLEAN–OUTS AND OTHER 90° BENDS IN THE SUBDRAIN SYSTEM (EXCEPT THE CONNECTION BETWEEN THE 4"PERFORATED PIPES AND 6" COLLECTION PIPES) SHOULD BE "SWEEP 90'S"OR OTHER APPROVED EQUIVALENT.
4. CONTRACTOR TO PROVIDE ALL INCIDENTAL FITTINGS IN THEIR BID PRICE TO CONSTRUCT THE SUBDRAIN SYSTEM. NOT ALL INCIDENTAL FITTINGS ARE SHOWN ON THESE PLANS.
5. FINAL SUBDRAIN LAYOUT AND PLACEMENT TO BE DETERMINED BY GEOTECHNICAL ENGINEER AT TIME OF CONSTRUCTION.

DETAIL 2 – SOLID COLLECTOR PIPE DETAIL
NTS



D-D CROSS SECTION
SCALE: 1"=10'

BKF HAS PREPARED THESE PLANS BASED ON CORNERSTONE EARTH GROUP GEOTECHNICAL INVESTIGATION AND RECOMMENDATIONS.

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HIGHLAND ESTATES
LOT 5 IMPROVEMENT PLANS
GEOTECHNICAL MITIGATION CROSS SECTIONS (LOTS 5 TO 8)
CITY OF SAN MATEO — SAN MATEO COUNTY, CALIFORNIA

Revisions

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PLOTTED BY: holt

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IMPROVEMENT PLANS FOR

HIGHLAND ESTATES - LOT 6 TICONDEROGA DRIVE

COUNTY OF SAN MATEO, CALIFORNIA

EARTHWORK

CUT	2,030	CY
SLOPE MITIGATION EXPORT CREDIT	580	CY
FILL	0	CY
NET	1,220	CY CUT

EARTHWORK NOTES:

1. THE QUANTITIES SHOWN ABOVE EXCLUDE EARTHWORK FROM GEOTECHNICAL SLOPE REMEDIATION ACTIVITIES PER CONDITION OF APPROVAL ITEM NO. 4.M, INCLUDING SITE STRIPPING, EARTHWORK SWELLING AND SHRINKAGE FACTORS ASSOCIATED WITH GEOTECHNICAL SLOPE REMEDIATION MITIGATION.
2. THE EARTHWORK QUANTITIES SHOWN ABOVE ARE IN-PLACE QUANTITIES AND HAVE BEEN ESTIMATED BY THE ENGINEER WITH THE FOLLOWING ASSUMPTIONS:
   - A. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR SITE STRIPPINGS.
   - B. THE UNIT PAD SECTION IS ASSUMED TO BE A 12" THICK CONCRETE SECTION.
   - C. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR FILL SHRINKAGE FACTORS.
   - D. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR UTILITY TRENCHING AND SPOILS.
   - E. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR SOIL STABILIZATION FACTORS AND LANDSCAPING PLANTING SOILS.
   - F. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR RETAINING WALLS AND BUILDING FOOTINGS AND BACKFILL.
2. ACTUAL QUANTITIES MAY VARY DUE TO FIELD CONDITIONS OR CONSTRUCTION TECHNIQUES. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES BASED UPON APPROVED PLANS AND INDEPENDENT CALCULATIONS.

LEGEND

EXISTING

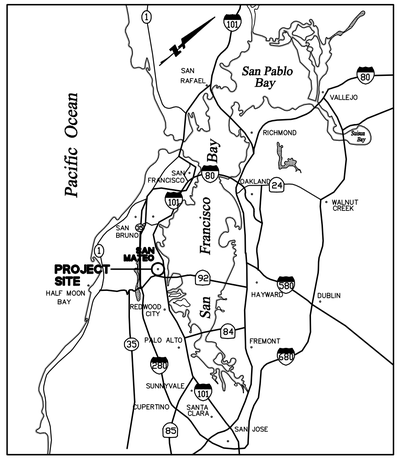
- EXISTING PROPERTY LINE BOUNDRY
- SS — SS — EXISTING SANITARY SEWER W/MANHOLE
- EXISTING STORM DRAIN W/ MANHOLE
- V — V — EXISTING WATERLINE
- EXISTING CATCH BASIN
- GAS — GAS — GAS — EXISTING GAS LINE
- ALL UTILITIES ARE APPROXIMATELY LOCATED

PROPOSED

- PROPOSED PROPERTY LINE BOUNDRY
- SS — SANITARY SEWER W/ MANHOLE
- STORM DRAIN W/ MANHOLE & CATCH BASIN
- W — FH — WATER LINE W/ FIRE HYDRANT
- GAS — GAS MAIN
- ETC — UNDERGROUND ELECTRIC, TELEPHONE, & C.A.T.V.
- S.D.E. — STORM DRAIN EASEMENT
- S.S.E. — SANITARY SEWER EASEMENT
- 509.3 / #4 OAK — EXISTING TREE & ELEVATION (TREE NO. REFERS TO TREE IDENTIFICATION TAG PER (TREE REPORT PREPARED BY HABITAT RESTORATION GROUP)
- 509.3 / #3 OAK — INDICATES TREE TO BE REMOVED
- L.W. — LEATHERWOOD BUSH
- EUC. — EUCALYPTUS TREE
- P.O.C. — POINT OF CONNECTION
- FDZ — FIRE DEFENSE ZONE
- FLOW-THROUGH PLANTER. PROPOSED FOR TREATMENT OF ROOF AND DRIVEWAY STORM WATER RUNOFF.

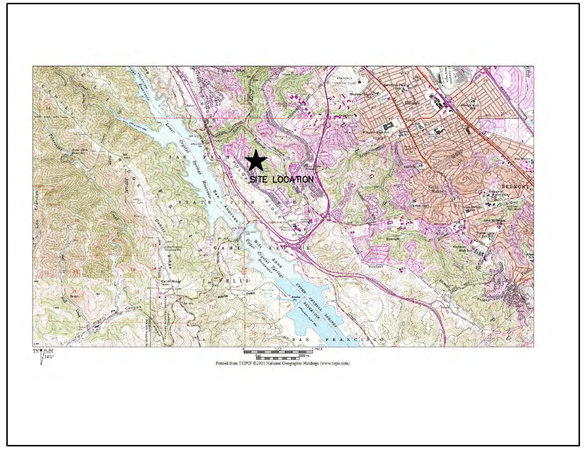
ABBREVIATIONS

AC	ASPHALTIC CONCRETE	L	LENGTH
BEG	BEGINNING	LF	LINEAR FEET
BL	BAY LAUREL	LG	LIP OF GUTTER
BLDG COR	BUILDING CORNER	NIC	NOT IN CONTRACT
BOT	BOTTOM	O	OAK TREE
BOW	GRADE AT BOTTOM OF WALL	P	PEPPER TREE
BW	BACK OF WALK	PD	PLANNED DEVELOPMENT
CB	CATCH BASIN	PINE	PINE TREE
CL	CENTERLINE	PUE	PUBLIC UTILITY EASEMENT
CLF	CHAIN LINK FENCE	PVC	POLYVINYL CHLORIDE PIPE
CMP	CORRUGATED METAL PIPE	RCP	REINFORCED CONCRETE PIPE
CO	CLEANOUT	RDW	REDWOOD TREE
CONC	CONCRETE	RET WALL	RETAINING WALL
CU	COPPER	ROW	RIGHT OF WAY
DG	DECOMPOSED GRANITE	RPB	REDUCED PRESSURE BACKFLOW
DI	DRAIN INLET	RWL	RAIN WATER LEADER
DW	DOMESTIC WATER	S	SLOPE
EG	EXISTING GRADE	SD	STORM DRAIN
EP	EDGE OF PAVEMENT	SDCB	STORM DRAIN CATCH BASIN
EUC	EUCALYPTUS TREE	SDCO	STORM DRAIN CLEANOUT
EX, (E)	EXISTING	SDDI	STORM DRAIN DROP INLET
FC, FOC	FACE OF CURB	SDMH	STORM DRAIN MANHOLE
FF	FINISH FLOOR	SS	SANITARY SEWER
FG	FINISH GRADE	SSCO	SANITARY SEWER CLEAN OUT
FL	FLOW LINE	SSMH	SANITARY SEWER MANHOLE
FNC	FENCE	T	TREE
FTP	FLOW THROUGH PLANTER	TC	TOP OF CURB
FW	FIRE WATER	TOE	TOE OF SLOPE
GB	GRADE BREAK	TOP	TOP OF SLOPE
GFF	GARAGE FINISH FLOOR	TOW	TOP OF WALL
GM	GAS METER	TYP	TYPICAL
GND	GROUND SHOT	UB	UTILITY BOX
GR	GRATE	VC	VERTICAL CURVE
GRAVEL	EDGE OF GRAVEL ROAD	VCP	VITRIFIED CLAY PIPE
GW	GUY WIRE	W	WATER
INV	INVERT	WM	WATER METER
JP	JOINT POLE	WV	WATER VALVE



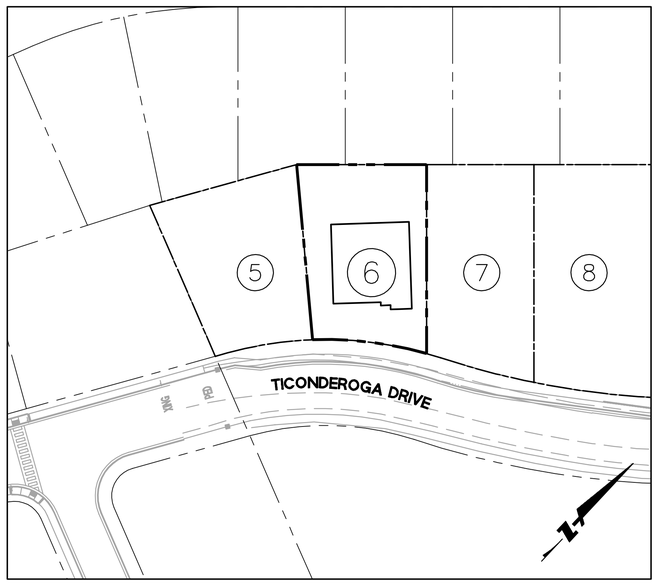
VICINITY MAP

NTS



LOCATION MAP

NTS



SITE PLAN

SCALE: 1" = 50'

PROJECT DATA

LOT AREA:	10,648 SF
EXISTING LAND USE:	UNDEVELOPED LAND
PROPOSED USE:	RESIDENTIAL (LOT 6)
EXISTING ZONE:	RMD – RESOURCE MANAGEMENT DISTRICT
PROPOSED ZONE:	R-1
PROPOSED USE:	1 RESIDENTIAL LOT
OWNER:	TICONDEROGA PARTNERS, A CALIFORNIA LIMITED LIABILITY CORPORATION C/O THE CHAMBERLAIN GROUP 655 SKYWAY, SUITE 230 SAN CARLOS, CA 94070 (650) 595-5582 ATTN: JACK CHAMBERLAIN
DEVELOPER:	THE CHAMBERLAIN GROUP 655 SKYWAY, SUITE 230 SAN CARLOS, CA 94070 (650) 595-5582 ATTN: JACK CHAMBERLAIN
CIVIL ENGINEER:	BKF ENGINEERS 255 SHORELINE DRIVE, SUITE 200 REDWOOD CITY, CA 94065 (650) 482-6300
GEOTECHNICAL ENGINEER:	CORNERSTONE EARTH GROUP 1259 OAKMEAD PARKWAY SUNNYVALE, CA 94085 (408) 245-4600
WATER SUPPLY:	CAL WATER SERVICE 341 N. DELAWARE STREET SAN MATEO, CA 94401-1808 (650) 343-1808
SEWAGE DISPOSAL:	CITY OF SAN MATEO & CRYSTAL SPRINGS COUNTY SANITATION DISTRICT
GAS & ELECTRIC	PG&E
TELEPHONE:	AT&T
FIRE PROTECTION:	CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION
CABLE:	COMCAST
STORM DRAINAGE:	COUNTY OF SAN MATEO CITY OF SAN MATEO
TOPOGRAPHIC BASE MAP:	AERO-GEODIC CORP. JOB NO. 950168 DATE OF PHOTOGRAPHY 9/18/87
EROSION CONTROL POINT OF CONTACT:	NOEL CHAMBERLAIN, NEXGEN BUILDERS INC. 225 DEMETER STREET EAST PALO ALTO, CA 94303 PHONE #: (650) 322-5800 CELL #: (650) 444-3089 EMAIL: noel@nexgenbuilders.com

SHEET INDEX

ENGINEER'S STATEMENT

THESE IMPROVEMENT PLANS HAVE BEEN PREPARED UNDER MY DIRECTION.

ROLAND N.V. HAGA — DATE
R.C.E NO. 43971
BKF ENGINEERS

REGISTERED PROFESSIONAL ENGINEER — ROLAND N.V. HAGA — No. C043971 — CIVIL — STATE OF CALIFORNIA

ENGINEER OF WORK

I HEREBY DECLARE THAT I AM THE CIVIL ENGINEER OF WORK FOR THIS PROJECT AND THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THIS PROJECT AS DEFINED IN SECTION 6703 OF THE STATE OF CALIFORNIA, BUSINESS & PROFESSIONAL CODES, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

JONATHAN TANG — DATE
P.E. NO. 67726
BKF ENGINEERS

REGISTERED PROFESSIONAL ENGINEER — JONATHAN TANG — No. C67726 — CIVIL — STATE OF CALIFORNIA

255 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
PHONE: (650) 482-6300
FAX: (650) 482-6399

BKF ENGINEERS / SURVEYORS / PLANNERS

HIGHLAND ESTATES
LOT 6 IMPROVEMENT PLANS
TITLE SHEET
SAN MATEO COUNTY CALIFORNIA
CITY OF SAN MATEO

No.	Revisions

Date	09/11/2018
Scale	NTS
Design	JT
Drawn	LE
Approved	RH
Job No	950168-20

Sheet Number:
C6.10
OF

© BKF ENGINEERS

NOTES:

I. GENERAL NOTES

1. WORK SHALL CONFORM TO THE COUNTY OF SAN MATEO PUBLIC WORKS STANDARD DRAWINGS FOR PUBLIC IMPROVEMENTS, REVISED SEPTEMBER 2007 AND THE SAN MATEO COUNTY SEWER AND SANITATION DISTRICTS STANDARD SPECIFICATIONS, DATED JUNE 1995.

2. PERFORM WORK IN CONFORMANCE WITH THE RECOMMENDATION OF THE PROJECT GEOTECHNICAL ENGINEERING REPORT TITLED "UPDATED GEOTECHNICAL INVESTIGATION, HIGHLAND ESTATES LOTS 5 THROUGH 11, TICONDEROGA DRIVE/COBBLEHILL PLACE/COWPENS WAY, SAN MATEO COUNTY, CALIFORNIA" PREPARED BY CORNERSTONE EARTH GROUP, DATED OCTOBER 30, 2015. GRADING WORK WILL BE SUBJECT TO APPROVAL OF GEOTECHNICAL ENGINEER.

3. ARRANGE FOR REQUIRED INSPECTIONS BY COUNTY ENGINEER. NO DELAY OF WORK CLAIM WILL BE ALLOWED DUE TO CONTRACTOR'S FAILURE TO ARRANGE FOR REQUIRED COUNTY INSPECTIONS IN ADVANCE. PROVIDE NOTICE TO COUNTY ENGINEER A MINIMUM OF 2 WORKING DAYS IN ADVANCE OF REQUIRED INSPECTIONS.

4. REVISIONS TO THESE PLANS MUST BE REVIEWED AND APPROVED IN WRITING BY ENGINEER, WHO WILL OBTAIN APPROVAL FROM COUNTY ENGINEER PRIOR TO CONSTRUCTION OF AFFECTED ITEMS. REVISIONS SHALL BE ACCURATELY SHOWN ON REVISED PLANS, WHICH SHALL BE REVIEWED AND APPROVED BY THE ENGINEER AND COUNTY ENGINEER PRIOR TO INSTALLATION OF THE IMPROVEMENTS.

5. REPLACE OR REPAIR EXISTING UTILITIES, IMPROVEMENTS OR FEATURES DAMAGED, REMOVED, OR DISTURBED BY CONSTRUCTION TO THEIR ORIGINAL CONDITION, WHETHER SHOWN ON PLANS OR NOT.

6. REPLACE STREET MONUMENTS, LOT CORNERS PIPES AND OTHER PERMANENT MONUMENTS DISTURBED DURING CONSTRUCTION. MONUMENTS SHALL BE SET BY A SURVEYOR REGISTERED IN THE STATE OF CALIFORNIA.

7. PREPARE TRAFFIC CONTROL PLAN AND OBTAIN APPROVAL FROM COUNTY ENGINEER BEFORE COMMENCING WORK. PROVIDE FLAG MEN, CONES, BARRICADES AND OTHER TRAFFIC CONTROL MEASURES NECESSARY TO PROVIDE SAFE LANE CLOSURE IN CONFORMANCE WITH CALTRANS STANDARDS AND AS APPROVED BY COUNTY ENGINEER.

8. PEDESTRIAN TRAFFIC CONTROL TO BE PROVIDED WHEN EXISTING SIDEWALKS CANNOT BE MAINTAINED DURING CONSTRUCTION.

9. DO NOT LEAVE TRENCHES OPEN OVERNIGHT IN EXISTING STREET AREAS. BACKFILL OR COVER OPEN TRENCHES AT THE END OF WORK EVERY WORK DAY.

10. PREPARE SHORING PLAN AND SUBMIT TO THE COUNTY ENGINEER FOR REVIEW AND APPROVAL. ADEQUATELY SHORE EXCAVATIONS TO PREVENT EARTH FROM SLIDING OR SETTLING AND TO PROTECT EXISTING ADJACENT IMPROVEMENTS FROM DAMAGE. DAMAGE RESULTING FROM A LACK OF ADEQUATE SHORING SHALL BE THE CONTRACTOR'S RESPONSIBILITY. PROVIDE SHORING IN CONFORMANCE WITH APPLICABLE CONSTRUCTION SAFETY ORDERS OF THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY AND OSHA WHERE EXCAVATIONS ARE 5 FEET OR MORE IN DEPTH.

11. IMPLEMENT CONSTRUCTION DUST CONTROL MEASURES TO REDUCE PARTICULATE GENERATION TO A LESS THAN SIGNIFICANT LEVEL. PROVIDE DUST CONTROL IN CONFORMANCE WITH BAY AREA AIR QUALITY MANAGEMENT DISTRICT MINIMUM REQUIREMENTS. IMPLEMENT THE FOLLOWING CONSTRUCTION PRACTICES EXCEPT WHEN IT IS RAINING.

    11.A. WATER ACTIVE EXTERIOR SOIL AREAS AT LEAST TWICE DAILY.

    11.B. COVER TRUCKS HAULING SOIL, SAND AND OTHER LOOSE MATERIAL OR PROVIDE 2 FEET OF FREEBOARD.

    11.C. PAVE, APPLY WATER THREE TIMES DAILY OR APPLY NON-TOXIC SOIL STABILIZER ON UNPAVED ACCESS ROADS, PARKING AREAS AND STAGING AREAS.

    11.D. SWEEP PAVED ACCESS ROADS, PARKING AREAS AND STAGING AREAS DAILY.

    11.E. APPLY HYDROSEED OR NON-TOXIC SOIL STABILIZER TO INACTIVE CONSTRUCTION AREAS.

    11.F. ENCLOSE, COVER, WATER TWICE DAILY OR APPLY NON-TOXIC SOIL STABILIZER TO EXPOSED SOIL STOCKPILES.

    11.G. INSTALL SANDBAGS AND OTHER EROSION CONTROL MEASURES TO PREVENT SILT RUNOFF TO PUBLIC ROADWAYS.

    11.H. LIMIT TRAFFIC SPEED ON UNPAVED ROADS TO 15 MPH.

    11.I. REPLANT VEGETATION IN DISTURBED AREAS AS QUICKLY AS POSSIBLE.

12. KEEP STREETS CLEAN OF DIRT, MUD AND OTHER CONSTRUCTION DEBRIS. CLEAN AND SWEEP STREETS ON A DAILY BASIS DURING THE WORK WEEK.

13. SHOULD IT APPEAR THAT THE WORK IS NOT SUFFICIENTLY DETAILED OR SPECIFIED IN CONSTRUCTION DOCUMENTS, NOTIFY ENGINEER AND OBTAIN CLARIFICATION BEFORE PROCEEDING WITH WORK IN QUESTION.

14. CONSTRUCTION STAKING SHALL BE DONE BY A CIVIL ENGINEER OR LAND SURVEYOR REGISTERED IN THE STATE OF CALIFORNIA.

15. IF BKF ENGINEERS IS RETAINED TO PROVIDE CONSTRUCTION STAKING SERVICES, CONTRACTOR WILL BE PROVIDED WITH ONE SET OF SURVEY STAKES FOR LAYOUT PURPOSES. PRESERVE AND PROTECT THESE STAKES UNTIL THEY ARE NO LONGER NEEDED. RESTAKING SHALL BE AT CONTRACTOR'S EXPENSE.

16. MATCH EXISTING PAVEMENT, CURB AND GUTTER, SIDEWALK, ADJACENT LANDSCAPE AND OTHER IMPROVEMENTS WITH SMOOTH TRANSITION TO AVOID ABRUPT OR APPARENT CHANGES IN GRADES, CROSS SLOPES, LOW SPOTS OR HAZARDOUS CONDITIONS.

17. VISIT SITE TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND OVERALL PROJECT REQUIREMENT PRIOR TO BIDDING PROJECT.

18. OBTAIN AND PAY FOR PERMITS AND LICENSES AS REQUIRED TO PERFORM WORK WITHIN THE COUNTY OF SAN MATEO PRIOR TO START OF WORK. PERMITS MAY INCLUDE ENCROACHMENT PERMIT FOR WORK WITHIN COUNTY RIGHT-OF-WAY AND GRADING/UTILITY PERMIT.

19. CONTRACTOR IS RESPONSIBLE FOR TRAFFIC AND PEDESTRIAN CONTROL DURING CONSTRUCTION.

20. OBTAIN APPROVAL OF IMPORT SOIL MATERIAL FROM GEOTECHNICAL ENGINEER PRIOR TO DISTRIBUTING MATERIAL OVER SITE.

21. PROTECT ADJOINING PREMISES, TREES, LANDSCAPING, UTILITIES, SIDEWALKS, STREETS AND OTHER FEATURES FROM DAMAGE BY CONTRACTOR'S OPERATIONS. REPAIR, REPLACE OR CLEAN ADJOINING PREMISES, TREES, LANDSCAPING, UTILITIES, SIDEWALKS, STREETS AND OTHER FEATURES TO SATISFACTION OF OWNER.

22. MAINTAIN AND MANAGE CONSTRUCTION MATERIALS, EQUIPMENT AND VEHICLES AT THE CONSTRUCTION SITE.

23. NOTIFY COUNTY ENGINEER A MINIMUM OF 24 HOURS PRIOR TO STARTING WORK ON OFF-SITE DRAINAGE AND SEWER FACILITIES, GRADING, PAVING, OR WORK IN THE COUNTY RIGHT-OF-WAY.

24. MAKE EFFORTS TO MINIMIZE CONSTRUCTION NOISE.

    24.A. MAINTAIN EQUIPMENT USED ON SITE IN GOOD MECHANICAL CONDITION TO MINIMIZE NOISE CREATED BY FAULTY OR POORLY MAINTAINED ENGINE, DRIVE-TRAIN AND OTHER COMPONENTS.

    24.B. EQUIPMENT EXCEEDING 110 DBA MEASURED 25 FEET FROM THE PIECE OF EQUIPMENT WILL NOT BE ALLOWED ON SITE.

    24.C. SELECT APPROPRIATE EQUIPMENT TO MINIMIZE NOISE GENERATION. USE THE FOLLOWING TECHNIQUES TO MINIMIZE NOISE GENERATION SUBJECT TO EQUIPMENT AVAILABILITY AND COST CONSIDERATIONS. USE SCRAPERS AS MUCH AS POSSIBLE FOR EARTH REMOVAL, RATHER THAN NOISIER LOADERS AND HAUL TRUCKS. USE BACKHOES FOR BACKFILLING AS IT IS QUIETER THAN DOZERS OR LOADERS. USE MOTOR GRADERS RATHER THAN BULLDOZERS FOR FINAL GRADING.

II. EXISTING CONDITIONS

1. EXISTING TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS IS BASED UPON A FIELD TOPOGRAPHIC SURVEY OF THE PROJECT SITE BY BKF ENGINEERS, DATED JUNE 2009. ACTUAL CONDITIONS ENCOUNTERED ON SITE MAY VARY FROM THOSE SHOWN ON THE PLANS. CONTRACTOR SHALL REVIEW CONSTRUCTION DOCUMENTS AND CONDUCT THEIR OWN INVESTIGATIONS TO UNDERSTAND AND VERIFY EXISTING CONDITIONS AT THE SITE.

2. EXISTING SUBSURFACE IMPROVEMENTS AND UTILITIES SHOWN ON THESE PLANS WERE TAKEN FROM RECORD INFORMATION KNOWN TO THE ENGINEER AND FIELD SURVEY OF ABOVE GRADE FEATURES. THESE PLANS ARE NOT MEANT TO BE A FULL CATALOG OF EXISTING SUBSURFACE CONDITIONS. CONDUCT FIELD INVESTIGATION TO VERIFY THE LOCATIONS AND ELEVATIONS OF EXISTING SUBSURFACE IMPROVEMENTS AND UTILITIES, WHETHER SHOWN ON PLANS OR NOT, PRIOR TO START OF EXCAVATION. IF DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THESE PLANS ARE DISCOVERED, NOTIFY ENGINEER IMMEDIATELY AND REQUEST DISCREPANCY BE RESOLVED.

3. VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION AFFECTING UTILITIES. POTHOLE WHERE NEEDED TO VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES.

4. CONTACT USA (UNDERGROUND SERVICES ALERT) AT 1-800-227-2600, AND AFFECTED UTILITY COMPANIES A MINIMUM OF 2 WORKING DAYS PRIOR TO STARTING WORK TO REQUEST UTILITIES BE MARKED.

III. DEMOLITION

1. REMOVE FROM SITE AND DISPOSE OF IN LAWFUL MANNER EXISTING STRUCTURES, UTILITIES, AND OTHER FEATURES NOT REMOVED DURING DEMOLITION OR ROUGH GRADING AND ENCOUNTERED DURING WORK ON SITE.

    1.A. REMOVE WOOD OR CONCRETE STRUCTURES, SLABS, FOOTINGS, GRADE BEAMS, DECKS, DOCKS, AND OTHER SIMILAR STRUCTURES.

    1.B. REMOVE LANDSCAPING, UTILITIES AND IRRIGATION LINES AS SPECIFIED BY GEOTECHNICAL ENGINEER.

    1.C. REMOVE ABANDONED IN-GROUND STRUCTURES, SUCH AS CULVERTS, UTILITY VAULTS, AND FOUNDATIONS AS SPECIFIED BY GEOTECHNICAL ENGINEER.

IV. DEWATERING

1. DEWATER AREAS COVERED WITH STANDING WATER PRIOR TO PLACEMENT OF FILL.

2. DISPOSE OF WATER FROM DEWATERING OPERATION IN CONFORMANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

V. UTILITIES

1. DO NOT OPERATE WATER VALVES OR OTHER WATER DISTRICT FACILITIES. REQUIRED OPERATION WILL BE PERFORMED BY UTILITY DISTRICT PERSONNEL ONLY. NOTIFY UTILITY DISTRICT 2 WORKING DAYS PRIOR TO REQUIRING FACILITY OPERATION.

2. PROVIDE MINIMUM 12 INCH VERTICAL CLEARANCE BETWEEN ADJACENT UTILITY PIPES AT UTILITY CROSSINGS UNLESS OTHERWISE NOTED.

3. COMPLETE ELECTRIC, GAS, TELEPHONE, CABLE AND OTHER JOINT TRENCH WORK IN CONFORMANCE WITH THE REQUIREMENTS OF THE RESPECTIVE UTILITY PROVIDER. NOTIFY UTILITY PROVIDER MINIMUM 2 WORKING DAYS PRIOR TO COMMENCING WORK. IF EXISTING WATER, SEWER, GAS OR OTHER UTILITY SERVICES ARE DISTURBED OR DAMAGED DURING CONSTRUCTION, NOTIFY UTILITY OWNER IMMEDIATELY.

4. PROTECT UTILITIES FROM DAMAGE CAUSED BY CONTRACTOR'S WORK.

5. PROVIDE UTILITY STRUCTURES IN PAVED AREAS SUITABLE FOR H-20 LOADING.

6. PIPE LENGTHS SHOWN ON PLANS ARE FOR ENGINEERING CALCULATIONS ONLY AND ARE NOT INTENDED AS BID QUANTITIES OR FOR ORDERING MATERIALS.

7. CONSTRUCT GRAVITY FLOW UTILITIES FROM DOWNSTREAM CONNECTION POINT TO UPSTREAM TERMINUS.

8. COORDINATE WITH COUNTY OF SAN MATEO AND CRYSTAL SPRINGS SANITATION DISTRICT FOR INSPECTION OF WORK ON DISTRICT FACILITIES.

9. ALL WATER LATERALS AND SERVICES SHALL BE INSTALLED TO THE STANDARDS OF THE CALIFORNIA WATER SERVICE COMPANY. EXISTING WATER MAINS OR LATERALS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AND TESTED TO THE SATISFACTION OF THE WATER COMPANY.

VI. EARTHWORK AND GRADING

1. OFF-SITE IMPORT FILL MATERIAL SHALL CONFORM TO THE SPECIFICATIONS AND THE REQUIREMENTS OF THE GEOTECHNICAL REPORT.

2. TOPSOIL, ROOTS, VEGETABLE MATTER, TRASH AND DEBRIS WILL NOT BE CONSIDERED ACCEPTABLE FILL MATERIAL.

3. REMOVE DEBRIS FROM AREAS OF EARTHWORK PRIOR TO PLACING FILL OR STARTING GRADING OPERATIONS.

4. PLACE AND COMPACT FILL MATERIAL AS RECOMMENDED IN GEOTECHNICAL REPORT. PLACE FILL MATERIAL IN MAXIMUM 8 INCH UNCOMPACTED THICKNESS. COMPACTION BY FLOODING, PONDING OR JETTING WILL NOT BE PERMITTED.

5. CONTRACTOR SHALL MAKE HIS OWN DETERMINATION OF EARTHWORK QUANTITIES.

VII RECORD DRAWINGS

1. KEEP ACCURATE RECORD OF THE FINAL LOCATION, ELEVATION AND DESCRIPTION OF WORK ON A COPY OF THE FINAL APPROVED CONSTRUCTION DOCUMENTS. NOTE THE LOCATIONS AND ELEVATIONS OF EXISTING IMPROVEMENTS ENCOUNTERED THAT VARY FROM THE LOCATIONS SHOWN ON THE IMPROVEMENT PLANS. PROVIDE COPY OF RECORD INFORMATION TO OWNER AT COMPLETION OF PROJECT AND WHEN REQUESTED.

VII. STATEMENT OF RESPONSIBILITY

1. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD BOTH DESIGN PROFESSIONAL AND THE COUNTY OF SAN MATEO HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF EITHER THE DESIGN PROFESSIONAL OR THE COUNTY OF SAN MATEO, RESPECTIVELY.

IX. UNAUTHORIZED CHANGES AND USES

1. THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND REQUIRE WRITTEN APPROVAL OF THE COUNTY ENGINEER AND THE PREPARER OF THESE PLANS.

X. DRAWING LANGUAGE

1. NOTES AND CALLOUTS ON DRAWINGS MAY USE IMPERATIVE LANGUAGE. REQUIREMENTS EXPRESSED IMPERATIVELY ARE TO BE PERFORMED BY THE CONTRACTOR UNLESS NOTED OTHERWISE.

CONDITIONS OF APPROVAL NOTES

CONSTRUCTION NOTES

1. THE FIRST PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY. THE REMAINDER OF CONSTRUCTION EQUIPMENT (70 PERCENT), WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL BE REQUIRED TO USE EMULSIFIED FUELS.

2. THE SECOND PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 2 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY AND 50 PERCENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS. THE REMAINING 20 PERCENT OF CONSTRUCTION EQUIPMENT, WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL USE EMULSIFIED FUELS.

3. FOR ALL LARGER VEHICLES, INCLUDING CEMENT MIXERS OR OTHER DEVICES THAT MUST BE DELIVERED BY LARGE TRUCKS, VEHICLES SHALL BE EQUIPPED WITH CARB LEVEL THREE VERIFIED CONTROL DEVICES.

4. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY.

5. COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR REQUIRE ALL TRUCKS TO MAINTAIN AT LEAST TWO FEET OF FREEBOARD.

6. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY NON-TOXIC SOIL STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.

7. SWEEP DAILY (WITH WATER SWEEPERS) ALL PAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.

8. SWEEP PUBLIC STREETS ADJACENT TO CONSTRUCTION SITES DAILY (WITH WATER SWEEPERS) IF VISIBLE SOIL MATERIAL IS CARRIED ONTO THE STREETS.

9. HYDROSEED OR APPLY NON-TOXIC SOIL STABILIZERS TO INACTIVE CONSTRUCTION AREAS (PREVIOUSLY GRADED AREAS INACTIVE FOR TEN DAYS OR MORE).

10. ENCLOSE, COVER, WATER TWICE DAILY, OR APPLY NON-TOXIC SOIL BINDERS TO EXPOSED STOCKPILES (DIRT, SAND, ETC.). LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.

11. LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.

12. INSTALL SANDBAGS OR OTHER EROSION CONTROL MEASURES TO PREVENT SILT RUNOFF TO PUBLIC ROADWAYS.

13. REPLANT VEGETATION IN DISTURBED AREAS AS SOON AS POSSIBLE.

14. INSTALL WHEEL WASHERS FOR ALL EXITING TRUCKS OR WASH OFF THE TIRES OR TRACKS OF ALL TRUCKS AND EQUIPMENT LEAVING THE CONSTRUCTION SITE.

15. INSTALL WIND BREAKS AT THE WINDWARD SIDES OF THE CONSTRUCTION AREAS.

16. SUSPEND EXCAVATION AND GRADING ACTIVITIES WHEN WIND (AS INSTANTANEOUS GUSTS) EXCEEDS 25 MILES PER HOUR.

NOISE NOTES

1. EQUIPMENT AND TRUCKS USED FOR PROJECT GRADING AND CONSTRUCTION WOULD UTILIZE THE BEST AVAILABLE NOISE CONTROL TECHNIQUES (E.G., IMPROVED EXHAUST MUFFLERS, EQUIPMENT REDESIGN, USE OF INTAKE SILENCERS, DUCTS, ENGINE ENCLOSURES, AND ACOUSTICALLY-ATTENUATING SHIELDS OR SHROUDS) IN ORDER TO MINIMIZE CONSTRUCTION NOISE IMPACTS.

2. EQUIPMENT USED FOR PROJECT GRADING AND CONSTRUCTION WOULD BE HYDRAULICALLY OR ELECTRICALLY POWERED IMPACT TOOLS (E.G., JACK HAMMERS AND PAVEMENT BREAKERS) WHEREVER POSSIBLE TO AVOID NOISE ASSOCIATED WITH COMPRESSED AIR EXHAUST FROM PNEUMATICALLY-POWERED TOOLS. COMPRESSED AIR EXHAUST SILENCERS WOULD BE USED ON OTHER EQUIPMENT. OTHER QUIETER PROCEDURES WOULD BE USED SUCH AS DRILLING RATHER THAN IMPACT EQUIPMENT WHENEVER FEASIBLE.

3. THE GRADING AND CONSTRUCTION ACTIVITY WOULD BE KEPT TO THE HOURS OF 7:00 AM TO 7:00 PM, MONDAY THROUGH FRIDAY. SATURDAY HOURS (8:00 AM TO 5:00 PM) ARE PERMITTED UPON THE DISCRETION OF COUNTY APPROVAL BASED ON INPUT FROM NEARBY RESIDENTS AND BUSINESSES. SATURDAY CONSTRUCTION (8:00 AM TO 5:00 PM) WOULD BE ALLOWED ONCE THE BUILDINGS ARE FULLY ENCLOSED. NOISE GENERATING GRADING AND CONSTRUCTION ACTIVITIES SHALL NOT OCCUR AT ANY TIME ON SUNDAYS, THANKSGIVING AND CHRISTMAS.

4. RESIDENTIAL PROPERTY OWNERS WITHIN 200 FEET OF PLANNED CONSTRUCTION AREAS SHALL BE NOTIFIED OF THE CONSTRUCTION SCHEDULE IN WRITING, PRIOR TO CONSTRUCTION; THE PROJECT SPONSOR SHALL DESIGNATE A "DISTURBANCE COORDINATOR" WHO SHALL BE RESPONSIBLE FOR RESPONDING TO ANY LOCAL COMPLAINTS REGARDING CONSTRUCTION NOISE; THE COORDINATOR (WHO MAY BE AN EMPLOYEE OF THE DEVELOPER OR GENERAL CONTRACTOR) SHALL DETERMINE THE CAUSE OF THE COMPLAINT AND SHALL REQUIRE THAT REASONABLE MEASURES WARRANTED TO CORRECT THE PROBLEM BE IMPLEMENTED; A TELEPHONE NUMBER OF THE NOISE DISTURBANCE COORDINATOR SHALL BE CONSPICUOUSLY POSTED AT THE CONSTRUCTION SITE FENCE AND ON THE NOTIFICATION SENT TO NEIGHBORS ADJACENT TO THE SITE.

ASBESTOS NOTES

1. IF NATURALLY OCCURRING ASBESTOS IS IDENTIFIED AT THE SITE, A SITE HEALTH AND SAFETY (H&S) PLAN INCLUDING METHODS FOR CONTROL OF AIRBORNE DUST SHALL BE PREPARED. THIS PLAN SHALL BE REVIEWED AND APPROVED BY THE COUNTY OF SAN MATEO PRIOR TO GRADING IN AREAS UNDERLAIN BY SERPENTINE-BEARING SOILS OR BEDROCK AND NATURALLY OCCURRING ASBESTOS. THE H&S PLAN SHALL STRICTLY CONTROL DUST-GENERATING EXCAVATION AND COMPACTION OF MATERIAL CONTAINING NATURALLY OCCURRING ASBESTOS. THE PLAN SHALL ALSO IDENTIFY SITE-MONITORING ACTIVITIES DEEMED NECESSARY DURING CONSTRUCTION (E.G., AIR MONITORING). WORKER MONITORING SHALL ALSO BE PERFORMED AS APPROPRIATE. THE PLAN SHALL DEFINE PERSONAL PROTECTION METHODS TO BE USED BY CONSTRUCTION WORKERS. ALL WORKER PROTECTION AND MONITORING SHALL COMPLY WITH PROVISIONS OF THE MINING SAFETY AND HEALTH ADMINISTRATION (MSHA) GUIDELINES, CALIFORNIA DIVISION OF OCCUPA-TIONAL SAFETY AND HEALTH (DOSH), AND THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).

2. IF NATURALLY OCCURRING ASBESTOS IS FOUND AT THE SITE, A SOIL MANAGEMENT PLAN SHALL BE DEVELOPED AND APPROVED BY THE COUNTY PLANNING DEPARTMENT TO PROVIDE DETAILED DESCRIPTIONS OF THE CONTROL AND DISPOSITION OF SOILS CONTAINING NATURALLY OCCURRING ASBESTOS. SERPENTINE MATERIAL PLACED AS FILL SHALL BE SUFFICIENTLY BURIED IN ORDER TO PREVENT EROSION BY WIND OR SURFACE WATER RUNOFF, OR EXPOSURE TO FUTURE HUMAN ACTIVITIES, SUCH AS LANDSCAPING OR SHALLOW TRENCHES. ADDITIONALLY, THE BAAQMD SHALL BE NOTIFIED PRIOR TO THE START OF ANY EXCAVATION IN AREAS CONTAINING NATURALLY OCCURRING ASBESTOS.

GRADING NOTES

1. NO GRADING SHALL BE ALLOWED DURING THE WINTER SEASON (OCTOBER 15 TO APRIL 30) TO AVOID POTENTIAL SOIL EROSION UNLESS APPROVED, IN WRITING, BY THE COMMUNITY DEVELOPMENT DIRECTOR. THE PROPERTY OWNERS SHALL SUBMIT A LETTER TO THE CURRENT PLANNING SECTION, AT LEAST TWO WEEKS PRIOR TO COMMENCEMENT OF GRADING, STATING THE DATE WHEN GRADING WILL BEGIN.

TREE PROTECTION NOTES

1. THE APPLICANT SHALL ESTABLISH AND MAINTAIN TREE PROTECTION ZONES THROUGHOUT THE ENTIRE LENGTH OF THE PROJECT. TREE PROTECTION ZONES SHALL BE DELINEATED USING 4-FOOT TALL ORANGE PLASTIC FENCING SUPPORTED BY POLES POUNDED INTO THE GROUND, LOCATED AS CLOSE TO THE DRIPLINES AS POSSIBLE WHILE STILL ALLOWING ROOM FOR CONSTRUCTION/GRADING TO SAFELY CONTINUE. THE APPLICANT SHALL MAINTAIN TREE PROTECTION ZONES FREE OF EQUIPMENT AND MATERIALS STORAGE AND SHALL NOT CLEAN ANY EQUIPMENT WITHIN THESE AREAS. SHOULD ANY LARGE ROOTS OR LARGE MASSES OF ROOTS NEED TO BE CUT, THE ROOTS SHALL BE INSPECTED BY A CERTIFIED ARBORIST OR REGISTERED FORESTER PRIOR TO CUTTING. ANY ROOT CUTTING SHALL BE MONITORED BY AN ARBORIST OR FORESTER AND DOCUMENTED. ROOTS TO BE CUT SHOULD BE SEVERED CLEANLY WITH A SAW OR TOPPERS. NORMAL IRRIGATION SHALL BE MAINTAINED, BUT OAKS SHOULD NOT NEED SUMMER IRRIGATION. THE ABOVE INFORMATION SHALL BE ON-SITE AT ALL TIMES.

VEGETATION REMOVAL/REPLACEMENT NOTES

1. VEGETATION REMOVED IN AREAS OUTSIDE OF BUILDING FOOTPRINTS, DRIVEWAYS, AND CONSTRUCTION ACCESS AREAS SHALL BE REPLACED WITH DROUGHT-TOLERANT, NON-INVASIVE PLANTS, IMMEDIATELY AFTER GRADING IS COMPLETE IN THAT AREA. PRIOR TO THE ISSUANCE OF ANY BUILDING PERMITS, THE APPLICANT SHALL SUBMIT PHOTOGRAPHS DEMONSTRATING COMPLIANCE WITH THIS CONDITION TO THE CURRENT PLANNING SECTION, SUBJECT TO REVIEW AND APPROVAL BY THE COMMUNITY DEVELOPMENT DIRECTOR.

2. THE APPLICANT SHALL REPLACE ALL VEGETATION REMOVED IN ALL AREAS NOT COVERED BY CONSTRUCTION WITH DROUGHT-TOLERANT, NON-INVASIVE PLANTS, ONCE CONSTRUCTION IS COMPLETED. PRIOR TO THE CURRENT PLANNING SECTION'S FINAL APPROVAL OF ANY BUILDING PERMIT, THE APPLICANT SHALL SUBMIT PHOTOGRAPHS DEMONSTRATING COMPLIANCE WITH THIS CONDITION, SUBJECT TO REVIEW AND APPROVAL BY THE COMMUNITY DEVELOPMENT DIRECTOR.

DUST CONTROL NOTES

1. ALL GRADED SURFACES AND MATERIALS, WHETHER FILLED, EXCAVATED, TRANSPORTED OR STOCKPILED, SHALL BE WETTED, PROTECTED OR CONTAINED IN SUCH A MANNER AS TO PREVENT ANY SIGNIFICANT NUISANCE FROM DUST, OR SPILLAGE UPON ADJOINING WATER BODY, PROPERTY, OR STREETS. EQUIPMENT AND MATERIALS ON THE SITE SHALL BE USED IN SUCH A MANNER AS TO AVOID EXCESSIVE DUST. A DUST CONTROL PLAN MAY BE REQUIRED AT ANYTIME DURING THE COURSE OF THE PROJECT.

2. A DUST PALLIATIVE SHALL BE APPLIED TO THE SITE WHEN REQUIRED BY THE COUNTY. THE TYPE AND RATE OF APPLICATION SHALL BE RECOMMENDED BY THE SOILS ENGINEER AND APPROVED BY THE DEPARTMENT OF PUBLIC WORKS, THE PLANNING AND BUILDING DEPARTMENT'S GEOTECHNICAL SECTION, AND THE REGIONAL WATER QUALITY CONTROL BOARD.

DISCOVERY OF HUMAN REMAINS NOTE

1. THE APPLICANT AND CONTRACTORS MUST BE PREPARED TO CARRY OUT THE REQUIREMENTS OF CALIFORNIA STATE LAW WITH REGARD TO THE DISCOVERY OF HUMAN REMAINS DURING CONSTRUCTION, WHETHER HISTORIC OR PREHISTORIC. IN THE EVENT THAT ANY HUMAN REMAINS ARE ENCOUNTERED DURING SITE DISTURBANCE, ALL GROUND-DISTURBING WORK SHALL CEASE IMMEDIATELY AND THE COUNTY CORONER SHALL BE NOTIFIED IMMEDIATELY. IF THE CORONER DETERMINES THE REMAINS TO BE NATIVE AMERICAN, THE NATIVE AMERICAN HERITAGE COMMISSION SHALL BE CONTACTED WITHIN 24 HOURS. A QUALIFIED ARCHAEOLOGIST, IN CONSULTATION WITH THE NATIVE AMERICAN HERITAGE COMMISSION, SHALL RECOMMEND SUBSEQUENT MEASURES FOR DISPOSITION OF THE REMAINS.

GEOTECHNICAL INSPECTION NOTE

1. PRIOR TO ISSUANCE OF BUILDING PERMITS, THE PROJECT GEOTECHNICAL CONSULTANT SHALL FIELD INSPECT (AND INVESTIGATE, AS NEEDED) ALL PROPOSED DRAINAGE DISCHARGE LOCATIONS AND VERIFY THAT PROPOSED DRAINAGE DESIGNS ARE ACCEPTABLE FROM A SLOPE STABILITY/EROSION PERSPECTIVE OR RECOMMEND APPROPRIATE MODIFICATIONS.

MITIGATION AQ-1

1. THE PROJECT APPLICANT SHALL REQUIRE THAT THE FOLLOWING BAAQMD RECOMMENDED AND ADDITIONAL PM10 REDUCTION PRACTICES BE IMPLEMENTED BY INCLUDING THEM IN THE CONTRACTOR CONSTRUCTION DOCUMENTS: THE FIRST PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY. THE REMAINDER OF CONSTRUCTION EQUIPMENT (70 PERCENT), WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL BE REQUIRED TO USE EMULSIFIED FUELS.

2. THE SECOND PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 2 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY AND 50 PERCENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS. THE REMAINING 20 PERCENT OF CONSTRUCTION EQUIPMENT, WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL USE EMULSIFIED FUELS.

3. FOR ALL LARGER VEHICLES, INCLUDING CEMENT MIXERS OR OTHER DEVICES THAT MUST BE DELIVERED BY LARGE TRUCKS, VEHICLES SHALL BE EQUIPPED WITH CARB LEVEL THREE VERIFIED CONTROL DEVICES.

4. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY.

2. COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR REQUIRE ALL TRUCKS TO MAINTAIN AT LEAST TWO FEET OF FREEBOARD.

3. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY NON-TOXIC SOIL STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.

4. SWEEP DAILY (WITH WATER SWEEPERS) ALL PAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.

5. SWEEP PUBLIC STREETS ADJACENT TO CONSTRUCTION SITES DAILY (WITH WATER SWEEPERS) IF VISIBLE SOIL MATERIAL IS CARRIED ONTO THE STREETS.

6. HYDROSEED OR APPLY NON-TOXIC SOIL STABILIZERS TO INACTIVE CONSTRUCTION AREAS (PREVIOUSLY GRADED AREAS INACTIVE FOR TEN DAYS OR MORE).

7. ENCLOSE, COVER, WATER TWICE DAILY, OR APPLY NON-TOXIC SOIL BINDERS TO EXPOSED STOCKPILES (DIRT, SAND, ETC.). LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.

8. LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.

9. INSTALL SANDBAGS OR OTHER EROSION CONTROL MEASURES TO PREVENT SILT RUNOFF TO PUBLIC ROADWAYS.

10. REPLANT VEGETATION IN DISTURBED AREAS AS SOON AS POSSIBLE.

11. INSTALL WHEEL WASHERS FOR ALL EXITING TRUCKS OR WASH OFF THE TIRES OR TRACKS OF ALL TRUCKS AND EQUIPMENT LEAVING THE CONSTRUCTION SITE.

12. INSTALL WIND BREAKS AT THE WINDWARD SIDES OF THE CONSTRUCTION AREAS.

13. SUSPEND EXCAVATION AND GRADING ACTIVITIES WHEN WIND (AS INSTANTANEOUS GUSTS) EXCEEDS 25 MILES PER HOUR.

MITIGATION NOI-1

1. THE PROJECT APPLICANT SHALL REQUIRE THAT THE FOLLOWING NOISE REDUCTION PRACTICES BE IMPLEMENTED BY INCLUDING THEM IN THE CONTRACTOR CONSTRUCTION DOCUMENTS:

2. EQUIPMENT AND TRUCKS USED FOR PROJECT GRADING AND CONSTRUCTION WOULD UTILIZE THE BEST AVAILABLE NOISE CONTROL TECHNIQUES (E.G., IMPROVED EXHAUST MUFFLERS, EQUIPMENT REDESIGN, USE OF INTAKE SILENCERS, DUCTS, ENGINE ENCLOSURES, AND ACOUSTICALLY-ATTENUATING SHIELDS OR SHROUDS) IN ORDER TO MINIMIZE CONSTRUCTION NOISE IMPACTS.

3. EQUIPMENT USED FOR PROJECT GRADING AND CONSTRUCTION WOULD BE HYDRAUL- ICALLY OR ELECTRICALLY POWERED IMPACT TOOLS (E.G., JACK HAMMERS AND PAVEMENT BREAKERS) WHEREVER POSSIBLE TO AVOID NOISE ASSOCIATED WITH COMPRESSED AIR EXHAUST FROM PNEUMATICALLY-POWERED TOOLS. COMPRESSED AIR EXHAUST SILENCERS WOULD BE USED ON OTHER EQUIPMENT. OTHER QUIETER PROCEDURES WOULD BE USED SUCH AS DRILLING RATHER THAN IMPACT EQUIPMENT WHENEVER FEASIBLE.

4. THE GRADING AND CONSTRUCTION ACTIVITY WOULD BE KEPT TO THE HOURS OF 7:00 AM TO 7:00 PM, MONDAY THROUGH FRIDAY. SATURDAY HOURS (8:00 AM TO 5:00 PM) ARE PERMITTED UPON THE DISCRETION OF COUNTY APPROVAL BASED ON INPUT FROM NEARBY RESIDENTS AND BUSINESSES. SATURDAY CONSTRUCTION (8:00 AM TO 5:00 PM) WOULD BE ALLOWED ONCE THE BUILDINGS ARE FULLY ENCLOSED. NOISE GENERATING GRADING AND CONSTRUCTION ACTIVITIES SHALL NOT OCCUR AT ANY TIME ON SUNDAYS, THANKSGIVING AND CHRISTMAS.

5. RESIDENTIAL PROPERTY OWNERS WITHIN 200 FEET OF PLANNED CONSTRUCTION AREAS SHALL BE NOTIFIED OF THE CONSTRUCTION SCHEDULE IN WRITING, PRIOR TO CONSTRUCTION; THE PROJECT SPONSOR SHALL DESIGNATE A "DISTURBANCE COORDI- NATOR" WHO SHALL BE RESPONSIBLE FOR RESPONDING TO ANY LOCAL COMPLAINTS REGARDING CONSTRUCTION NOISE; THE COORDINATOR (WHO MAY BE AN EMPLOYEE OF THE DEVELOPER OR GENERAL CONTRACTOR) SHALL DETERMINE THE CAUSE OF THE COMPLAINT AND SHALL REQUIRE THAT REASONABLE MEASURES WARRANTED TO CORRECT THE PROBLEM BE IMPLEMENTED; A TELEPHONE NUMBER OF THE NOISE DISTURBANCE COORDINATOR SHALL BE CONSPICUOUSLY POSTED AT THE CONSTRUCTION SITE FENCE AND ON THE NOTIFICATION SENT TO NEIGHBORS ADJACENT TO THE SITE.

BENCHMARK:

THE PROJECT BENCHMARK IS THE TOP OF AN IRON PIPE, ELEVATION OF 538.23, LOCATED WITHIN A MONUMENT BOX AT THE INTERSECTION OF THE CENTERLINES OF COBBLEHILL PLACE AND NEW BRUNSWICK DRIVE IN SAN MATEO, CALIFORNIA. THE ELEVATION SHOWN IN BASED UPON A SURVEY BY BKF ENGINEERS IN MARCH OF 2011 AND IS BASED UPON AN ASSUMED ELEVATION.

BASIS OF BEARINGS:

THE BEARING NORTH 76° 09' 00" EAST OF THE CENTERLINE OF COBBLE HILL PLACE AS SHOWN ON TRACT MAP NO. 723, THE HIGHLANDS, RECORDED ON AUGUST 26TH, 1955, IN VOLUME 43 OF MAPS AT PAGES 23-25, SAN MATEO COUNTY RECORDS.

811
Know what's **below.**
Call before you dig.

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ROLAND N.V. HAGA
No. C043971

HIGHLAND ESTATES
LOT 6 IMPROVEMENT PLANS
GENERAL NOTES

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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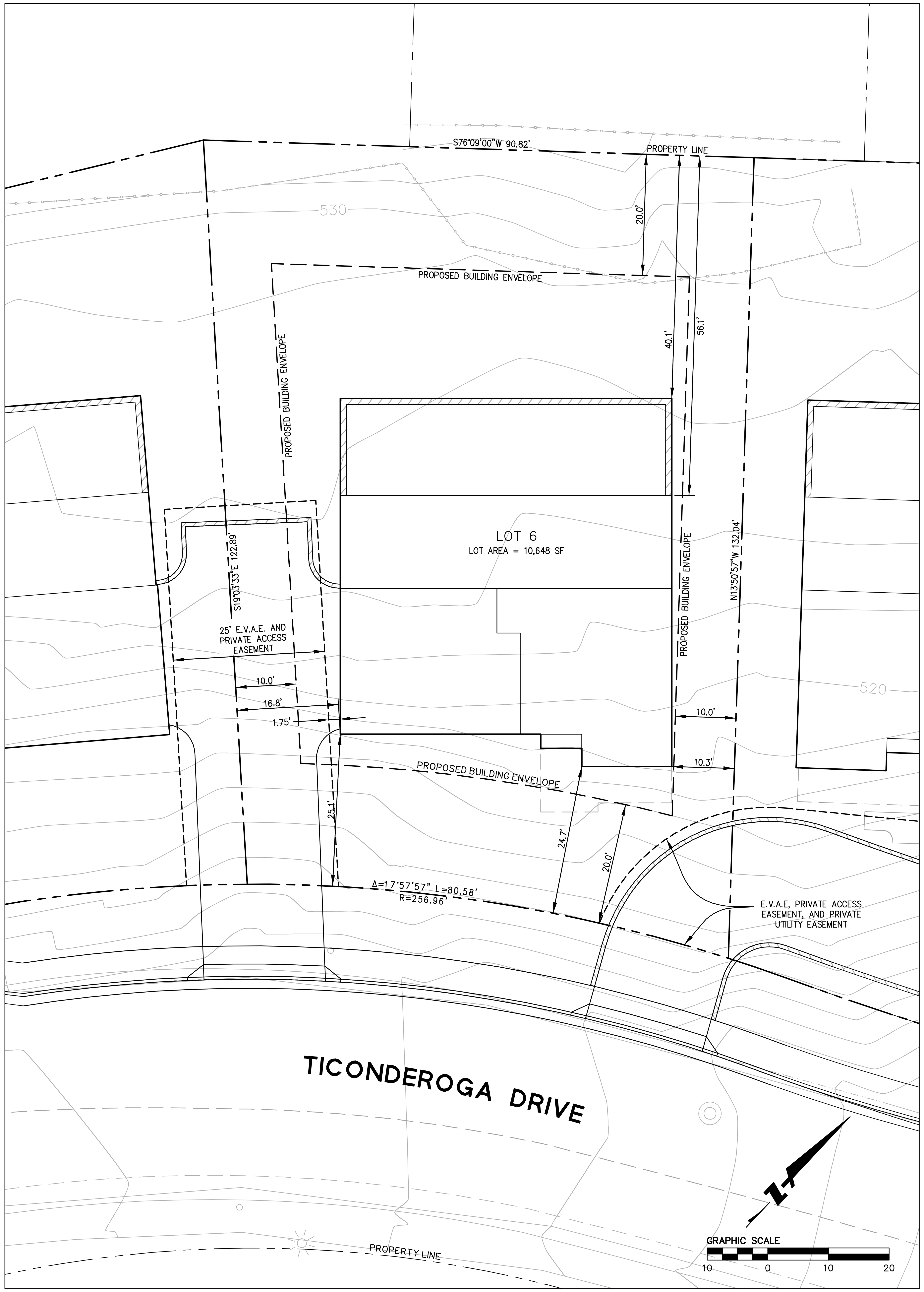
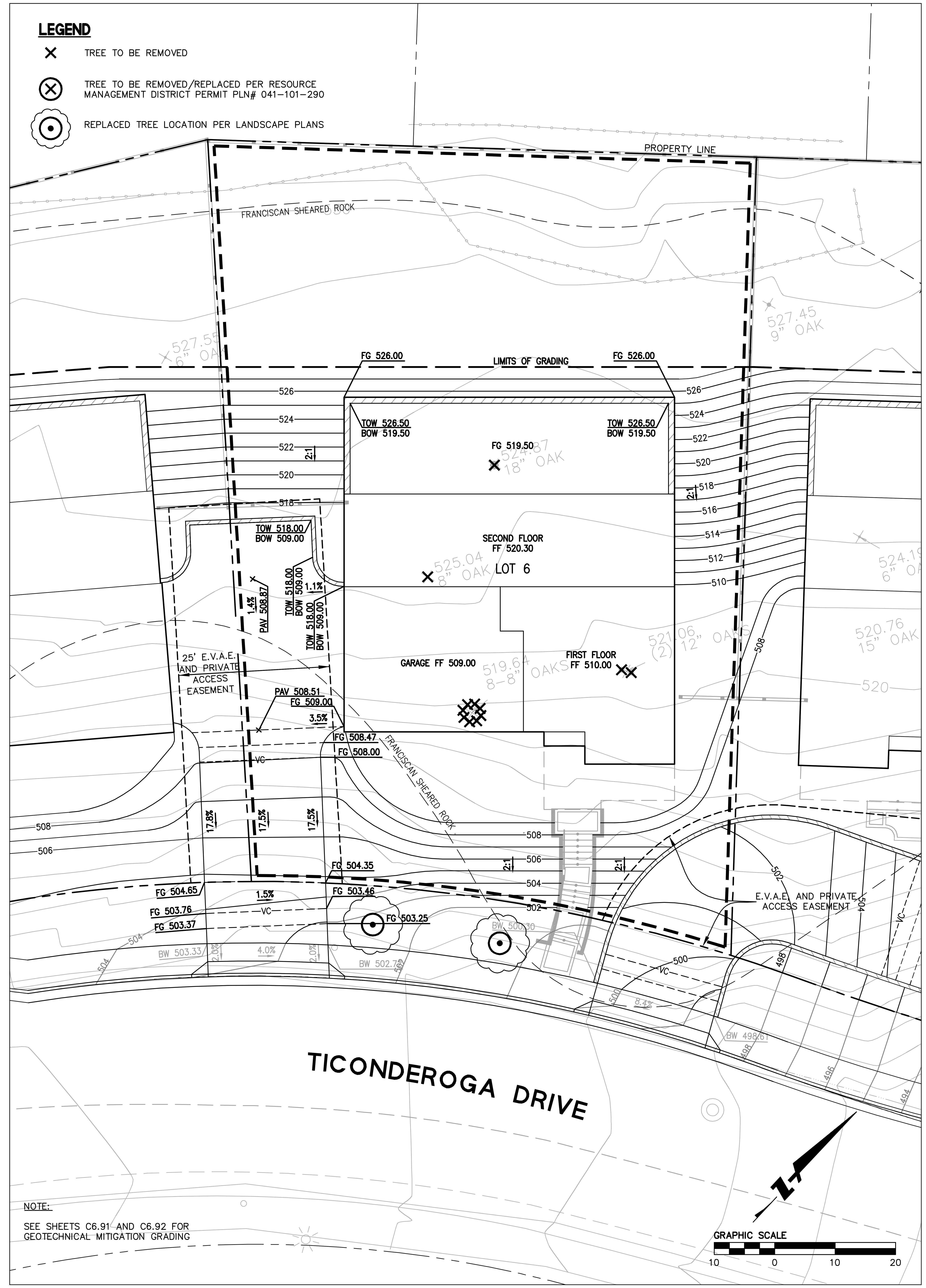


LOT 6
SITE PLAN
SCALE: 1"=10'



LOT 6
CLEARING, CONSTRUCTION, AND GRADING PLAN
SCALE: 1"=10'

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HIGHLAND ESTATES
LOT 6 IMPROVEMENT PLANS
SITE & CLEARING, CONSTRUCTION AND GRADING PLANS

CITY OF SAN MATEO — SAN MATEO COUNTY — CALIFORNIA

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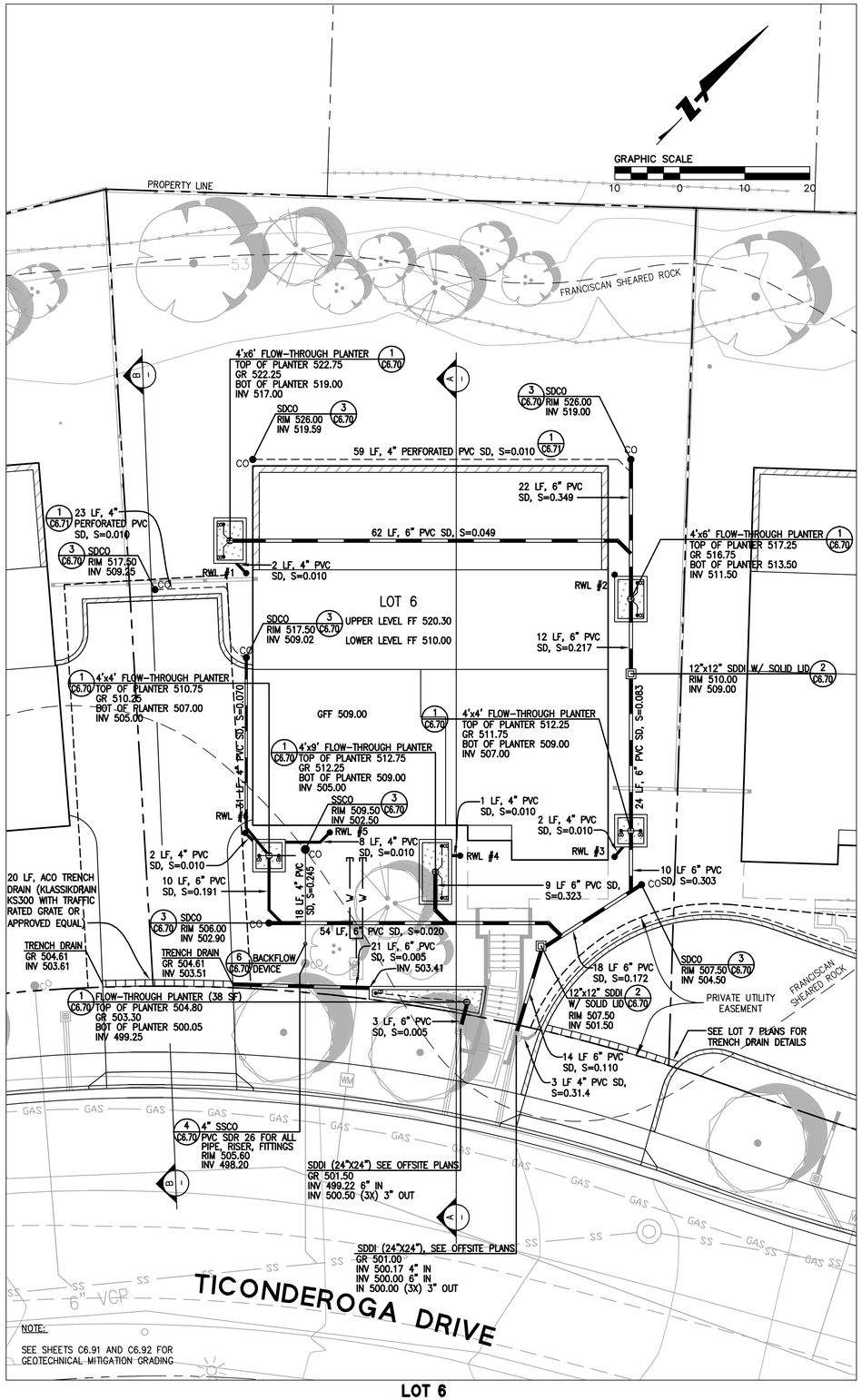
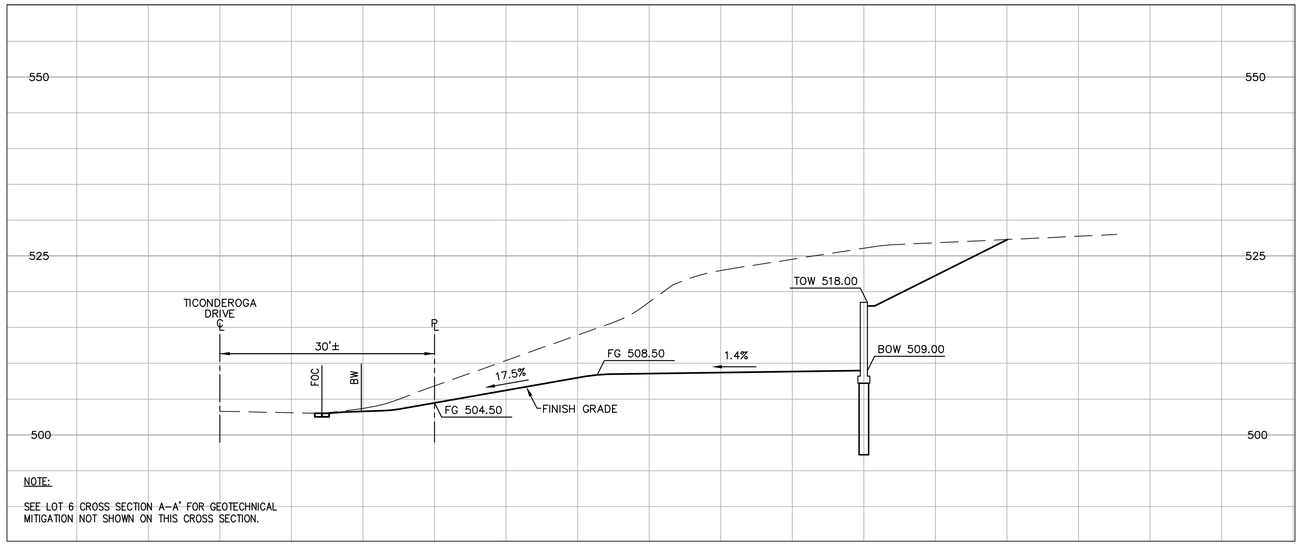


LOT 6
UTILITY PLAN
SCALE: 1"=10'

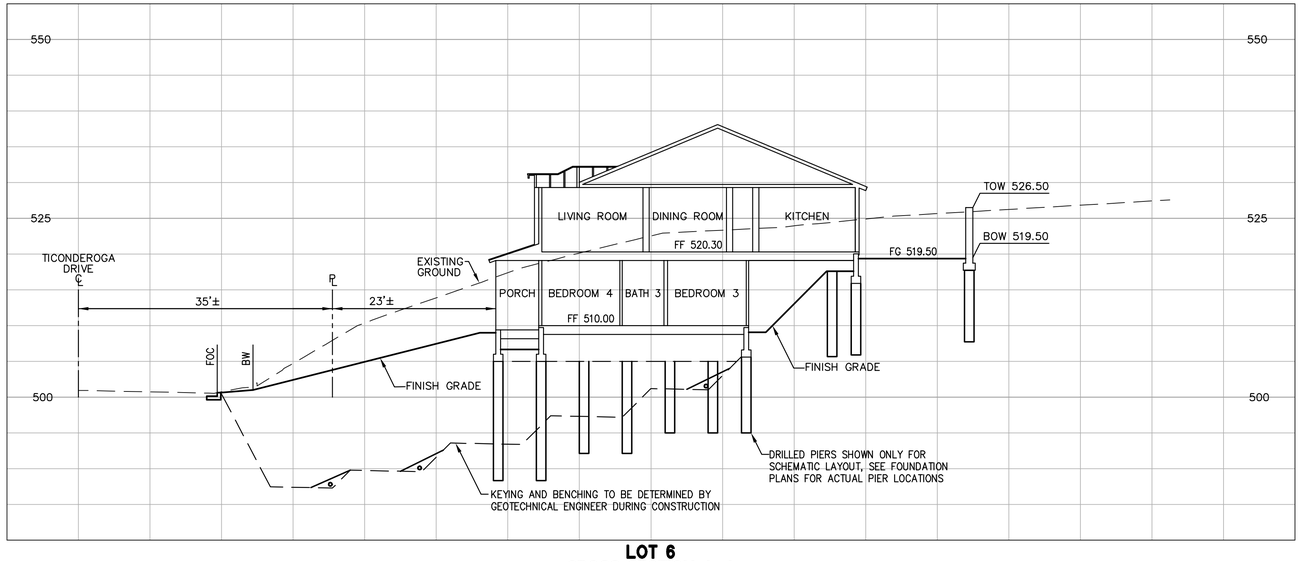


NOTE:
SEE LOT 6 CROSS SECTION A-A' FOR GEOTECHNICAL MITIGATION NOT SHOWN ON THIS CROSS SECTION.

LOT 6
CROSS SECTION B-B
SCALE: 1"=10'

NOTES:

1. PER THE GEOTECHNICAL REPORT, UNDOCUMENTED FILL WAS MAPPED AT LOT 5 AND IF THIS FILL IS TO BE LEFT IN PLACE DURING HOUSE AND DRIVEWAY GRADING, IT SHOULD BE REMOVED AND REPLACED AS PROPERLY COMPACTED ENGINEERED FILL.
2. PER THE GEOTECHNICAL REPORT, ALL EXISTING FILLS SHOULD BE COMPLETELY REMOVED FROM WITHIN PROPOSED HOUSE FOOTPRINT AND DRIVEWAY AREAS AND TO A LATERAL DISTANCE OF AT LEAST 5 FEET BEYOND THE EDGE OF THE IMPROVEMENTS OR AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER. ANY EXCESS MATERIAL SHALL BE DISPOSED OF OFF-SITE IN A LAWFUL MANNER.
3. PER THE GEOTECHNICAL REPORT, GEOTECHNICAL MITIGATION GRADING WILL BE PERFORMED ON LOT 6, SEE SHEETS C6.91 AND C6.92 FOR GRADING DETAILS OF THE MITIGATION
4. PER THE GEOTECHNICAL REPORT, ALL BUILDING AND RETAINING WALLS SHOULD BE SUPPORTED ON DRILLED PIERS. THE FOUNDATION SHOWN ON THIS PLAN ARE SCHEMATIC. REFER TO THE PROJECT STRUCTURAL PLANS FOR DETAILS ON THE DRILLED PIERS.



LOT 6
CROSS SECTION A-A
SCALE: 1"=10'

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HIGHLAND ESTATES
LOT 6 IMPROVEMENT PLANS
UTILITY PLAN AND CROSS SECTION

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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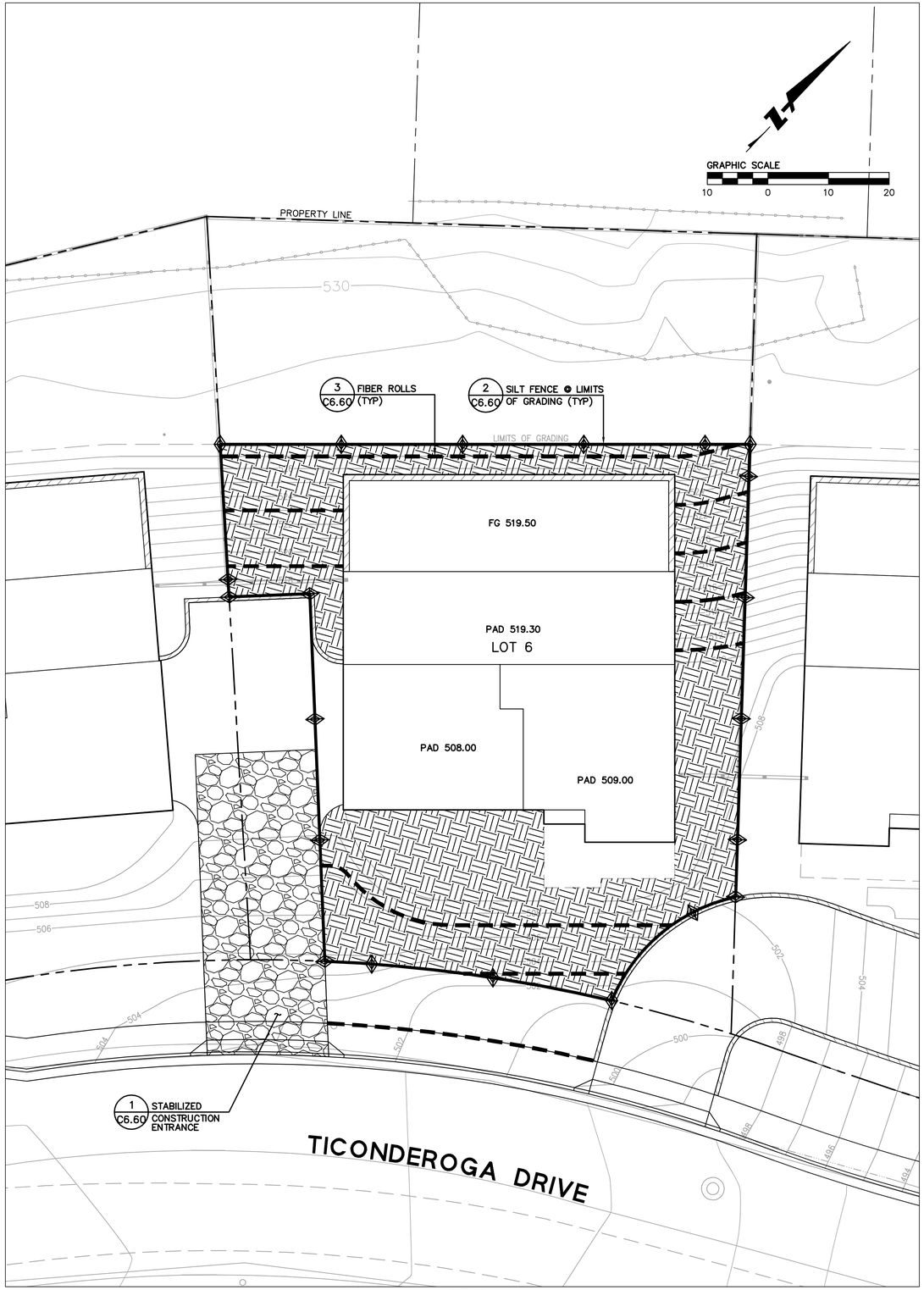
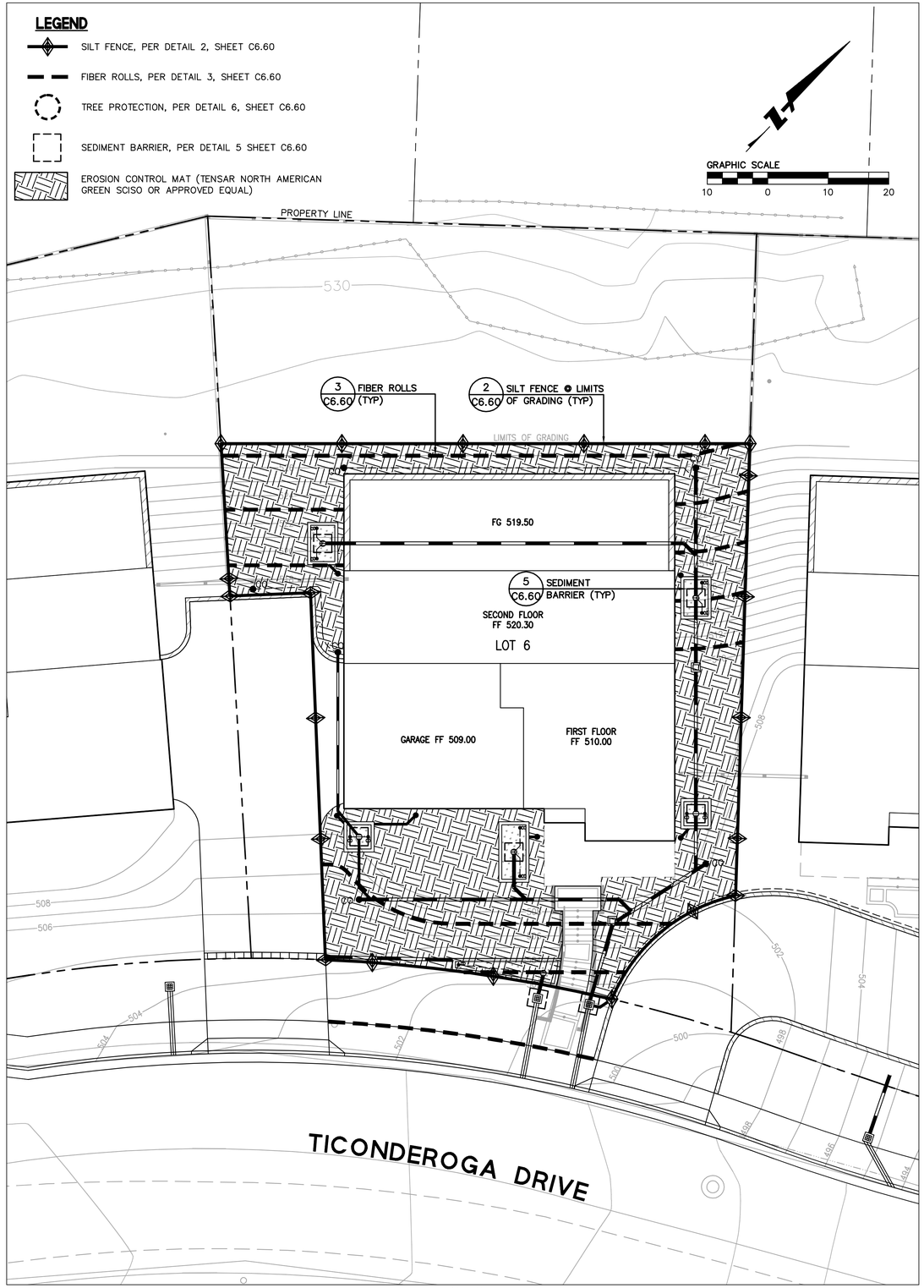


LOT 6
GRADING AND RETAINING WALL EROSION CONTROL PLAN
SCALE: 1"=10'

LEGEND

- SILT FENCE, PER DETAIL 2, SHEET C6.60
- FIBER ROLLS, PER DETAIL 3, SHEET C6.60
- TREE PROTECTION, PER DETAIL 6, SHEET C6.60
- SEDIMENT BARRIER, PER DETAIL 5 SHEET C6.60
- EROSION CONTROL MAT (TENSAR NORTH AMERICAN GREEN SCISO OR APPROVED EQUAL)



LOT 6
FOUNDATION AND CONSTRUCTION EROSION CONTROL PLAN
SCALE: 1"=10'

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HIGHLAND ESTATES
LOT 6 IMPROVEMENT PLANS
EROSION CONTROL PLANS

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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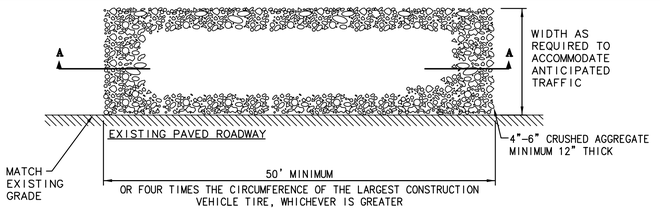
EROSION CONTROL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2. ALTHOUGH SPECIFIC LOCATIONS FOR SEDIMENT CONTROL FACILITIES ARE SHOWN ON THESE PLANS, IT IS INTENDED THIS EROSION CONTROL PLAN BE MODIFIED WHEN NECESSARY TO MEET FIELD CONDITIONS. BASIN AND TRAP SIZES AND ELEVATIONS MAY BE ADJUSTED AS LONG AS THE MINIMUM AREAS AND DEPTHS FOR SEDIMENT SETTLING AND STORAGE ARE NOT REDUCED.
3. THE INTENT OF THESE PLANS IS TO PROVIDE THE INITIAL CONCEPT FOR INTERIM EROSION CONTROL. THE CONTRACTOR SHALL UPDATE THE PLANS TO REFLECT CHANGING SITE CONDITIONS. PLAN UPDATES SHALL BE BASED UPON GENERAL SURVEY DATA. EROSION CONTROL EFFECTIVENESS SHALL ALSO BE MONITORED AND THE PLANS UPGRADED AS REQUIRED TO PREVENT SIGNIFICANT QUANTITIES OF SEDIMENT FROM ENTERING THE DOWNSTREAM DRAINAGE SYSTEM.
4. THIS PLAN MAY NOT COVER ALL THE SITUATIONS THAT ARISE DURING CONSTRUCTION DUE TO UNANTICIPATED FIELD CONDITIONS. IN GENERAL, THE CONTRACTOR IS RESPONSIBLE FOR KEEPING THE STORM RUN OFF FROM LEAVING THE SITE. FIBER ROLLS, SAND BAGS, AND SILT FENCES SHALL BE USED BY THE CONTRACTOR ON AN AS NEEDED BASIS TO INHIBIT SILT FROM LEAVING THE SITE AND ENTERING THE STORM DRAIN SYSTEM. ALL EXISTING, TEMPORARY, OR PERMANENT CATCH BASINS SHALL USE ONE OF THE SEDIMENT BARRIERS SHOWN.
5. THE CONTRACTOR WILL BE LIABLE FOR ANY AND ALL DAMAGES TO PUBLIC AND/OR PRIVATE OWNED AND MAINTAINED ROAD CAUSED BY THE CONTRACTOR'S GRADING ACTIVITIES, AND WILL BE RESPONSIBLE FOR THE CLEANUP OF ANY MATERIAL SPILLED ON ANY PUBLIC ROAD ON THE HAUL ROUTE. ADJACENT PUBLIC ROADS SHALL BE CLEANED AT THE END OF EACH WORKING DAY.
6. BEST MANAGEMENT PRACTICES SHALL BE OPERABLE YEAR AROUND.
7. DURING THE RAINY SEASON, ALL PAVED AREAS ARE TO BE KEPT CLEAR OF EARTH MATERIAL AND DEBRIS. THE SITE IS TO BE MAINTAINED SO AS TO MINIMIZE SEDIMENT-LADEN RUNOFF TO ANY STORM DRAIN SYSTEM.
8. ALL EROSION CONTROL FACILITIES MUST BE INSPECTED AND REPAIRED DAILY DURING THE RAINY SEASON. ALL SLOPES SHALL BE REPAIRED AS SOON AS POSSIBLE WHEN DAMAGED.
9. THE FIRST PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY. THE REMAINDER OF CONSTRUCTION EQUIPMENT (70 PERCENT), WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL BE REQUIRED TO USE EMULSIFIED FUELS.
10. THE SECOND PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 2 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY AND 50 PERCENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS. THE REMAINING 20 PERCENT OF CONSTRUCTION EQUIPMENT, WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL USE EMULSIFIED FUELS.
11. FOR ALL LARGER VEHICLES, INCLUDING CEMENT MIXERS OR OTHER DEVICES THAT MUST BE DELIVERED BY LARGE TRUCKS, VEHICLES SHALL BE EQUIPPED WITH CARB LEVEL THREE VERIFIED CONTROL DEVICES.
12. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY.
13. COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR REQUIRE ALL TRUCKS TO MAINTAIN AT LEAST TWO FEET OF FREEBOARD.
14. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY NON-TOXIC SOIL STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.
15. SWEEP DAILY (WITH WATER SWEEPERS) ALL PAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.
16. SWEEP PUBLIC STREETS ADJACENT TO CONSTRUCTION SITES DAILY (WITH WATER SWEEPERS) IF VISIBLE SOIL MATERIAL IS CARRIED ONTO THE STREETS.
17. HYDROSEED OR APPLY NON-TOXIC SOIL STABILIZERS TO INACTIVE CONSTRUCTION AREAS (PREVIOUSLY GRADED AREAS INACTIVE FOR TEN DAYS OR MORE).
18. TEMPORARY AND PERMANENT SLOPES GREATER THAN 3 FEET SHALL BE SEEDED UNLESS ALTERNATIVE MEASURES ARE USED.
19. SEED MIX FOR REVEGETATION AND HYDROSEEDING:
    NORTHERN CALIFORNIA COVER MIX BY ACBRIGHT OR EQUAL

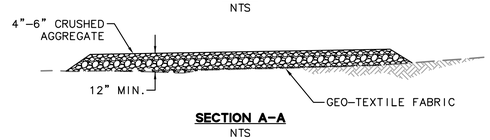
    30% BLUE WILDRYE
    30% MEADOW BARLEY
    20% ZORRO FESCUE
    10% PURPLE NEEDLE GRASS
    10% CALIFORNIA NATIVE WILDFLOWERS

    APPLY AT 40 POUNDS PER ACRE MINIMUM
20. ENCLOSE, COVER, WATER TWICE DAILY, OR APPLY NON-TOXIC SOIL BINDERS TO EXPOSED STOCKPILES (DIRT, SAND, ETC.). LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.
21. DISPOSAL AREAS FOR SEDIMENT TO BE DETERMINED IN FIELD. WHEN MATERIAL IS STOCKPILED, IT SHALL BE SURROUNDED BY A SILT FENCE/FIBER ROLLS.
22. LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.
23. INSTALL SANDBAGS OR OTHER EROSION CONTROL MEASURES TO PREVENT SILT RUNOFF TO PUBLIC ROADWAYS.
24. REPLANT VEGETATION IN DISTURBED AREAS AS SOON AS POSSIBLE.
25. INSTALL WHEEL WASHERS FOR ALL EXITING TRUCKS OR WASH OFF THE TIRES OR TRACKS OF ALL TRUCKS AND EQUIPMENT LEAVING THE CONSTRUCTION SITE.
26. INSTALL WIND BREAKS AT THE WINDWARD SIDES OF THE CONSTRUCTION AREAS.
27. SUSPEND EXCAVATION AND GRADING ACTIVITIES WHEN WIND (AS INSTANTANEOUS GUSTS) EXCEEDS 25 MILES PER HOUR.
28. NO GRADING SHALL BE ALLOWED DURING THE WINTER SEASON (OCTOBER 1 TO APRIL 30) TO AVOID POTENTIAL SOIL EROSION UNLESS APPROVED, IN WRITING, BY THE COMMUNITY DEVELOPMENT DIRECTOR. THE PROPERTY OWNERS SHALL SUBMIT A LETTER TO THE CURRENT PLANNING SECTION, AT LEAST TWO WEEKS PRIOR TO COMMENCEMENT OF GRADING, STATING THE DATE WHEN GRADING WILL BEGIN.
29. STABILIZE ALL DENUDED AREAS AND MAINTAIN EROSION CONTROL MEASURES CONTINUOUSLY BETWEEN OCTOBER 1 AND APRIL 30. STABILIZING SHALL INCLUDE BOTH PROACTIVE MEASURES, SUCH AS THE PLACEMENT OF STRAW BALES OR COIR NETTING, AND PASSIVE MEASURES, SUCH AS MINIMIZING VEGETATION REMOVAL AND REVEGETATING DISTURBED AREAS WITH VEGETATION THAT IS COMPATIBLE WITH THE SURROUNDING ENVIRONMENT.
30. STORE, HANDLE, AND DISPOSE OF CONSTRUCTION MATERIALS AND WASTES PROPERLY, SO AS TO PREVENT THEIR CONTACT WITH STORMWATER.
31. CONTROL AND PREVENT THE DISCHARGE OF ALL POTENTIAL POLLUTANTS, INCLUDING PAVEMENT CUTTING WASTES, PAINTS, CONCRETE, PETROLEUM PRODUCTS, CHEMICALS, WASH WATER OR SEDIMENTS, AND NON-STORMWATER DISCHARGES TO STORM DRAINS AND WATERCOURSES.
32. USE SEDIMENT CONTROLS OR FILTRATION TO REMOVE SEDIMENT WHEN DEWATERING SITE AND OBTAINING ALL NECESSARY PERMITS.
33. AVOID CLEANING, FUELING, OR MAINTAINING VEHICLES ON-SITE, EXCEPT IN A DESIGNATED AREA WHERE WASH WATER IS CONTAINED AND TREATED.
34. DELINEATE WITH FIELD MARKERS CLEARING LIMITS, SETBACKS, AND DRAINAGE COURSES.
35. PROTECT ADJACENT PROPERTIES AND UNDISTURBED AREAS FROM CONSTRUCTION IMPACTS USING VEGETATIVE BUFFER STRIPS, SEDIMENT BARRIERS OR FILTERS, DIKES, MULCHING, OR OTHER MEASURES AS APPROPRIATE.
36. PERFORM CLEARING AND EARTH-MOVING ACTIVITIES ONLY DURING DRY WEATHER.
37. LIMIT AND TIME APPLICATIONS OF PESTICIDES AND FERTILIZERS TO PREVENT POLLUTED RUNOFF.
38. LIMIT CONSTRUCTION ACCESS ROUTES AND STABILIZE DESIGNATED ACCESS POINTS.
39. ALL GRADED SURFACES AND MATERIALS, WHETHER FILLED, EXCAVATED, TRANSPORTED OR STOCKPILED, SHALL BE WETTED, PROTECTED OR CONTAINED IN SUCH A MANNER AS TO PREVENT ANY SIGNIFICANT NUISANCE FROM DUST, OR SPILLAGE UPON ADJOINING WATER BODY, PROPERTY, OR STREETS. EQUIPMENT AND MATERIALS ON THE SITE SHALL BE USED IN SUCH A MANNER AS TO AVOID EXCESSIVE DUST. A DUST CONTROL PLAN MAY BE REQUIRED AT ANYTIME DURING THE COURSE OF THE PROJECT.
40. A DUST PALLIATIVE SHALL BE APPLIED TO THE SITE WHEN REQUIRED BY THE COUNTY. THE TYPE AND RATE OF APPLICATION SHALL BE RECOMMENDED BY THE SOILS ENGINEER AND APPROVED BY THE DEPARTMENT OF PUBLIC WORKS, THE PLANNING AND BUILDING DEPARTMENT'S GEOTECHNICAL SECTION, AND THE REGIONAL WATER QUALITY CONTROL BOARD.
41. IF NO WORK HAS PROGRESSED FOR A PERIOD OF 6-WEEKS, FINAL DRAINAGE AND EROSION CONTROL IMPROVEMENTS SHALL BE INSTALLED IN ACCORDANCE WITH AN APPROVED WINTERIZATION PLAN.
42. PADS SHALL BE GRADED TO MINIMIZE STANDING WATER. SPECIFIC LOCATIONS REQUIRING SUPPLEMENTAL GRADING TO ACHIEVE ACCEPTABLE DRAINAGE SHALL BE DETERMINED BY THE CONSTRUCTION MANAGER. ALL SPOILS AND SOIL STOCKPILES REMAINING ON SITE SHALL BE ENCIRCLED BY SILT FENCES/FIBER ROLLS.
43. STUBBED OUT ENDS OF PARTIALLY COMPLETED SUBDRAINS SHALL BE WRAPPED WITH AN APPROVED FABRIC TO PREVENT SOIL AND DEBRIS FROM ENTERING THE PIPE.
44. HAUL ROADS ARE CURRENTLY NOT SHOWN ON THE PLANS. EROSION CONTROL MEASURES SHALL BE TAKEN TO MINIMIZE EROSION RELATED TO HAUL ROADS.
45. GRADING SCHEDULE SHALL BE SUBMITTED FOR APPROVAL TO SAN MATEO COUNTY PUBLIC WORKS BY AUGUST 15.
46. EROSION CONTROL POINT OF CONTACT:
    NOEL CHAMBERLAIN, NEXGEN BUILDERS INC.
    225 DEMETER STREET
    EAST PALO ALTO, CA 94303
    PHONE #: 650-322-5800
    CELL #: 650-444-3089
    EMAIL: noel@nexgenbuilders.com
47. SHOULD IT APPEAR THAT THE EROSION CONTROL PLAN, OR ANY OTHER MATTER THERETO, IS NOT SUFFICIENTLY DETAILED OR EXPLAINED ON THESE PLANS, THE CONTRACTOR SHALL CONTACT THE BKF PROJECT ENGINEER AT (650) 482-6300 FOR SUCH FURTHER EXPLANATIONS AS MAY BE NECESSARY.
48. AREAS DELINEATED ON PLANS FOR PARKING, CLEARING & GRUBBING, STORAGE, ETC. SHALL NOT BE ENLARGED OR "RUN OVER."
49. CONSTRUCTION SITES ARE REQUIRED TO HAVE EROSION CONTROL MATERIALS ON-SITE DURING THE "OFF-SEASON."
50. DUST CONTROL IS REQUIRED YEAR-ROUND.
51. EROSION CONTROL MATERIALS SHALL BE STORED ON-SITE.
52. USE OF PLASTIC SHEETING BETWEEN OCTOBER 1ST AND APRIL 30TH IS NOT ACCEPTABLE, UNLESS FOR USE ON STOCKPILES WHERE THE STOCKPILE IS ALSO PROTECTED WITH FIBER ROLLS CONTAINING THE BASE OF THE STOCKPILE.
53. TREE PROTECTION SHALL BE IN PLACE BEFORE ANY GRADING, EXCAVATING OR GRUBBING IS STARTED.

ALL EROSION CONTROL MEASURES SHALL BE IN PLACE BY OCTOBER 1ST THROUGH APRIL 30TH AND MAINTAINED DURING ALL PHASES OF CONSTRUCTION.



PLAN
NTS

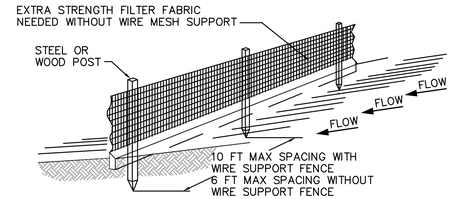


SECTION A-A
NTS

NOTES:

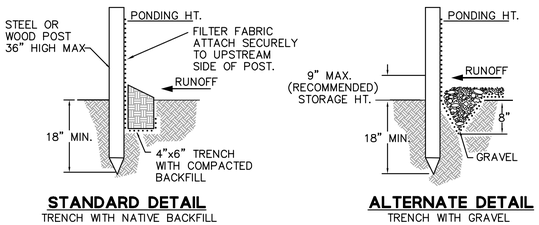
1. ALL CONSTRUCTION ENTRANCES SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USE TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAYS SHALL BE REMOVED IMMEDIATELY.
2. WHEELS SHALL BE CLEAN PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAYS. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE THROUGH USE OF INLET PROTECTION (E.G. SAND BAGS OR OTHER APPROVED METHODS).
3. THE MATERIAL FOR CONSTRUCTION OF THE PAD SHALL BE 4" TO 6" STONE.
4. THE THICKNESS OF THE PAD SHALL NOT BE LESS THAN 12".
5. THE WIDTH OF THE PAD SHALL NOT BE LESS THAN THE FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
6. THE LENGTH OF THE PAD SHALL NOT BE LESS THAN 50'.

1 – STABILIZED CONSTRUCTION ENTRANCE
NTS



NOTES:

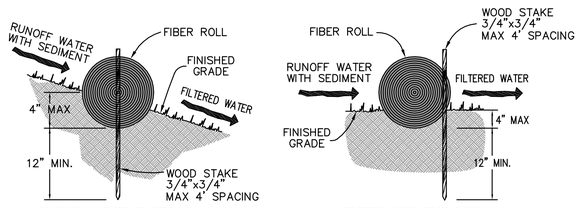
1. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
2. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
3. SILT FENCE SHALL BE PLACED ON SLOPE TO MAXIMIZE PONDING EFFICIENCY.



STANDARD DETAIL
TRENCH WITH NATIVE BACKFILL

ALTERNATE DETAIL
TRENCH WITH GRAVEL

2 – SILT FENCE
NTS



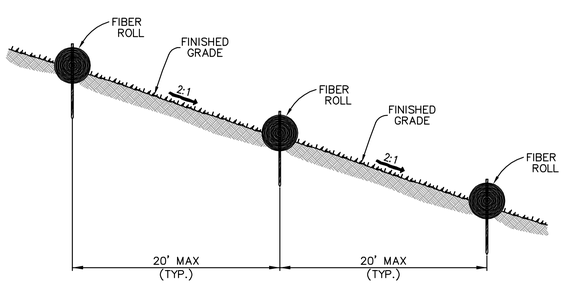
ENTRENCHMENT DETAIL IN SLOPE AREA

ENTRENCHMENT DETAIL IN FLAT AREA

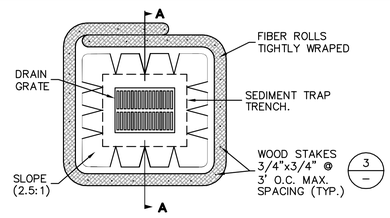
NOTES:

1. FIBER ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3" TO 4" DEEP, DUG ON CONTOUR.
2. ADJACENT ROLLS SHALL TIGHTLY ABUT.
3. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND FIBER ROLL.

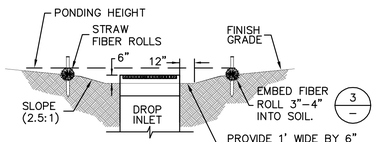
3 – FIBER ROLL
NTS



4 – FIBER ROLL INSTALLATION ON SLOPE
(TIME FRAME: BETWEEN FINAL PAVING OPERATIONS AND PROJECT COMPLETION)
NTS



PLAN VIEW



SECTION A-A

NOTES:

1. PLACE FIBER ROLLS AROUND THE INLET CONSISTENT WITH BASIN SEDIMENT BARRIER DETAIL ON THIS SHEET. (FIBER ROLLS ARE TUBES MADE FROM STRAW BOUND W/ PLASTIC NETTING. THEY ARE APPROX. 8" DIA. AND 20 – 30 FT. LONG.)
2. FIBER ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE FIBER ROLL IN A TRENCH, 3" – 4" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND FIBER ROLL.
3. THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BY-PASSING THE INLET. EXCAVATION OF A BASIN ADJACENT TO THE DROP INLET OR A TEMPORARY DIKE ON THE DOWNSLOPE OF THE STRUCTURE MAY BE NECESSARY.

5 – SEDIMENT BARRIER
(TIME FRAME: AREA DRAINS – BETWEEN AREA DRAIN INSTALLATION AND PROJECT COMPLETION
CURB INLETS – BETWEEN CURB INLET INSTALLATION AND FINAL PAVING OPERATIONS)
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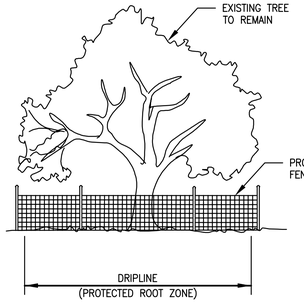

TREE PROTECTION FENCE

NOTES:

1. THE APPLICANT SHALL ESTABLISH AND MAINTAIN TREE PROTECTION ZONES THROUGHOUT THE ENTIRE LENGTH OF THE PROJECT.
2. TREE PROTECTION ZONES SHALL BE DELINEATED USING 4-FOOT TALL ORANGE PLASTIC FENCING SUPPORTED BY POLES POUNDED INTO THE GROUND, LOCATED AS CLOSE TO THE DRIPLINES AS POSSIBLE WHILE STILL ALLOWING ROOM FOR CONSTRUCTION/GRADING TO SAFELY CONTINUE.
3. THE APPLICANT SHALL MAINTAIN TREE PROTECTION ZONES FREE OF EQUIPMENT AND MATERIALS STORAGE AND SHALL NOT CLEAN ANY EQUIPMENT WITHIN THESE AREAS.
4. SHOULD ANY LARGE ROOTS OR LARGE MASSES OF ROOTS NEED TO BE CUT, THE ROOTS SHALL BE INSPECTED BY A CERTIFIED ARBORIST OR REGISTERED FORESTER PRIOR TO CUTTING. ANY ROOT CUTTING SHALL BE MONITORED BY AN ARBORIST OR FORESTER AND DOCUMENTED.
5. ROOTS TO BE CUT SHOULD BE SEVERED CLEANLY WITH A SAW OR TOPPERS.
6. NORMAL IRRIGATION SHALL BE MAINTAINED, BUT OAKS SHOULD NOT NEED SUMMER IRRIGATION.
7. THE ABOVE INFORMATION SHALL BE ON-SITE AT ALL TIMES.

6 – TREE PROTECTION FENCE
NTS

CALIFORNIA STORMWATER QUALITY ASSOCIATION (CASQA) STANDARD DETAIL REFERENCES

(CALIFORNIA STORMWATER BMP HANDBOOK CONSTRUCTION, DATED NOVEMBER 2009)

NOTE: ALTHOUGH SPECIFIC LOCATIONS FOR SPECIFIC BMPS ARE SHOWN ON THESE PLANS, IT IS INTENDED FOR THE CONTRACTOR TO APPLY APPROPRIATE BMPS WHEN NECESSARY TO MEET FIELD CONDITIONS.

EROSION CONTROL BMPS:

- EC-1 SCHEDULING
- EC-2 PRESERVATION OF EXISTING VEGETATION
- EC-3 HYDRAULIC MULCH
- EC-4 HYDROSEEDING
- EC-5 SOIL BINDERS
- EC-6 STRAW MULCH
- EC-7 GEOTEXTILES & MATS
- EC-8 WOOD MULCHING
- EC-9 EARTH DIKES AND DRAINAGE SWALES
- EC-10 VELOCITY DISSIPATION DEVICES
- EC-11 SLOPE DRAINS
- EC-12 STREAMBANK STABILIZATION
- EC-14 COMPOST BLANKETS
- EC-15 SOIL PREPARATION/ROUGHENING
- EC-16 NON-VEGETATIVE STABILIZATION

TEMPORARY SEDIMENT CONTROL BMPS:

- SE-1 SILT FENCE
- SE-2 SEDIMENT BASIN
- SE-3 SEDIMENT TRAP
- SE-4 CHECK DAM
- SE-5 FIBER ROLLS
- SE-6 GRAVEL BAG BERM
- SE-7 STREET SWEEPING AND VACUUMING
- SE-8 SANDBAG BARRIER
- SE-9 STRAW BALE BARRIER
- SE-10 STORM DRAIN INLET PROTECTION
- SE-11 ACTIVE TREATMENT SYSTEMS
- SE-12 TEMPORARY SILT DIKE
- SE-13 COMPOST SOCKS AND BERMS
- SE-14 BIOFILTER BAGS

WIND EROSION CONTROL BMPS:

- WE-1 WIND EROSION CONTROL

TEMPORARY TRACKING CONTROL BMPS:

- TC-1 STABILIZED CONSTRUCTION ENTRANCE/EXIT
- TC-2 STABILIZED CONSTRUCTION ROADWAY
- TC-3 ENTRANCE/OUTLET TIRE WASH

NON-STORMWATER MANAGEMENT BMPS:

- NS-1 WATER CONSERVATION PRACTICES
- NS-2 DEWATERING OPERATIONS
- NS-3 PAVING AND GRINDING OPERATIONS
- NS-4 TEMPORARY STREAM CROSSING
- NS-5 CLEAR WATER DIVERSION
- NS-6 ILLICIT CONNECTION/DISCHARGE
- NS-7 POTABLE WATER/IRRIGATION
- NS-8 VEHICLE AND EQUIPMENT CLEANING
- NS-9 VEHICLE AND EQUIPMENT FUELING
- NS-10 VEHICLE AND EQUIPMENT MAINTENANCE
- NS-11 PILE DRIVING OPERATIONS
- NS-12 CONCRETE CURING
- NS-13 CONCRETE FINISHING
- NS-14 MATERIAL AND EQUIPMENT USE
- NS-15 DEMOLITION ADJACENT TO WATER
- NS-16 TEMPORARY BATCH PLANTS

WASTE MANAGEMENT & MATERIALS POLLUTION CONTROL BMPS:

- WM-1 MATERIAL DELIVERY AND STORAGE
- WM-2 MATERIAL USE
- WM-3 STOCKPILE MANAGEMENT
- WM-4 SPILL PREVENTION AND CONTROL
- WM-5 SOLID WASTE MANAGEMENT
- WM-6 HAZARDOUS WASTE MANAGEMENT
- WM-7 CONTAMINATED SOIL MANAGEMENT
- WM-8 CONCRETE WASTE MANAGEMENT
- WM-9 SANITARY/SEPTIC WASTE MANAGEMENT
- WM-10 LIQUID WASTE MANAGEMENT

255 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
PHONE: (650) 482-6300
FAX: (650) 482-6399

BKF ENGINEERS | SURVEYORS | PLANNERS

REGISTERED PROFESSIONAL ENGINEER MATTHEW T. HAYA No. 043971 CIVIL STATE OF CALIFORNIA

HIGHLAND ESTATES
LOT 6 IMPROVEMENT PLANS
EROSION CONTROL DETAILS AND NOTES

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

No.	Revisions

Date 05/10/2018
Scale AS SHOWN
Design JT
Drawn MD
Approved RH
Job No 950168-20

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PLOT DATE: 08-28-18
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REDWOOD CITY CALIFORNIA

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APPROVED BY: N.R.C.
SCALE: NONE
DATE: 6/95
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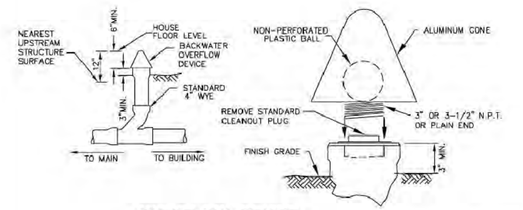
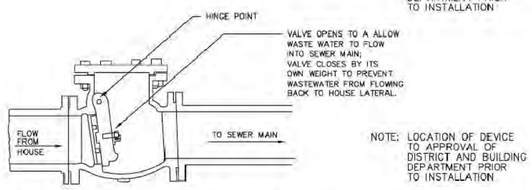


OVERFLOW DEVICE

NOTE: LOCATION OF DEVICE TO APPROVAL OF DISTRICT AND BUILDING DEPARTMENT PRIOR TO INSTALLATION



NOTE: LOCATION OF DEVICE TO APPROVAL OF DISTRICT AND BUILDING DEPARTMENT PRIOR TO INSTALLATION

BACKFLOW DEVICE

OVERFLOW AND BACKFLOW DEVICE DETAIL

C-9

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REDWOOD CITY CALIFORNIA

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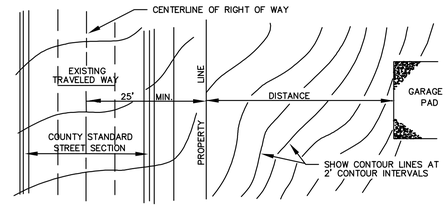
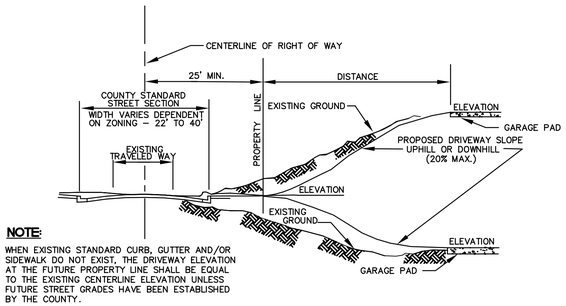


DRIVEWAY PLAN VIEW



NOTE:
WHEN EXISTING STANDARD CURB, GUTTER AND/OR SIDEWALK DO NOT EXIST, THE DRIVEWAY ELEVATION AT THE FUTURE PROPERTY LINE SHALL BE EQUAL TO THE EXISTING CENTERLINE ELEVATION UNLESS FUTURE STREET GRADES HAVE BEEN ESTABLISHED BY THE COUNTY.

DRIVEWAY PROFILE VIEW

D-7

SAN MATEO COUNTY DEPARTMENT OF PUBLIC WORKS
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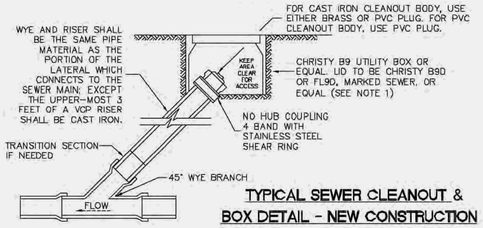
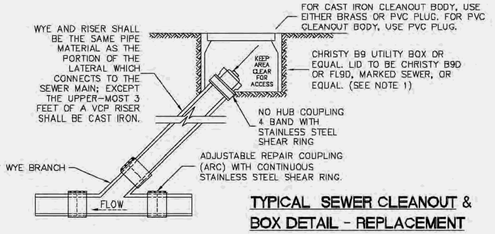


TYPICAL SEWER CLEANOUT & BOX DETAIL - NEW CONSTRUCTION



TYPICAL SEWER CLEANOUT & BOX DETAIL - REPLACEMENT

NOTES:

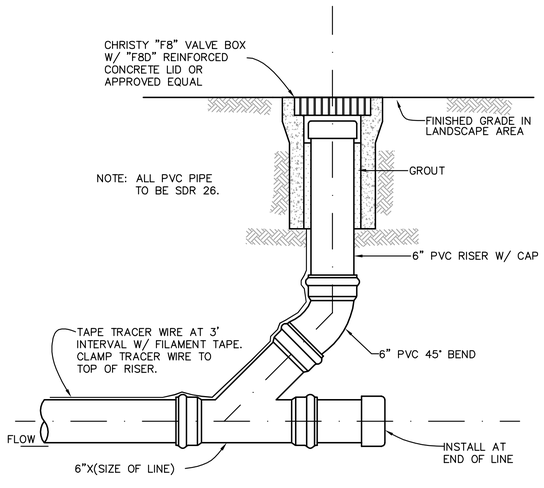
1. WHEN BOX IS SUBJECT TO TRAFFIC LOADING, PROVIDE CAST IRON LID.
2. BOX TO BE PLACED SUCH THAT CLEANOUT CAP CAN BE EASILY REMOVED. SEE ILLUSTRATION.
3. PROPERTY OWNER IS RESPONSIBLE FOR MAINTAINING LATERAL FROM THE PROPERTY STRUCTURE TO DISTRICT MAIN. DISTRICT PROVIDES COURTESY SERVICE FROM DISTRICT STANDARD PROPERTY LINE CLEANOUT TO THE MAIN.
4. SDR-26 WYE, RISER, CLEANOUT BODY AND CAP CAN BE USED ONLY WHEN LATERAL FROM PROPERTY LINE TO MAIN LINE IS REPLACED WITH SDR-26.
5. WHEN ENTIRE LATERAL IS REPLACED, LATERAL FROM PROPERTY LINE CLEANOUT TO MAIN LINE SHALL HAVE A 14-1-UF GUAGE MINIMUM SINGLE CONDUCTOR TRACER WIRE TAPED TO THE ENTIRE LENGTH OF THE PIPE.

CONSTRUCTION OF A STANDARD CLEANOUT REQUIRES MULTIPLE INSPECTIONS BY DISTRICT PERSONEL:
1. FIRST INSPECTION - TO INSPECT WYE AND RISER. WYE AND RISER MUST BE EXPOSED.
2. SECOND INSPECTION - TO INSPECT PLACEMENT OF BOX, LID AND LOCATION OF CLEANOUT WITHIN BOX .

C-3

6 SAN MATEO COUNTY OVERFLOW AND BACKFLOW DEVICE DETAIL

NTS

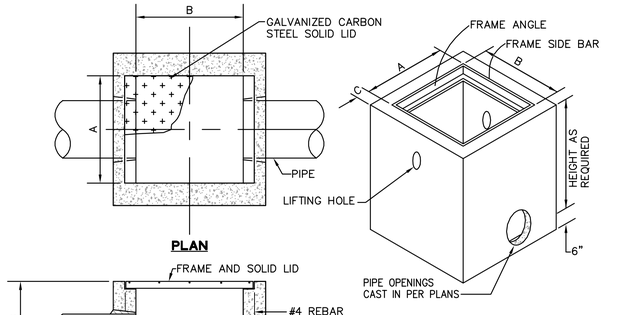


3 CLEANOUT

NTS

5 SAN MATEO COUNTY DRIVEWAY PLAN AND PROFILE VIEWS

NTS



CENTRAL PRECAST

MODEL	A	B	C
CP1212	12	12	4
CP2424	24	24	5

NOTES:

1. DROP INLET SHALL BE CENTRAL PRECAST OR APPROVED EQUAL.
2. AN ENGINEERED PRECAST DROP INLET UNIT CAN BE USED AS AN ALTERNATE.

2 DROP INLET

NTS

4 SAN MATEO COUNTY TYPICAL SEWER CLEANOUT & BOX DETAIL

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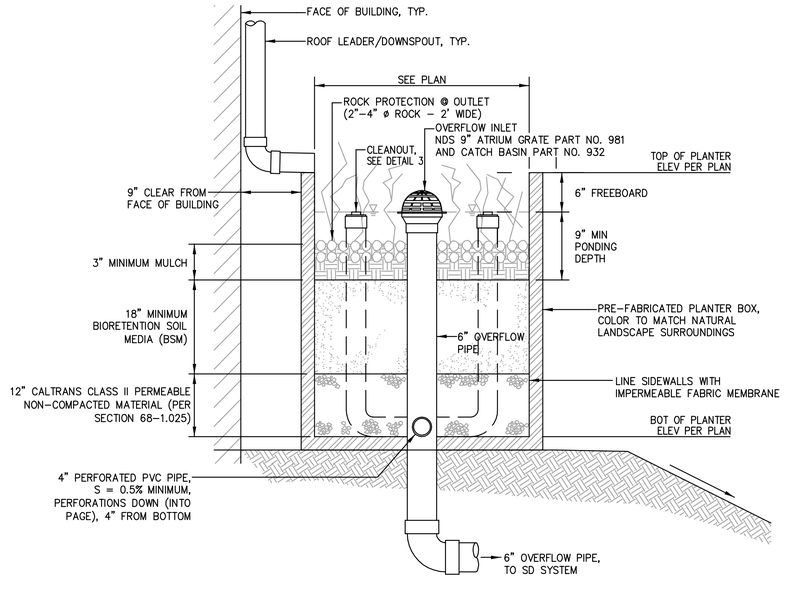

1 FLOW-THROUGH PLANTER (FTP)

BKF ENGINEERS
255 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
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BKF ENGINEERS | SURVEYORS | PLANNERS

REGISTERED PROFESSIONAL ENGINEER NATHAN R. MARKA No. 043971 CIVIL STATE OF CALIFORNIA

HIGHLAND ESTATES
LOT 6 IMPROVEMENT PLANS
CONSTRUCTION DETAILS

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

Revisions

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SCALE: NONE
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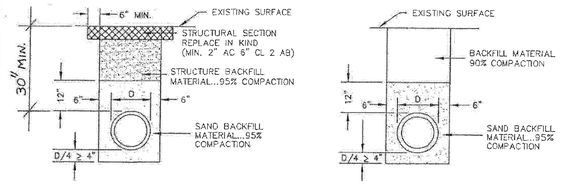
REVISED: 7/97



TYPE A (IN ROADWAY)

TYPE B (OUTSIDE ROADWAY)

NOTES

1. SAND.... MATERIAL FREE FROM ORGANIC MATTER AND CLAY WITH A SIEVE GRADATION BY WEIGHT AS FOLLOWS:

SIEVE SIZE	% PASSING SIEVE
No. 4	100
No. 200	0–5

2. STRUCTURE BACKFILL MATERIAL... MATERIAL WITH SAND EQUIVALENT NOT LESS THAN 20 AND SIEVE GRADATION BY WEIGHT AS FOLLOWS:

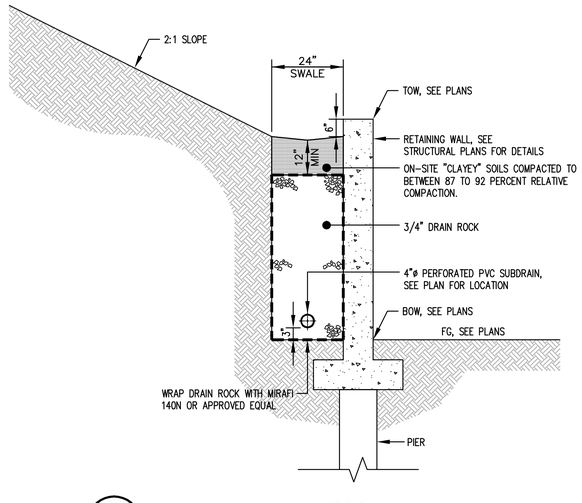
SIEVE SIZE	% PASSING SIEVE
3"	100
No. 4	35–100
No. 30	20–100

3. BACKFILL MATERIAL... MATERIAL FROM EXCAVATION, FREE FROM STONES OR LUMPS EXCEEDING 3 INCHES GREATEST DIMENSION, ORGANIC MATTER, OR OTHER UNSATISFACTORY MATERIAL.

STANDARD TRENCH BACKFILL AND BEDDING DETAIL

W–10

2 – SAN MATEO COUNTY STANDARD TRENCH BACKFILL & BEDDING DETAIL
NTS



1 – SUBDRAIN
NTS

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ENGINEERS | SURVEYORS | PLANNERS

REGISTERED PROFESSIONAL ENGINEER SUNWHAN TANG No. 067726 CIVIL STATE OF CALIFORNIA

HIGHLAND ESTATES
LOT 6 IMPROVEMENT PLANS
CONSTRUCTION DETAILS

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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SITE KEY:

1. WASH OUT PIT, PER CASQA STANDARD WM-8, CONCRETE WASTE MANAGEMENT (REFER TO DETAIL 2, SHEET C6.90).
2. TOILETS AND HAND WASH STATION
3. MATERIALS STORAGE
4. DEBRIS BOX LOCATION
5. TOOL STORAGE LOCKER
6. JOB SITE TRAILER
7. STOCKPILE AREA
8. CONSTRUCTION EQUIPMENT PARKING

GRAPHIC SCALE
30 0 30 60

CONSTRUCTION NOTES:

1. CONSTRUCTION ACCESS ROUTE SHALL BE FROM TICONDEROGA DRIVE TO INTERSTATE 280:

   HEAD NORTHEAST ON TICONDEROGA DR TOWARD POLHEMUS RD.

   TURN RIGHT ONTO POLHEMUS RD.

   TURN LEFT TO MERGE ONTO CA-92 TOWARD I-280.
2. STOCKPILE TO CONFORM TO CASQA STANDARD WM-3, STOCKPILE MANAGEMENT (REFER TO DETAIL 1, SHEET C5.90).
3. CONSTRUCTION VEHICLE PARKING AREA SHALL HAVE 4"-6" AGGREGATE OVER GEO-TEXTILE FABRIC.

NEW BRUNSWICK DRIVE
COBBLEHILL PLACE
TICONDEROGA DRIVE
ALLEGHENY WAY
PROPERTY LINE
PROPOSED BUILDING ENVELOPE
PROPOSED BUILDING ENVELOPE
PROPOSED BUILDING ENVELOPE
PROPOSED BUILDING ENVELOPE
LOT 5
LOT 6
LOT 7
LOT 8
25' E.V.A.E. AND PRIVATE ACCESS EASEMENT
E.V.A.E AND PRIVATE ACCESS EASEMENT
E.V.A.E AND PRIVATE ACCESS EASEMENT
NO BUILD ZONE
(E) FIRE HYDRANT
18 TOTAL 8'x20' CONSTRUCTION PARKING SPACES
SWK
PRD

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HIGHLAND ESTATES
LOT 6 IMPROVEMENT PLANS
LOGISTICS PLAN

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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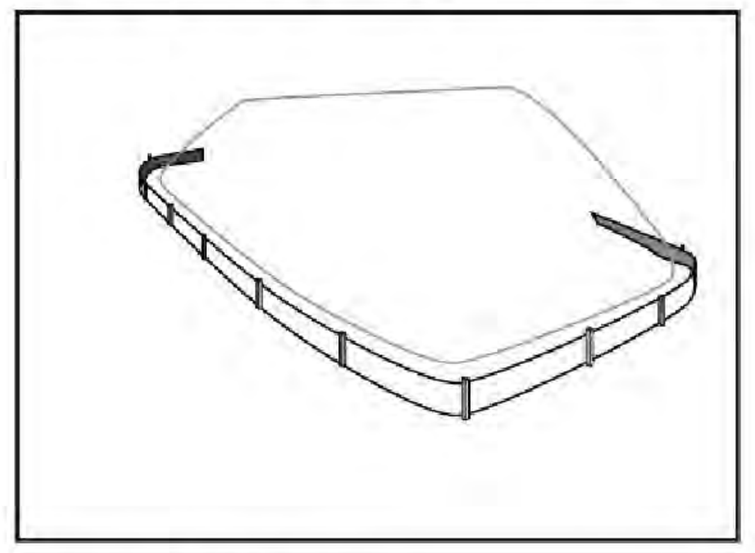
Stockpile Management WM-3



Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☒
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ Primary Category
☒ Secondary Category

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose
Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, soil amendments, sand, paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called "cold mix" asphalt), and pressure treated wood.

Suitable Applications
Implement in all projects that stockpile soil and other loose materials.

Limitations
- Plastic sheeting as a stockpile protection is temporary and hard to manage in windy conditions. Where plastic is used, consider use of plastic tarps with nylon reinforcement which may be more durable than standard sheeting.
- Plastic sheeting can increase runoff volume due to lack of infiltration and potentially cause perimeter control failure.
- Plastic sheeting breaks down faster in sunlight.
- The use of plastic materials should be avoided when feasible and photodegradable plastics should not be used.

Implementation
Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

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Construction
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Stockpile Management WM-3

- On larger sites, a minimum of 50 ft separation from concentrated flows of stormwater, drainage courses, and inlets is recommended.
- All stockpiles are required to be protected immediately if they are not scheduled to be used within 14 days.
- Protect all stockpiles from stormwater run-on using temporary perimeter sediment barriers such as compost berms (SE-13), temporary silt dikes (SE-12), fiber rolls (SE-5), silt fences (SE-1), sandbags (SE-8), gravel bags (SE-6), or biofilter bags (SE-14). Refer to the individual fact sheet for each of these controls for installation information.
- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information, see WE-1, Wind Erosion Control.
- Manage stockpiles of contaminated soil in accordance with WM-7, Contaminated Soil Management.
- Place bagged materials on pallets and under cover.
- Ensure that stockpile coverings are installed securely to protect from wind and rain.
- Some plastic covers withstand weather and sunlight better than others. Select cover materials or methods based on anticipated duration of use.

Protection of Non-Active Stockpiles
Non-active stockpiles of the identified materials should be protected further as follows:

Soil stockpiles
- Cover and project soil stockpiles with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- Consider temporary vegetation for topsoil piles that will be stockpiled for extended periods.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub base
- Provide covers and protect these stockpiles with a temporary perimeter sediment barrier at all times.

Stockpiles of "cold mix"
- Cover cold mix stockpiles and place them on plastic sheeting (or comparable material) and surround the stockpiles with a berm all times.

Stockpiles of fly ash, stucco, hydrated lime
- Cover stockpiles of materials that may raise the pH of runoff (i.e., basic materials) with plastic and surround the stockpiles with a berm at all times.

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Stockpile Management WM-3

Stockpiles/Storage of wood (Pressure treated with chromated copper arsenate or ammoniacal copper zinc arsenate)
- Cover treated wood with plastic sheeting (or comparable material) and surround with a berm at all times.

Protection of Active Stockpiles
Active stockpiles of the identified materials should be protected as follows:

- All stockpiles should be covered and protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" and treated wood, and basic materials should be placed on and covered with plastic sheeting or comparable material and surrounded by a berm prior to the onset of precipitation.
- The downstream perimeter of an active stockpile should be protected with a linear sediment barrier or berm and runoff should be diverted around or away from the stockpile on the upstream perimeter.

Costs
For cost information associated with stockpile protection refer to the individual erosion or sediment control BMP fact sheet considered for implementation (For example, refer to SE-1 Silt Fence for installation of silt fence around the perimeter of a stockpile.)

Inspection and Maintenance
- Stockpiles must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- It may be necessary to inspect stockpiles covered with plastic sheeting more frequently during certain conditions (for example, high winds or extreme heat).
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.
- Sediment shall be removed when it reaches one-third of the barrier height.

References
Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

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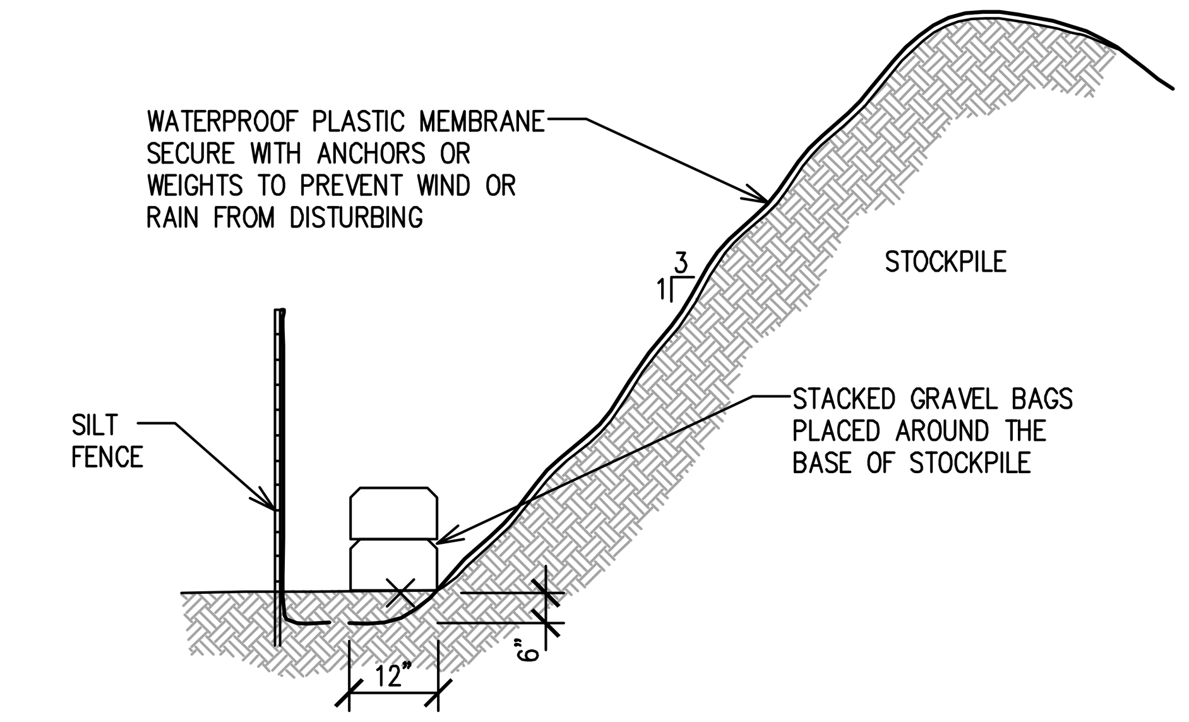
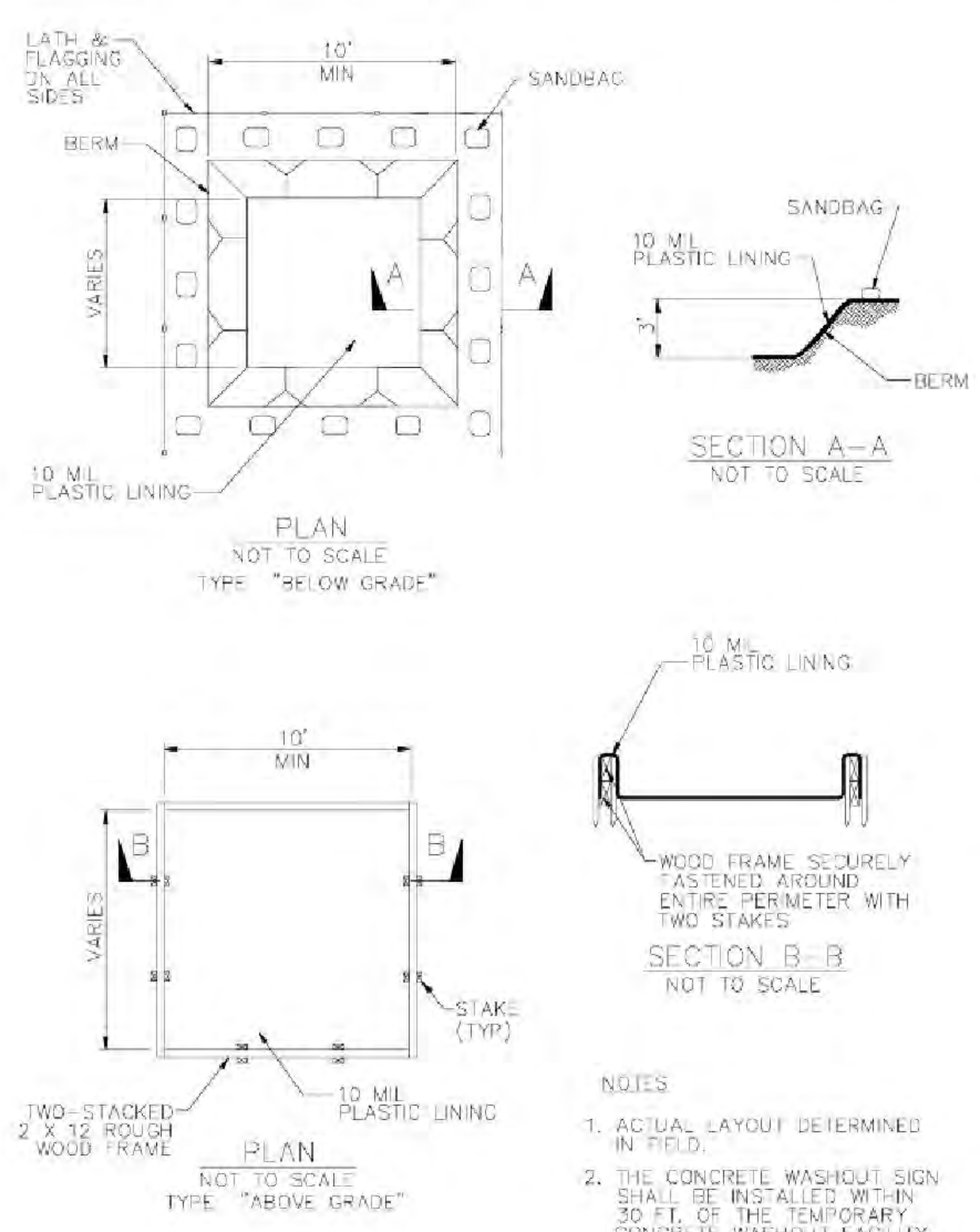
WM-3 – STOCKPILE MANAGEMENT
NTS



1 / –
STOCKPILE COVERING
(PER CASQA STANDARD WM–3, STOCKPILE MANAGEMENT, SEE LEFT)
NTS

Concrete Waste Management WM-8



November 2009 California Stormwater BMP Handbook 6 of 7
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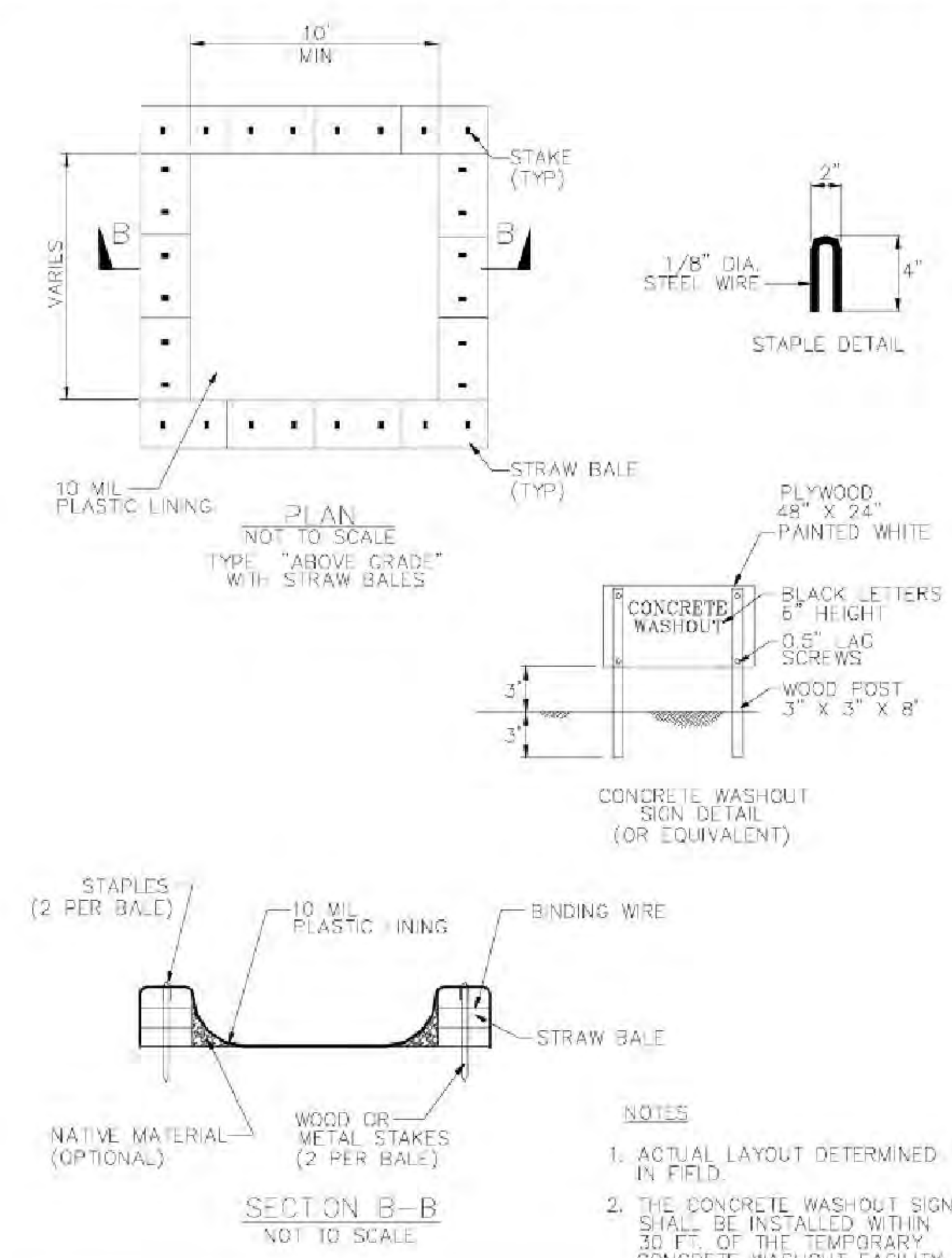
Concrete Waste Management WM-8



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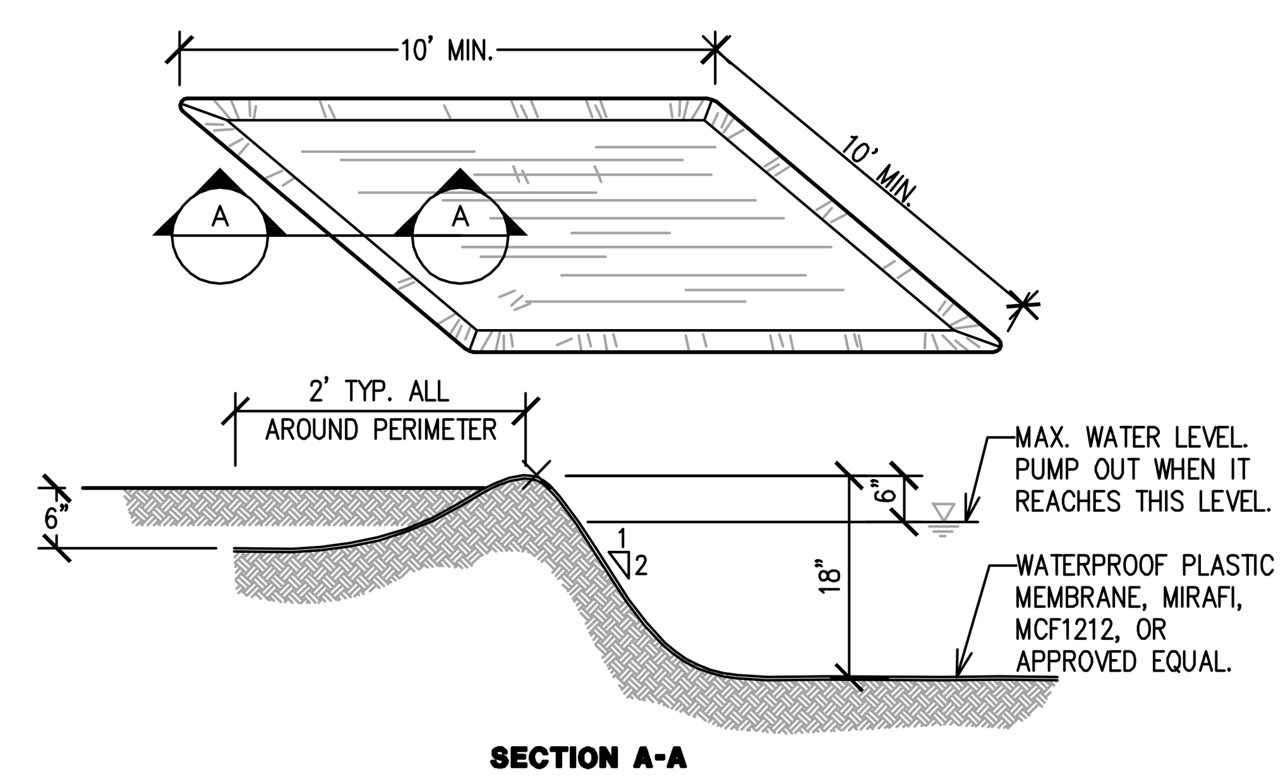
WM-8 – CONCRETE WASTE MANAGEMENT
NTS



2 / –
TEMPORARY WASHOUT PIT
(PER CASQA STANDARD WM–8, CONCRETE WASTE MANAGEMENT, SEE LEFT)
NTS

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HIGHLAND ESTATES
LOT 6 IMPROVEMENT PLANS
CASQA STANDARD DETAILS
CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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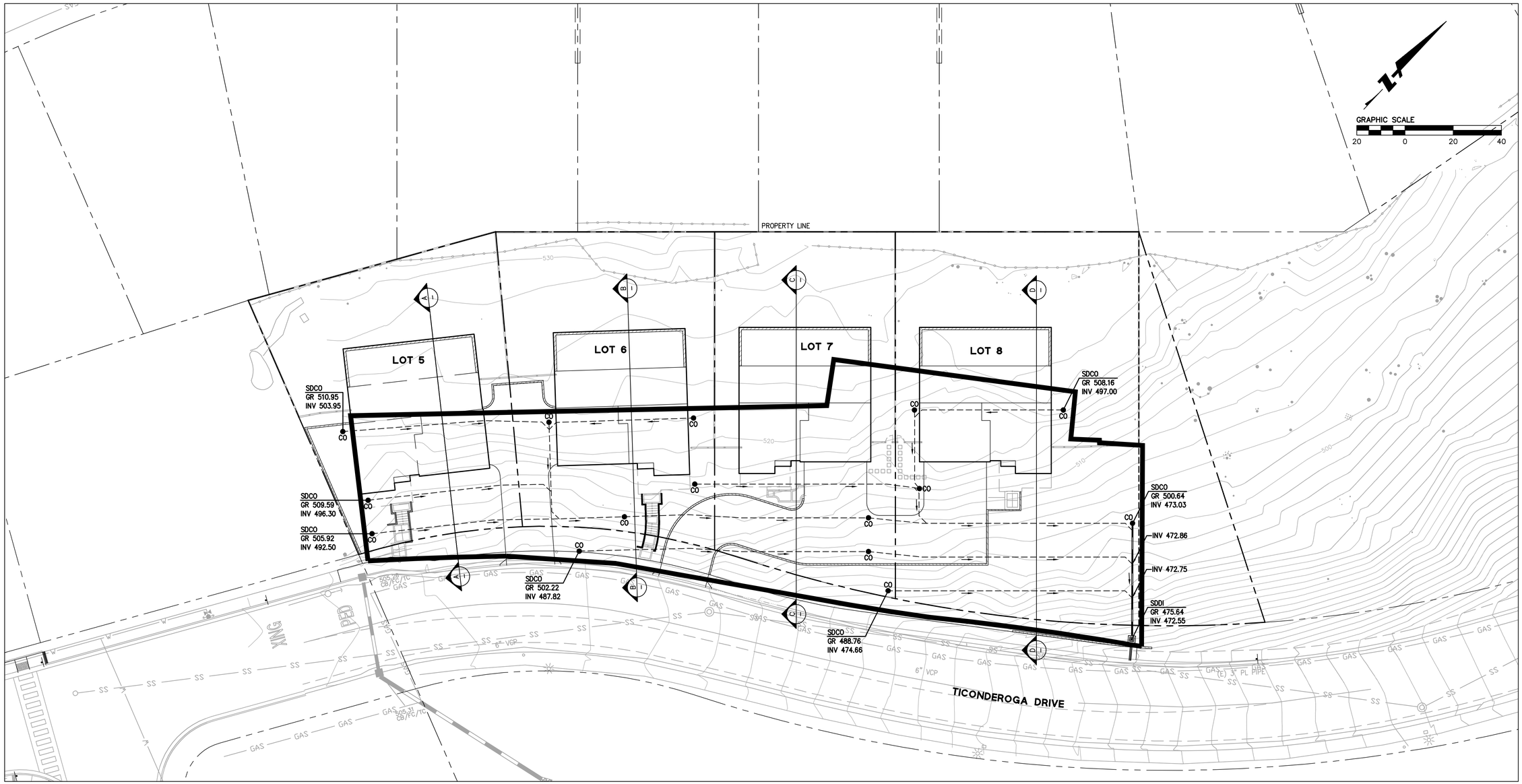

LEGEND

AREA OF GEOTECHNICAL MITIGATION GRADING (SEE GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION).

4" PERFORATED SUBDRAIN FOR KEYWAY. NOTE THE FINAL LOCATIONS OF THE SUBDRAIN WILL BE DETERMINED BY CORNERSTONE DURING CONSTRUCTION, ARROW IS ANTICIPATED DIRECTION OF FLOW

BKF HAS PREPARED THESE PLANS BASED ON CORNERSTONE EARTH GROUP GEOTECHNICAL INVESTIGATION AND RECOMMENDATIONS.

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JONATHAN TANG, P.E.

THE UNDERSIGNED GEOTECHNICAL ENGINEER HAS PERFORMED A GEOTECHNICAL INVESTIGATION AT THE SITE INCLUDING PERFORMING FIELD INVESTIGATION, LABORATORY TESTING, ENGINEERING ANALYSIS, AND REPORT PREPARATION AS DESCRIBED IN THE OCTOBER 30, 2015 REPORT BY CORNERSTONE EARTH GROUP, INC. FOR THE PROJECT. THE GEOTECHNICAL ASPECTS OF THESE PLAN SHEETS HAVE BEEN PREPARED AND REVIEWED BY THE UNDERSIGNED GEOTECHNICAL ENGINEER AND ARE BASED UPON LIMITATIONS DESCRIBED IN THE GEOTECHNICAL INVESTIGATION REPORT. THESE PLANS ARE NOT A STAND-ALONE DOCUMENT AND SHOULD BE CONSIDERED AS PART OF THE GEOTECHNICAL INVESTIGATION REPORT. THE GEOTECHNICAL DESIGN ASPECTS IN THESE PLANS ARE CONTINGENT UPON A GEOTECHNICAL ENGINEER AND ENGINEERING GEOLOGIST OBSERVING CERTAIN ASPECTS OF THE PROJECT GRADING. THESE PLANS ARE SUBJECT TO MODIFICATION AND REVISION DURING CONSTRUCTION BASED ON THE FIELD CONDITIONS ENCOUNTERED.

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HIGHLAND ESTATES
LOT 6 IMPROVEMENT PLANS
GEOTECHNICAL MITIGATION PLAN (LOTS 5 TO 8)

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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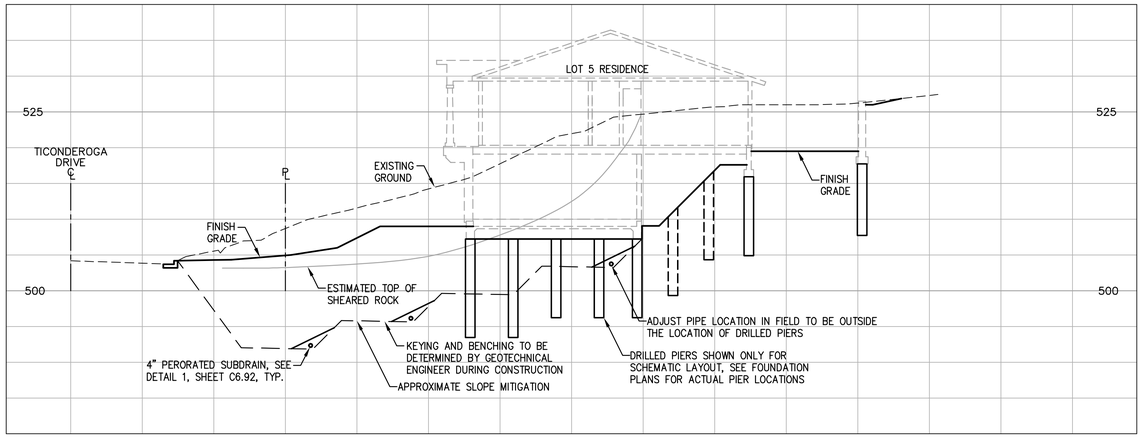
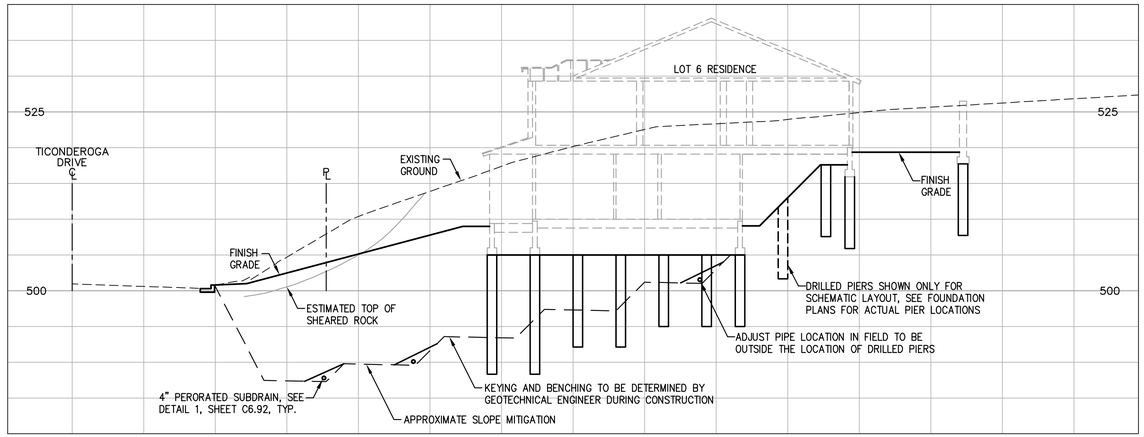


A-A CROSS SECTION
SCALE: 1"=10'



B-B CROSS SECTION
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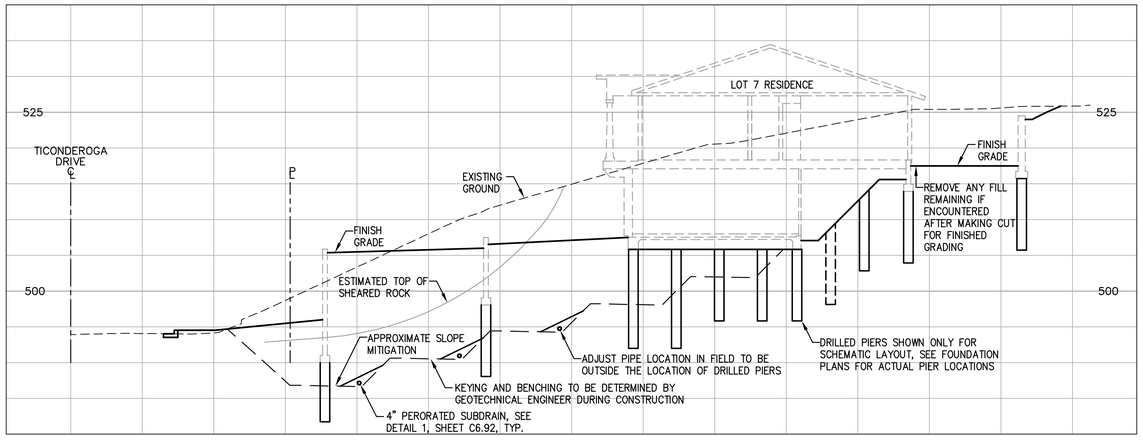


C-C CROSS SECTION
SCALE: 1"=10'

DRAINAGE MATERIAL

ALTERNATIVE 1

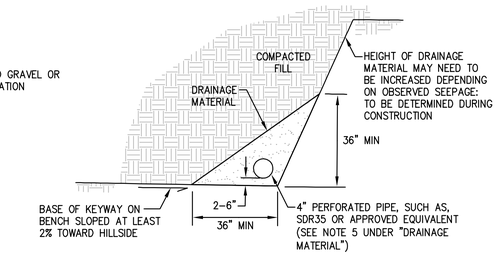
CLASS 2 PERMEABLE MATERIAL
(CALTRANS STANDARD SPECS LATEST EDITION)
MATERIAL SHALL CONSIST OF CLEAN, COARSE SAND AND GRAVEL OR CRUSHED STONE, CONFORMING TO THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE SIZE	% PASSING SIEVE
1"	100
3/4"	90–100
3/8"	40–100
#4	25–40
#8	18–33
#30	5–15
#50	0–7
#200	0–3

ALTERNATIVE 2

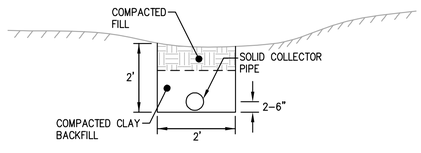
1/2 – TO 3/4– INCH CLEAN CRUSHED ROCK OR GRAVEL WRAPPED IN FILTER FABRIC
ALL NON–WOVEN FILTER FABRIC SHALL MEET THE FOLLOWING MINIMUM AVERAGE ROLL VALUES UNLESS OTHERWISE SPECIFIED BY CORNERSTONE EARTH GROUP

GRAB STRENGTH (ASTM D–4632):	180 LBS.
MASS PER UNIT AREA (ASTM D–4751):	5 OZ/YD
APPARENT OPENING SIZE (ASTM D–4751):	70–100 U.S. STD. SIEVE
FLOW RATE (ASTM D–4491):	80 GAL/MIN/FT
PUNCTURE STRENGTH (ASTM D–4833):	80 LBS.



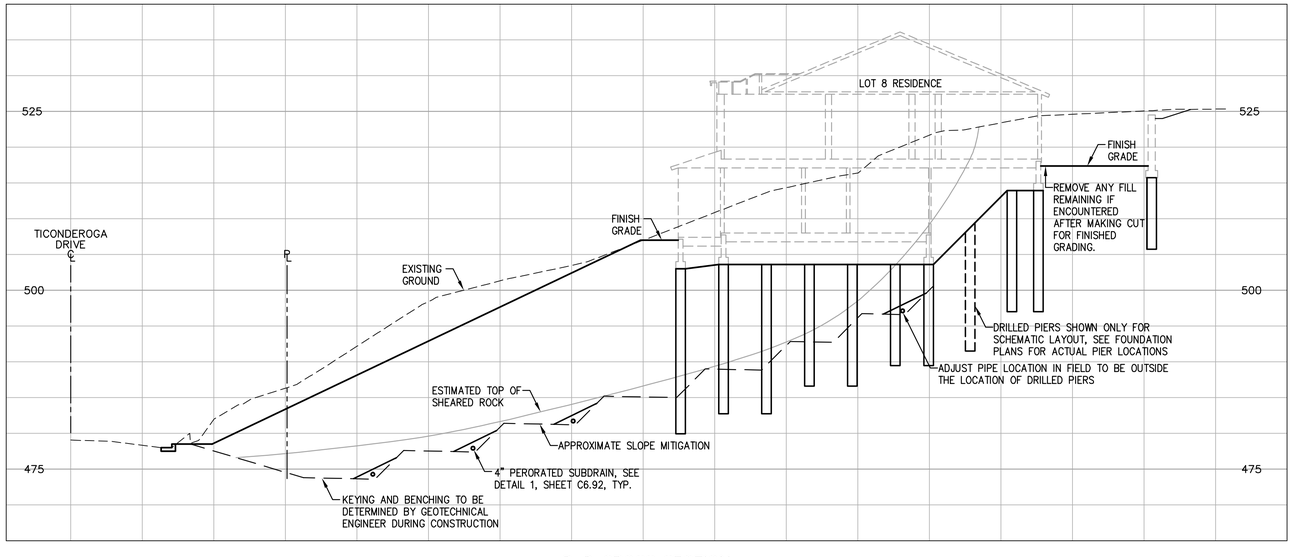
DETAIL 1 – TYPICAL BENCH AND KEYWAY SUBDRAIN
NTS

NOTES:
1. 1% FALL (MINIMUM) ALONG ALL KEYWAYS, BENCHES ANDSUBDRAIN LINES.
2. ALL PERFORATED PIPE PLACED PERFORATIONS DOWN.
3. ALL PIPE JOINTS SHALL BE GLUED.
4. ALL SUBDRAINS SHOULD BE DISCHARGED TO A FREE DRAINING OUTLET APPROVED BY THE CIVIL ENGINEER.
5. SUBDRAIN PIPE (PERFORATED OR SOLID CONNECTOR) SHOULD CONSIST OF SDR–35 PVC PIPE WHEN PLACED IN FILLS LESS THAN 30 FEET DEEP.
6. USE 4" PERFORATED PIPE ON KEYWAY OR BENCHES.
7. USE 6"SOLID PIPE FOR COLLECTOR PIPES OR 6" PERFORATED PIPE (DETAIL 2)
8. PIPE FITTINGS FOR CLEAN–OUTS AND OTHER 90° BENDS IN THE SUBDRAIN SYSTEM (EXCEPT THE CONNECTION BETWEEN THE 4"PERFORATED PIPES AND 6"COLLECTION PIPES) SHOULD BE "SWEEP 90'S" OR OTHER APPROVED EQUIVALENT.
9. CONTRACTOR TO PROVIDE ALL INCIDENTAL FITTINGS IN THEIR BID PRICE TO CONSTRUCT THE SUBDRAIN SYSTEM. NOT ALL INCIDENTAL FITTINGS ARE SHOWN ON THESE PLANS.
10. FINAL SUBDRAIN LAYOUT AND PLACEMENT TO BE DETERMINED BY GEOTECHNICAL ENGINEER AT TIME OF CONSTRUCTION. A SUBDRAIN SHOULD NOT CONFLICT WITH DRILLED PIERS.



NOTES:
1. THIS AREA MAY HAVE ACTIVE SEEPAGE DURING CONSTRUCTION.
2. COLLECTOR PIPE SHOULD BE 6" PERFORATED PIPE, SUCH AS SDR–35 OR SDR–23.5 OR APPROVED EQUIVALENT (SEE DETAIL 1 NOTE 5 UNDER "DRAINAGE MATERIAL")
3. PIPE FITTINGS FOR CLEAN–OUTS AND OTHER 90° BENDS IN THE SUBDRAIN SYSTEM (EXCEPT THE CONNECTION BETWEEN THE 4"PERFORATED PIPES AND 6" COLLECTION PIPES) SHOULD BE "SWEEP 90'S"OR OTHER APPROVED EQUIVALENT.
4. CONTRACTOR TO PROVIDE ALL INCIDENTAL FITTINGS IN THEIR BID PRICE TO CONSTRUCT THE SUBDRAIN SYSTEM. NOT ALL INCIDENTAL FITTINGS ARE SHOWN ON THESE PLANS.
5. FINAL SUBDRAIN LAYOUT AND PLACEMENT TO BE DETERMINED BY GEOTECHNICAL ENGINEER AT TIME OF CONSTRUCTION.

DETAIL 2 – SOLID COLLECTOR PIPE DETAIL
NTS



D-D CROSS SECTION
SCALE: 1"=10'

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HIGHLAND ESTATES
LOT 6 IMPROVEMENT PLANS
GEOTECHNICAL MITIGATION CROSS SECTIONS (LOTS 5 TO 8)
CITY OF SAN MATEO — SAN MATEO COUNTY, CALIFORNIA

Revisions

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IMPROVEMENT PLANS FOR

HIGHLAND ESTATES - LOT 7 TICONDEROGA DRIVE

COUNTY OF SAN MATEO, CALIFORNIA

EARTHWORK

CUT	2,170	CY
SLOPE MITIGATION EXPORT CREDIT	660	CY
FILL	40	CY
NET	1,470	CY CUT

EARTHWORK NOTES:

1. THE QUANTITIES SHOWN ABOVE EXCLUDE EARTHWORK FROM GEOTECHNICAL SLOPE REMEDIATION ACTIVITIES PER CONDITION OF APPROVAL ITEM NO. 4.M, INCLUDING SITE STRIPPING, EARTHWORK SWELLING AND SHRINKAGE FACTORS ASSOCIATED WITH GEOTECHNICAL SLOPE REMEDIATION MITIGATION.

2. THE EARTHWORK QUANTITIES SHOWN ABOVE ARE IN-PLACE QUANTITIES AND HAVE BEEN ESTIMATED BY THE ENGINEER WITH THE FOLLOWING ASSUMPTIONS:

   A. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR SITE STRIPPINGS.
   B. THE UNIT PAD SECTION IS ASSUMED TO BE A 12" THICK CONCRETE SECTION.
   C. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR FILL SHRINKAGE FACTORS.
   D. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR UTILITY TRENCHING AND SPOILS.
   E. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR SOIL STABILIZATION FACTORS AND LANDSCAPING PLANTING SOILS.
   F. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR RETAINING WALLS AND BUILDING FOOTINGS AND BACKFILL.

2. ACTUAL QUANTITIES MAY VARY DUE TO FIELD CONDITIONS OR CONSTRUCTION TECHNIQUES. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES BASED UPON APPROVED PLANS AND INDEPENDENT CALCULATIONS.

LEGEND

EXISTING

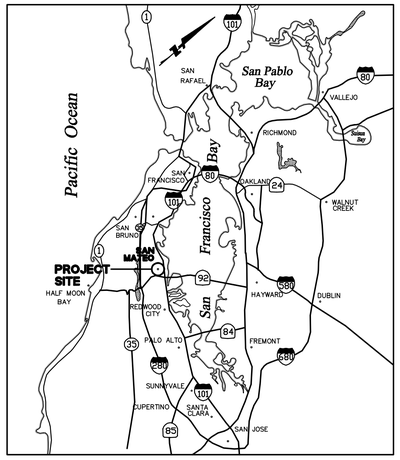
- EXISTING PROPERTY LINE BOUNDRY
- EXISTING SANITARY SEWER W/MANHOLE
- EXISTING STORM DRAIN W/ MANHOLE
- EXISTING WATERLINE
- EXISTING CATCH BASIN
- EXISTING GAS LINE
- ALL UTILITIES ARE APPROXIMATELY LOCATED

PROPOSED

- PROPOSED PROPERTY LINE BOUNDRY
- SS — SANITARY SEWER W/ MANHOLE
- STORM DRAIN W/ MANHOLE & CATCH BASIN
- W / FH — WATER LINE W/ FIRE HYDRANT
- GAS — GAS MAIN
- ETC — UNDERGROUND ELECTRIC, TELEPHONE, & C.A.T.V.
- S.D.E. — STORM DRAIN EASEMENT
- S.S.E. — SANITARY SEWER EASEMENT
- 509.3 / #4 OAK — EXISTING TREE & ELEVATION (TREE NO. REFERS TO TREE IDENTIFICATION TAG PER (TREE REPORT PREPARED BY HABITAT RESTORATION GROUP)
- 509.3 / #3 OAK — INDICATES TREE TO BE REMOVED
- L.W. — LEATHERWOOD BUSH
- EUC. — EUCALYPTUS TREE
- P.O.C. — POINT OF CONNECTION
- FDZ — FIRE DEFENSE ZONE
- FLOW-THROUGH PLANTER. PROPOSED FOR TREATMENT OF ROOF AND DRIVEWAY STORM WATER RUNOFF.

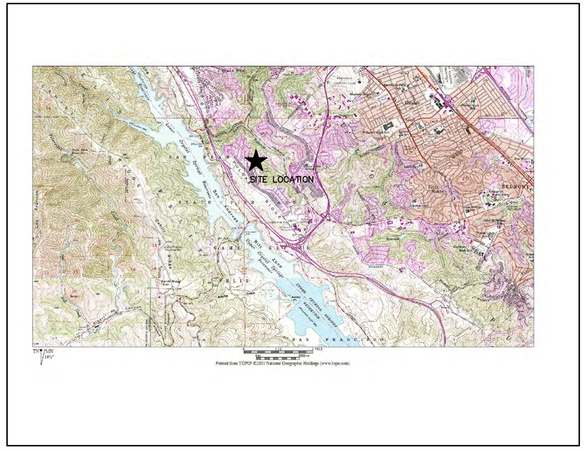
ABBREVIATIONS

AC	ASPHALTIC CONCRETE	L	LENGTH
BEG	BEGINNING	LF	LINEAR FEET
BL	BAY LAUREL	LG	LIP OF GUTTER
BLDG COR	BUILDING CORNER	NIC	NOT IN CONTRACT
BOT	BOTTOM	O	OAK TREE
BOW	GRADE AT BOTTOM OF WALL	P	PEPPER TREE
BW	BACK OF WALK	PD	PLANNED DEVELOPMENT
CB	CATCH BASIN	PINE	PINE TREE
CL	CENTERLINE	PUE	PUBLIC UTILITY EASEMENT
CLF	CHAIN LINK FENCE	PVC	POLYVINYL CHLORIDE PIPE
CMP	CORRUGATED METAL PIPE	RCP	REINFORCED CONCRETE PIPE
CO	CLEANOUT	RDW	REDWOOD TREE
CONC	CONCRETE	RET WALL	RETAINING WALL
CU	COPPER	ROW	RIGHT OF WAY
DG	DECOMPOSED GRANITE	RPB	REDUCED PRESSURE BACKFLOW
DI	DRAIN INLET	RWL	RAIN WATER LEADER
DW	DOMESTIC WATER	S	SLOPE
EG	EXISTING GRADE	SD	STORM DRAIN
EP	EDGE OF PAVEMENT	SDCB	STORM DRAIN CATCH BASIN
EUC	EUCALYPTUS TREE	SDCO	STORM DRAIN CLEANOUT
EX, (E)	EXISTING	SDDI	STORM DRAIN DROP INLET
FC, FOC	FACE OF CURB	SDMH	STORM DRAIN MANHOLE
FF	FINISH FLOOR	SS	SANITARY SEWER
FG	FINISH GRADE	SSCO	SANITARY SEWER CLEAN OUT
FL	FLOW LINE	SSMH	SANITARY SEWER MANHOLE
FNC	FENCE	T	TREE
FTP	FLOW THROUGH PLANTER	TC	TOP OF CURB
FW	FIRE WATER	TOE	TOE OF SLOPE
GB	GRADE BREAK	TOP	TOP OF SLOPE
GFF	GARAGE FINISH FLOOR	TOW	TOP OF WALL
GM	GAS METER	TYP	TYPICAL
GND	GROUND SHOT	UB	UTILITY BOX
GR	GRATE	VC	VERTICAL CURVE
GRAVEL	EDGE OF GRAVEL ROAD	VCP	VITRIFIED CLAY PIPE
GW	GUY WIRE	W	WATER
INV	INVERT	WM	WATER METER
JP	JOINT POLE	WV	WATER VALVE



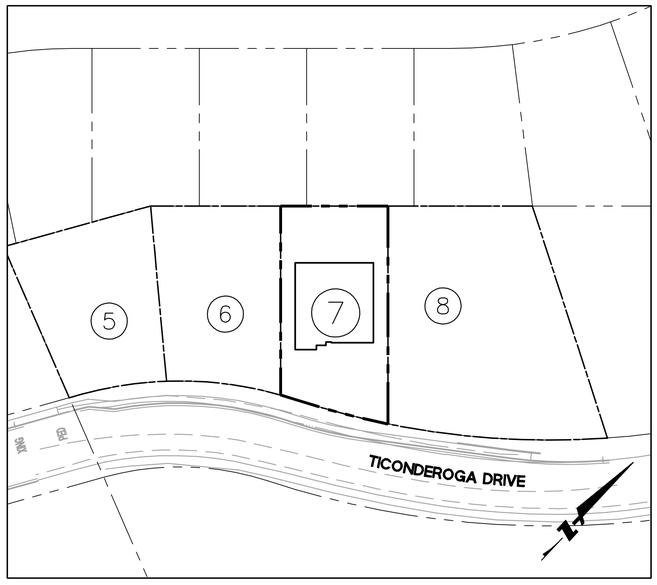
VICINITY MAP

NTS



LOCATION MAP

NTS



SITE PLAN

SCALE: 1" = 50'

PROJECT DATA

SITE AREA:	10,720 SF
EXISTING LAND USE:	UNDEVELOPED LAND
PROPOSED USE:	RESIDENTIAL (LOT 7)
EXISTING ZONE:	RMD – RESOURCE MANAGEMENT DISTRICT
PROPOSED ZONE:	R-1
PROPOSED USE:	1 RESIDENTIAL LOT
OWNER:	TICONDEROGA PARTNERS, A CALIFORNIA LIMITED LIABILITY CORPORATION C/O THE CHAMBERLAIN GROUP 655 SKYWAY, SUITE 230 SAN CARLOS, CA 94070 (650) 595-5582 ATTN: JACK CHAMBERLAIN
DEVELOPER:	THE CHAMBERLAIN GROUP 655 SKYWAY, SUITE 230 SAN CARLOS, CA 94070 (650) 595-5582 ATTN: JACK CHAMBERLAIN
CIVIL ENGINEER:	BKF ENGINEERS 255 SHORELINE DRIVE, SUITE 200 REDWOOD CITY, CA 94065 (650) 482-6300
GEOTECHNICAL ENGINEER:	CORNERSTONE EARTH GROUP 1259 OAKMEAD PARKWAY SUNNYVALE, CA 94085 (408) 245-4600
WATER SUPPLY:	CAL WATER SERVICE 341 N. DELAWARE STREET SAN MATEO, CA 94401-1808 (650) 343-1808
SEWAGE DISPOSAL:	CITY OF SAN MATEO & CRYSTAL SPRINGS COUNTY SANITATION DISTRICT
GAS & ELECTRIC	PG&E
TELEPHONE:	AT&T
FIRE PROTECTION:	CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION
CABLE:	COMCAST
STORM DRAINAGE:	COUNTY OF SAN MATEO CITY OF SAN MATEO
TOPOGRAPHIC BASE MAP:	AERO-GEODIC COROP. JOB NO. 950168 DATE OF PHOTOGRAPHY 9/18/87
EROSION CONTROL POINT OF CONTACT:	NOEL CHAMBERLAIN, NEXGEN BUILDERS INC. 225 DEMETER STREET EAST PALO ALTO, CA 94303 PHONE #: (650) 322-5800 CELL #: (650) 444-3089 EMAIL: noel@nexgenbuilders.com

SHEET INDEX

ENGINEER'S STATEMENT

THESE IMPROVEMENT PLANS HAVE BEEN PREPARED UNDER MY DIRECTION.

REGISTERED PROFESSIONAL ENGINEER — ROLAND N.V. HAGA — No. C043971 — CIVIL — STATE OF CALIFORNIA

ROLAND N.V. HAGA — DATE
R.C.E NO. 43971
BKF ENGINEERS

ENGINEER OF WORK

I HEREBY DECLARE THAT I AM THE CIVIL ENGINEER OF WORK FOR THIS PROJECT AND THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THIS PROJECT AS DEFINED IN SECTION 6703 OF THE STATE OF CALIFORNIA, BUSINESS & PROFESSIONAL CODES, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

REGISTERED PROFESSIONAL ENGINEER — JONATHAN TANG — No. C67726 — CIVIL — STATE OF CALIFORNIA

JONATHAN TANG — DATE
P.E. NO. 67726
BKF ENGINEERS

255 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
PHONE: (650) 482-6300
FAX: (650) 482-6399

BKF ENGINEERS / SURVEYORS / PLANNERS

HIGHLAND ESTATES
LOT 7 IMPROVEMENT PLANS
TITLE SHEET
SAN MATEO COUNTY CALIFORNIA
CITY OF SAN MATEO

Revisions | No.

Date 09/11/2018
Scale NTS
Design JT
Drown MD
Approved RH
Job No 950168-14

Sheet Number:
C7.10
OF

© BKF ENGINEERS

NOTES:

I. GENERAL NOTES

1. WORK SHALL CONFORM TO THE COUNTY OF SAN MATEO PUBLIC WORKS STANDARD DRAWINGS FOR PUBLIC IMPROVEMENTS, REVISED SEPTEMBER 2007 AND THE SAN MATEO COUNTY SEWER AND SANITATION DISTRICTS STANDARD SPECIFICATIONS, DATED JUNE 1995.

2. PERFORM WORK IN CONFORMANCE WITH THE RECOMMENDATION OF THE PROJECT GEOTECHNICAL ENGINEERING REPORT TITLED "UPDATED GEOTECHNICAL INVESTIGATION, HIGHLAND ESTATES LOTS 5 THROUGH 11, TICONDEROGA DRIVE/COBBLEHILL PLACE/COWPENS WAY, SAN MATEO COUNTY, CALIFORNIA" PREPARED BY CORNERSTONE EARTH GROUP, DATED OCTOBER 30, 2015. GRADING WORK WILL BE SUBJECT TO APPROVAL OF GEOTECHNICAL ENGINEER.

3. ARRANGE FOR REQUIRED INSPECTIONS BY COUNTY ENGINEER. NO DELAY OF WORK CLAIM WILL BE ALLOWED DUE TO CONTRACTOR'S FAILURE TO ARRANGE FOR REQUIRED COUNTY INSPECTIONS IN ADVANCE. PROVIDE NOTICE TO COUNTY ENGINEER A MINIMUM OF 2 WORKING DAYS IN ADVANCE OF REQUIRED INSPECTIONS.

4. REVISIONS TO THESE PLANS MUST BE REVIEWED AND APPROVED IN WRITING BY ENGINEER, WHO WILL OBTAIN APPROVAL FROM COUNTY ENGINEER PRIOR TO CONSTRUCTION OF AFFECTED ITEMS. REVISIONS SHALL BE ACCURATELY SHOWN ON REVISED PLANS, WHICH SHALL BE REVIEWED AND APPROVED BY THE ENGINEER AND COUNTY ENGINEER PRIOR TO INSTALLATION OF THE IMPROVEMENTS.

5. REPLACE OR REPAIR EXISTING UTILITIES, IMPROVEMENTS OR FEATURES DAMAGED, REMOVED, OR DISTURBED BY CONSTRUCTION TO THEIR ORIGINAL CONDITION, WHETHER SHOWN ON PLANS OR NOT.

6. REPLACE STREET MONUMENTS, LOT CORNERS PIPES AND OTHER PERMANENT MONUMENTS DISTURBED DURING CONSTRUCTION. MONUMENTS SHALL BE SET BY A SURVEYOR REGISTERED IN THE STATE OF CALIFORNIA.

7. PREPARE TRAFFIC CONTROL PLAN AND OBTAIN APPROVAL FROM COUNTY ENGINEER BEFORE COMMENCING WORK. PROVIDE FLAG MEN, CONES, BARRICADES AND OTHER TRAFFIC CONTROL MEASURES NECESSARY TO PROVIDE SAFE LANE CLOSURE IN CONFORMANCE WITH CALTRANS STANDARDS AND AS APPROVED BY COUNTY ENGINEER.

8. PEDESTRIAN TRAFFIC CONTROL TO BE PROVIDED WHEN EXISTING SIDEWALKS CANNOT BE MAINTAINED DURING CONSTRUCTION.

9. DO NOT LEAVE TRENCHES OPEN OVERNIGHT IN EXISTING STREET AREAS. BACKFILL OR COVER OPEN TRENCHES AT THE END OF WORK EVERY WORK DAY.

10. PREPARE SHORING PLAN AND SUBMIT TO THE COUNTY ENGINEER FOR REVIEW AND APPROVAL. ADEQUATELY SHORE EXCAVATIONS TO PREVENT EARTH FROM SLIDING OR SETTLING AND TO PROTECT EXISTING ADJACENT IMPROVEMENTS FROM DAMAGE. DAMAGE RESULTING FROM A LACK OF ADEQUATE SHORING SHALL BE THE CONTRACTOR'S RESPONSIBILITY. PROVIDE SHORING IN CONFORMANCE WITH APPLICABLE CONSTRUCTION SAFETY ORDERS OF THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY AND OSHA WHERE EXCAVATIONS ARE 5 FEET OR MORE IN DEPTH.

11. IMPLEMENT CONSTRUCTION DUST CONTROL MEASURES TO REDUCE PARTICULATE GENERATION TO A LESS THAN SIGNIFICANT LEVEL. PROVIDE DUST CONTROL IN CONFORMANCE WITH BAY AREA AIR QUALITY MANAGEMENT DISTRICT MINIMUM REQUIREMENTS. IMPLEMENT THE FOLLOWING CONSTRUCTION PRACTICES EXCEPT WHEN IT IS RAINING.

11.A. WATER ACTIVE EXTERIOR SOIL AREAS AT LEAST TWICE DAILY.

11.B. COVER TRUCKS HAULING SOIL, SAND AND OTHER LOOSE MATERIAL OR PROVIDE 2 FEET OF FREEBOARD.

11.C. PAVE, APPLY WATER THREE TIMES DAILY OR APPLY NON-TOXIC SOIL STABILIZER ON UNPAVED ACCESS ROADS, PARKING AREAS AND STAGING AREAS.

11.D. SWEEP PAVED ACCESS ROADS, PARKING AREAS AND STAGING AREAS DAILY.

11.E. APPLY HYDROSEED OR NON-TOXIC SOIL STABILIZER TO INACTIVE CONSTRUCTION AREAS.

11.F. ENCLOSE, COVER, WATER TWICE DAILY OR APPLY NON-TOXIC SOIL STABILIZER TO EXPOSED SOIL STOCKPILES.

11.G. INSTALL SANDBAGS AND OTHER EROSION CONTROL MEASURES TO PREVENT SILT RUNOFF TO PUBLIC ROADWAYS.

11.H. LIMIT TRAFFIC SPEED ON UNPAVED ROADS TO 15 MPH.

11.I. REPLANT VEGETATION IN DISTURBED AREAS AS QUICKLY AS POSSIBLE.

12. KEEP STREETS CLEAN OF DIRT, MUD AND OTHER CONSTRUCTION DEBRIS. CLEAN AND SWEEP STREETS ON A DAILY BASIS DURING THE WORK WEEK.

13. SHOULD IT APPEAR THAT THE WORK IS NOT SUFFICIENTLY DETAILED OR SPECIFIED IN CONSTRUCTION DOCUMENTS, NOTIFY ENGINEER AND OBTAIN CLARIFICATION BEFORE PROCEEDING WITH WORK IN QUESTION.

14. CONSTRUCTION STAKING SHALL BE DONE BY A CIVIL ENGINEER OR LAND SURVEYOR REGISTERED IN THE STATE OF CALIFORNIA.

15. IF BKF ENGINEERS IS RETAINED TO PROVIDE CONSTRUCTION STAKING SERVICES, CONTRACTOR WILL BE PROVIDED WITH ONE SET OF SURVEY STAKES FOR LAYOUT PURPOSES. PRESERVE AND PROTECT THESE STAKES UNTIL THEY ARE NO LONGER NEEDED. RESTAKING SHALL BE AT CONTRACTOR'S EXPENSE.

16. MATCH EXISTING PAVEMENT, CURB AND GUTTER, SIDEWALK, ADJACENT LANDSCAPE AND OTHER IMPROVEMENTS WITH SMOOTH TRANSITION TO AVOID ABRUPT OR APPARENT CHANGES IN GRADES, CROSS SLOPES, LOW SPOTS OR HAZARDOUS CONDITIONS.

17. VISIT SITE TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND OVERALL PROJECT REQUIREMENT PRIOR TO BIDDING PROJECT.

18. OBTAIN AND PAY FOR PERMITS AND LICENSES AS REQUIRED TO PERFORM WORK WITHIN THE COUNTY OF SAN MATEO PRIOR TO START OF WORK. PERMITS MAY INCLUDE ENCROACHMENT PERMIT FOR WORK WITHIN COUNTY RIGHT-OF-WAY AND GRADING/UTILITY PERMIT.

19. CONTRACTOR IS RESPONSIBLE FOR TRAFFIC AND PEDESTRIAN CONTROL DURING CONSTRUCTION.

20. OBTAIN APPROVAL OF IMPORT SOIL MATERIAL FROM GEOTECHNICAL ENGINEER PRIOR TO DISTRIBUTING MATERIAL OVER SITE.

21. PROTECT ADJOINING PREMISES, TREES, LANDSCAPING, UTILITIES, SIDEWALKS, STREETS AND OTHER FEATURES FROM DAMAGE BY CONTRACTOR'S OPERATIONS. REPAIR, REPLACE OR CLEAN ADJOINING PREMISES, TREES, LANDSCAPING, UTILITIES, SIDEWALKS, STREETS AND OTHER FEATURES TO SATISFACTION OF OWNER.

22. MAINTAIN AND MANAGE CONSTRUCTION MATERIALS, EQUIPMENT AND VEHICLES AT THE CONSTRUCTION SITE.

23. NOTIFY COUNTY ENGINEER A MINIMUM OF 24 HOURS PRIOR TO STARTING WORK ON OFF-SITE DRAINAGE AND SEWER FACILITIES, GRADING, PAVING, OR WORK IN THE COUNTY RIGHT-OF-WAY.

24. MAKE EFFORTS TO MINIMIZE CONSTRUCTION NOISE.

24.A. MAINTAIN EQUIPMENT USED ON SITE IN GOOD MECHANICAL CONDITION TO MINIMIZE NOISE CREATED BY FAULTY OR POORLY MAINTAINED ENGINE, DRIVE-TRAIN AND OTHER COMPONENTS.

24.B. EQUIPMENT EXCEEDING 110 DBA MEASURED 25 FEET FROM THE PIECE OF EQUIPMENT WILL NOT BE ALLOWED ON SITE.

24.C. SELECT APPROPRIATE EQUIPMENT TO MINIMIZE NOISE GENERATION. USE THE FOLLOWING TECHNIQUES TO MINIMIZE NOISE GENERATION SUBJECT TO EQUIPMENT AVAILABILITY AND COST CONSIDERATIONS. USE SCRAPERS AS MUCH AS POSSIBLE FOR EARTH REMOVAL, RATHER THAN NOISIER LOADERS AND HAUL TRUCKS. USE BACKHOES FOR BACKFILLING AS IT IS QUIETER THAN DOZERS OR LOADERS. USE MOTOR GRADERS RATHER THAN BULLDOZERS FOR FINAL GRADING.

II. EXISTING CONDITIONS

1. EXISTING TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS IS BASED UPON A FIELD TOPOGRAPHIC SURVEY OF THE PROJECT SITE BY BKF ENGINEERS, DATED JUNE 2009. ACTUAL CONDITIONS ENCOUNTERED ON SITE MAY VARY FROM THOSE SHOWN ON THE PLANS. CONTRACTOR SHALL REVIEW CONSTRUCTION DOCUMENTS AND CONDUCT THEIR OWN INVESTIGATIONS TO UNDERSTAND AND VERIFY EXISTING CONDITIONS AT THE SITE.

2. EXISTING SUBSURFACE IMPROVEMENTS AND UTILITIES SHOWN ON THESE PLANS WERE TAKEN FROM RECORD INFORMATION KNOWN TO THE ENGINEER AND FIELD SURVEY OF ABOVE GRADE FEATURES. THESE PLANS ARE NOT MEANT TO BE A FULL CATALOG OF EXISTING SUBSURFACE CONDITIONS. CONDUCT FIELD INVESTIGATION TO VERIFY THE LOCATIONS AND ELEVATIONS OF EXISTING SUBSURFACE IMPROVEMENTS AND UTILITIES, WHETHER SHOWN ON PLANS OR NOT, PRIOR TO START OF EXCAVATION. IF DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THESE PLANS ARE DISCOVERED, NOTIFY ENGINEER IMMEDIATELY AND REQUEST DISCREPANCY BE RESOLVED.

3. VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION AFFECTING UTILITIES. POTHOLE WHERE NEEDED TO VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES.

4. CONTACT USA (UNDERGROUND SERVICES ALERT) AT 1-800-227-2600, AND AFFECTED UTILITY COMPANIES A MINIMUM OF 2 WORKING DAYS PRIOR TO STARTING WORK TO REQUEST UTILITIES BE MARKED.

III. DEMOLITION

1. REMOVE FROM SITE AND DISPOSE OF IN LAWFUL MANNER EXISTING STRUCTURES, UTILITIES, AND OTHER FEATURES NOT REMOVED DURING DEMOLITION OR ROUGH GRADING AND ENCOUNTERED DURING WORK ON SITE.

1.A. REMOVE WOOD OR CONCRETE STRUCTURES, SLABS, FOOTINGS, GRADE BEAMS, DECKS, DOCKS, AND OTHER SIMILAR STRUCTURES.

1.B. REMOVE LANDSCAPING, UTILITIES AND IRRIGATION LINES AS SPECIFIED BY GEOTECHNICAL ENGINEER.

1.C. REMOVE ABANDONED IN-GROUND STRUCTURES, SUCH AS CULVERTS, UTILITY VAULTS, AND FOUNDATIONS AS SPECIFIED BY GEOTECHNICAL ENGINEER.

IV. DEWATERING

1. DEWATER AREAS COVERED WITH STANDING WATER PRIOR TO PLACEMENT OF FILL.

2. DISPOSE OF WATER FROM DEWATERING OPERATION IN CONFORMANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

V. UTILITIES

1. DO NOT OPERATE WATER VALVES OR OTHER WATER DISTRICT FACILITIES. REQUIRED OPERATION WILL BE PERFORMED BY UTILITY DISTRICT PERSONNEL ONLY. NOTIFY UTILITY DISTRICT 2 WORKING DAYS PRIOR TO REQUIRING FACILITY OPERATION.

2. PROVIDE MINIMUM 12 INCH VERTICAL CLEARANCE BETWEEN ADJACENT UTILITY PIPES AT UTILITY CROSSINGS UNLESS OTHERWISE NOTED.

3. COMPLETE ELECTRIC, GAS, TELEPHONE, CABLE AND OTHER JOINT TRENCH WORK IN CONFORMANCE WITH THE REQUIREMENTS OF THE RESPECTIVE UTILITY PROVIDER. NOTIFY UTILITY PROVIDER MINIMUM 2 WORKING DAYS PRIOR TO COMMENCING WORK. IF EXISTING WATER, SEWER, GAS OR OTHER UTILITY SERVICES ARE DISTURBED OR DAMAGED DURING CONSTRUCTION, NOTIFY UTILITY OWNER IMMEDIATELY.

4. PROTECT UTILITIES FROM DAMAGE CAUSED BY CONTRACTOR'S WORK.

5. PROVIDE UTILITY STRUCTURES IN PAVED AREAS SUITABLE FOR H-20 LOADING.

6. PIPE LENGTHS SHOWN ON PLANS ARE FOR ENGINEERING CALCULATIONS ONLY AND ARE NOT INTENDED AS BID QUANTITIES OR FOR ORDERING MATERIALS.

7. CONSTRUCT GRAVITY FLOW UTILITIES FROM DOWNSTREAM CONNECTION POINT TO UPSTREAM TERMINUS.

8. COORDINATE WITH COUNTY OF SAN MATEO AND CRYSTAL SPRINGS SANITATION DISTRICT FOR INSPECTION OF WORK ON DISTRICT FACILITIES.

9. ALL WATER LATERALS AND SERVICES SHALL BE INSTALLED TO THE STANDARDS OF THE CALIFORNIA WATER SERVICE COMPANY. EXISTING WATER MAINS OR LATERALS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AND TESTED TO THE SATISFACTION OF THE WATER COMPANY.

VI. EARTHWORK AND GRADING

1. OFF-SITE IMPORT FILL MATERIAL SHALL CONFORM TO THE SPECIFICATIONS AND THE REQUIREMENTS OF THE GEOTECHNICAL REPORT.

2. TOPSOIL, ROOTS, VEGETABLE MATTER, TRASH AND DEBRIS WILL NOT BE CONSIDERED ACCEPTABLE FILL MATERIAL.

3. REMOVE DEBRIS FROM AREAS OF EARTHWORK PRIOR TO PLACING FILL OR STARTING GRADING OPERATIONS.

4. PLACE AND COMPACT FILL MATERIAL AS RECOMMENDED IN GEOTECHNICAL REPORT. PLACE FILL MATERIAL IN MAXIMUM 8 INCH UNCOMPACTED THICKNESS. COMPACTION BY FLOODING, PONDING OR JETTING WILL NOT BE PERMITTED.

5. CONTRACTOR SHALL MAKE HIS OWN DETERMINATION OF EARTHWORK QUANTITIES.

VII RECORD DRAWINGS

1. KEEP ACCURATE RECORD OF THE FINAL LOCATION, ELEVATION AND DESCRIPTION OF WORK ON A COPY OF THE FINAL APPROVED CONSTRUCTION DOCUMENTS. NOTE THE LOCATIONS AND ELEVATIONS OF EXISTING IMPROVEMENTS ENCOUNTERED THAT VARY FROM THE LOCATIONS SHOWN ON THE IMPROVEMENT PLANS. PROVIDE COPY OF RECORD INFORMATION TO OWNER AT COMPLETION OF PROJECT AND WHEN REQUESTED.

VII. STATEMENT OF RESPONSIBILITY

1. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD BOTH DESIGN PROFESSIONAL AND THE COUNTY OF SAN MATEO HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF EITHER THE DESIGN PROFESSIONAL OR THE COUNTY OF SAN MATEO, RESPECTIVELY.

IX. UNAUTHORIZED CHANGES AND USES

1. THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND REQUIRE WRITTEN APPROVAL OF THE COUNTY ENGINEER AND THE PREPARER OF THESE PLANS.

X. DRAWING LANGUAGE

1. NOTES AND CALLOUTS ON DRAWINGS MAY USE IMPERATIVE LANGUAGE. REQUIREMENTS EXPRESSED IMPERATIVELY ARE TO BE PERFORMED BY THE CONTRACTOR UNLESS NOTED OTHERWISE.

CONDITIONS OF APPROVAL NOTES

CONSTRUCTION NOTES

1. THE FIRST PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY. THE REMAINDER OF CONSTRUCTION EQUIPMENT (70 PERCENT), WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL BE REQUIRED TO USE EMULSIFIED FUELS.

2. THE SECOND PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 2 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY AND 50 PERCENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS. THE REMAINING 20 PERCENT OF CONSTRUCTION EQUIPMENT, WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL USE EMULSIFIED FUELS.

3. FOR ALL LARGER VEHICLES, INCLUDING CEMENT MIXERS OR OTHER DEVICES THAT MUST BE DELIVERED BY LARGE TRUCKS, VEHICLES SHALL BE EQUIPPED WITH CARB LEVEL THREE VERIFIED CONTROL DEVICES.

4. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY.

5. COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR REQUIRE ALL TRUCKS TO MAINTAIN AT LEAST TWO FEET OF FREEBOARD.

6. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY NON-TOXIC SOIL STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.

7. SWEEP DAILY (WITH WATER SWEEPERS) ALL PAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.

8. SWEEP PUBLIC STREETS ADJACENT TO CONSTRUCTION SITES DAILY (WITH WATER SWEEPERS) IF VISIBLE SOIL MATERIAL IS CARRIED ONTO THE STREETS.

9. HYDROSEED OR APPLY NON-TOXIC SOIL STABILIZERS TO INACTIVE CONSTRUCTION AREAS (PREVIOUSLY GRADED AREAS INACTIVE FOR TEN DAYS OR MORE).

10. ENCLOSE, COVER, WATER TWICE DAILY, OR APPLY NON-TOXIC SOIL BINDERS TO EXPOSED STOCKPILES (DIRT, SAND, ETC.). LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.

11. LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.

12. INSTALL SANDBAGS OR OTHER EROSION CONTROL MEASURES TO PREVENT SILT RUNOFF TO PUBLIC ROADWAYS.

13. REPLANT VEGETATION IN DISTURBED AREAS AS SOON AS POSSIBLE.

14. INSTALL WHEEL WASHERS FOR ALL EXITING TRUCKS OR WASH OFF THE TIRES OR TRACKS OF ALL TRUCKS AND EQUIPMENT LEAVING THE CONSTRUCTION SITE.

15. INSTALL WIND BREAKS AT THE WINDWARD SIDES OF THE CONSTRUCTION AREAS.

16. SUSPEND EXCAVATION AND GRADING ACTIVITIES WHEN WIND (AS INSTANTANEOUS GUSTS) EXCEEDS 25 MILES PER HOUR.

NOISE NOTES

1. EQUIPMENT AND TRUCKS USED FOR PROJECT GRADING AND CONSTRUCTION WOULD UTILIZE THE BEST AVAILABLE NOISE CONTROL TECHNIQUES (E.G., IMPROVED EXHAUST MUFFLERS, EQUIPMENT REDESIGN, USE OF INTAKE SILENCERS, DUCTS, ENGINE ENCLOSURES, AND ACOUSTICALLY-ATTENUATING SHIELDS OR SHROUDS) IN ORDER TO MINIMIZE CONSTRUCTION NOISE IMPACTS.

2. EQUIPMENT USED FOR PROJECT GRADING AND CONSTRUCTION WOULD BE HYDRAULICALLY OR ELECTRICALLY POWERED IMPACT TOOLS (E.G., JACK HAMMERS AND PAVEMENT BREAKERS) WHEREVER POSSIBLE TO AVOID NOISE ASSOCIATED WITH COMPRESSED AIR EXHAUST FROM PNEUMATICALLY-POWERED TOOLS. COMPRESSED AIR EXHAUST SILENCERS WOULD BE USED ON OTHER EQUIPMENT. OTHER QUIETER PROCEDURES WOULD BE USED SUCH AS DRILLING RATHER THAN IMPACT EQUIPMENT WHENEVER FEASIBLE.

3. THE GRADING AND CONSTRUCTION ACTIVITY WOULD BE KEPT TO THE HOURS OF 7:00 AM TO 7:00 PM, MONDAY THROUGH FRIDAY. SATURDAY HOURS (8:00 AM TO 5:00 PM) ARE PERMITTED UPON THE DISCRETION OF COUNTY APPROVAL BASED ON INPUT FROM NEARBY RESIDENTS AND BUSINESSES. SATURDAY CONSTRUCTION (8:00 AM TO 5:00 PM) WOULD BE ALLOWED ONCE THE BUILDINGS ARE FULLY ENCLOSED. NOISE GENERATING GRADING AND CONSTRUCTION ACTIVITIES SHALL NOT OCCUR AT ANY TIME ON SUNDAYS, THANKSGIVING AND CHRISTMAS.

4. RESIDENTIAL PROPERTY OWNERS WITHIN 200 FEET OF PLANNED CONSTRUCTION AREAS SHALL BE NOTIFIED OF THE CONSTRUCTION SCHEDULE IN WRITING, PRIOR TO CONSTRUCTION; THE PROJECT SPONSOR SHALL DESIGNATE A "DISTURBANCE COORDINATOR" WHO SHALL BE RESPONSIBLE FOR RESPONDING TO ANY LOCAL COMPLAINTS REGARDING CONSTRUCTION NOISE; THE COORDINATOR (WHO MAY BE AN EMPLOYEE OF THE DEVELOPER OR GENERAL CONTRACTOR) SHALL DETERMINE THE CAUSE OF THE COMPLAINT AND SHALL REQUIRE THAT REASONABLE MEASURES WARRANTED TO CORRECT THE PROBLEM BE IMPLEMENTED; A TELEPHONE NUMBER OF THE NOISE DISTURBANCE COORDINATOR SHALL BE CONSPICUOUSLY POSTED AT THE CONSTRUCTION SITE FENCE AND ON THE NOTIFICATION SENT TO NEIGHBORS ADJACENT TO THE SITE.

ASBESTOS NOTES

1. IF NATURALLY OCCURRING ASBESTOS IS IDENTIFIED AT THE SITE, A SITE HEALTH AND SAFETY (H&S) PLAN INCLUDING METHODS FOR CONTROL OF AIRBORNE DUST SHALL BE PREPARED. THIS PLAN SHALL BE REVIEWED AND APPROVED BY THE COUNTY OF SAN MATEO PRIOR TO GRADING IN AREAS UNDERLAIN BY SERPENTINE-BEARING SOILS OR BEDROCK AND NATURALLY OCCURRING ASBESTOS. THE H&S PLAN SHALL STRICTLY CONTROL DUST-GENERATING EXCAVATION AND COMPACTION OF MATERIAL CONTAINING NATURALLY OCCURRING ASBESTOS. THE PLAN SHALL ALSO IDENTIFY SITE-MONITORING ACTIVITIES DEEMED NECESSARY DURING CONSTRUCTION (E.G., AIR MONITORING). WORKER MONITORING SHALL ALSO BE PERFORMED AS APPROPRIATE. THE PLAN SHALL DEFINE PERSONAL PROTECTION METHODS TO BE USED BY CONSTRUCTION WORKERS. ALL WORKER PROTECTION AND MONITORING SHALL COMPLY WITH PROVISIONS OF THE MINING SAFETY AND HEALTH ADMINISTRATION (MSHA) GUIDELINES, CALIFORNIA DIVISION OF OCCUPA-TIONAL SAFETY AND HEALTH (DOSH), AND THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).

2. IF NATURALLY OCCURRING ASBESTOS IS FOUND AT THE SITE, A SOIL MANAGEMENT PLAN SHALL BE DEVELOPED AND APPROVED BY THE COUNTY PLANNING DEPARTMENT TO PROVIDE DETAILED DESCRIPTIONS OF THE CONTROL AND DISPOSITION OF SOILS CONTAINING NATURALLY OCCURRING ASBESTOS. SERPENTINE MATERIAL PLACED AS FILL SHALL BE SUFFICIENTLY BURIED IN ORDER TO PREVENT EROSION BY WIND OR SURFACE WATER RUNOFF, OR EXPOSURE TO FUTURE HUMAN ACTIVITIES, SUCH AS LANDSCAPING OR SHALLOW TRENCHES. ADDITIONALLY, THE BAAQMD SHALL BE NOTIFIED PRIOR TO THE START OF ANY EXCAVATION IN AREAS CONTAINING NATURALLY OCCURRING ASBESTOS.

GRADING NOTES

1. NO GRADING SHALL BE ALLOWED DURING THE WINTER SEASON (OCTOBER 15 TO APRIL 30) TO AVOID POTENTIAL SOIL EROSION UNLESS APPROVED, IN WRITING, BY THE COMMUNITY DEVELOPMENT DIRECTOR. THE PROPERTY OWNERS SHALL SUBMIT A LETTER TO THE CURRENT PLANNING SECTION, AT LEAST TWO WEEKS PRIOR TO COMMENCEMENT OF GRADING, STATING THE DATE WHEN GRADING WILL BEGIN.

TREE PROTECTION NOTES

1. THE APPLICANT SHALL ESTABLISH AND MAINTAIN TREE PROTECTION ZONES THROUGHOUT THE ENTIRE LENGTH OF THE PROJECT. TREE PROTECTION ZONES SHALL BE DELINEATED USING 4-FOOT TALL ORANGE PLASTIC FENCING SUPPORTED BY POLES POUNDED INTO THE GROUND, LOCATED AS CLOSE TO THE DRIPLINES AS POSSIBLE WHILE STILL ALLOWING ROOM FOR CONSTRUCTION/GRADING TO SAFELY CONTINUE. THE APPLICANT SHALL MAINTAIN TREE PROTECTION ZONES FREE OF EQUIPMENT AND MATERIALS STORAGE AND SHALL NOT CLEAN ANY EQUIPMENT WITHIN THESE AREAS. SHOULD ANY LARGE ROOTS OR LARGE MASSES OF ROOTS NEED TO BE CUT, THE ROOTS SHALL BE INSPECTED BY A CERTIFIED ARBORIST OR REGISTERED FORESTER PRIOR TO CUTTING. ANY ROOT CUTTING SHALL BE MONITORED BY AN ARBORIST OR FORESTER AND DOCUMENTED. ROOTS TO BE CUT SHOULD BE SEVERED CLEANLY WITH A SAW OR TOPPERS. NORMAL IRRIGATION SHALL BE MAINTAINED, BUT OAKS SHOULD NOT NEED SUMMER IRRIGATION. THE ABOVE INFORMATION SHALL BE ON-SITE AT ALL TIMES.

VEGETATION REMOVAL/REPLACEMENT NOTES

1. VEGETATION REMOVED IN AREAS OUTSIDE OF BUILDING FOOTPRINTS, DRIVEWAYS, AND CONSTRUCTION ACCESS AREAS SHALL BE REPLACED WITH DROUGHT-TOLERANT, NON-INVASIVE PLANTS, IMMEDIATELY AFTER GRADING IS COMPLETE IN THAT AREA. PRIOR TO THE ISSUANCE OF ANY BUILDING PERMITS, THE APPLICANT SHALL SUBMIT PHOTOGRAPHS DEMONSTRATING COMPLIANCE WITH THIS CONDITION TO THE CURRENT PLANNING SECTION, SUBJECT TO REVIEW AND APPROVAL BY THE COMMUNITY DEVELOPMENT DIRECTOR.

2. THE APPLICANT SHALL REPLACE ALL VEGETATION REMOVED IN ALL AREAS NOT COVERED BY CONSTRUCTION WITH DROUGHT-TOLERANT, NON-INVASIVE PLANTS, ONCE CONSTRUCTION IS COMPLETED. PRIOR TO THE CURRENT PLANNING SECTION'S FINAL APPROVAL OF ANY BUILDING PERMIT, THE APPLICANT SHALL SUBMIT PHOTOGRAPHS DEMONSTRATING COMPLIANCE WITH THIS CONDITION, SUBJECT TO REVIEW AND APPROVAL BY THE COMMUNITY DEVELOPMENT DIRECTOR.

DUST CONTROL NOTES

1. ALL GRADED SURFACES AND MATERIALS, WHETHER FILLED, EXCAVATED, TRANSPORTED OR STOCKPILED, SHALL BE WETTED, PROTECTED OR CONTAINED IN SUCH A MANNER AS TO PREVENT ANY SIGNIFICANT NUISANCE FROM DUST, OR SPILLAGE UPON ADJOINING WATER BODY, PROPERTY, OR STREETS. EQUIPMENT AND MATERIALS ON THE SITE SHALL BE USED IN SUCH A MANNER AS TO AVOID EXCESSIVE DUST. A DUST CONTROL PLAN MAY BE REQUIRED AT ANYTIME DURING THE COURSE OF THE PROJECT.

2. A DUST PALLIATIVE SHALL BE APPLIED TO THE SITE WHEN REQUIRED BY THE COUNTY. THE TYPE AND RATE OF APPLICATION SHALL BE RECOMMENDED BY THE SOILS ENGINEER AND APPROVED BY THE DEPARTMENT OF PUBLIC WORKS, THE PLANNING AND BUILDING DEPARTMENT'S GEOTECHNICAL SECTION, AND THE REGIONAL WATER QUALITY CONTROL BOARD.

DISCOVERY OF HUMAN REMAINS NOTE

1. THE APPLICANT AND CONTRACTORS MUST BE PREPARED TO CARRY OUT THE REQUIREMENTS OF CALIFORNIA STATE LAW WITH REGARD TO THE DISCOVERY OF HUMAN REMAINS DURING CONSTRUCTION, WHETHER HISTORIC OR PREHISTORIC. IN THE EVENT THAT ANY HUMAN REMAINS ARE ENCOUNTERED DURING SITE DISTURBANCE, ALL GROUND-DISTURBING WORK SHALL CEASE IMMEDIATELY AND THE COUNTY CORONER SHALL BE NOTIFIED IMMEDIATELY. IF THE CORONER DETERMINES THE REMAINS TO BE NATIVE AMERICAN, THE NATIVE AMERICAN HERITAGE COMMISSION SHALL BE CONTACTED WITHIN 24 HOURS. A QUALIFIED ARCHAEOLOGIST, IN CONSULTATION WITH THE NATIVE AMERICAN HERITAGE COMMISSION, SHALL RECOMMEND SUBSEQUENT MEASURES FOR DISPOSITION OF THE REMAINS.

GEOTECHNICAL INSPECTION NOTE

1. PRIOR TO ISSUANCE OF BUILDING PERMITS, THE PROJECT GEOTECHNICAL CONSULTANT SHALL FIELD INSPECT (AND INVESTIGATE, AS NEEDED) ALL PROPOSED DRAINAGE DISCHARGE LOCATIONS AND VERIFY THAT PROPOSED DRAINAGE DESIGNS ARE ACCEPTABLE FROM A SLOPE STABILITY/EROSION PERSPECTIVE OR RECOMMEND APPROPRIATE MODIFICATIONS.

MITIGATION AQ-1

1. THE PROJECT APPLICANT SHALL REQUIRE THAT THE FOLLOWING BAAQMD RECOMMENDED AND ADDITIONAL PM10 REDUCTION PRACTICES BE IMPLEMENTED BY INCLUDING THEM IN THE CONTRACTOR CONSTRUCTION DOCUMENTS: THE FIRST PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY. THE REMAINDER OF CONSTRUCTION EQUIPMENT (70 PERCENT), WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL BE REQUIRED TO USE EMULSIFIED FUELS.

2. THE SECOND PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 2 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY AND 50 PERCENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS. THE REMAINING 20 PERCENT OF CONSTRUCTION EQUIPMENT, WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL USE EMULSIFIED FUELS.

3. FOR ALL LARGER VEHICLES, INCLUDING CEMENT MIXERS OR OTHER DEVICES THAT MUST BE DELIVERED BY LARGE TRUCKS, VEHICLES SHALL BE EQUIPPED WITH CARB LEVEL THREE VERIFIED CONTROL DEVICES.

4. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY.

2. COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR REQUIRE ALL TRUCKS TO MAINTAIN AT LEAST TWO FEET OF FREEBOARD.

3. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY NON-TOXIC SOIL STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.

4. SWEEP DAILY (WITH WATER SWEEPERS) ALL PAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.

5. SWEEP PUBLIC STREETS ADJACENT TO CONSTRUCTION SITES DAILY (WITH WATER SWEEPERS) IF VISIBLE SOIL MATERIAL IS CARRIED ONTO THE STREETS.

6. HYDROSEED OR APPLY NON-TOXIC SOIL STABILIZERS TO INACTIVE CONSTRUCTION AREAS (PREVIOUSLY GRADED AREAS INACTIVE FOR TEN DAYS OR MORE).

7. ENCLOSE, COVER, WATER TWICE DAILY, OR APPLY NON-TOXIC SOIL BINDERS TO EXPOSED STOCKPILES (DIRT, SAND, ETC.). LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.

8. LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.

9. INSTALL SANDBAGS OR OTHER EROSION CONTROL MEASURES TO PREVENT SILT RUNOFF TO PUBLIC ROADWAYS.

10. REPLANT VEGETATION IN DISTURBED AREAS AS SOON AS POSSIBLE.

11. INSTALL WHEEL WASHERS FOR ALL EXITING TRUCKS OR WASH OFF THE TIRES OR TRACKS OF ALL TRUCKS AND EQUIPMENT LEAVING THE CONSTRUCTION SITE.

12. INSTALL WIND BREAKS AT THE WINDWARD SIDES OF THE CONSTRUCTION AREAS.

13. SUSPEND EXCAVATION AND GRADING ACTIVITIES WHEN WIND (AS INSTANTANEOUS GUSTS) EXCEEDS 25 MILES PER HOUR.

MITIGATION NOI-1

1. THE PROJECT APPLICANT SHALL REQUIRE THAT THE FOLLOWING NOISE REDUCTION PRACTICES BE IMPLEMENTED BY INCLUDING THEM IN THE CONTRACTOR CONSTRUCTION DOCUMENTS:

2. EQUIPMENT AND TRUCKS USED FOR PROJECT GRADING AND CONSTRUCTION WOULD UTILIZE THE BEST AVAILABLE NOISE CONTROL TECHNIQUES (E.G., IMPROVED EXHAUST MUFFLERS, EQUIPMENT REDESIGN, USE OF INTAKE SILENCERS, DUCTS, ENGINE ENCLOSURES, AND ACOUSTICALLY-ATTENUATING SHIELDS OR SHROUDS) IN ORDER TO MINIMIZE CONSTRUCTION NOISE IMPACTS.

3. EQUIPMENT USED FOR PROJECT GRADING AND CONSTRUCTION WOULD BE HYDRAUL- ICALLY OR ELECTRICALLY POWERED IMPACT TOOLS (E.G., JACK HAMMERS AND PAVEMENT BREAKERS) WHEREVER POSSIBLE TO AVOID NOISE ASSOCIATED WITH COMPRESSED AIR EXHAUST FROM PNEUMATICALLY-POWERED TOOLS. COMPRESSED AIR EXHAUST SILENCERS WOULD BE USED ON OTHER EQUIPMENT. OTHER QUIETER PROCEDURES WOULD BE USED SUCH AS DRILLING RATHER THAN IMPACT EQUIPMENT WHENEVER FEASIBLE.

4. THE GRADING AND CONSTRUCTION ACTIVITY WOULD BE KEPT TO THE HOURS OF 7:00 AM TO 7:00 PM, MONDAY THROUGH FRIDAY. SATURDAY HOURS (8:00 AM TO 5:00 PM) ARE PERMITTED UPON THE DISCRETION OF COUNTY APPROVAL BASED ON INPUT FROM NEARBY RESIDENTS AND BUSINESSES. SATURDAY CONSTRUCTION (8:00 AM TO 5:00 PM) WOULD BE ALLOWED ONCE THE BUILDINGS ARE FULLY ENCLOSED. NOISE GENERATING GRADING AND CONSTRUCTION ACTIVITIES SHALL NOT OCCUR AT ANY TIME ON SUNDAYS, THANKSGIVING AND CHRISTMAS.

5. RESIDENTIAL PROPERTY OWNERS WITHIN 200 FEET OF PLANNED CONSTRUCTION AREAS SHALL BE NOTIFIED OF THE CONSTRUCTION SCHEDULE IN WRITING, PRIOR TO CONSTRUCTION; THE PROJECT SPONSOR SHALL DESIGNATE A "DISTURBANCE COORDI- NATOR" WHO SHALL BE RESPONSIBLE FOR RESPONDING TO ANY LOCAL COMPLAINTS REGARDING CONSTRUCTION NOISE; THE COORDINATOR (WHO MAY BE AN EMPLOYEE OF THE DEVELOPER OR GENERAL CONTRACTOR) SHALL DETERMINE THE CAUSE OF THE COMPLAINT AND SHALL REQUIRE THAT REASONABLE MEASURES WARRANTED TO CORRECT THE PROBLEM BE IMPLEMENTED; A TELEPHONE NUMBER OF THE NOISE DISTURBANCE COORDINATOR SHALL BE CONSPICUOUSLY POSTED AT THE CONSTRUCTION SITE FENCE AND ON THE NOTIFICATION SENT TO NEIGHBORS ADJACENT TO THE SITE.

BENCHMARK:

THE PROJECT BENCHMARK IS THE TOP OF AN IRON PIPE, ELEVATION OF 538.23, LOCATED WITHIN A MONUMENT BOX AT THE INTERSECTION OF THE CENTERLINES OF COBBLEHILL PLACE AND NEW BRUNSWICK DRIVE IN SAN MATEO, CALIFORNIA. THE ELEVATION SHOWN IN BASED UPON A SURVEY BY BKF ENGINEERS IN MARCH OF 2011 AND IS BASED UPON AN ASSUMED ELEVATION.

BASIS OF BEARINGS:

THE BEARING NORTH 76° 09' 00" EAST OF THE CENTERLINE OF COBBLE HILL PLACE AS SHOWN ON TRACT MAP NO. 723, THE HIGHLANDS, RECORDED ON AUGUST 26TH, 1955, IN VOLUME 43 OF MAPS AT PAGES 23-25, SAN MATEO COUNTY RECORDS.

811

Know what's **below.**
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REDWOOD CITY, CA 94065
PHONE: (650) 482-6300
FAX: (650) 482-6399

BKF
ENGINEERS / SURVEYORS / PLANNERS

ROLAND N.V. HAGA
No. C043971

HIGHLAND ESTATES
LOT 7 IMPROVEMENT PLANS
GENERAL NOTES

CITY OF SAN MATEO
SAN MATEO COUNTY
CALIFORNIA

No.	Revisions

Date 05/10/2018
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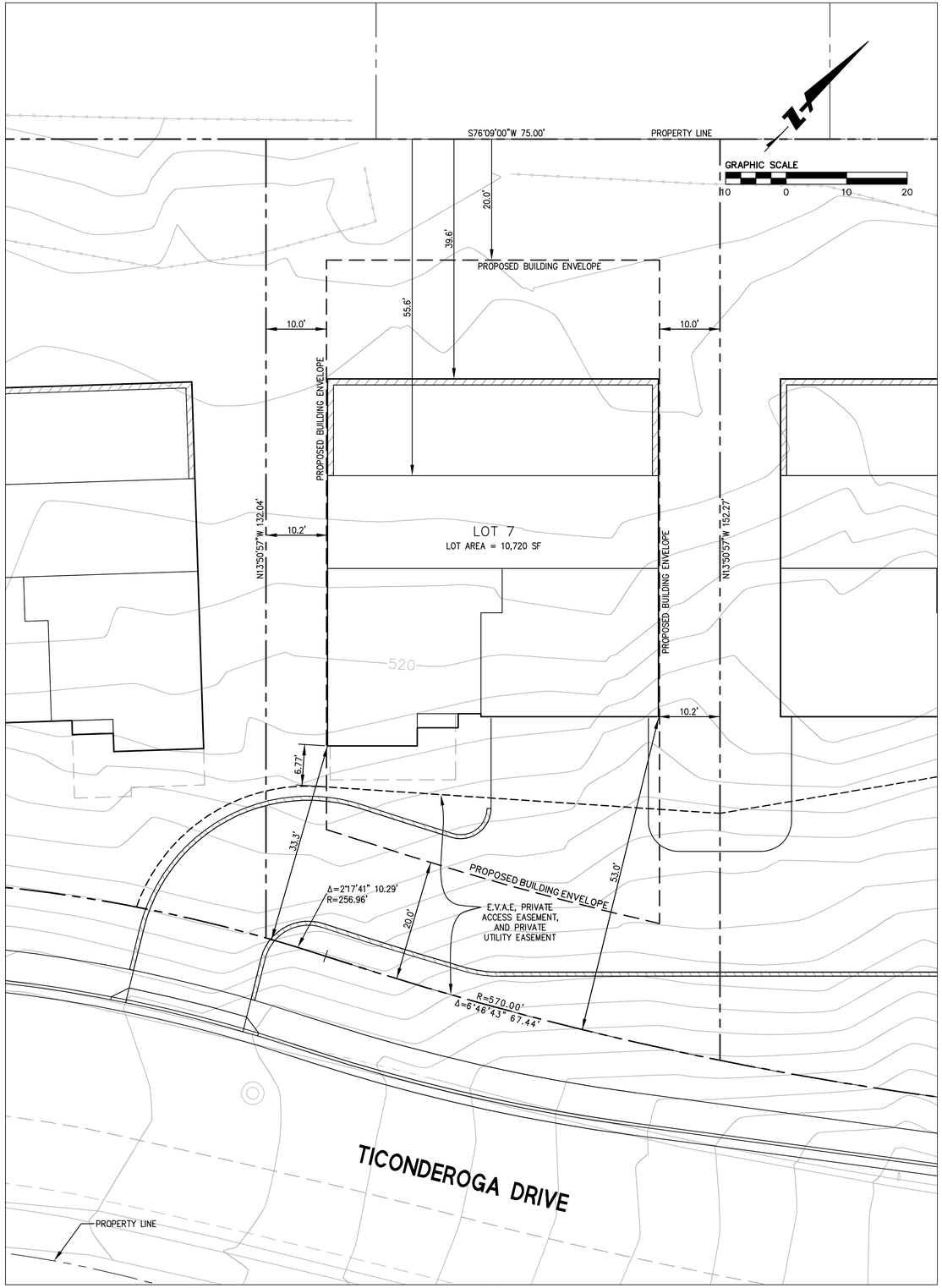
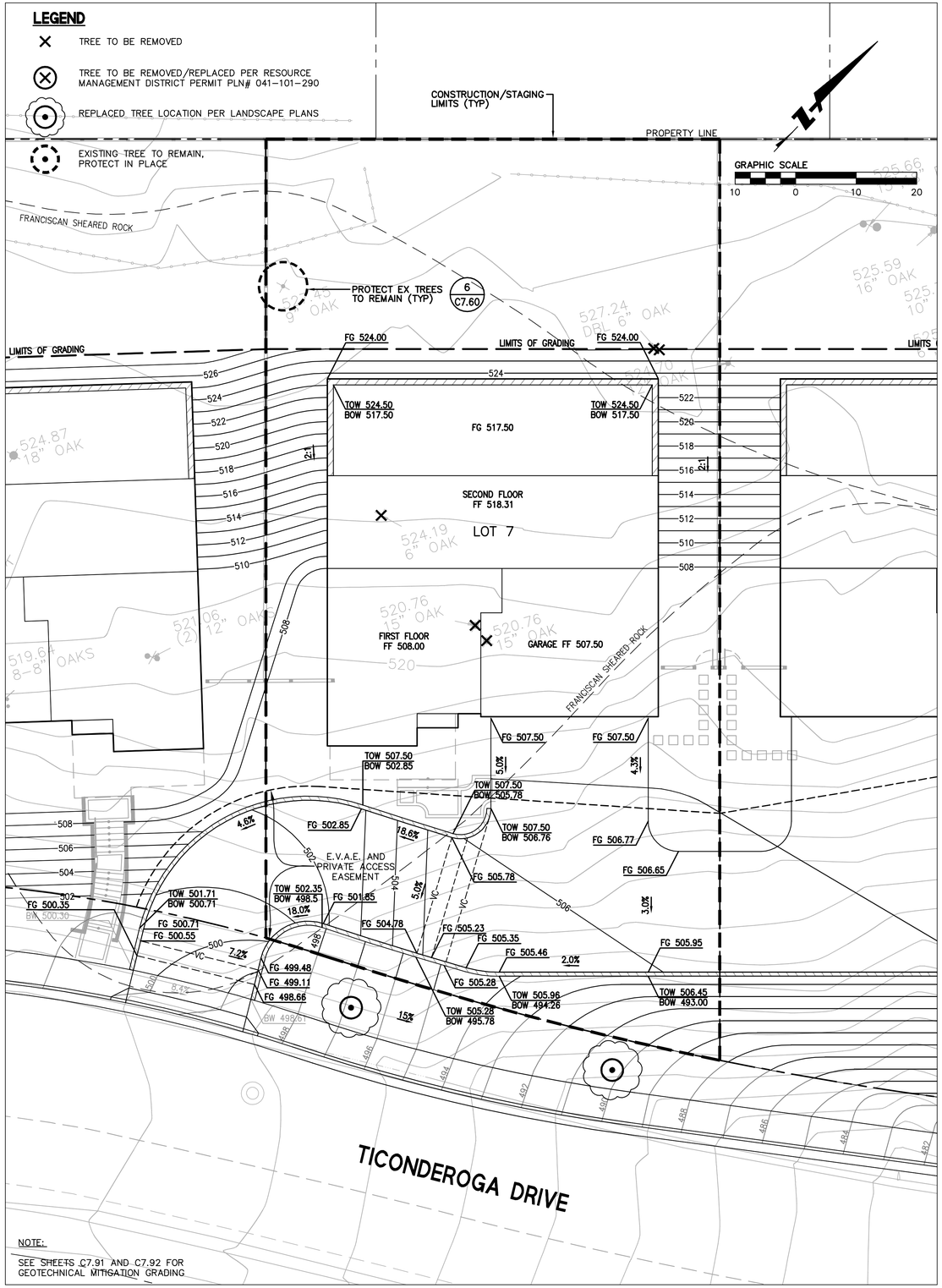


LOT 7
SITE PLAN
SCALE: 1"=10'



NOTE:
SEE SHEETS C7.91 AND C7.92 FOR GEOTECHNICAL MITIGATION GRADING

LOT 7
CLEARING, CONSTRUCTION, AND GRADING PLAN
SCALE: 1"=10'

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REGISTERED PROFESSIONAL ENGINEER SHAWHWA TANG No. 067726 CIVIL STATE OF CALIFORNIA

HIGHLAND ESTATES
LOT 7 IMPROVEMENT PLANS
SITE & CLEARING, CONSTRUCTION AND GRADING PLANS
CITY OF SAN MATEO — SAN MATEO COUNTY — CALIFORNIA

Revisions	No.

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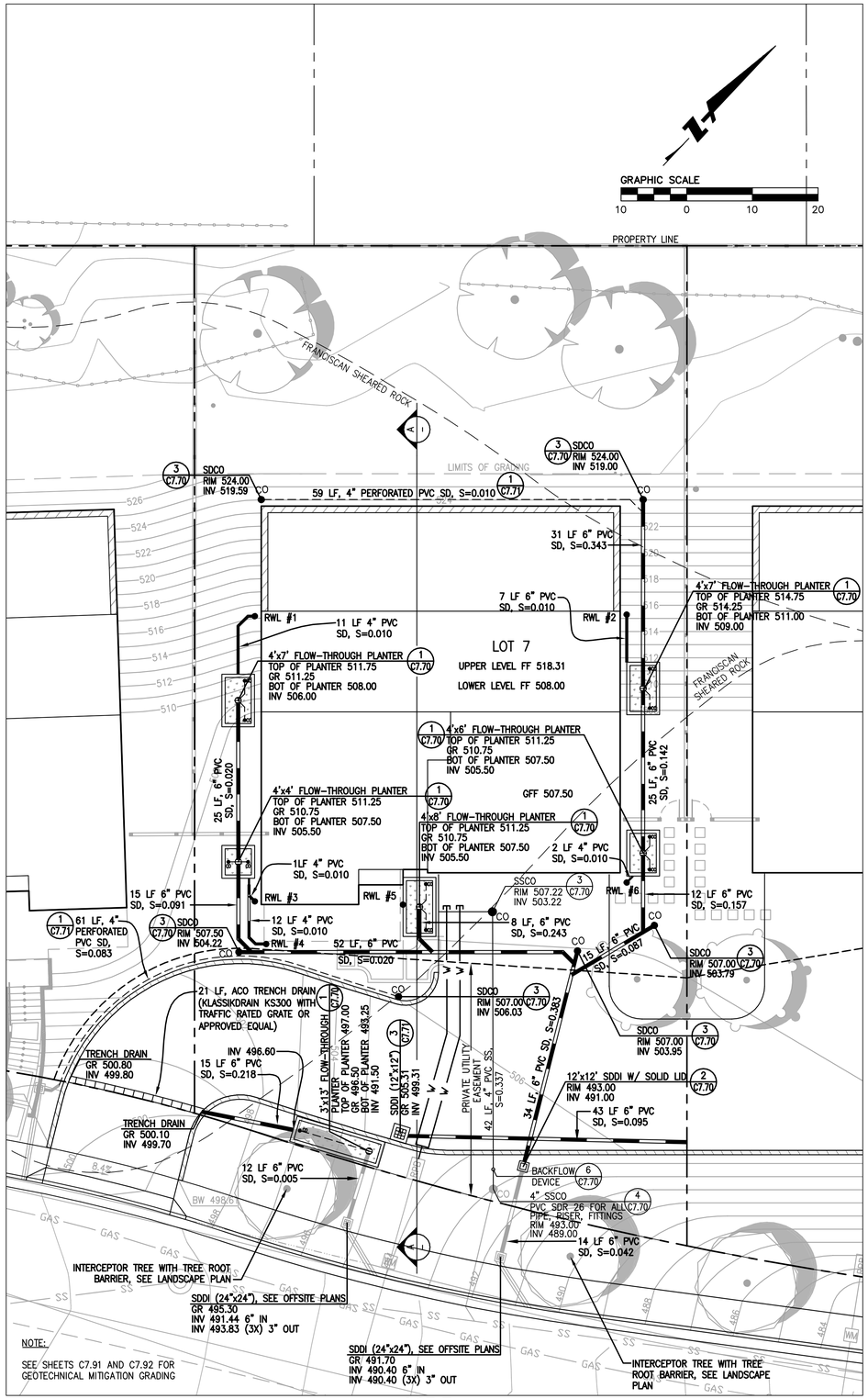
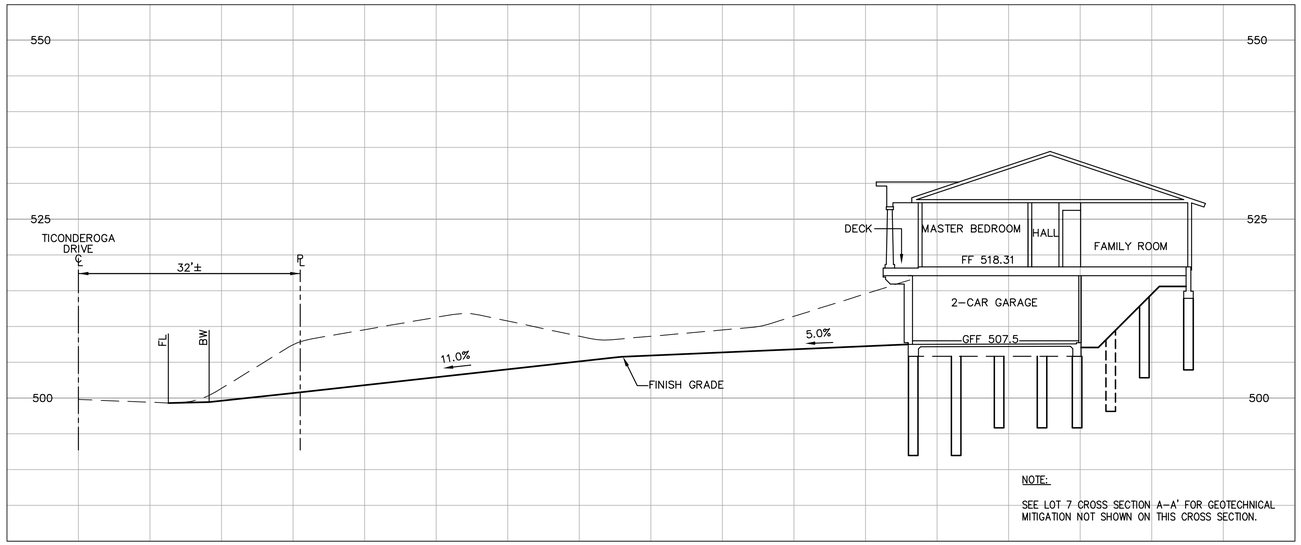


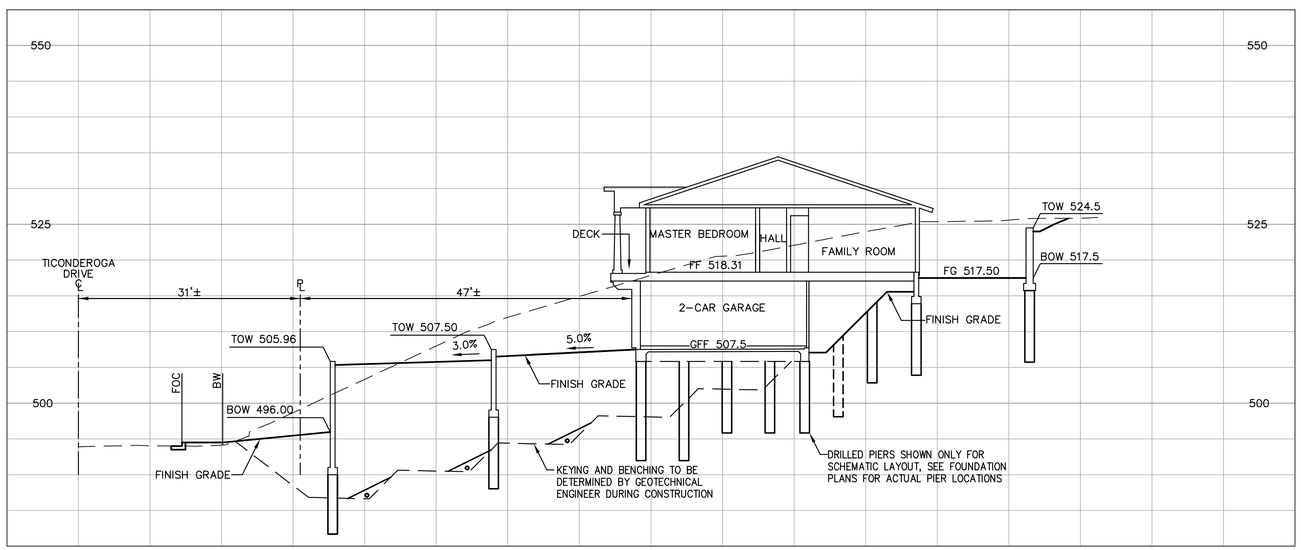
LOT 7
UTILITY PLAN
SCALE: 1"=10'



LOT 7
CROSS SECTION DWY CENTERLINE
SCALE: 1"=10'

NOTES:

1. PER THE GEOTECHNICAL REPORT, UNDOCUMENTED FILL WAS MAPPED AT LOT 5 AND IF THIS FILL IS TO BE LEFT IN PLACE DURING HOUSE AND DRIVEWAY GRADING, IT SHOULD BE REMOVED AND REPLACED AS PROPERLY COMPACTED ENGINEERED FILL.
2. PER THE GEOTECHNICAL REPORT, ALL EXISTING FILLS SHOULD BE COMPLETELY REMOVED FROM WITHIN PROPOSED HOUSE FOOTPRINT AND DRIVEWAY AREAS AND TO A LATERAL DISTANCE OF AT LEAST 5 FEET BEYOND THE EDGE OF THE IMPROVEMENTS OR AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER. ANY EXCESS MATERIAL SHALL BE DISPOSED OF OFF-SITE IN A LAWFUL MANNER.
3. PER THE GEOTECHNICAL REPORT, GEOTECHNICAL MITIGATION GRADING WILL BE PERFORMED ON LOT 7, SEE SHEETS C7.91 AND C7.92 FOR GRADING DETAILS OF THE MITIGATION
4. PER THE GEOTECHNICAL REPORT, ALL BUILDING AND RETAINING WALLS SHOULD BE SUPPORTED ON DRILLED PIERS. THE FOUNDATION SHOWN ON THIS PLAN ARE SCHEMATIC. REFER TO THE PROJECT STRUCTURAL PLANS FOR DETAILS ON THE DRILLED PIERS.



LOT 7
CROSS SECTION A-A
SCALE: 1"=10'

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HIGHLAND ESTATES
LOT 7 IMPROVEMENT PLANS
UTILITY PLAN AND CROSS SECTION

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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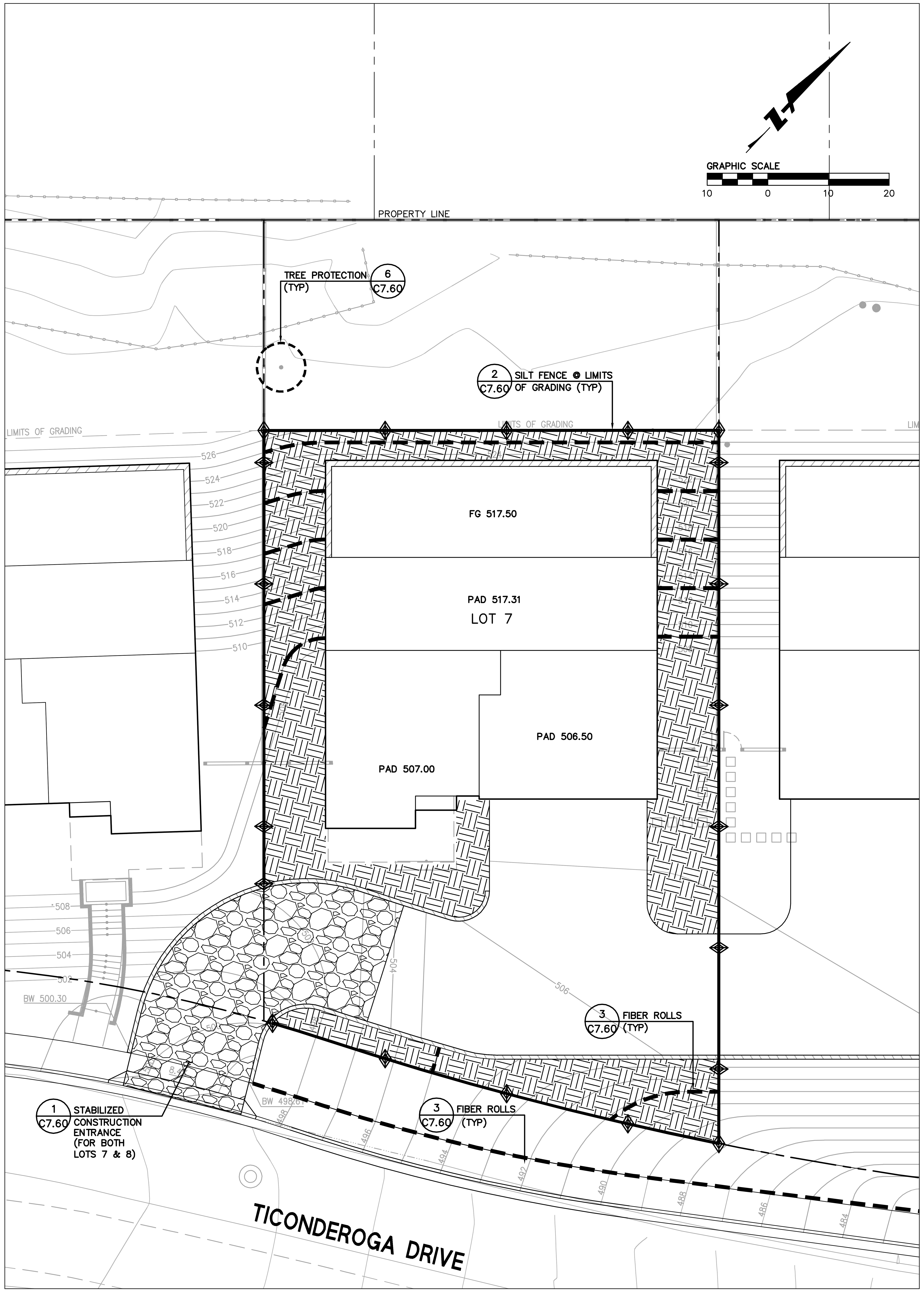
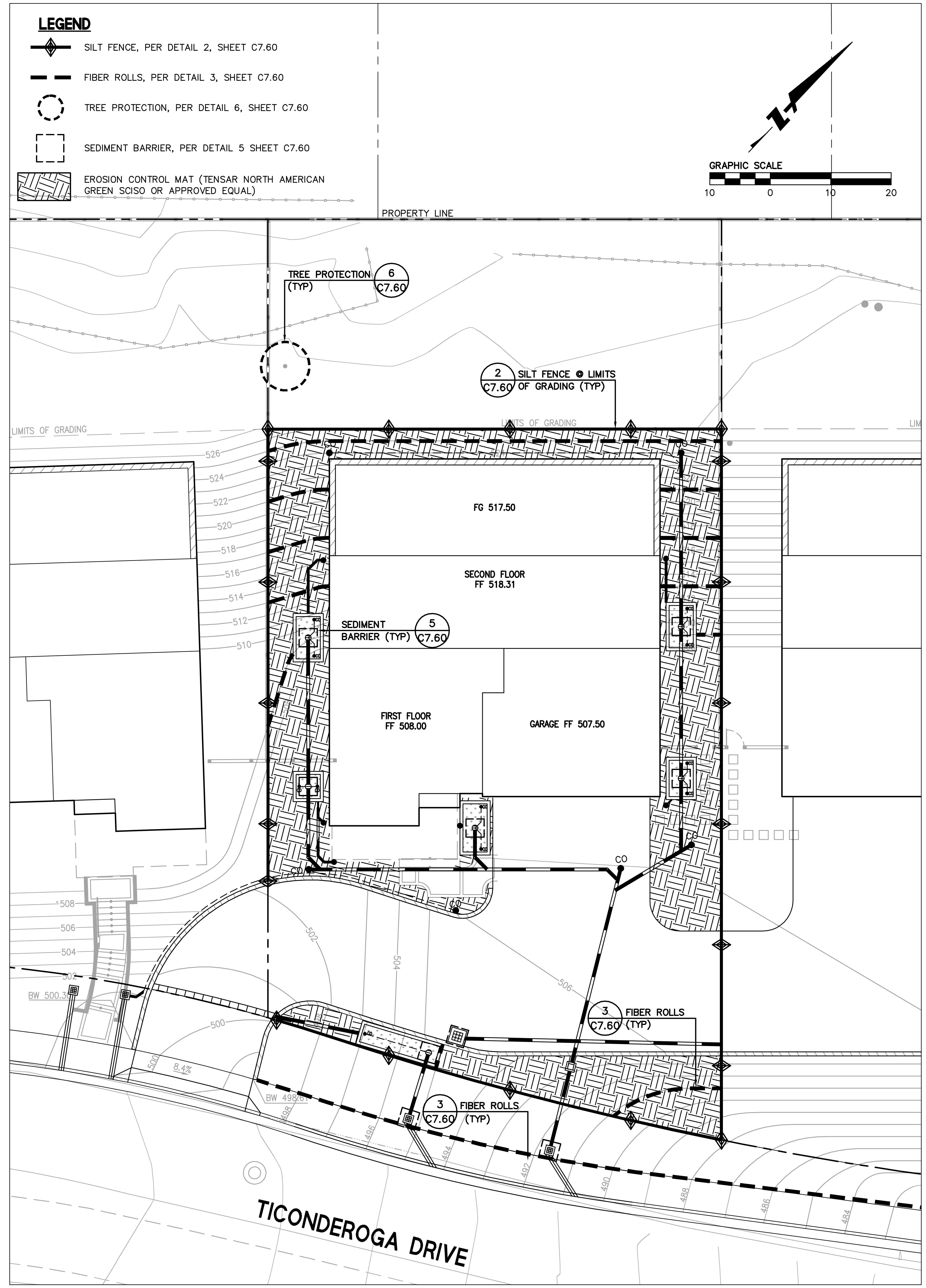


LOT 7
GRADING AND RETAINING WALL EROSION CONTROL PLAN
SCALE: 1"=10'



LOT 7
FOUNDATION AND CONSTRUCTION EROSION CONTROL PLAN
SCALE: 1"=10'

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REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA — CIVIL

HIGHLAND ESTATES
LOT 7 IMPROVEMENT PLANS
EROSION CONTROL PLANS

CITY OF SAN MATEO — SAN MATEO COUNTY — CALIFORNIA

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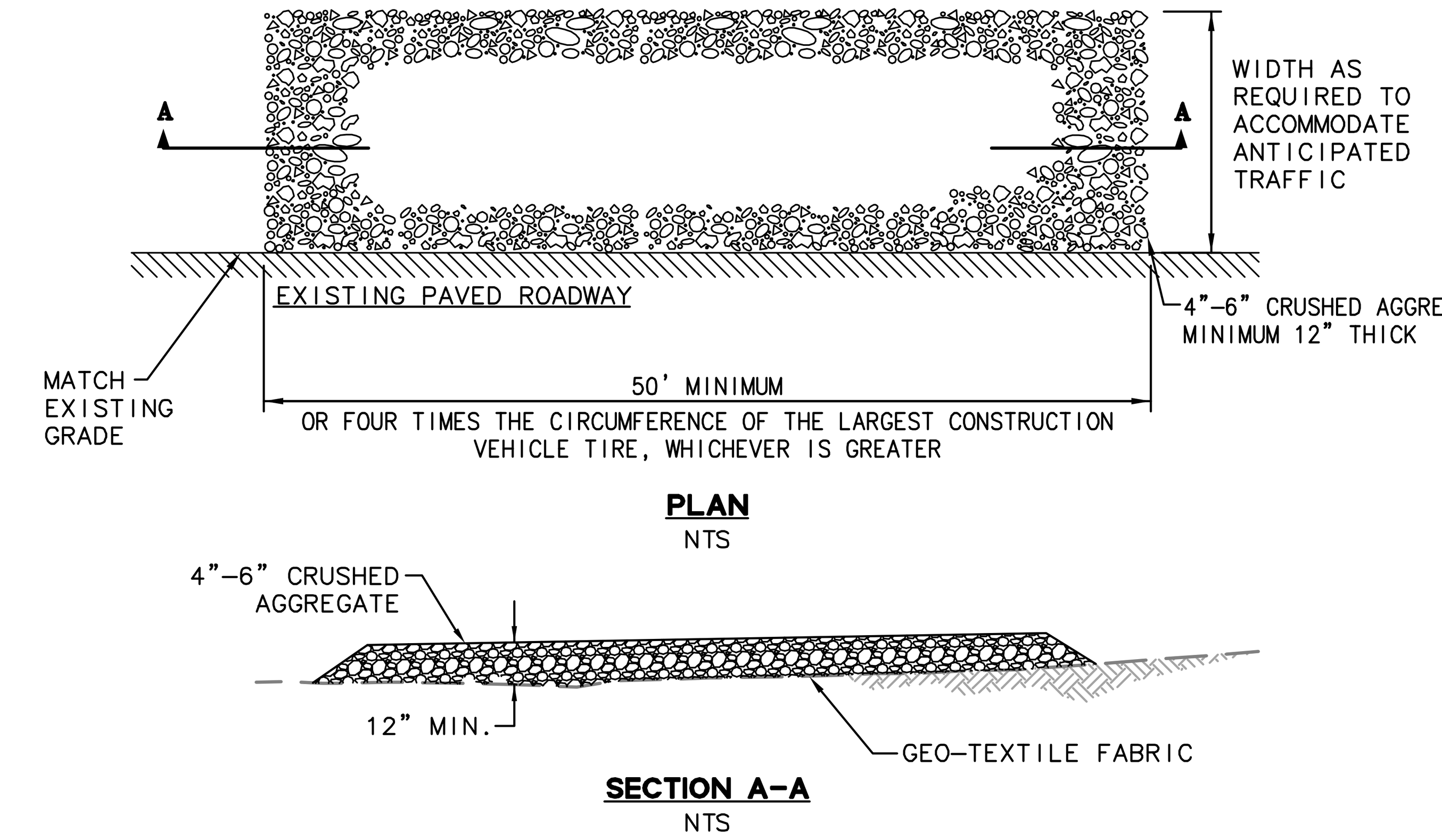
EROSION CONTROL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2. ALTHOUGH SPECIFIC LOCATIONS FOR SEDIMENT CONTROL FACILITIES ARE SHOWN ON THESE PLANS, IT IS INTENDED THIS EROSION CONTROL PLAN BE MODIFIED WHEN NECESSARY TO MEET FIELD CONDITIONS. BASIN AND TRAP SIZES AND ELEVATIONS MAY BE ADJUSTED AS LONG AS THE MINIMUM AREAS AND DEPTHS FOR SEDIMENT SETTLING AND STORAGE ARE NOT REDUCED.
3. THE INTENT OF THESE PLANS IS TO PROVIDE THE INITIAL CONCEPT FOR INTERIM EROSION CONTROL. THE CONTRACTOR SHALL UPDATE THE PLANS TO REFLECT CHANGING SITE CONDITIONS. PLAN UPDATES SHALL BE BASED UPON GENERAL SURVEY DATA. EROSION CONTROL EFFECTIVENESS SHALL ALSO BE MONITORED AND THE PLANS UPGRADED AS REQUIRED TO PREVENT SIGNIFICANT QUANTITIES OF SEDIMENT FROM ENTERING THE DOWNSTREAM DRAINAGE SYSTEM.
4. THIS PLAN MAY NOT COVER ALL THE SITUATIONS THAT ARISE DURING CONSTRUCTION DUE TO UNANTICIPATED FIELD CONDITIONS. IN GENERAL, THE CONTRACTOR IS RESPONSIBLE FOR KEEPING THE STORM RUN OFF FROM LEAVING THE SITE. FIBER ROLLS, SAND BAGS, AND SILT FENCES SHALL BE USED BY THE CONTRACTOR ON AN AS NEEDED BASIS TO INHIBIT SILT FROM LEAVING THE SITE AND ENTERING THE STORM DRAIN SYSTEM. ALL EXISTING, TEMPORARY, OR PERMANENT CATCH BASINS SHALL USE ONE OF THE SEDIMENT BARRIERS SHOWN.
5. THE CONTRACTOR WILL BE LIABLE FOR ANY AND ALL DAMAGES TO PUBLIC AND/OR PRIVATE OWNED AND MAINTAINED ROAD CAUSED BY THE CONTRACTOR'S GRADING ACTIVITIES, AND WILL BE RESPONSIBLE FOR THE CLEANUP OF ANY MATERIAL SPILLED ON ANY PUBLIC ROAD ON THE HAUL ROUTE. ADJACENT PUBLIC ROADS SHALL BE CLEANED AT THE END OF EACH WORKING DAY.
6. BEST MANAGEMENT PRACTICES SHALL BE OPERABLE YEAR AROUND.
7. DURING THE RAINY SEASON, ALL PAVED AREAS ARE TO BE KEPT CLEAR OF EARTH MATERIAL AND DEBRIS. THE SITE IS TO BE MAINTAINED SO AS TO MINIMIZE SEDIMENT-LADEN RUNOFF TO ANY STORM DRAIN SYSTEM.
8. ALL EROSION CONTROL FACILITIES MUST BE INSPECTED AND REPAIRED DAILY DURING THE RAINY SEASON. ALL SLOPES SHALL BE REPAIRED AS SOON AS POSSIBLE WHEN DAMAGED.
9. THE FIRST PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY. THE REMAINDER OF CONSTRUCTION EQUIPMENT (70 PERCENT), WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL BE REQUIRED TO USE EMULSIFIED FUELS.
10. THE SECOND PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 2 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY AND 50 PERCENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS. THE REMAINING 20 PERCENT OF CONSTRUCTION EQUIPMENT, WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL USE EMULSIFIED FUELS.
11. FOR ALL LARGER VEHICLES, INCLUDING CEMENT MIXERS OR OTHER DEVICES THAT MUST BE DELIVERED BY LARGE TRUCKS, VEHICLES SHALL BE EQUIPPED WITH CARB LEVEL THREE VERIFIED CONTROL DEVICES.
12. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY.
13. COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR REQUIRE ALL TRUCKS TO MAINTAIN AT LEAST TWO FEET OF FREEBOARD.
14. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY NON-TOXIC SOIL STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.
15. SWEEP DAILY (WITH WATER SWEEPERS) ALL PAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.
16. SWEEP PUBLIC STREETS ADJACENT TO CONSTRUCTION SITES DAILY (WITH WATER SWEEPERS) IF VISIBLE SOIL MATERIAL IS CARRIED ONTO THE STREETS.
17. HYDROSEED OR APPLY NON-TOXIC SOIL STABILIZERS TO INACTIVE CONSTRUCTION AREAS (PREVIOUSLY GRADED AREAS INACTIVE FOR TEN DAYS OR MORE).
18. TEMPORARY AND PERMANENT SLOPES GREATER THAN 3 FEET SHALL BE SEEDED UNLESS ALTERNATIVE MEASURES ARE USED.
19. SEED MIX FOR REVEGETATION AND HYDROSEEDING:
    NORTHERN CALIFORNIA COVER MIX BY ACBRIGHT OR EQUAL

    30% BLUE WILDRYE
    30% MEADOW BARLEY
    20% ZORRO FESCUE
    10% PURPLE NEEDLE GRASS
    10% CALIFORNIA NATIVE WILDFLOWERS

    APPLY AT 40 POUNDS PER ACRE MINIMUM
20. ENCLOSE, COVER, WATER TWICE DAILY, OR APPLY NON-TOXIC SOIL BINDERS TO EXPOSED STOCKPILES (DIRT, SAND, ETC.). LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.
21. DISPOSAL AREAS FOR SEDIMENT TO BE DETERMINED IN FIELD. WHEN MATERIAL IS STOCKPILED, IT SHALL BE SURROUNDED BY A SILT FENCE/FIBER ROLLS.
22. LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.
23. INSTALL SANDBAGS OR OTHER EROSION CONTROL MEASURES TO PREVENT SILT RUNOFF TO PUBLIC ROADWAYS.
24. REPLANT VEGETATION IN DISTURBED AREAS AS SOON AS POSSIBLE.
25. INSTALL WHEEL WASHERS FOR ALL EXITING TRUCKS OR WASH OFF THE TIRES OR TRACKS OF ALL TRUCKS AND EQUIPMENT LEAVING THE CONSTRUCTION SITE.
26. INSTALL WIND BREAKS AT THE WINDWARD SIDES OF THE CONSTRUCTION AREAS.
27. SUSPEND EXCAVATION AND GRADING ACTIVITIES WHEN WIND (AS INSTANTANEOUS GUSTS) EXCEEDS 25 MILES PER HOUR.
28. NO GRADING SHALL BE ALLOWED DURING THE WINTER SEASON (OCTOBER 1 TO APRIL 30) TO AVOID POTENTIAL SOIL EROSION UNLESS APPROVED, IN WRITING, BY THE COMMUNITY DEVELOPMENT DIRECTOR. THE PROPERTY OWNERS SHALL SUBMIT A LETTER TO THE CURRENT PLANNING SECTION, AT LEAST TWO WEEKS PRIOR TO COMMENCEMENT OF GRADING, STATING THE DATE WHEN GRADING WILL BEGIN.
29. STABILIZE ALL DENUDED AREAS AND MAINTAIN EROSION CONTROL MEASURES CONTINUOUSLY BETWEEN OCTOBER 1 AND APRIL 30. STABILIZING SHALL INCLUDE BOTH PROACTIVE MEASURES, SUCH AS THE PLACEMENT OF STRAW BALES OR COIR NETTING, AND PASSIVE MEASURES, SUCH AS MINIMIZING VEGETATION REMOVAL AND REVEGETATING DISTURBED AREAS WITH VEGETATION THAT IS COMPATIBLE WITH THE SURROUNDING ENVIRONMENT.
30. STORE, HANDLE, AND DISPOSE OF CONSTRUCTION MATERIALS AND WASTES PROPERLY, SO AS TO PREVENT THEIR CONTACT WITH STORMWATER.
31. CONTROL AND PREVENT THE DISCHARGE OF ALL POTENTIAL POLLUTANTS, INCLUDING PAVEMENT CUTTING WASTES, PAINTS, CONCRETE, PETROLEUM PRODUCTS, CHEMICALS, WASH WATER OR SEDIMENTS, AND NON-STORMWATER DISCHARGES TO STORM DRAINS AND WATERCOURSES.
32. USE SEDIMENT CONTROLS OR FILTRATION TO REMOVE SEDIMENT WHEN DEWATERING SITE AND OBTAINING ALL NECESSARY PERMITS.
33. AVOID CLEANING, FUELING, OR MAINTAINING VEHICLES ON-SITE, EXCEPT IN A DESIGNATED AREA WHERE WASH WATER IS CONTAINED AND TREATED.
34. DELINEATE WITH FIELD MARKERS CLEARING LIMITS, SETBACKS, AND DRAINAGE COURSES.
35. PROTECT ADJACENT PROPERTIES AND UNDISTURBED AREAS FROM CONSTRUCTION IMPACTS USING VEGETATIVE BUFFER STRIPS, SEDIMENT BARRIERS OR FILTERS, DIKES, MULCHING, OR OTHER MEASURES AS APPROPRIATE.
36. PERFORM CLEARING AND EARTH-MOVING ACTIVITIES ONLY DURING DRY WEATHER.
37. LIMIT AND TIME APPLICATIONS OF PESTICIDES AND FERTILIZERS TO PREVENT POLLUTED RUNOFF.
38. LIMIT CONSTRUCTION ACCESS ROUTES AND STABILIZE DESIGNATED ACCESS POINTS.
39. ALL GRADED SURFACES AND MATERIALS, WHETHER FILLED, EXCAVATED, TRANSPORTED OR STOCKPILED, SHALL BE WETTED, PROTECTED OR CONTAINED IN SUCH A MANNER AS TO PREVENT ANY SIGNIFICANT NUISANCE FROM DUST, OR SPILLAGE UPON ADJOINING WATER BODY, PROPERTY, OR STREETS. EQUIPMENT AND MATERIALS ON THE SITE SHALL BE USED IN SUCH A MANNER AS TO AVOID EXCESSIVE DUST. A DUST CONTROL PLAN MAY BE REQUIRED AT ANYTIME DURING THE COURSE OF THE PROJECT.
40. A DUST PALLIATIVE SHALL BE APPLIED TO THE SITE WHEN REQUIRED BY THE COUNTY. THE TYPE AND RATE OF APPLICATION SHALL BE RECOMMENDED BY THE SOILS ENGINEER AND APPROVED BY THE DEPARTMENT OF PUBLIC WORKS, THE PLANNING AND BUILDING DEPARTMENT'S GEOTECHNICAL SECTION, AND THE REGIONAL WATER QUALITY CONTROL BOARD.
41. IF NO WORK HAS PROGRESSED FOR A PERIOD OF 6-WEEKS, FINAL DRAINAGE AND EROSION CONTROL IMPROVEMENTS SHALL BE INSTALLED IN ACCORDANCE WITH AN APPROVED WINTERIZATION PLAN.
42. PADS SHALL BE GRADED TO MINIMIZE STANDING WATER. SPECIFIC LOCATIONS REQUIRING SUPPLEMENTAL GRADING TO ACHIEVE ACCEPTABLE DRAINAGE SHALL BE DETERMINED BY THE CONSTRUCTION MANAGER. ALL SPOILS AND SOIL STOCKPILES REMAINING ON SITE SHALL BE ENCIRCLED BY SILT FENCES/FIBER ROLLS.
43. STUBBED OUT ENDS OF PARTIALLY COMPLETED SUBDRAINS SHALL BE WRAPPED WITH AN APPROVED FABRIC TO PREVENT SOIL AND DEBRIS FROM ENTERING THE PIPE.
44. HAUL ROADS ARE CURRENTLY NOT SHOWN ON THE PLANS. EROSION CONTROL MEASURES SHALL BE TAKEN TO MINIMIZE EROSION RELATED TO HAUL ROADS.
45. GRADING SCHEDULE SHALL BE SUBMITTED FOR APPROVAL TO SAN MATEO COUNTY PUBLIC WORKS BY AUGUST 15.
46. EROSION CONTROL POINT OF CONTACT:
    NOEL CHAMBERLAIN, NEXGEN BUILDERS INC.
    225 DEMETER STREET
    EAST PALO ALTO, CA 94303
    PHONE #: 650-322-5800
    CELL #: 650-444-3089
    EMAIL: noel@nexgenbuilders.com
47. SHOULD IT APPEAR THAT THE EROSION CONTROL PLAN, OR ANY OTHER MATTER THERETO, IS NOT SUFFICIENTLY DETAILED OR EXPLAINED ON THESE PLANS, THE CONTRACTOR SHALL CONTACT THE BKF PROJECT ENGINEER AT (650) 482-6300 FOR SUCH FURTHER EXPLANATIONS AS MAY BE NECESSARY.
48. AREAS DELINEATED ON PLANS FOR PARKING, CLEARING & GRUBBING, STORAGE, ETC. SHALL NOT BE ENLARGED OR "RUN OVER."
49. CONSTRUCTION SITES ARE REQUIRED TO HAVE EROSION CONTROL MATERIALS ON-SITE DURING THE "OFF-SEASON."
50. DUST CONTROL IS REQUIRED YEAR-ROUND.
51. EROSION CONTROL MATERIALS SHALL BE STORED ON-SITE.
52. USE OF PLASTIC SHEETING BETWEEN OCTOBER 1ST AND APRIL 30TH IS NOT ACCEPTABLE, UNLESS FOR USE ON STOCKPILES WHERE THE STOCKPILE IS ALSO PROTECTED WITH FIBER ROLLS CONTAINING THE BASE OF THE STOCKPILE.
53. TREE PROTECTION SHALL BE IN PLACE BEFORE ANY GRADING, EXCAVATING OR GRUBBING IS STARTED.

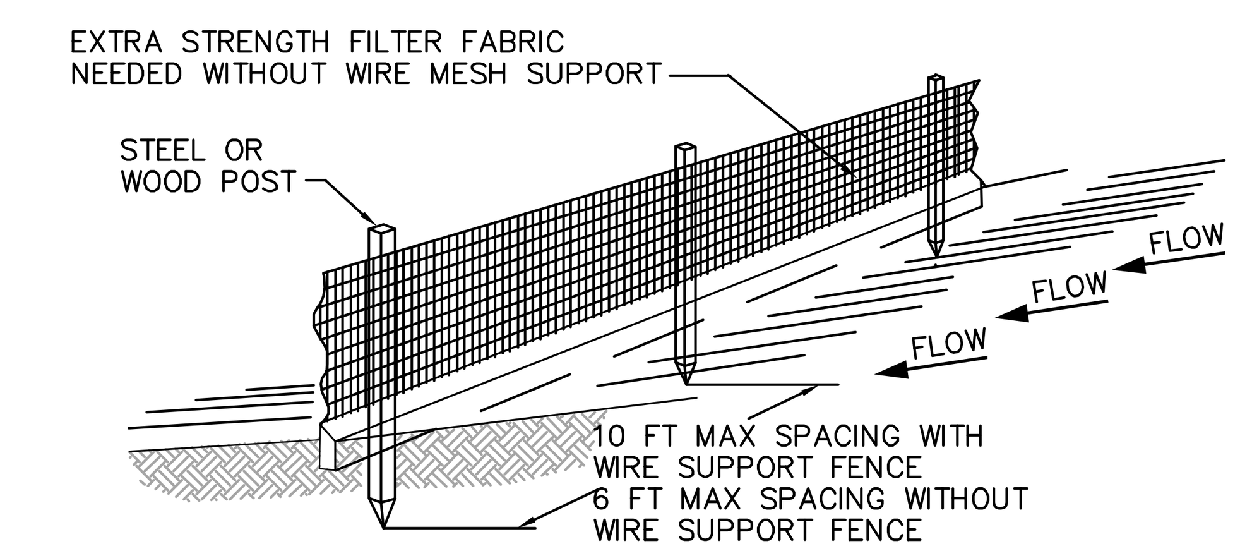
ALL EROSION CONTROL MEASURES SHALL BE IN PLACE BY OCTOBER 1ST THROUGH APRIL 30TH AND MAINTAINED DURING ALL PHASES OF CONSTRUCTION.



NOTES:

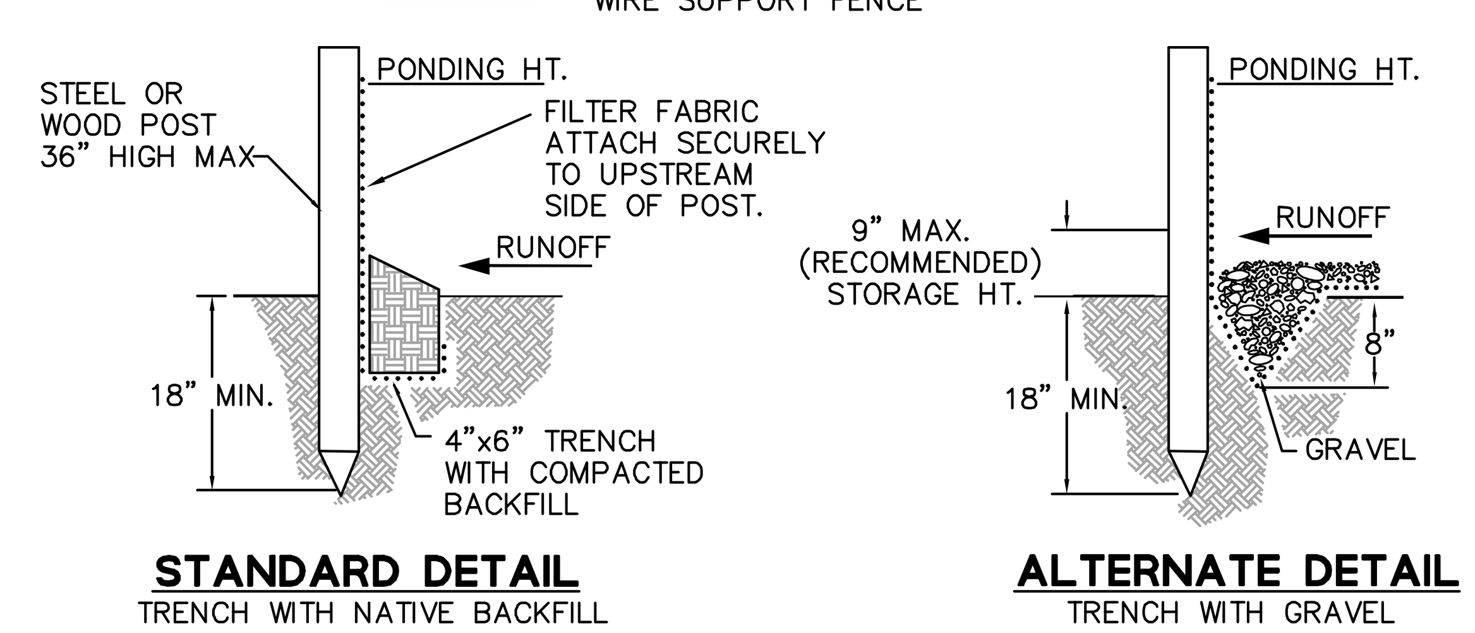
1. ALL CONSTRUCTION ENTRANCES SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USE TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAYS SHALL BE REMOVED IMMEDIATELY.
2. WHEELS SHALL BE CLEAN PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAYS. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE THROUGH USE OF INLET PROTECTION (E.G. SAND BAGS OR OTHER APPROVED METHODS).
3. THE MATERIAL FOR CONSTRUCTION OF THE PAD SHALL BE 4" TO 6" STONE.
4. THE THICKNESS OF THE PAD SHALL NOT BE LESS THAN 12".
5. THE WIDTH OF THE PAD SHALL NOT BE LESS THAN THE FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
6. THE LENGTH OF THE PAD SHALL NOT BE LESS THAN 50'.

1 — STABILIZED CONSTRUCTION ENTRANCE
NTS

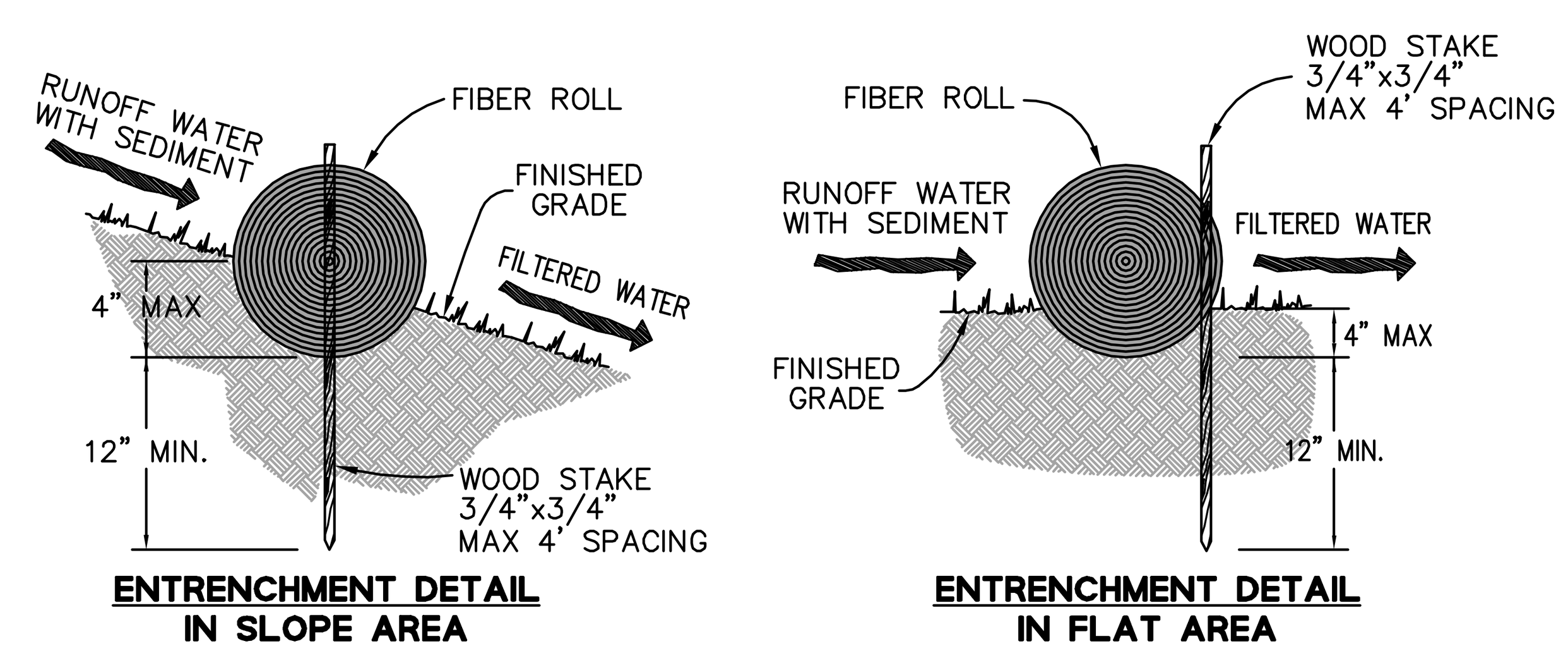


NOTES:

1. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
2. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
3. SILT FENCE SHALL BE PLACED ON SLOPE TO MAXIMIZE PONDING EFFICIENCY.



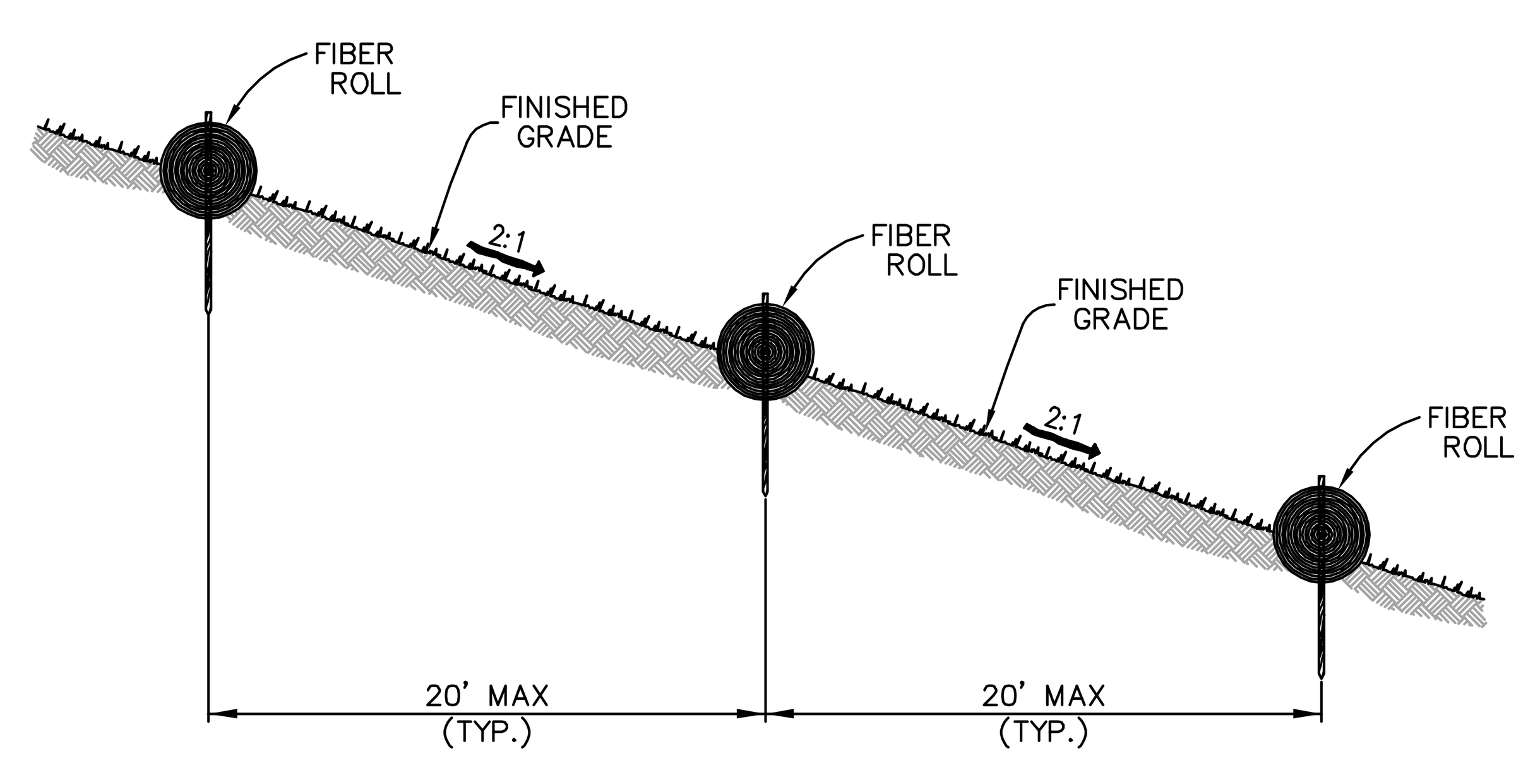
2 — SILT FENCE
NTS



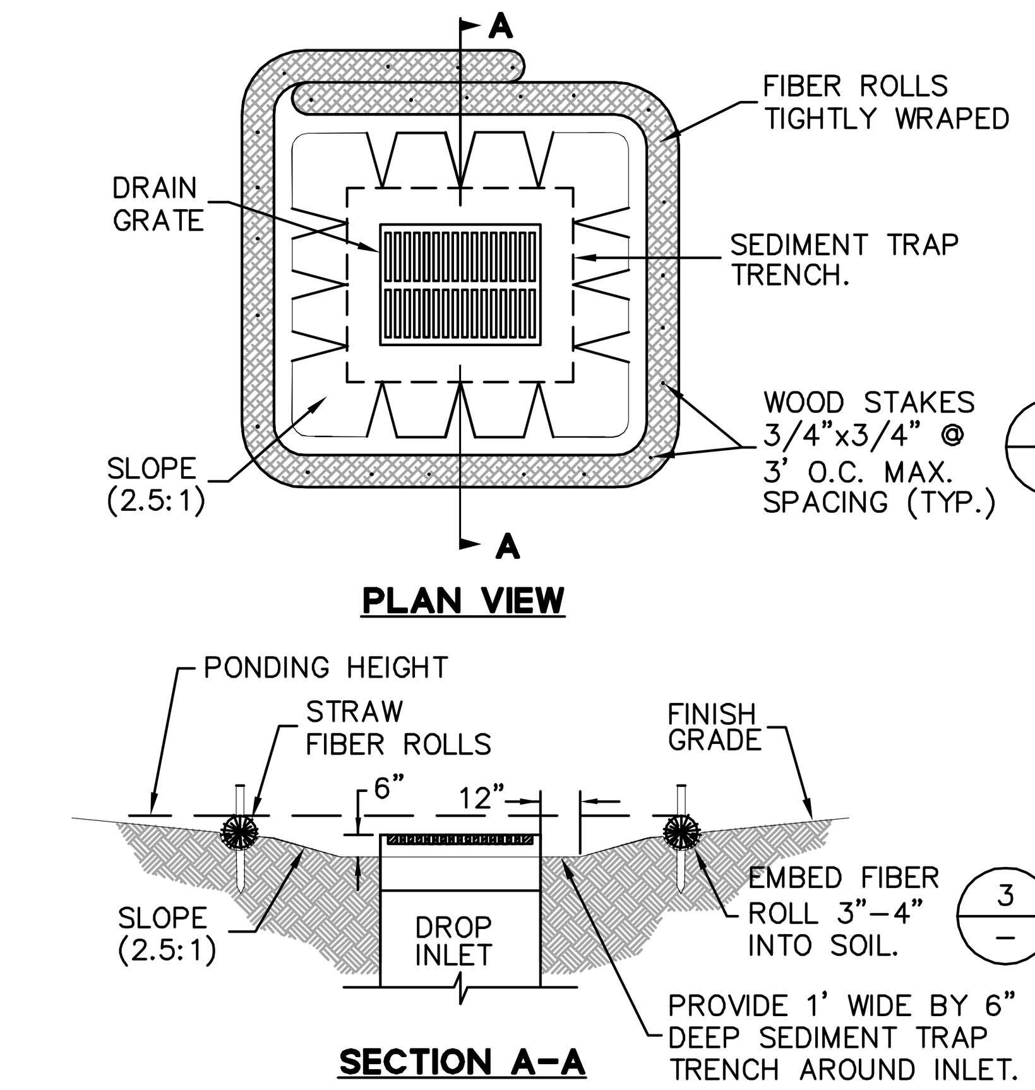
NOTES:

1. FIBER ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3" TO 4" DEEP, DUG ON CONTOUR.
2. ADJACENT ROLLS SHALL TIGHTLY ABUT.
3. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND FIBER ROLL.

3 — FIBER ROLL
NTS



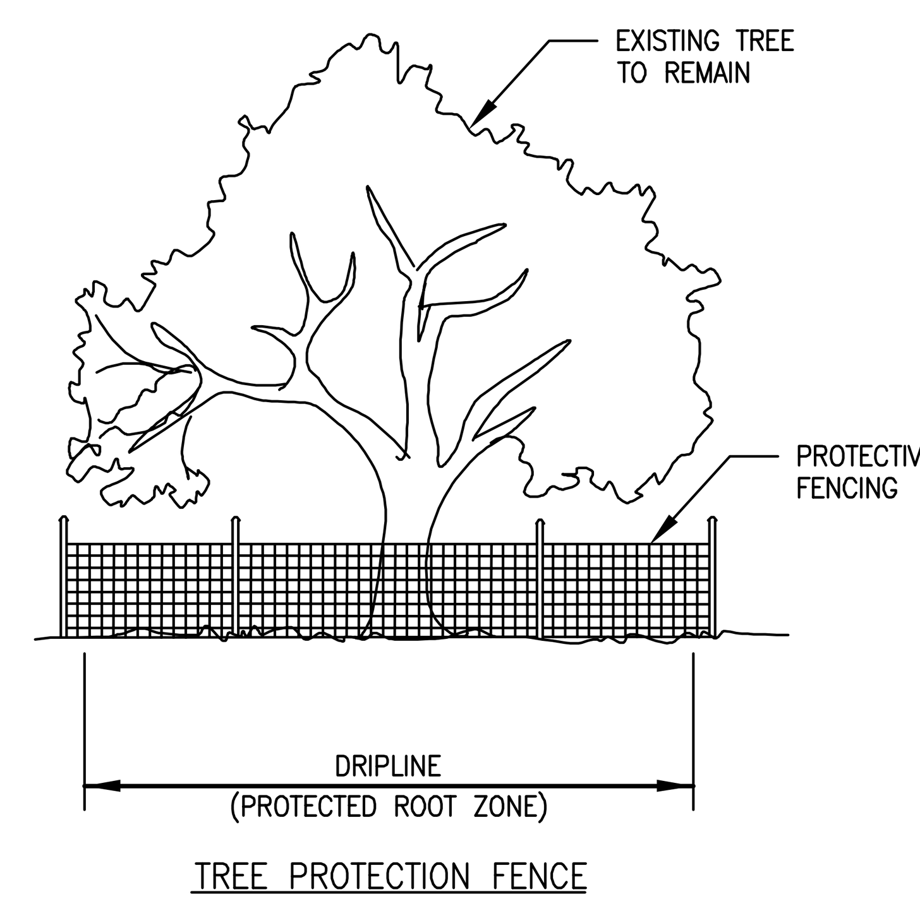
4 — FIBER ROLL INSTALLATION ON SLOPE
(TIME FRAME: BETWEEN FINAL PAVING OPERATIONS AND PROJECT COMPLETION)
NTS



NOTES:

1. PLACE FIBER ROLLS AROUND THE INLET CONSISTENT WITH BASIN SEDIMENT BARRIER DETAIL ON THIS SHEET. (FIBER ROLLS ARE TUBES MADE FROM STRAW BOUND W/ PLASTIC NETTING. THEY ARE APPROX. 8" DIA. AND 20 - 30 FT. LONG.)
2. FIBER ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE FIBER ROLL IN A TRENCH, 3" - 4" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND FIBER ROLL.
3. THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BY-PASSING THE INLET. EXCAVATION OF A BASIN ADJACENT TO THE DROP INLET OR A TEMPORARY DIKE ON THE DOWNSLOPE OF THE STRUCTURE MAY BE NECESSARY.

5 — SEDIMENT BARRIER
(TIME FRAME: AREA DRAINS - BETWEEN AREA DRAIN INSTALLATION AND PROJECT COMPLETION
CURB INLETS - BETWEEN CURB INLET INSTALLATION AND FINAL PAVING OPERATIONS)
NTS



NOTES:

1. THE APPLICANT SHALL ESTABLISH AND MAINTAIN TREE PROTECTION ZONES THROUGHOUT THE ENTIRE LENGTH OF THE PROJECT.
2. TREE PROTECTION ZONES SHALL BE DELINEATED USING 4-FOOT TALL ORANGE PLASTIC FENCING SUPPORTED BY POLES POUNDED INTO THE GROUND, LOCATED AS CLOSE TO THE DRIPLINES AS POSSIBLE WHILE STILL ALLOWING ROOM FOR CONSTRUCTION/GRADING TO SAFELY CONTINUE.
3. THE APPLICANT SHALL MAINTAIN TREE PROTECTION ZONES FREE OF EQUIPMENT AND MATERIALS STORAGE AND SHALL NOT CLEAN ANY EQUIPMENT WITHIN THESE AREAS.
4. SHOULD ANY LARGE ROOTS OR LARGE MASSES OF ROOTS NEED TO BE CUT, THE ROOTS SHALL BE INSPECTED BY A CERTIFIED ARBORIST OR REGISTERED FORESTER PRIOR TO CUTTING. ANY ROOT CUTTING SHALL BE MONITORED BY AN ARBORIST OR FORESTER AND DOCUMENTED.
5. ROOTS TO BE CUT SHOULD BE SEVERED CLEANLY WITH A SAW OR TOPPERS.
6. NORMAL IRRIGATION SHALL BE MAINTAINED, BUT OAKS SHOULD NOT NEED SUMMER IRRIGATION.
7. THE ABOVE INFORMATION SHALL BE ON-SITE AT ALL TIMES.

6 — TREE PROTECTION FENCE
NTS

CALIFORNIA STORMWATER QUALITY ASSOCIATION [CASQA] STANDARD DETAIL REFERENCES

(CALIFORNIA STORMWATER BMP HANDBOOK CONSTRUCTION, DATED NOVEMBER 2009)

NOTE: ALTHOUGH SPECIFIC LOCATIONS FOR SPECIFIC BMPS ARE SHOWN ON THESE PLANS, IT IS INTENDED FOR THE CONTRACTOR TO APPLY APPROPRIATE BMPS WHEN NECESSARY TO MEET FIELD CONDITIONS.

EROSION CONTROL BMPS:

EC-1 SCHEDULING
EC-2 PRESERVATION OF EXISTING VEGETATION
EC-3 HYDRAULIC MULCH
EC-4 HYDROSEEDING
EC-5 SOIL BINDERS
EC-6 STRAW MULCH
EC-7 GEOTEXTILES & MATS
EC-8 WOOD MULCHING
EC-9 EARTH DIKES AND DRAINAGE SWALES
EC-10 VELOCITY DISSIPATION DEVICES
EC-11 SLOPE DRAINS
EC-12 STREAMBANK STABILIZATION
EC-14 COMPOST BLANKETS
EC-15 SOIL PREPARATION/ROUGHENING
EC-16 NON-VEGETATIVE STABILIZATION

TEMPORARY SEDIMENT CONTROL BMPS:

SE-1 SILT FENCE
SE-2 SEDIMENT BASIN
SE-3 SEDIMENT TRAP
SE-4 CHECK DAM
SE-5 FIBER ROLLS
SE-6 GRAVEL BAG BERM
SE-7 STREET SWEEPING AND VACUUMING
SE-8 SANDBAG BARRIER
SE-9 STRAW BALE BARRIER
SE-10 STORM DRAIN INLET PROTECTION
SE-11 ACTIVE TREATMENT SYSTEMS
SE-12 TEMPORARY SILT DIKE
SE-13 COMPOST SOCKS AND BERMS
SE-14 BIOFILTER BAGS

WIND EROSION CONTROL BMPS:

WE-1 WIND EROSION CONTROL

TEMPORARY TRACKING CONTROL BMPS:

TC-1 STABILIZED CONSTRUCTION ENTRANCE/EXIT
TC-2 STABILIZED CONSTRUCTION ROADWAY
TC-3 ENTRANCE/OUTLET TIRE WASH

NON-STORMWATER MANAGEMENT BMPS:

NS-1 WATER CONSERVATION PRACTICES
NS-2 DEWATERING OPERATIONS
NS-3 PAVING AND GRINDING OPERATIONS
NS-4 TEMPORARY STREAM CROSSING
NS-5 CLEAR WATER DIVERSION
NS-6 ILLICIT CONNECTION/DISCHARGE
NS-7 POTABLE WATER/IRRIGATION
NS-8 VEHICLE AND EQUIPMENT CLEANING
NS-9 VEHICLE AND EQUIPMENT FUELING
NS-10 VEHICLE AND EQUIPMENT MAINTENANCE
NS-11 PILE DRIVING OPERATIONS
NS-12 CONCRETE CURING
NS-13 CONCRETE FINISHING
NS-14 MATERIAL AND EQUIPMENT USE
NS-15 DEMOLITION ADJACENT TO WATER
NS-16 TEMPORARY BATCH PLANTS

WASTE MANAGEMENT & MATERIALS POLLUTION CONTROL BMPS:

WM-1 MATERIAL DELIVERY AND STORAGE
WM-2 MATERIAL USE
WM-3 STOCKPILE MANAGEMENT
WM-4 SPILL PREVENTION AND CONTROL
WM-5 SOLID WASTE MANAGEMENT
WM-6 HAZARDOUS WASTE MANAGEMENT
WM-7 CONTAMINATED SOIL MANAGEMENT
WM-8 CONCRETE WASTE MANAGEMENT
WM-9 SANITARY/SEPTIC WASTE MANAGEMENT
WM-10 LIQUID WASTE MANAGEMENT

BKF ENGINEERS / SURVEYORS / PLANNERS
255 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
PHONE: (650) 482-6300
FAX: (650) 482-6399

HIGHLAND ESTATES
LOT 7 IMPROVEMENT PLANS
EROSION CONTROL DETAILS AND NOTES
CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

Revisions

Date	05/10/2018
Scale	AS SHOWN
Design	JT
Drawn	MD
Approved	RH
Job No	950168-20

Sheet Number:
C7.60
OF

DRAWING NAME: K:\Eng95\950168\dwg\CD\Lot_7\C7.60-HECDEC.dwg
PLOT DATE: 08-28-18 PLOTTED BY: holt

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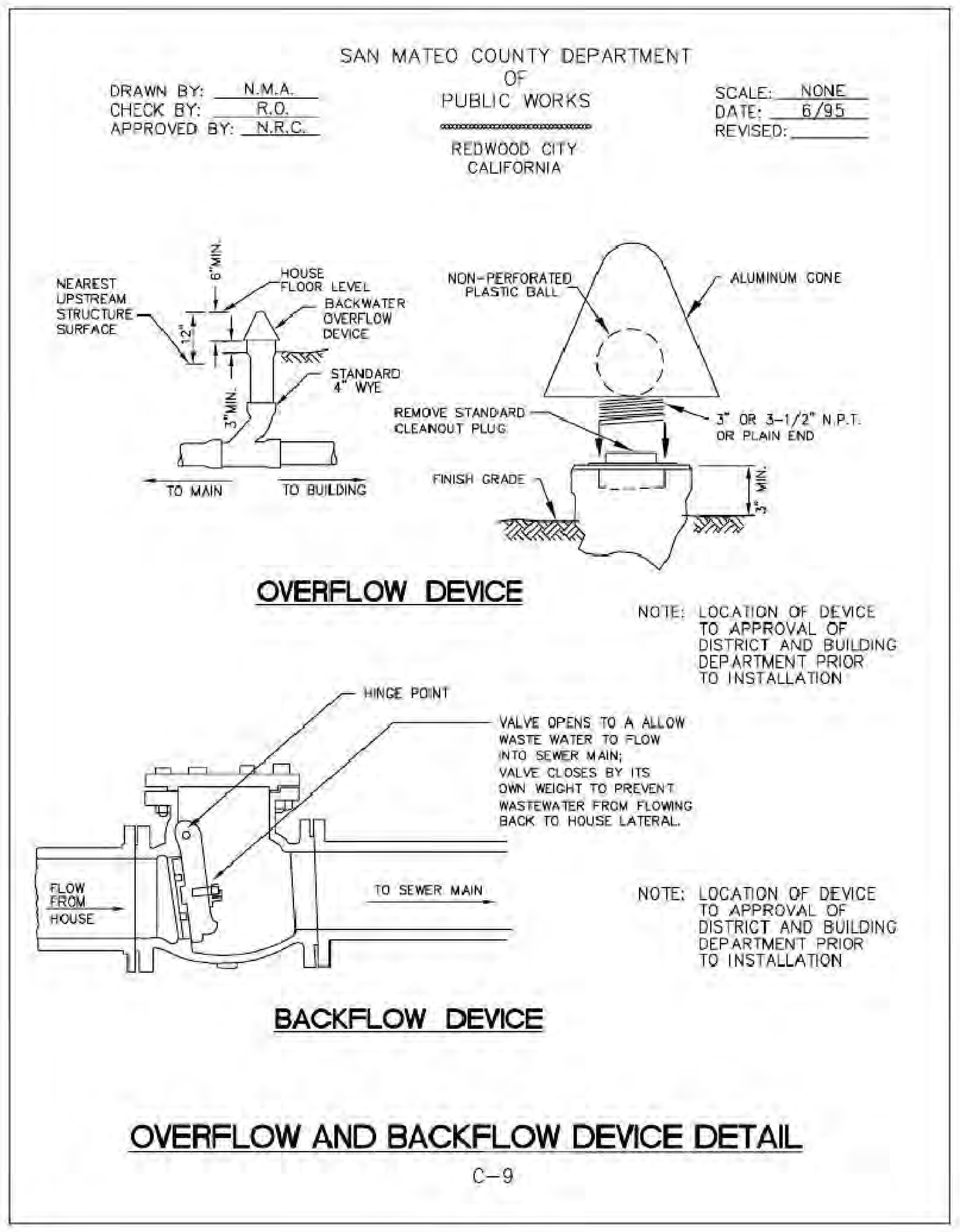
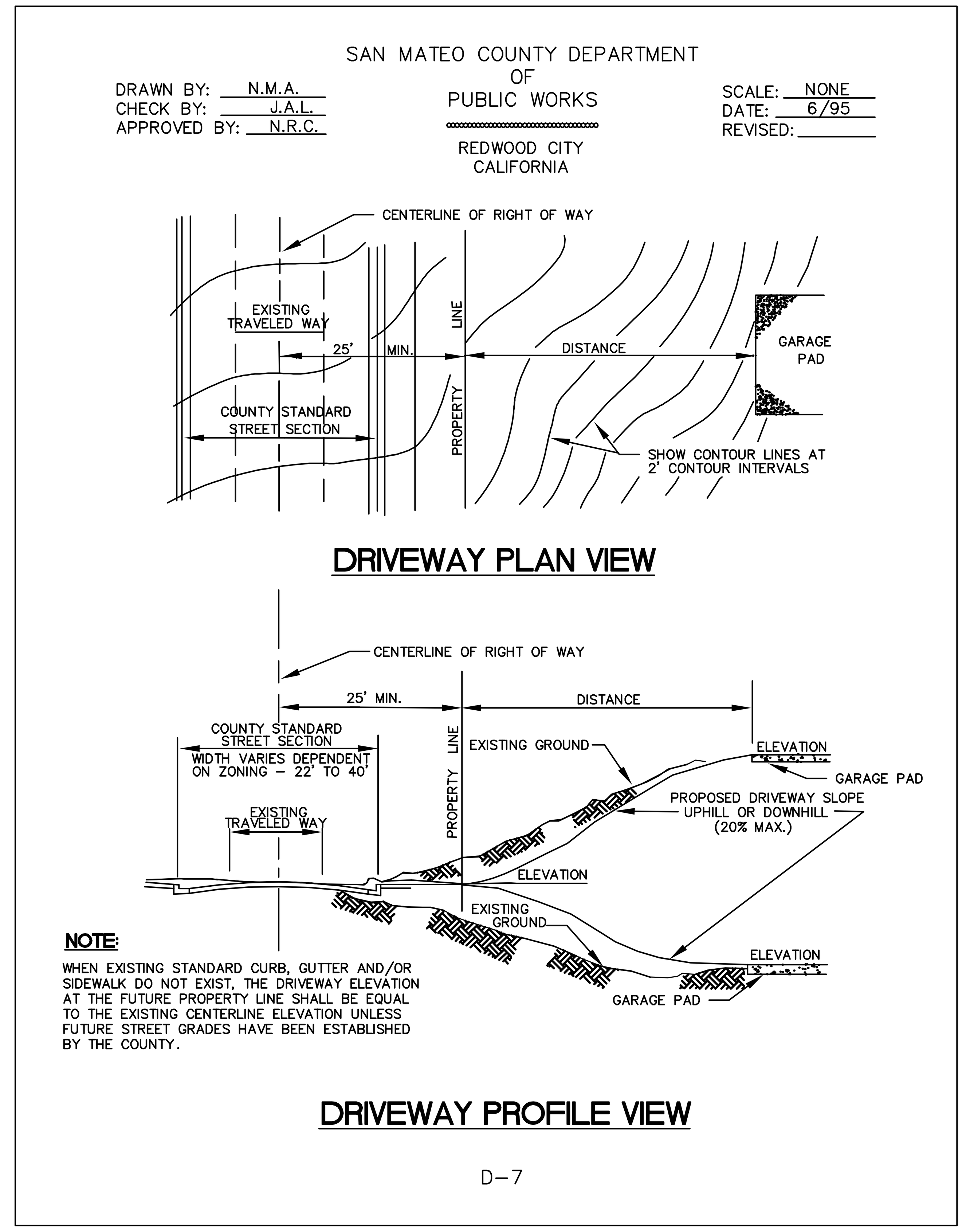

SAN MATEO COUNTY DEPARTMENT OF PUBLIC WORKS
REDWOOD CITY CALIFORNIA
DRAWN BY: N.M.A.
CHECK BY: R.O.
APPROVED BY: N.R.C.
SCALE: NONE
DATE: 6/95
REVISED:
NEAREST UPSTREAM STRUCTURE SURFACE
HOUSE FLOOR LEVEL
BACKWATER OVERFLOW DEVICE
STANDARD 4" WYE
TO MAIN
TO BUILDING
NON-PERFORATED PLASTIC BALL
ALUMINUM CONE
REMOVE STANDARD CLEANOUT PLUG
3" OR 3-1/2" N.P.T. OR PLAIN END
FINISH GRADE
OVERFLOW DEVICE
NOTE: LOCATION OF DEVICE TO APPROVAL OF DISTRICT AND BUILDING DEPARTMENT PRIOR TO INSTALLATION
HINGE POINT
VALVE OPENS TO A ALLOW WASTE WATER TO FLOW INTO SEWER MAIN; VALVE CLOSES BY ITS OWN WEIGHT TO PREVENT WASTEWATER FROM FLOWING BACK TO HOUSE LATERAL.
FLOW FROM HOUSE
TO SEWER MAIN
NOTE: LOCATION OF DEVICE TO APPROVAL OF DISTRICT AND BUILDING DEPARTMENT PRIOR TO INSTALLATION
BACKFLOW DEVICE
OVERFLOW AND BACKFLOW DEVICE DETAIL
C-9

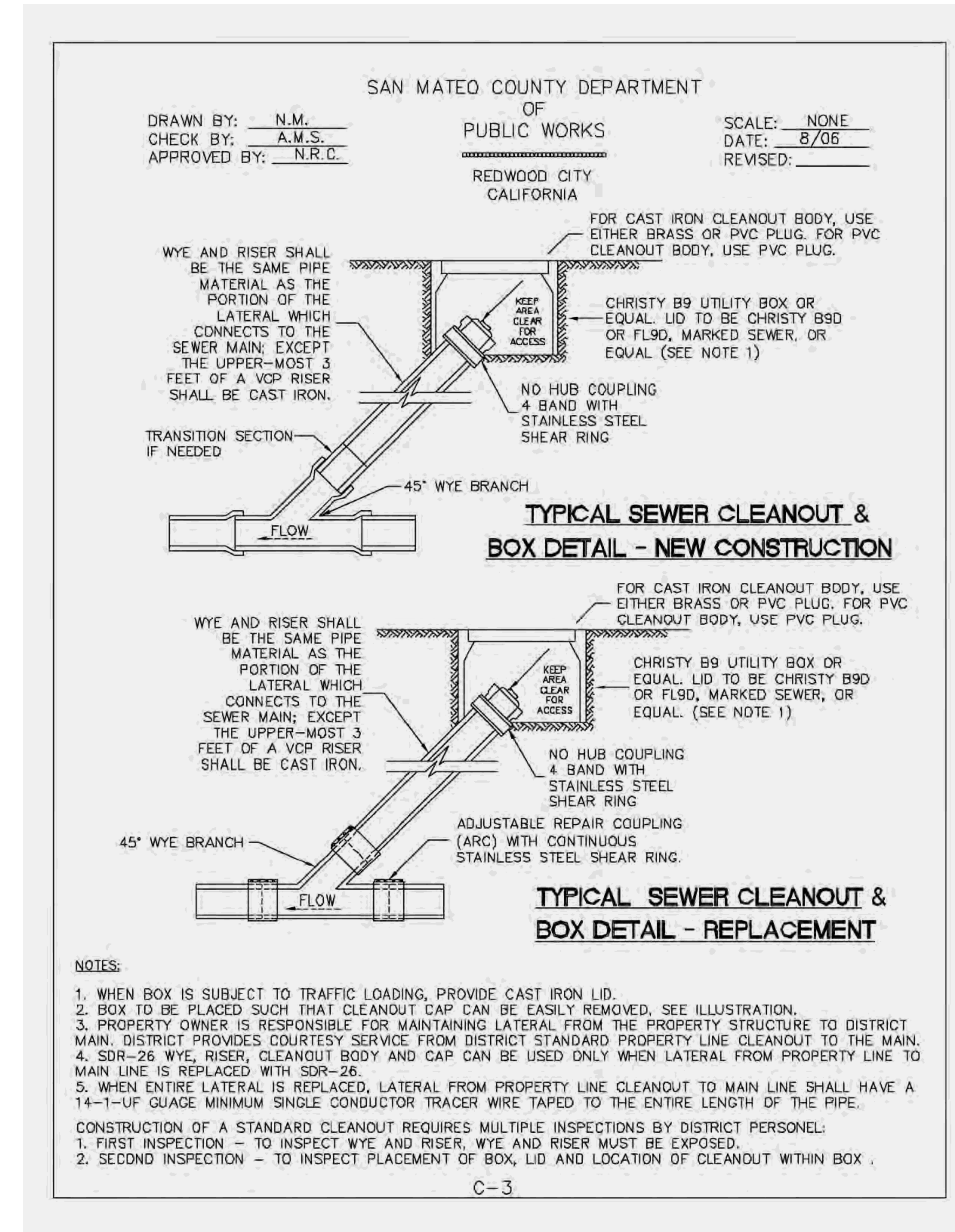
6 SAN MATEO COUNTY OVERFLOW AND BACKFLOW DEVICE DETAIL

NTS


SAN MATEO COUNTY DEPARTMENT OF PUBLIC WORKS
REDWOOD CITY CALIFORNIA
DRAWN BY: N.M.A.
CHECK BY: J.A.L.
APPROVED BY: N.R.C.
SCALE: NONE
DATE: 6/95
REVISED:
CENTERLINE OF RIGHT OF WAY
EXISTING TRAVELED WAY
25' MIN
DISTANCE
GARAGE PAD
COUNTY STANDARD STREET SECTION
PROPERTY LINE
SHOW CONTOUR LINES AT 2' CONTOUR INTERVALS
DRIVEWAY PLAN VIEW
CENTERLINE OF RIGHT OF WAY
25' MIN.
DISTANCE
COUNTY STANDARD STREET SECTION
WIDTH VARIES DEPENDENT ON ZONING – 22' TO 40'
EXISTING GROUND
ELEVATION
GARAGE PAD
PROPOSED DRIVEWAY SLOPE UPHILL OR DOWNHILL (20% MAX.)
EXISTING TRAVELED WAY
ELEVATION
EXISTING GROUND
ELEVATION
GARAGE PAD
NOTE:
WHEN EXISTING STANDARD CURB, GUTTER AND/OR SIDEWALK DO NOT EXIST, THE DRIVEWAY ELEVATION AT THE FUTURE PROPERTY LINE SHALL BE EQUAL TO THE EXISTING CENTERLINE ELEVATION UNLESS FUTURE STREET GRADES HAVE BEEN ESTABLISHED BY THE COUNTY.
DRIVEWAY PROFILE VIEW
D-7

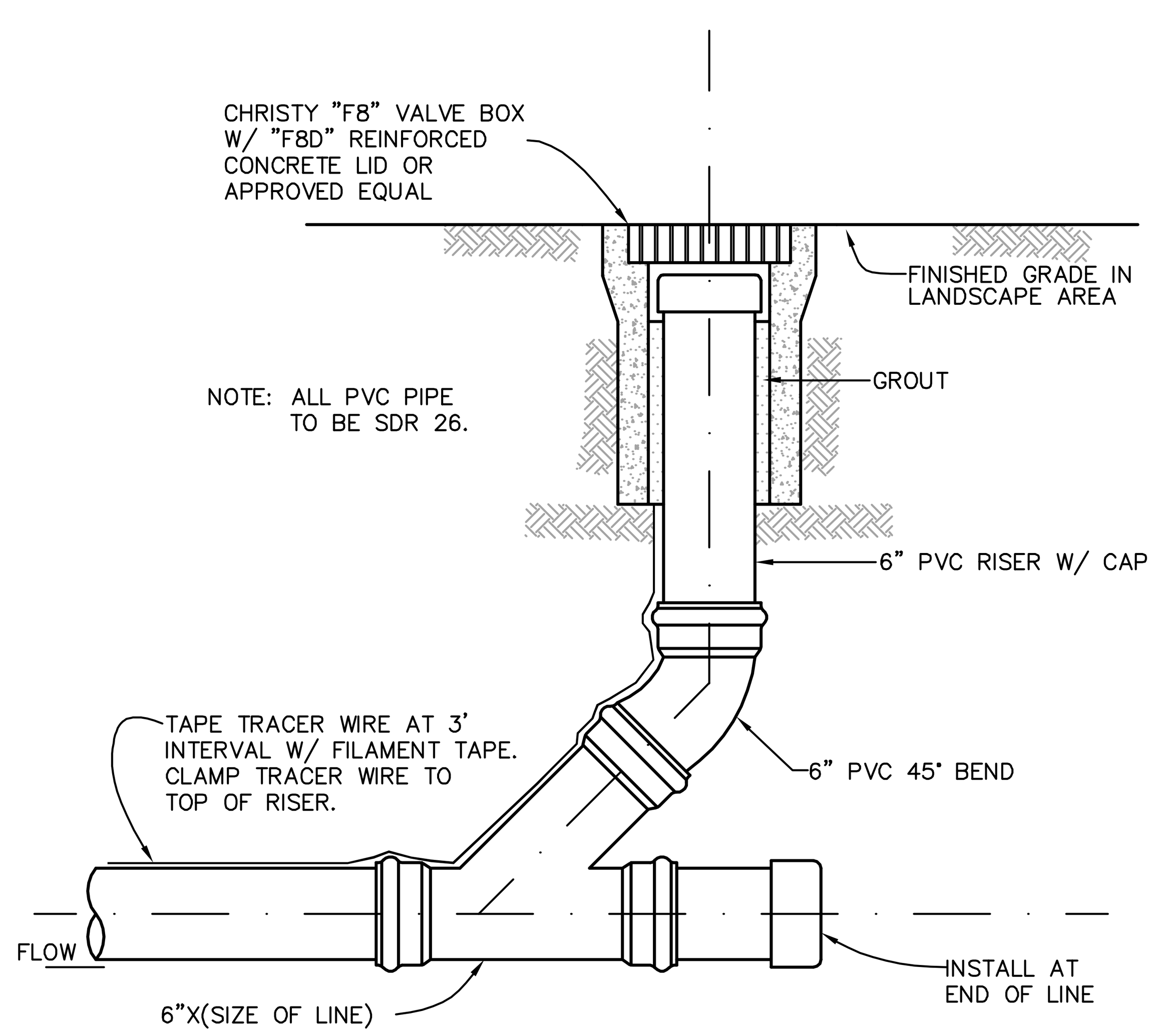
5 SAN MATEO COUNTY DRIVEWAY PLAN AND PROFILE VIEWS

NTS


SAN MATEO COUNTY DEPARTMENT OF PUBLIC WORKS
REDWOOD CITY CALIFORNIA
DRAWN BY: N.M.
CHECK BY: A.M.S.
APPROVED BY: N.R.C.
SCALE: NONE
DATE: 8/06
REVISED:
FOR CAST IRON CLEANOUT BODY, USE EITHER BRASS OR PVC PLUG. FOR PVC CLEANOUT BODY, USE PVC PLUG.
WYE AND RISER SHALL BE THE SAME PIPE MATERIAL AS THE PORTION OF THE LATERAL WHICH CONNECTS TO THE SEWER MAIN; EXCEPT THE UPPER-MOST 3 FEET OF A VCP RISER SHALL BE CAST IRON.
KEEP AREA CLEAR FOR ACCESS
CHRISTY B9 UTILITY BOX OR EQUAL. LID TO BE CHRISTY B9D OR FL9D, MARKED SEWER, OR EQUAL (SEE NOTE 1)
NO HUB COUPLING 4 BAND WITH STAINLESS STEEL SHEAR RING
TRANSITION SECTION IF NEEDED
45° WYE BRANCH
FLOW
TYPICAL SEWER CLEANOUT & BOX DETAIL - NEW CONSTRUCTION
FOR CAST IRON CLEANOUT BODY, USE EITHER BRASS OR PVC PLUG. FOR PVC CLEANOUT BODY, USE PVC PLUG.
WYE AND RISER SHALL BE THE SAME PIPE MATERIAL AS THE PORTION OF THE LATERAL WHICH CONNECTS TO THE SEWER MAIN; EXCEPT THE UPPER-MOST 3 FEET OF A VCP RISER SHALL BE CAST IRON.
CHRISTY B9 UTILITY BOX OR EQUAL. LID TO BE CHRISTY B9D OR FL9D, MARKED SEWER, OR EQUAL. (SEE NOTE 1)
NO HUB COUPLING 4 BAND WITH STAINLESS STEEL SHEAR RING
ADJUSTABLE REPAIR COUPLING (ARC) WITH CONTINUOUS STAINLESS STEEL SHEAR RING.
45° WYE BRANCH
FLOW
TYPICAL SEWER CLEANOUT & BOX DETAIL - REPLACEMENT
NOTES:
1. WHEN BOX IS SUBJECT TO TRAFFIC LOADING, PROVIDE CAST IRON LID.
2. BOX TO BE PLACED SUCH THAT CLEANOUT CAP CAN BE EASILY REMOVED. SEE ILLUSTRATION.
3. PROPERTY OWNER IS RESPONSIBLE FOR MAINTAINING LATERAL FROM THE PROPERTY STRUCTURE TO DISTRICT MAIN. DISTRICT PROVIDES COURTESY SERVICE FROM DISTRICT STANDARD PROPERTY LINE CLEANOUT TO THE MAIN.
4. SDR-26 WYE, RISER, CLEANOUT BODY AND CAP CAN BE USED ONLY WHEN LATERAL FROM PROPERTY LINE TO MAIN LINE IS REPLACED WITH SDR-26.
5. WHEN ENTIRE LATERAL IS REPLACED, LATERAL FROM PROPERTY LINE CLEANOUT TO MAIN LINE SHALL HAVE A 14-1-UF GUAGE MINIMUM SINGLE CONDUCTOR TRACER WIRE TAPED TO THE ENTIRE LENGTH OF THE PIPE.
CONSTRUCTION OF A STANDARD CLEANOUT REQUIRES MULTIPLE INSPECTIONS BY DISTRICT PERSONEL:
1. FIRST INSPECTION – TO INSPECT WYE AND RISER, WYE AND RISER MUST BE EXPOSED.
2. SECOND INSPECTION – TO INSPECT PLACEMENT OF BOX, LID AND LOCATION OF CLEANOUT WITHIN BOX.
C-3

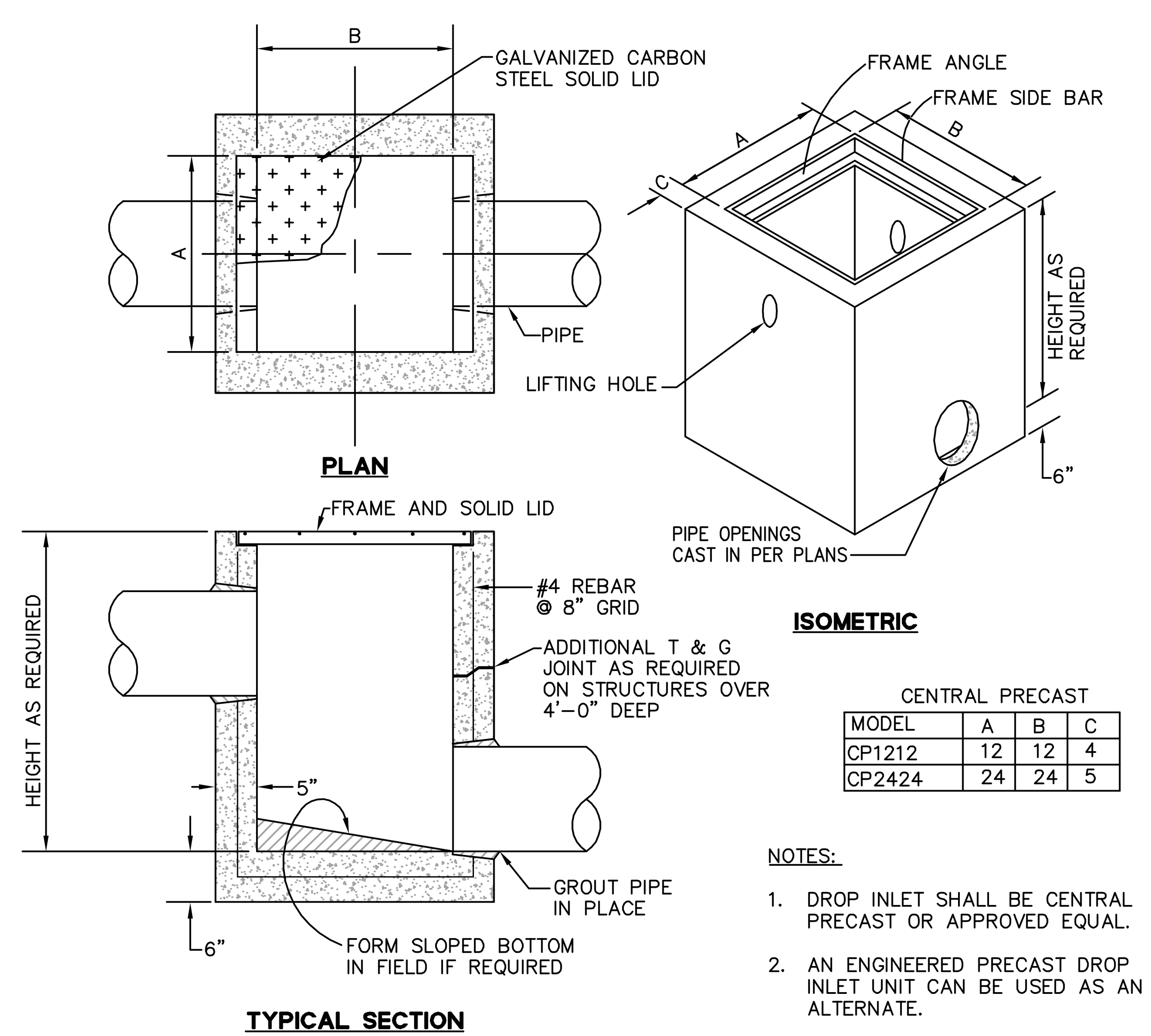
4 SAN MATEO COUNTY TYPICAL SEWER CLEANOUT & BOX DETAIL

NTS


CHRISTY "F8" VALVE BOX W/ "F8D" REINFORCED CONCRETE LID OR APPROVED EQUAL
FINISHED GRADE IN LANDSCAPE AREA
NOTE: ALL PVC PIPE TO BE SDR 26.
GROUT
6" PVC RISER W/ CAP
TAPE TRACER WIRE AT 3' INTERVAL W/ FILAMENT TAPE. CLAMP TRACER WIRE TO TOP OF RISER.
6" PVC 45° BEND
FLOW
INSTALL AT END OF LINE
6"X(SIZE OF LINE)

3 CLEANOUT

NTS


B
GALVANIZED CARBON STEEL SOLID LID
A
PIPE
LIFTING HOLE
PLAN
FRAME ANGLE
FRAME SIDE BAR
C
A
B
HEIGHT AS REQUIRED
6"
PIPE OPENINGS CAST IN PER PLANS
ISOMETRIC
FRAME AND SOLID LID
#4 REBAR @ 8" GRID
ADDITIONAL T & G JOINT AS REQUIRED ON STRUCTURES OVER 4'-0" DEEP
HEIGHT AS REQUIRED
5"
GROUT PIPE IN PLACE
6"
FORM SLOPED BOTTOM IN FIELD IF REQUIRED
TYPICAL SECTION

CENTRAL PRECAST

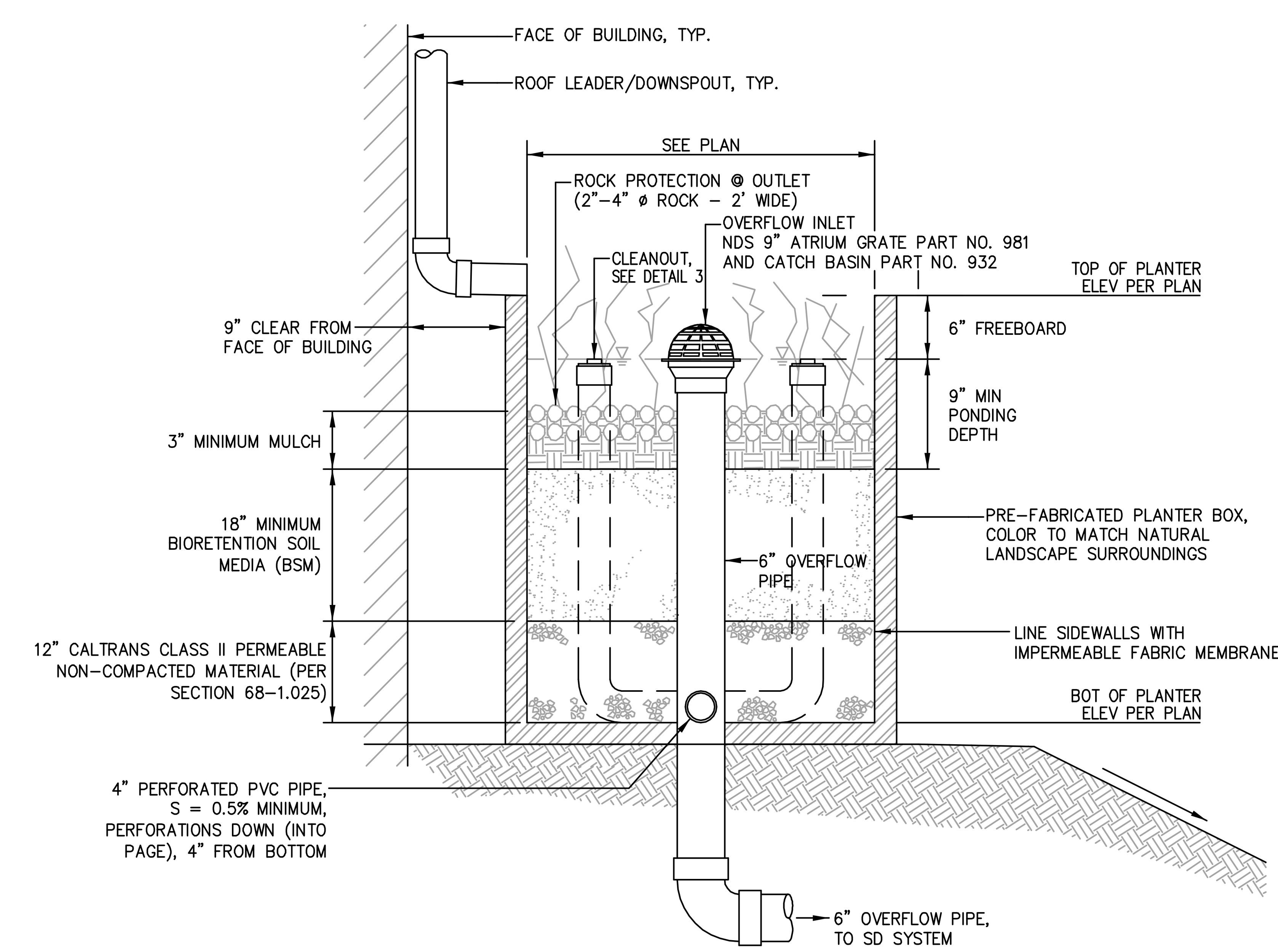
MODEL	A	B	C
CP1212	12	12	4
CP2424	24	24	5

NOTES:

1. DROP INLET SHALL BE CENTRAL PRECAST OR APPROVED EQUAL.
2. AN ENGINEERED PRECAST DROP INLET UNIT CAN BE USED AS AN ALTERNATE.

2 DROP INLET

NTS


FACE OF BUILDING, TYP.
ROOF LEADER/DOWNSPOUT, TYP.
SEE PLAN
ROCK PROTECTION @ OUTLET (2"-4" ø ROCK – 2' WIDE)
OVERFLOW INLET NDS 9" ATRIUM GRATE PART NO. 981 AND CATCH BASIN PART NO. 932
CLEANOUT, SEE DETAIL 3
TOP OF PLANTER ELEV PER PLAN
9" CLEAR FROM FACE OF BUILDING
6" FREEBOARD
9" MIN PONDING DEPTH
3" MINIMUM MULCH
18" MINIMUM BIORETENTION SOIL MEDIA (BSM)
6" OVERFLOW PIPE
PRE-FABRICATED PLANTER BOX, COLOR TO MATCH NATURAL LANDSCAPE SURROUNDINGS
12" CALTRANS CLASS II PERMEABLE NON-COMPACTED MATERIAL (PER SECTION 68-1.025)
LINE SIDEWALLS WITH IMPERMEABLE FABRIC MEMBRANE
BOT OF PLANTER ELEV PER PLAN
4" PERFORATED PVC PIPE, S = 0.5% MINIMUM, PERFORATIONS DOWN (INTO PAGE), 4" FROM BOTTOM
6" OVERFLOW PIPE, TO SD SYSTEM

1 FLOW-THROUGH PLANTER (FTP)

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REGISTERED PROFESSIONAL ENGINEER — No. C043971 — CIVIL — STATE OF CALIFORNIA

HIGHLAND ESTATES
LOT 7 IMPROVEMENT PLANS
CONSTRUCTION DETAILS

CITY OF SAN MATEO — SAN MATEO COUNTY — CALIFORNIA

Revisions

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OF
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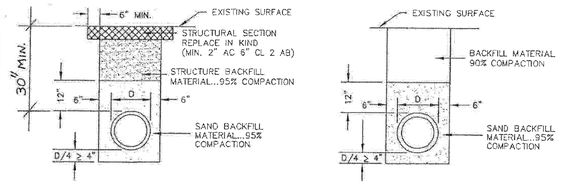
CALIFORNIA

DRAWN BY: M.I.
CHECK BY: D.M.W.
APPROVED BY: N.R.C.

SCALE: NONE
DATE: 6/95
REVISED: 7/97



TYPE A (IN ROADWAY)

TYPE B (OUTSIDE ROADWAY)

NOTES

1. SAND.... MATERIAL FREE FROM ORGANIC MATTER AND CLAY WITH A SIEVE GRADATION BY WEIGHT AS FOLLOWS:

SIEVE SIZE	% PASSING SIEVE
No. 4	100
No. 200	0–5

2. STRUCTURE BACKFILL MATERIAL... MATERIAL WITH SAND EQUIVALENT NOT LESS THAN 20 AND SIEVE GRADATION BY WEIGHT AS FOLLOWS:

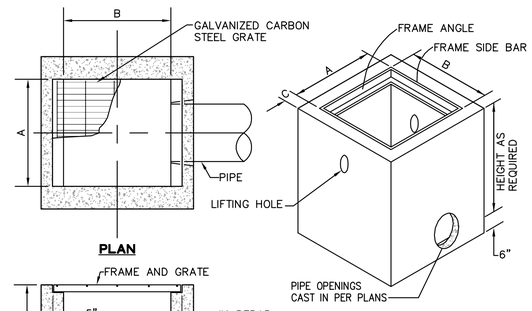
SIEVE SIZE	% PASSING SIEVE
3"	100
No. 4	35–100
No. 30	20–100

3. BACKFILL MATERIAL... MATERIAL FROM EXCAVATION, FREE FROM STONES OR LUMPS EXCEEDING 3 INCHES GREATEST DIMENSION, ORGANIC MATTER, OR OTHER UNSATISFACTORY MATERIAL.

STANDARD TRENCH BACKFILL AND BEDDING DETAIL

W–10

2 – SAN MATEO COUNTY STANDARD TRENCH BACKFILL & BEDDING DETAIL
NTS



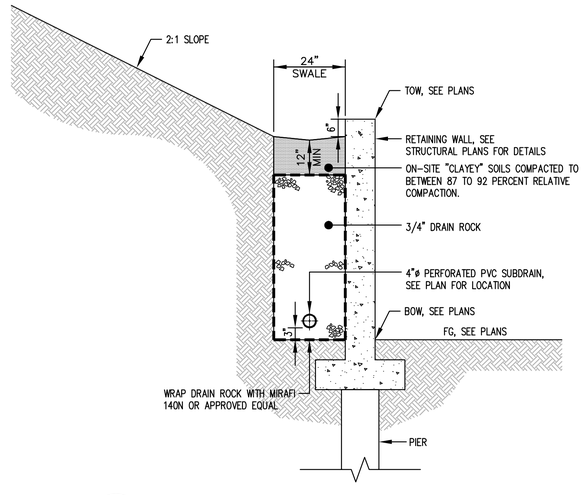
CENTRAL PRECAST

MODEL	A	B	C
CP1212	12	12	4
CP1818	18	18	4
CP2424	24	24	5

NOTES:

1. DROP INLET SHALL BE CENTRAL PRECAST OR APPROVED EQUAL.
2. AN ENGINEERED PRECAST DROP INLET UNIT CAN BE USED AS AN ALTERNATE.

3 – DROP INLET
NTS



1 – SUBDRAIN
NTS

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REGISTERED PROFESSIONAL ENGINEER
SUNAMWAH TANG
No. 067726
CIVIL
STATE OF CALIFORNIA

HIGHLAND ESTATES
LOT 7 IMPROVEMENT PLANS
CONSTRUCTION DETAILS

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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SITE KEY:

1. WASH OUT PIT, PER CASQA STANDARD WM-8, CONCRETE WASTE MANAGEMENT (REFER TO DETAIL 2, SHEET C7.90).
2. TOILETS AND HAND WASH STATION
3. MATERIALS STORAGE
4. DEBRIS BOX LOCATION
5. TOOL STORAGE LOCKER
6. JOB SITE TRAILER
7. STOCKPILE AREA
8. CONSTRUCTION EQUIPMENT PARKING

GRAPHIC SCALE
30 0 30 60

CONSTRUCTION NOTES:

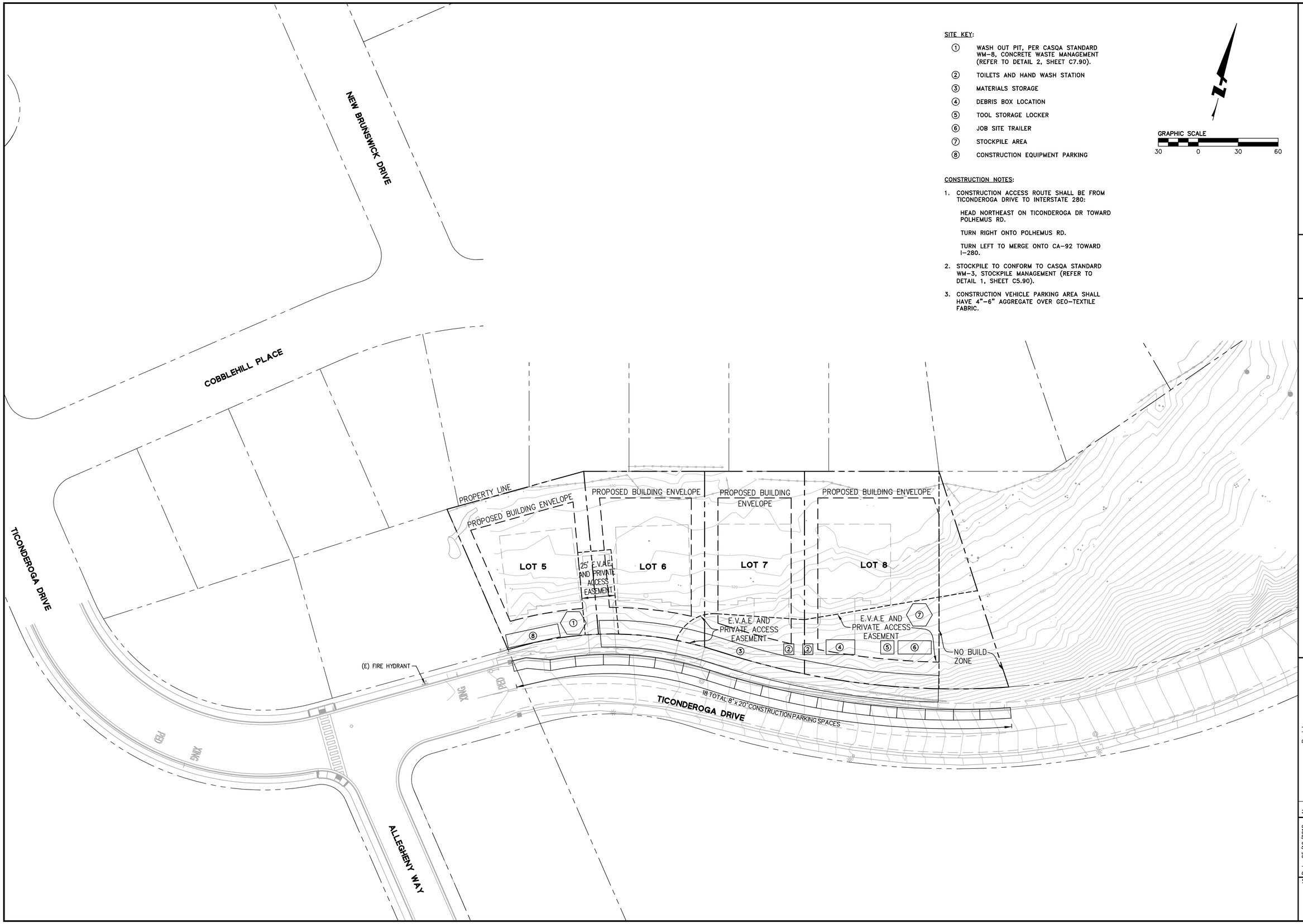
1. CONSTRUCTION ACCESS ROUTE SHALL BE FROM TICONDEROGA DRIVE TO INTERSTATE 280:

   HEAD NORTHEAST ON TICONDEROGA DR TOWARD POLHEMUS RD.

   TURN RIGHT ONTO POLHEMUS RD.

   TURN LEFT TO MERGE ONTO CA-92 TOWARD I-280.

2. STOCKPILE TO CONFORM TO CASQA STANDARD WM-3, STOCKPILE MANAGEMENT (REFER TO DETAIL 1, SHEET C5.90).
3. CONSTRUCTION VEHICLE PARKING AREA SHALL HAVE 4"-6" AGGREGATE OVER GEO-TEXTILE FABRIC.



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HIGHLAND ESTATES
LOT 7 IMPROVEMENT PLANS
LOGISTICS PLAN

CITY OF SAN MATEO — SAN MATEO COUNTY — CALIFORNIA

Revisions

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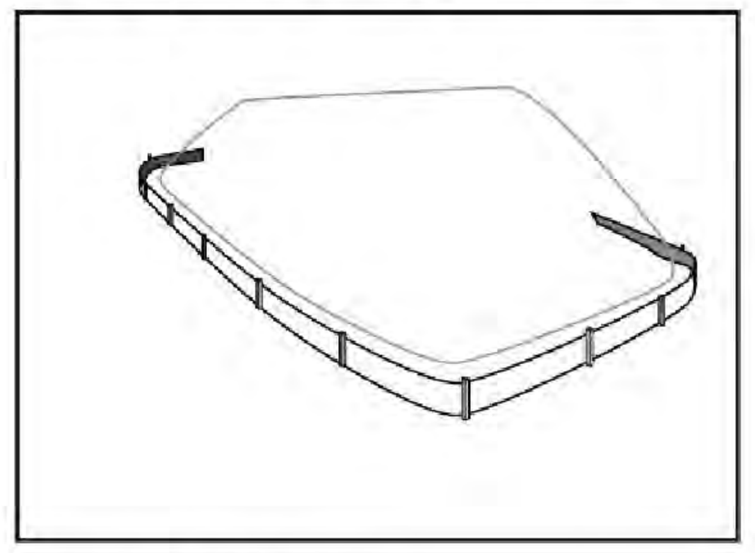
Stockpile Management — WM-3



Categories		
EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☒
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives
None

Description and Purpose
Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, soil amendments, sand, paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called "cold mix" asphalt), and pressure treated wood.

Suitable Applications
Implement in all projects that stockpile soil and other loose materials.

Limitations
- Plastic sheeting as a stockpile protection is temporary and hard to manage in windy conditions. Where plastic is used, consider use of plastic tarps with nylon reinforcement which may be more durable than standard sheeting.
- Plastic sheeting can increase runoff volume due to lack of infiltration and potentially cause perimeter control failure.
- Plastic sheeting breaks down faster in sunlight.
- The use of plastic materials should be avoided when feasible and photodegradable plastics should not be used.

Implementation
Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

Stockpile Management — WM-3

- On larger sites, a minimum of 50 ft separation from concentrated flows of stormwater, drainage courses, and inlets is recommended.
- All stockpiles are required to be protected immediately if they are not scheduled to be used within 14 days.
- Protect all stockpiles from stormwater run-on using temporary perimeter sediment barriers such as compost berms (SE-13), temporary silt dikes (SE-12), fiber rolls (SE-5), silt fences (SE-1), sandbags (SE-8), gravel bags (SE-6), or biofilter bags (SE-14). Refer to the individual fact sheet for each of these controls for installation information.
- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information, see WE-1, Wind Erosion Control.
- Manage stockpiles of contaminated soil in accordance with WM-7, Contaminated Soil Management.
- Place bagged materials on pallets and under cover.
- Ensure that stockpile coverings are installed securely to protect from wind and rain.
- Some plastic covers withstand weather and sunlight better than others. Select cover materials or methods based on anticipated duration of use.

Protection of Non-Active Stockpiles
Non-active stockpiles of the identified materials should be protected further as follows:

Soil stockpiles
- Cover and project soil stockpiles with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- Consider temporary vegetation for topsoil piles that will be stockpiled for extended periods.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub base
- Provide covers and protect these stockpiles with a temporary perimeter sediment barrier at all times.

Stockpiles of "cold mix"
- Cover cold mix stockpiles and place them on plastic sheeting (or comparable material) and surround the stockpiles with a berm all times.

Stockpiles of fly ash, stucco, hydrated lime
- Cover stockpiles of materials that may raise the pH of runoff (i.e., basic materials) with plastic and surround the stockpiles with a berm at all times.

Stockpile Management — WM-3

Stockpiles/Storage of wood (Pressure treated with chromated copper arsenate or ammoniacal copper zinc arsenate)
- Cover treated wood with plastic sheeting (or comparable material) and surround with a berm at all times.

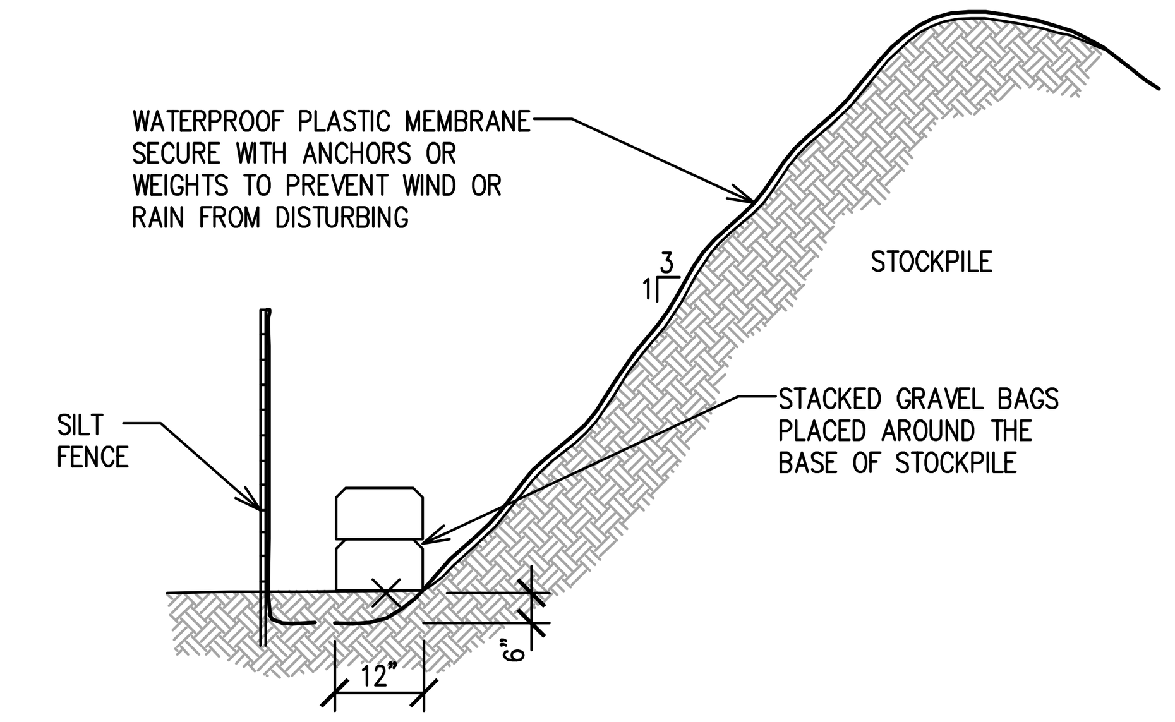
Protection of Active Stockpiles
Active stockpiles of the identified materials should be protected as follows:
- All stockpiles should be covered and protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" and treated wood, and basic materials should be placed on and covered with plastic sheeting or comparable material and surrounded by a berm prior to the onset of precipitation.
- The downstream perimeter of an active stockpile should be protected with a linear sediment barrier or berm and runoff should be diverted around or away from the stockpile on the upstream perimeter.

Costs
For cost information associated with stockpile protection refer to the individual erosion or sediment control BMP fact sheet considered for implementation (For example, refer to SE-1 Silt Fence for installation of silt fence around the perimeter of a stockpile.)

Inspection and Maintenance
- Stockpiles must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- It may be necessary to inspect stockpiles covered with plastic sheeting more frequently during certain conditions (for example, high winds or extreme heat).
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.
- Sediment shall be removed when it reaches one-third of the barrier height.

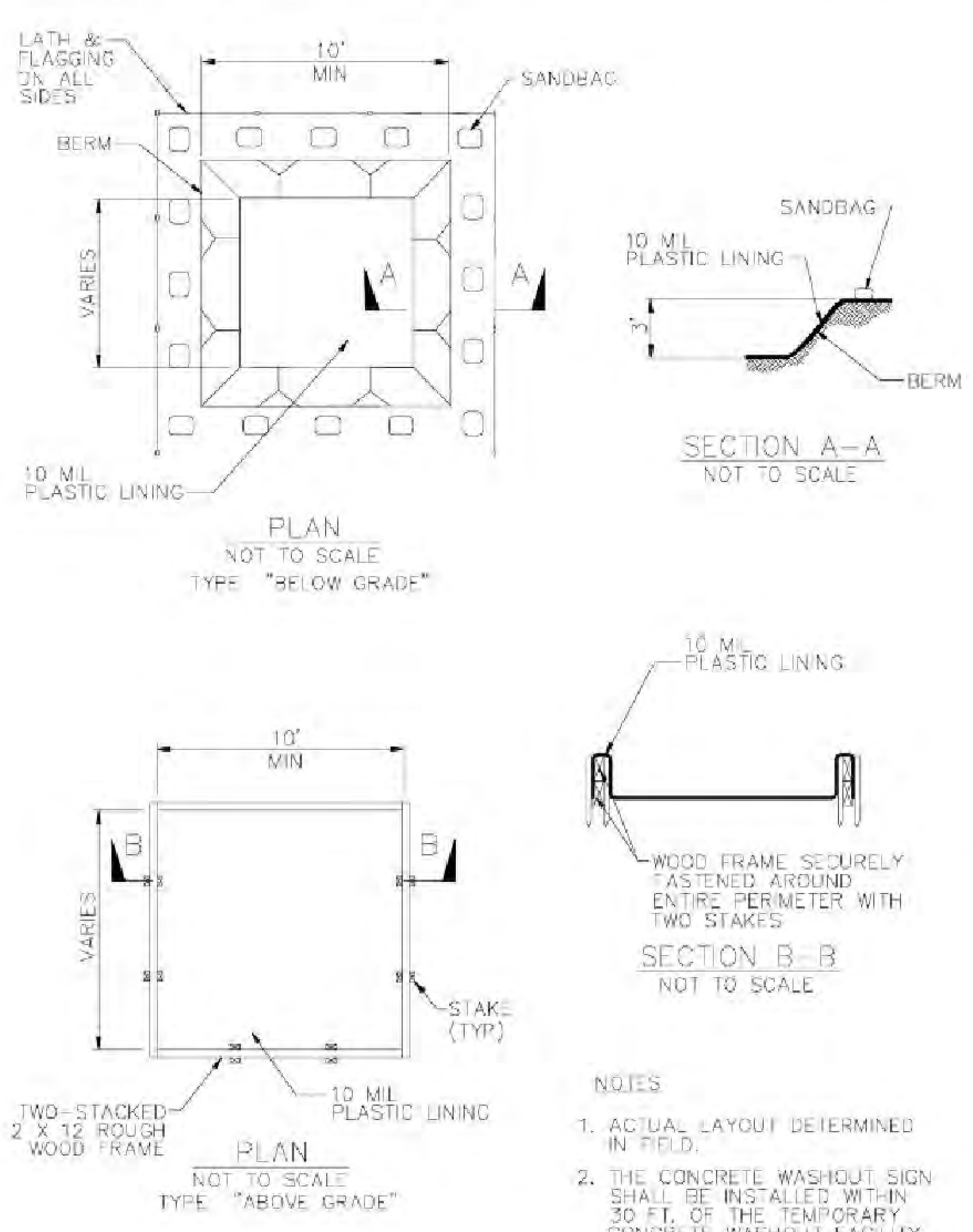
References
Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

WM-3 – STOCKPILE MANAGEMENT
NTS



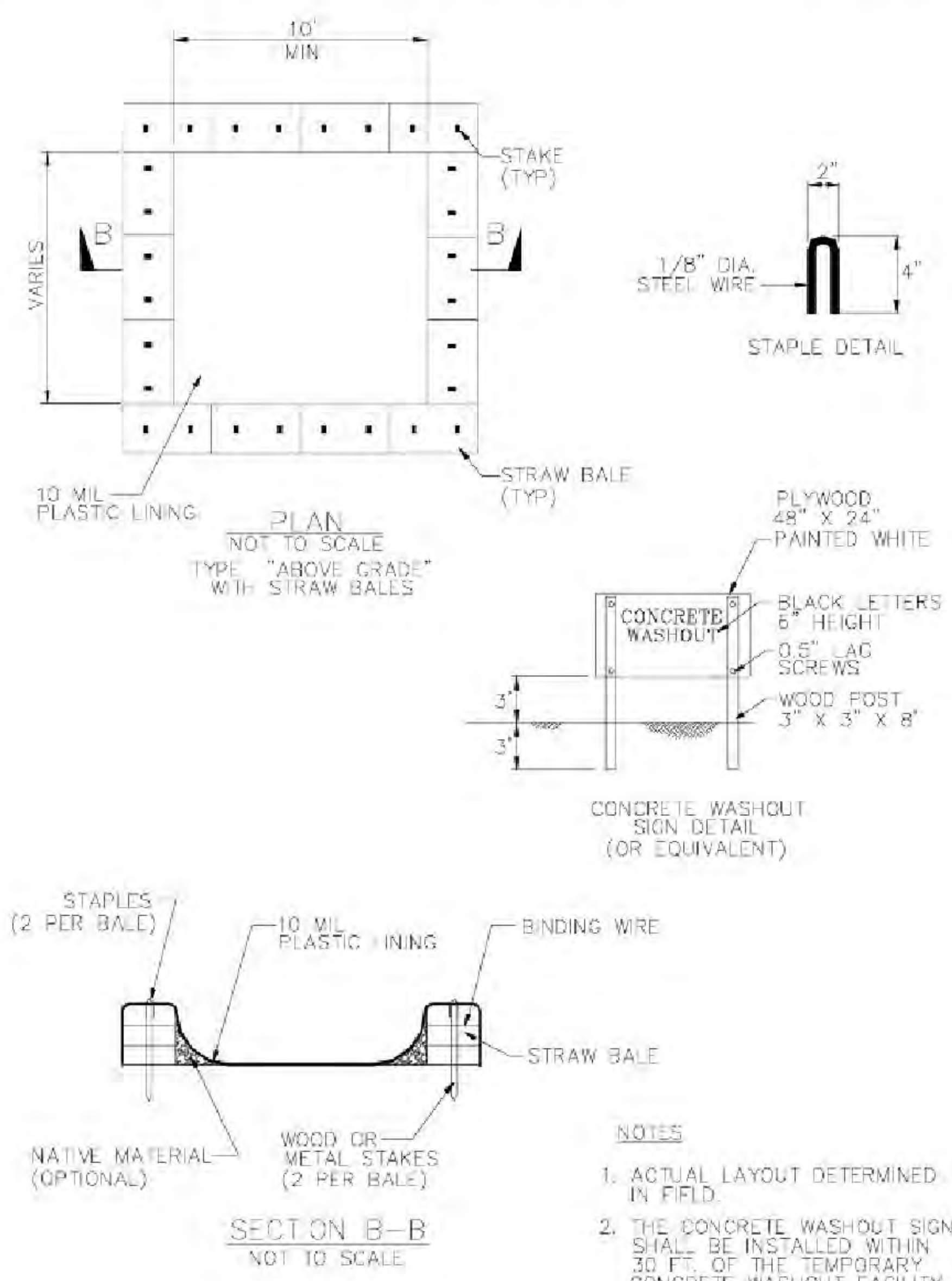
1 – STOCKPILE COVERING
(PER CASQA STANDARD WM-3, STOCKPILE MANAGEMENT, SEE LEFT)
NTS

Concrete Waste Management — WM-8



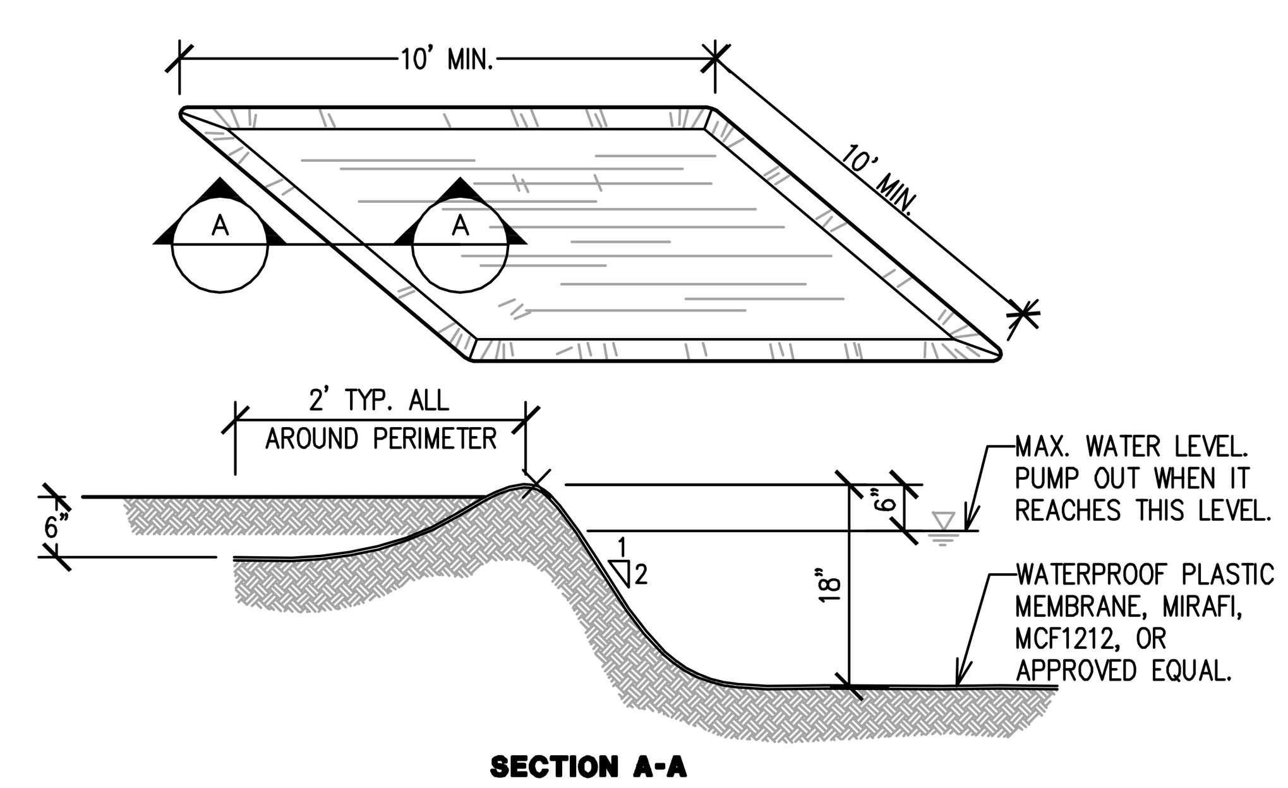
NOTES
1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

Concrete Waste Management — WM-8



NOTES
1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

WM-8 – CONCRETE WASTE MANAGEMENT
NTS



2 – TEMPORARY WASHOUT PIT
(PER CASQA STANDARD WM-8, CONCRETE WASTE MANAGEMENT, SEE LEFT)
NTS

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REGISTERED PROFESSIONAL ENGINEER ROLAND N.V. HAGA No. C043971 CIVIL STATE OF CALIFORNIA

HIGHLAND ESTATES
LOT 7 IMPROVEMENT PLANS
CASQA STANDARD DETAILS
CITY OF SAN MATEO — SAN MATEO COUNTY — CALIFORNIA

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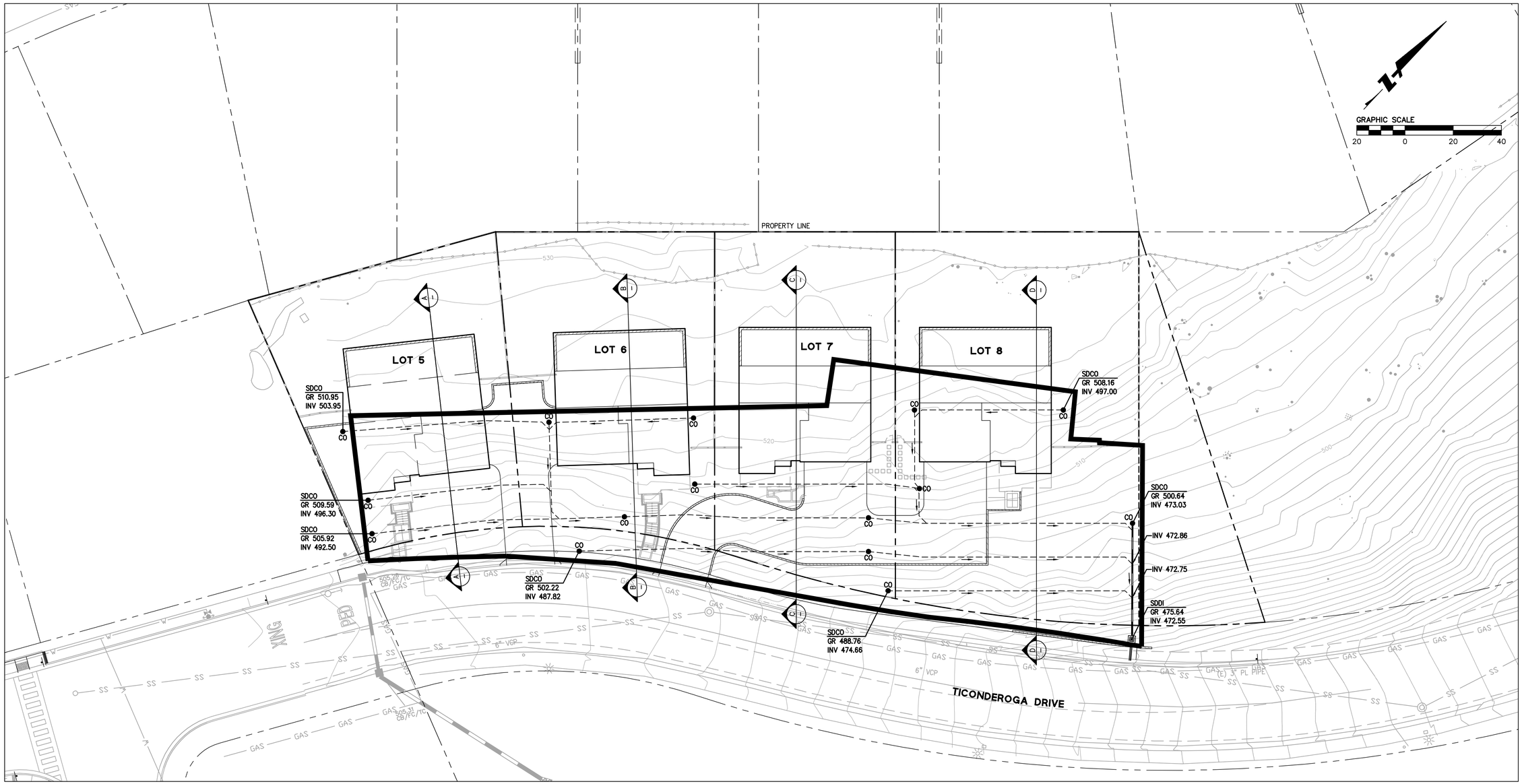

LEGEND

AREA OF GEOTECHNICAL MITIGATION GRADING (SEE GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION).

4" PERFORATED SUBDRAIN FOR KEYWAY. NOTE THE FINAL LOCATIONS OF THE SUBDRAIN WILL BE DETERMINED BY CORNERSTONE DURING CONSTRUCTION, ARROW IS ANTICIPATED DIRECTION OF FLOW

BKF HAS PREPARED THESE PLANS BASED ON CORNERSTONE EARTH GROUP GEOTECHNICAL INVESTIGATION AND RECOMMENDATIONS.

REGISTERED PROFESSIONAL ENGINEER
JONATHAN TANG
No. C67726
CIVIL
STATE OF CALIFORNIA

JONATHAN TANG, P.E.

THE UNDERSIGNED GEOTECHNICAL ENGINEER HAS PERFORMED A GEOTECHNICAL INVESTIGATION AT THE SITE INCLUDING PERFORMING FIELD INVESTIGATION, LABORATORY TESTING, ENGINEERING ANALYSIS, AND REPORT PREPARATION AS DESCRIBED IN THE OCTOBER 30, 2015 REPORT BY CORNERSTONE EARTH GROUP, INC. FOR THE PROJECT. THE GEOTECHNICAL ASPECTS OF THESE PLAN SHEETS HAVE BEEN PREPARED AND REVIEWED BY THE UNDERSIGNED GEOTECHNICAL ENGINEER AND ARE BASED UPON LIMITATIONS DESCRIBED IN THE GEOTECHNICAL INVESTIGATION REPORT. THESE PLANS ARE NOT A STAND-ALONE DOCUMENT AND SHOULD BE CONSIDERED AS PART OF THE GEOTECHNICAL INVESTIGATION REPORT. THE GEOTECHNICAL DESIGN ASPECTS IN THESE PLANS ARE CONTINGENT UPON A GEOTECHNICAL ENGINEER AND ENGINEERING GEOLOGIST OBSERVING CERTAIN ASPECTS OF THE PROJECT GRADING. THESE PLANS ARE SUBJECT TO MODIFICATION AND REVISION DURING CONSTRUCTION BASED ON THE FIELD CONDITIONS ENCOUNTERED.

REGISTERED PROFESSIONAL ENGINEER
SCOTT E. FITINGHOFF
No. 2379
GEOTECHNICAL
STATE OF CALIFORNIA

SCOTT E. FITINGHOFF, P.E., G.E.

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HIGHLAND ESTATES
LOT 7 IMPROVEMENT PLANS
GEOTECHNICAL MITIGATION PLAN (LOTS 5 TO 8)

CITY OF SAN MATEO — SAN MATEO COUNTY — CALIFORNIA

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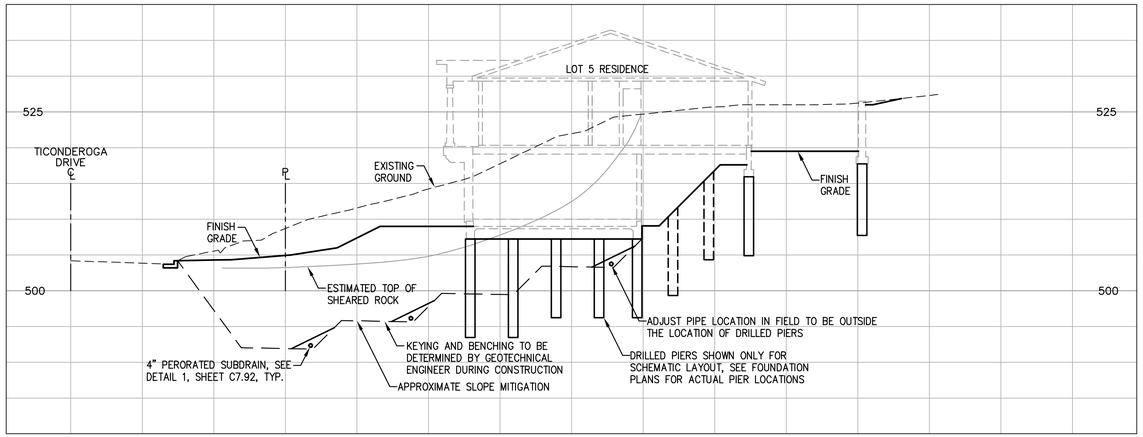
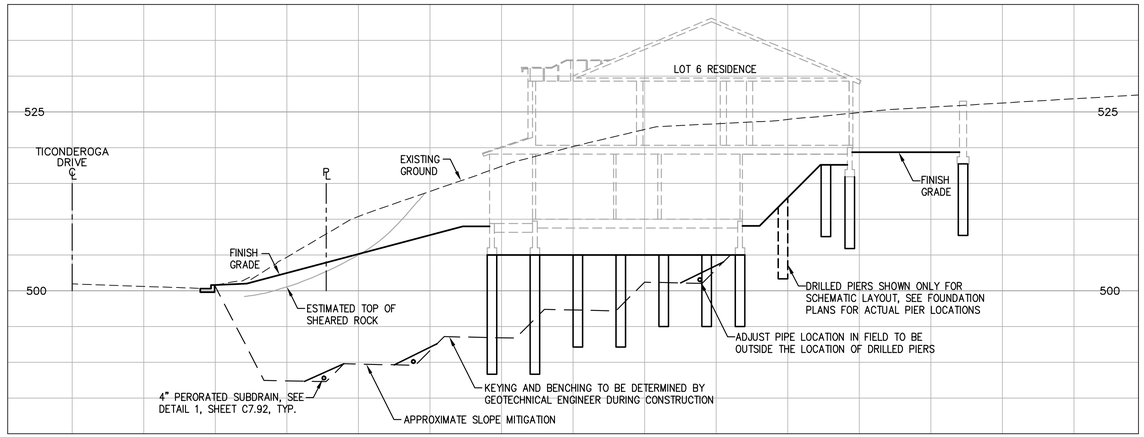


A-A CROSS SECTION
SCALE: 1"=10'



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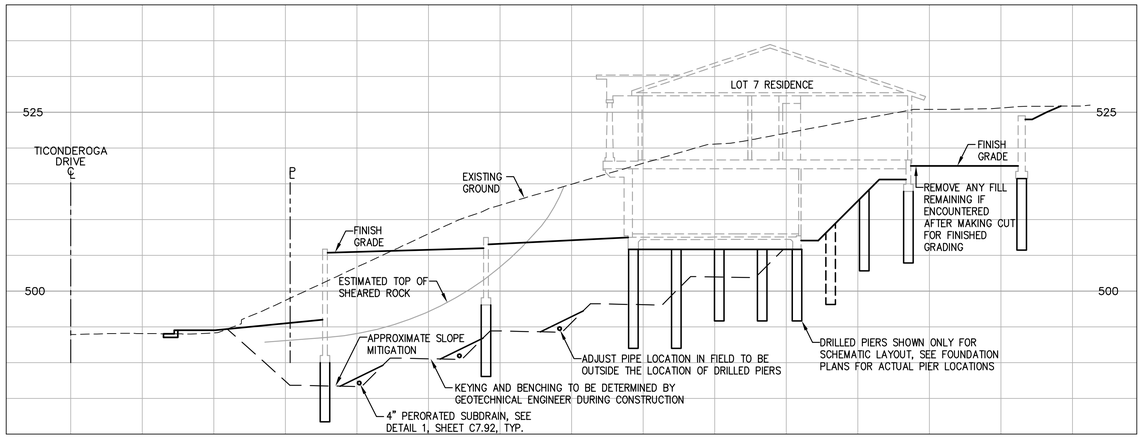


C-C CROSS SECTION
SCALE: 1"=10'

DRAINAGE MATERIAL

ALTERNATIVE 1

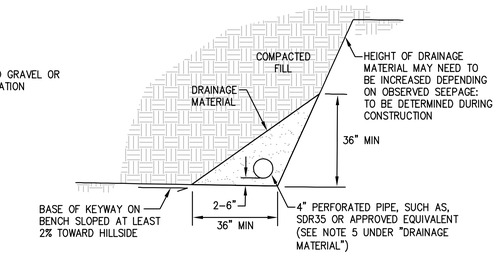
CLASS 2 PERMEABLE MATERIAL
(CALTRANS STANDARD SPECS LATEST EDITION)
MATERIAL SHALL CONSIST OF CLEAN, COARSE SAND AND GRAVEL OR CRUSHED STONE, CONFORMING TO THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE SIZE	% PASSING SIEVE
1"	100
3/4"	90–100
3/8"	40–100
#4	25–40
#8	18–33
#30	5–15
#50	0–7
#200	0–3

ALTERNATIVE 2

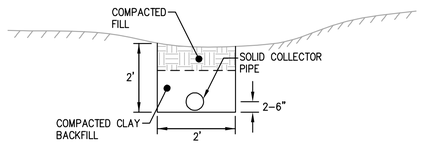
1/2 – TO 3/4– INCH CLEAN CRUSHED ROCK OR GRAVEL WRAPPED IN FILTER FABRIC
ALL NON–WOVEN FILTER FABRIC SHALL MEET THE FOLLOWING MINIMUM AVERAGE ROLL VALUES UNLESS OTHERWISE SPECIFIED BY CORNERSTONE EARTH GROUP

GRAB STRENGTH (ASTM D–4632):	180 LBS.
MASS PER UNIT AREA (ASTM D–4751):	5 OZ/YD
APPARENT OPENING SIZE (ASTM D–4751):	70–100 U.S. STD. SIEVE
FLOW RATE (ASTM D–4491):	80 GAL/MIN/FT
PUNCTURE STRENGTH (ASTM D–4833):	80 LBS.



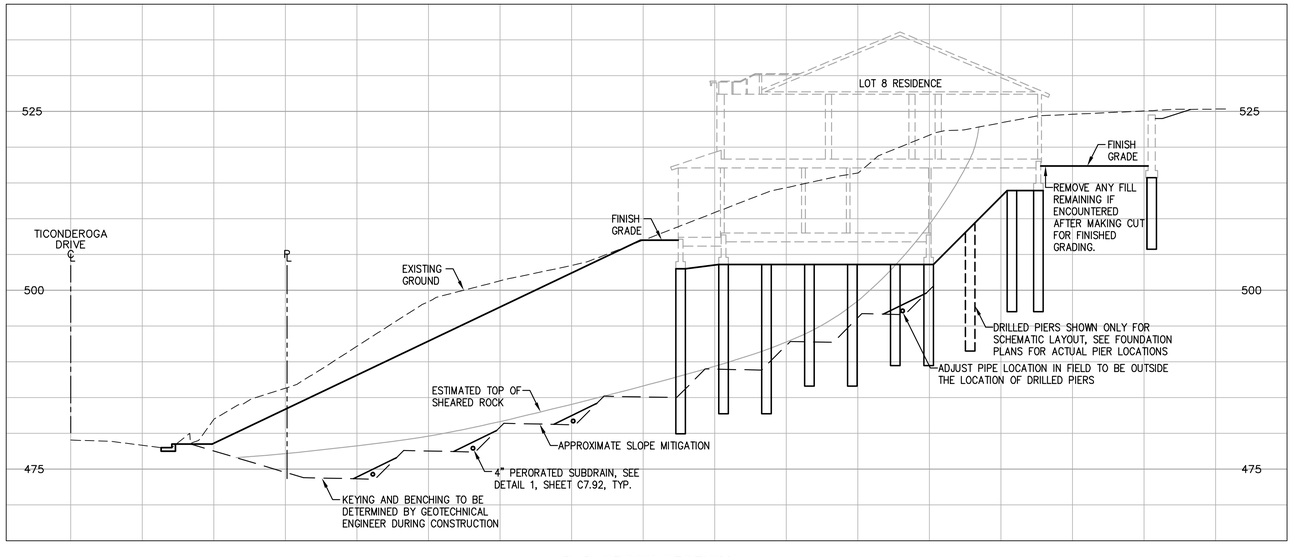
DETAIL 1 – TYPICAL BENCH AND KEYWAY SUBDRAIN
NTS

NOTES:
1. 1% FALL (MINIMUM) ALONG ALL KEYWAYS, BENCHES ANDSUBDRAIN LINES.
2. ALL PERFORATED PIPE PLACED PERFORATIONS DOWN.
3. ALL PIPE JOINTS SHALL BE GLUED.
4. ALL SUBDRAINS SHOULD BE DISCHARGED TO A FREE DRAINING OUTLET APPROVED BY THE CIVIL ENGINEER.
5. SUBDRAIN PIPE (PERFORATED OR SOLID CONNECTOR) SHOULD CONSIST OF SDR–35 PVC PIPE WHEN PLACED IN FILLS LESS THAN 30 FEET DEEP.
6. USE 4" PERFORATED PIPE ON KEYWAY OR BENCHES.
7. USE 6"SOLID PIPE FOR COLLECTOR PIPES OR 6" PERFORATED PIPE (DETAIL 2)
8. PIPE FITTINGS FOR CLEAN–OUTS AND OTHER 90° BENDS IN THE SUBDRAIN SYSTEM (EXCEPT THE CONNECTION BETWEEN THE 4"PERFORATED PIPES AND 6"COLLECTION PIPES) SHOULD BE "SWEEP 90'S" OR OTHER APPROVED EQUIVALENT.
9. CONTRACTOR TO PROVIDE ALL INCIDENTAL FITTINGS IN THEIR BID PRICE TO CONSTRUCT THE SUBDRAIN SYSTEM. NOT ALL INCIDENTAL FITTINGS ARE SHOWN ON THESE PLANS.
10. FINAL SUBDRAIN LAYOUT AND PLACEMENT TO BE DETERMINED BY GEOTECHNICAL ENGINEER AT TIME OF CONSTRUCTION.



NOTES:
1. THIS AREA MAY HAVE ACTIVE SEEPAGE DURING CONSTRUCTION.
2. COLLECTOR PIPE SHOULD BE 6" PERFORATED PIPE, SUCH AS SDR–35 OR SDR–23.5 OR APPROVED EQUIVALENT (SEE DETAIL 1 NOTE 5 UNDER "DRAINAGE MATERIAL")
3. PIPE FITTINGS FOR CLEAN–OUTS AND OTHER 90° BENDS IN THE SUBDRAIN SYSTEM (EXCEPT THE CONNECTION BETWEEN THE 4"PERFORATED PIPES AND 6" COLLECTION PIPES) SHOULD BE "SWEEP 90'S"OR OTHER APPROVED EQUIVALENT.
4. CONTRACTOR TO PROVIDE ALL INCIDENTAL FITTINGS IN THEIR BID PRICE TO CONSTRUCT THE SUBDRAIN SYSTEM. NOT ALL INCIDENTAL FITTINGS ARE SHOWN ON THESE PLANS.
5. FINAL SUBDRAIN LAYOUT AND PLACEMENT TO BE DETERMINED BY GEOTECHNICAL ENGINEER AT TIME OF CONSTRUCTION.

DETAIL 2 – SOLID COLLECTOR PIPE DETAIL
NTS



D-D CROSS SECTION
SCALE: 1"=10'

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REGISTERED PROFESSIONAL ENGINEER JONATHAN TANG No. C67726 CIVIL STATE OF CALIFORNIA

JONATHAN TANG, P.E.

THE UNDERSIGNED GEOTECHNICAL ENGINEER HAS PERFORMED A GEOTECHNICAL INVESTIGATION AT THE SITE INCLUDING PERFORMING FIELD INVESTIGATION, LABORATORY TESTING, ENGINEERING ANALYSIS, AND REPORT PREPARATION AS DESCRIBED IN THE OCTOBER 30, 2015 REPORT BY CORNERSTONE EARTH GROUP, INC. FOR THE PROJECT. THE GEOTECHNICAL ASPECTS OF THESE PLAN SHEETS HAVE BEEN PREPARED AND REVIEWED BY THE UNDERSIGNED GEOTECHNICAL ENGINEER AND ARE BASED UPON LIMITATIONS DESCRIBED IN THE GEOTECHNICAL INVESTIGATION REPORT. THESE PLANS ARE NOT A STAND–ALONE DOCUMENT AND SHOULD BE CONSIDERED AS PART OF THE GEOTECHNICAL INVESTIGATION REPORT. THE GEOTECHNICAL DESIGN ASPECTS IN THESE PLANS ARE CONTINGENT UPON A GEOTECHNICAL ENGINEER AND ENGINEERING GEOLOGIST OBSERVING CERTAIN ASPECTS OF THE PROJECT GRADING. THESE PLANS ARE SUBJECT TO MODIFICATION AND REVISION DURING CONSTRUCTION BASED ON THE FIELD CONDITIONS ENCOUNTERED.

REGISTERED PROFESSIONAL ENGINEER SCOTT E. FITINGHOFF No. 2379 GEOTECHNICAL STATE OF CALIFORNIA

SCOTT E. FITINGHOFF, P.E., G.E.

255 SHORELINE DRIVE, SUITE 200
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BKF ENGINEERS | SURVEYORS | PLANNERS

HIGHLAND ESTATES
LOT 7 IMPROVEMENT PLANS
GEOTECHNICAL MITIGATION CROSS SECTIONS (LOTS 5 TO 8)
CITY OF SAN MATEO — SAN MATEO COUNTY, CALIFORNIA

Revisions

No.						
Date	09/11/2018					
Scale	AS SHOWN					
Design	RH					
Drawn	NH					
Approved	JT					
Job No	950168-20					

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PLOT DATE: 09-11-18
PLOTTED BY: holt

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IMPROVEMENT PLANS FOR

HIGHLAND ESTATES - LOT 8 TICONDEROGA DRIVE

COUNTY OF SAN MATEO, CALIFORNIA

EARTHWORK

CUT	2,080	CY
SLOPE MITIGATION EXPORT CREDIT	1120	CY
FILL	90	CY
NET	770	CY CUT

EARTHWORK NOTES:

1. THE QUANTITIES SHOWN ABOVE EXCLUDE EARTHWORK FROM GEOTECHNICAL SLOPE REMEDIATION ACTIVITIES PER CONDITION OF APPROVAL ITEM NO. 4.M, INCLUDING SITE STRIPPING, EARTHWORK SWELLING AND SHRINKAGE FACTORS ASSOCIATED WITH GEOTECHNICAL SLOPE REMEDIATION MITIGATION.

2. THE EARTHWORK QUANTITIES SHOWN ABOVE ARE IN-PLACE QUANTITIES AND HAVE BEEN ESTIMATED BY THE ENGINEER WITH THE FOLLOWING ASSUMPTIONS:

   A. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR SITE STRIPPINGS.
   B. THE UNIT PAD SECTION IS ASSUMED TO BE A 12" THICK CONCRETE SECTION.
   C. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR FILL SHRINKAGE FACTORS.
   D. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR UTILITY TRENCHING AND SPOILS.
   E. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR SOIL STABILIZATION FACTORS AND LANDSCAPING PLANTING SOILS.
   F. EARTHWORK QUANTITIES DO NOT ACCOUNT FOR RETAINING WALLS AND BUILDING FOOTINGS AND BACKFILL.

2. ACTUAL QUANTITIES MAY VARY DUE TO FIELD CONDITIONS OR CONSTRUCTION TECHNIQUES. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES BASED UPON APPROVED PLANS AND INDEPENDENT CALCULATIONS.

LEGEND

EXISTING

- EXISTING PROPERTY LINE BOUNDRY
- EXISTING SANITARY SEWER W/MANHOLE
- EXISTING STORM DRAIN W/ MANHOLE
- EXISTING WATERLINE
- EXISTING CATCH BASIN
- EXISTING GAS LINE

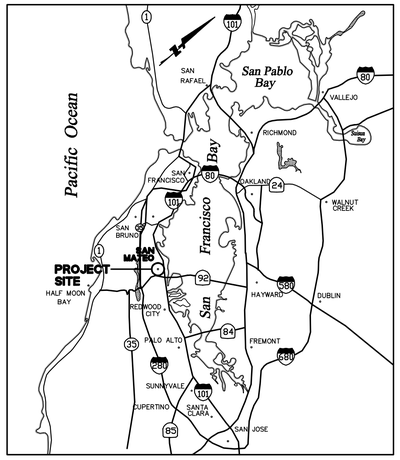
ALL UTILITIES ARE APPROXIMATELY LOCATED

PROPOSED

- PROPOSED PROPERTY LINE BOUNDRY
- SS — SANITARY SEWER W/ MANHOLE
- STORM DRAIN W/ MANHOLE & CATCH BASIN
- W / FH — WATER LINE W/ FIRE HYDRANT
- GAS — GAS MAIN
- ETC — UNDERGROUND ELECTRIC, TELEPHONE, & C.A.T.V.
- S.D.E. — STORM DRAIN EASEMENT
- S.S.E. — SANITARY SEWER EASEMENT
- 509.3 / #4 OAK — EXISTING TREE & ELEVATION (TREE NO. REFERS TO TREE IDENTIFICATION TAG PER (TREE REPORT PREPARED BY HABITAT RESTORATION GROUP)
- 509.3 / #3 OAK — INDICATES TREE TO BE REMOVED
- L.W. — LEATHERWOOD BUSH
- EUC. — EUCALYPTUS TREE
- P.O.C. — POINT OF CONNECTION
- FDZ — FIRE DEFENSE ZONE
- FLOW-THROUGH PLANTER. PROPOSED FOR TREATMENT OF ROOF AND DRIVEWAY STORM WATER RUNOFF.

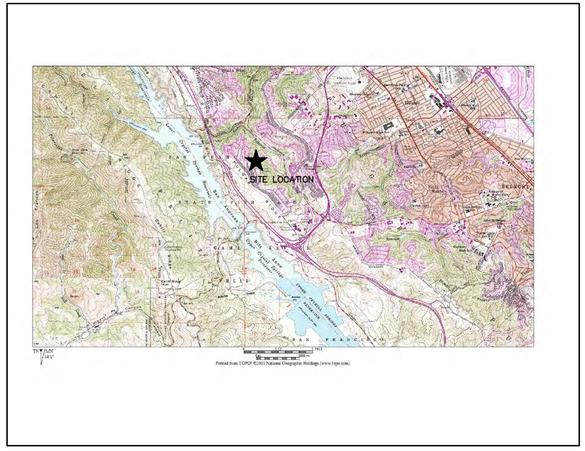
ABBREVIATIONS

AC	ASPHALTIC CONCRETE	L	LENGTH
BEG	BEGINNING	LF	LINEAR FEET
BL	BAY LAUREL	LG	LIP OF GUTTER
BLDG COR	BUILDING CORNER	NIC	NOT IN CONTRACT
BOT	BOTTOM	O	OAK TREE
BOW	GRADE AT BOTTOM OF WALL	P	PEPPER TREE
BW	BACK OF WALK	PD	PLANNED DEVELOPMENT
CB	CATCH BASIN	PINE	PINE TREE
CL	CENTERLINE	PUE	PUBLIC UTILITY EASEMENT
CLF	CHAIN LINK FENCE	PVC	POLYVINYL CHLORIDE PIPE
CMP	CORRUGATED METAL PIPE	RCP	REINFORCED CONCRETE PIPE
CO	CLEANOUT	RDW	REDWOOD TREE
CONC	CONCRETE	RET WALL	RETAINING WALL
CU	COPPER	ROW	RIGHT OF WAY
DG	DECOMPOSED GRANITE	RPB	REDUCED PRESSURE BACKFLOW
DI	DRAIN INLET	RWL	RAIN WATER LEADER
DW	DOMESTIC WATER	S	SLOPE
EG	EXISTING GRADE	SD	STORM DRAIN
EP	EDGE OF PAVEMENT	SDCB	STORM DRAIN CATCH BASIN
EUC	EUCALYPTUS TREE	SDCO	STORM DRAIN CLEANOUT
EX, (E)	EXISTING	SDDI	STORM DRAIN DROP INLET
FC, FOC	FACE OF CURB	SDMH	STORM DRAIN MANHOLE
FF	FINISH FLOOR	SS	SANITARY SEWER
FG	FINISH GRADE	SSCO	SANITARY SEWER CLEAN OUT
FL	FLOW LINE	SSMH	SANITARY SEWER MANHOLE
FNC	FENCE	T	TREE
FTP	FLOW THROUGH PLANTER	TC	TOP OF CURB
FW	FIRE WATER	TOE	TOE OF SLOPE
GB	GRADE BREAK	TOP	TOP OF SLOPE
GFF	GARAGE FINISH FLOOR	TOW	TOP OF WALL
GM	GAS METER	TYP	TYPICAL
GND	GROUND SHOT	UB	UTILITY BOX
GR	GRATE	VC	VERTICAL CURVE
GRAVEL	EDGE OF GRAVEL ROAD	VCP	VITRIFIED CLAY PIPE
GW	GUY WIRE	W	WATER
INV	INVERT	WM	WATER METER
JP	JOINT POLE	WV	WATER VALVE



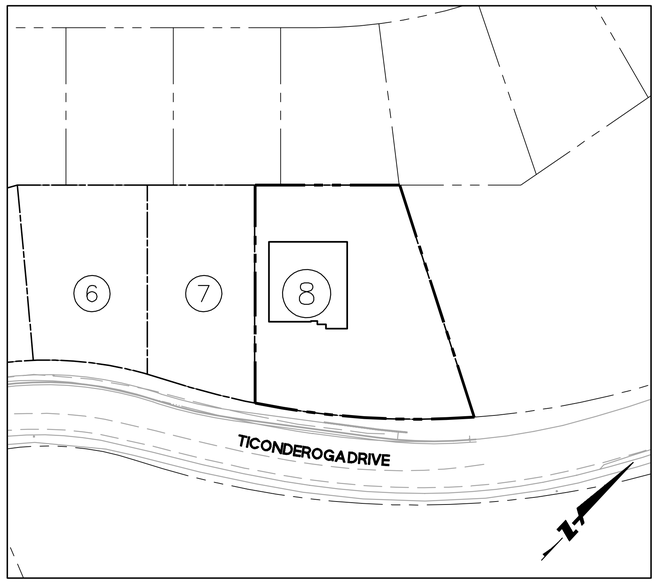
VICINITY MAP

NTS



LOCATION MAP

NTS



SITE PLAN

SCALE: 1" = 50'

PROJECT DATA

SITE AREA:	20,394 SF
EXISTING LAND USE:	UNDEVELOPED LAND
PROPOSED USE:	RESIDENTIAL (LOT 8)
EXISTING ZONE:	RMD – RESOURCE MANAGEMENT DISTRICT
PROPOSED ZONE:	R-1
PROPOSED USE:	1 RESIDENTIAL LOT
OWNER:	TICONDEROGA PARTNERS, A CALIFORNIA LIMITED LIABILITY CORPORATION C/O THE CHAMBERLAIN GROUP 655 SKYWAY, SUITE 230 SAN CARLOS, CA 94070 (650) 595-5582 ATTN: JACK CHAMBERLAIN
DEVELOPER:	THE CHAMBERLAIN GROUP 655 SKYWAY, SUITE 230 SAN CARLOS, CA 94070 (650) 595-5582 ATTN: JACK CHAMBERLAIN
CIVIL ENGINEER:	BKF ENGINEERS 255 SHORELINE DRIVE, SUITE 200 REDWOOD CITY, CA 94065 (650) 482-6300
GEOTECHNICAL ENGINEER:	CORNERSTONE EARTH GROUP 1259 OAKMEAD PARKWAY SUNNYVALE, CA 94085 (408) 245-4600
WATER SUPPLY:	CAL WATER SERVICE 341 N. DELAWARE STREET SAN MATEO, CA 94401-1808 (650) 343-1808
SEWAGE DISPOSAL:	CITY OF SAN MATEO & CRYSTAL SPRINGS COUNTY SANITATION DISTRICT
GAS & ELECTRIC	PG&E
TELEPHONE:	AT&T
FIRE PROTECTION:	CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION
CABLE:	COMCAST
STORM DRAINAGE:	COUNTY OF SAN MATEO CITY OF SAN MATEO
TOPOGRAPHIC BASE MAP:	AERO-GEODIC COROP. JOB NO. 950168 DATE OF PHOTOGRAPHY 9/18/87
EROSION CONTROL POINT OF CONTACT:	NOEL CHAMBERLAIN, NEXGEN BUILDERS INC. 225 DEMETER STREET EAST PALO ALTO, CA 94303 PHONE #: (650) 322-5800 CELL #: (650) 444-3089 EMAIL: noel@nexgenbuilders.com

SHEET INDEX

ENGINEER'S STATEMENT

THESE IMPROVEMENT PLANS HAVE BEEN PREPARED UNDER MY DIRECTION.

REGISTERED PROFESSIONAL ENGINEER — ROLAND N.V. HAGA — No. C043971 — CIVIL — STATE OF CALIFORNIA

ROLAND N.V. HAGA — DATE
R.C.E NO. 43971
BKF ENGINEERS

ENGINEER OF WORK

I HEREBY DECLARE THAT I AM THE CIVIL ENGINEER OF WORK FOR THIS PROJECT AND THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THIS PROJECT AS DEFINED IN SECTION 6703 OF THE STATE OF CALIFORNIA, BUSINESS & PROFESSIONAL CODES, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

REGISTERED PROFESSIONAL ENGINEER — JONATHAN TANG — No. C67726 — CIVIL — STATE OF CALIFORNIA

JONATHAN TANG — DATE
P.E. NO. 67726
BKF ENGINEERS

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BKF ENGINEERS / SURVEYORS / PLANNERS

HIGHLAND ESTATES
LOT 8 IMPROVEMENT PLANS
TITLE SHEET
SAN MATEO COUNTY CALIFORNIA
CITY OF SAN MATEO

Revisions	No.

Date	09/11/2018
Scale	NTS
Design	JT
Drawn	MD
Approved	RH
Job No	950168-20

Sheet Number:
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OF

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NOTES:

I. GENERAL NOTES

1. WORK SHALL CONFORM TO THE COUNTY OF SAN MATEO PUBLIC WORKS STANDARD DRAWINGS FOR PUBLIC IMPROVEMENTS, REVISED SEPTEMBER 2007 AND THE SAN MATEO COUNTY SEWER AND SANITATION DISTRICTS STANDARD SPECIFICATIONS, DATED JUNE 1995.

2. PERFORM WORK IN CONFORMANCE WITH THE RECOMMENDATION OF THE PROJECT GEOTECHNICAL ENGINEERING REPORT TITLED "UPDATED GEOTECHNICAL INVESTIGATION, HIGHLAND ESTATES LOTS 5 THROUGH 11, TICONDEROGA DRIVE/COBBLEHILL PLACE/COWPENS WAY, SAN MATEO COUNTY, CALIFORNIA" PREPARED BY CORNERSTONE EARTH GROUP, DATED OCTOBER 30, 2015. GRADING WORK WILL BE SUBJECT TO APPROVAL OF GEOTECHNICAL ENGINEER.

3. ARRANGE FOR REQUIRED INSPECTIONS BY COUNTY ENGINEER. NO DELAY OF WORK CLAIM WILL BE ALLOWED DUE TO CONTRACTOR'S FAILURE TO ARRANGE FOR REQUIRED COUNTY INSPECTIONS IN ADVANCE. PROVIDE NOTICE TO COUNTY ENGINEER A MINIMUM OF 2 WORKING DAYS IN ADVANCE OF REQUIRED INSPECTIONS.

4. REVISIONS TO THESE PLANS MUST BE REVIEWED AND APPROVED IN WRITING BY ENGINEER, WHO WILL OBTAIN APPROVAL FROM COUNTY ENGINEER PRIOR TO CONSTRUCTION OF AFFECTED ITEMS. REVISIONS SHALL BE ACCURATELY SHOWN ON REVISED PLANS, WHICH SHALL BE REVIEWED AND APPROVED BY THE ENGINEER AND COUNTY ENGINEER PRIOR TO INSTALLATION OF THE IMPROVEMENTS.

5. REPLACE OR REPAIR EXISTING UTILITIES, IMPROVEMENTS OR FEATURES DAMAGED, REMOVED, OR DISTURBED BY CONSTRUCTION TO THEIR ORIGINAL CONDITION, WHETHER SHOWN ON PLANS OR NOT.

6. REPLACE STREET MONUMENTS, LOT CORNERS PIPES AND OTHER PERMANENT MONUMENTS DISTURBED DURING CONSTRUCTION. MONUMENTS SHALL BE SET BY A SURVEYOR REGISTERED IN THE STATE OF CALIFORNIA.

7. PREPARE TRAFFIC CONTROL PLAN AND OBTAIN APPROVAL FROM COUNTY ENGINEER BEFORE COMMENCING WORK. PROVIDE FLAG MEN, CONES, BARRICADES AND OTHER TRAFFIC CONTROL MEASURES NECESSARY TO PROVIDE SAFE LANE CLOSURE IN CONFORMANCE WITH CALTRANS STANDARDS AND AS APPROVED BY COUNTY ENGINEER.

8. PEDESTRIAN TRAFFIC CONTROL TO BE PROVIDED WHEN EXISTING SIDEWALKS CANNOT BE MAINTAINED DURING CONSTRUCTION.

9. DO NOT LEAVE TRENCHES OPEN OVERNIGHT IN EXISTING STREET AREAS. BACKFILL OR COVER OPEN TRENCHES AT THE END OF WORK EVERY WORK DAY.

10. PREPARE SHORING PLAN AND SUBMIT TO THE COUNTY ENGINEER FOR REVIEW AND APPROVAL. ADEQUATELY SHORE EXCAVATIONS TO PREVENT EARTH FROM SLIDING OR SETTLING AND TO PROTECT EXISTING ADJACENT IMPROVEMENTS FROM DAMAGE. DAMAGE RESULTING FROM A LACK OF ADEQUATE SHORING SHALL BE THE CONTRACTOR'S RESPONSIBILITY. PROVIDE SHORING IN CONFORMANCE WITH APPLICABLE CONSTRUCTION SAFETY ORDERS OF THE CALIFORNIA DIVISION OF INDUSTRIAL SAFETY AND OSHA WHERE EXCAVATIONS ARE 5 FEET OR MORE IN DEPTH.

11. IMPLEMENT CONSTRUCTION DUST CONTROL MEASURES TO REDUCE PARTICULATE GENERATION TO A LESS THAN SIGNIFICANT LEVEL. PROVIDE DUST CONTROL IN CONFORMANCE WITH BAY AREA AIR QUALITY MANAGEMENT DISTRICT MINIMUM REQUIREMENTS. IMPLEMENT THE FOLLOWING CONSTRUCTION PRACTICES EXCEPT WHEN IT IS RAINING.

    11.A. WATER ACTIVE EXTERIOR SOIL AREAS AT LEAST TWICE DAILY.

    11.B. COVER TRUCKS HAULING SOIL, SAND AND OTHER LOOSE MATERIAL OR PROVIDE 2 FEET OF FREEBOARD.

    11.C. PAVE, APPLY WATER THREE TIMES DAILY OR APPLY NON–TOXIC SOIL STABILIZER ON UNPAVED ACCESS ROADS, PARKING AREAS AND STAGING AREAS.

    11.D. SWEEP PAVED ACCESS ROADS, PARKING AREAS AND STAGING AREAS DAILY.

    11.E. APPLY HYDROSEED OR NON–TOXIC SOIL STABILIZER TO INACTIVE CONSTRUCTION AREAS.

    11.F. ENCLOSE, COVER, WATER TWICE DAILY OR APPLY NON–TOXIC SOIL STABILIZER TO EXPOSED SOIL STOCKPILES.

    11.G. INSTALL SANDBAGS AND OTHER EROSION CONTROL MEASURES TO PREVENT SILT RUNOFF TO PUBLIC ROADWAYS.

    11.H. LIMIT TRAFFIC SPEED ON UNPAVED ROADS TO 15 MPH.

    11.I. REPLANT VEGETATION IN DISTURBED AREAS AS QUICKLY AS POSSIBLE.

12. KEEP STREETS CLEAN OF DIRT, MUD AND OTHER CONSTRUCTION DEBRIS. CLEAN AND SWEEP STREETS ON A DAILY BASIS DURING THE WORK WEEK.

13. SHOULD IT APPEAR THAT THE WORK IS NOT SUFFICIENTLY DETAILED OR SPECIFIED IN CONSTRUCTION DOCUMENTS, NOTIFY ENGINEER AND OBTAIN CLARIFICATION BEFORE PROCEEDING WITH WORK IN QUESTION.

14. CONSTRUCTION STAKING SHALL BE DONE BY A CIVIL ENGINEER OR LAND SURVEYOR REGISTERED IN THE STATE OF CALIFORNIA.

15. IF BKF ENGINEERS IS RETAINED TO PROVIDE CONSTRUCTION STAKING SERVICES, CONTRACTOR WILL BE PROVIDED WITH ONE SET OF SURVEY STAKES FOR LAYOUT PURPOSES. PRESERVE AND PROTECT THESE STAKES UNTIL THEY ARE NO LONGER NEEDED. RESTAKING SHALL BE AT CONTRACTOR'S EXPENSE.

16. MATCH EXISTING PAVEMENT, CURB AND GUTTER, SIDEWALK, ADJACENT LANDSCAPE AND OTHER IMPROVEMENTS WITH SMOOTH TRANSITION TO AVOID ABRUPT OR APPARENT CHANGES IN GRADES, CROSS SLOPES, LOW SPOTS OR HAZARDOUS CONDITIONS.

17. VISIT SITE TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND OVERALL PROJECT REQUIREMENT PRIOR TO BIDDING PROJECT.

18. OBTAIN AND PAY FOR PERMITS AND LICENSES AS REQUIRED TO PERFORM WORK WITHIN THE COUNTY OF SAN MATEO PRIOR TO START OF WORK. PERMITS MAY INCLUDE ENCROACHMENT PERMIT FOR WORK WITHIN COUNTY RIGHT–OF–WAY AND GRADING/UTILITY PERMIT.

19. CONTRACTOR IS RESPONSIBLE FOR TRAFFIC AND PEDESTRIAN CONTROL DURING CONSTRUCTION.

20. OBTAIN APPROVAL OF IMPORT SOIL MATERIAL FROM GEOTECHNICAL ENGINEER PRIOR TO DISTRIBUTING MATERIAL OVER SITE.

21. PROTECT ADJOINING PREMISES, TREES, LANDSCAPING, UTILITIES, SIDEWALKS, STREETS AND OTHER FEATURES FROM DAMAGE BY CONTRACTOR'S OPERATIONS. REPAIR, REPLACE OR CLEAN ADJOINING PREMISES, TREES, LANDSCAPING, UTILITIES, SIDEWALKS, STREETS AND OTHER FEATURES TO SATISFACTION OF OWNER.

22. MAINTAIN AND MANAGE CONSTRUCTION MATERIALS, EQUIPMENT AND VEHICLES AT THE CONSTRUCTION SITE.

23. NOTIFY COUNTY ENGINEER A MINIMUM OF 24 HOURS PRIOR TO STARTING WORK ON OFF–SITE DRAINAGE AND SEWER FACILITIES, GRADING, PAVING, OR WORK IN THE COUNTY RIGHT–OF–WAY.

24. MAKE EFFORTS TO MINIMIZE CONSTRUCTION NOISE.

    24.A. MAINTAIN EQUIPMENT USED ON SITE IN GOOD MECHANICAL CONDITION TO MINIMIZE NOISE CREATED BY FAULTY OR POORLY MAINTAINED ENGINE, DRIVE–TRAIN AND OTHER COMPONENTS.

    24.B. EQUIPMENT EXCEEDING 110 DBA MEASURED 25 FEET FROM THE PIECE OF EQUIPMENT WILL NOT BE ALLOWED ON SITE.

    24.C. SELECT APPROPRIATE EQUIPMENT TO MINIMIZE NOISE GENERATION. USE THE FOLLOWING TECHNIQUES TO MINIMIZE NOISE GENERATION SUBJECT TO EQUIPMENT AVAILABILITY AND COST CONSIDERATIONS. USE SCRAPERS AS MUCH AS POSSIBLE FOR EARTH REMOVAL, RATHER THAN NOISIER LOADERS AND HAUL TRUCKS. USE BACKHOES FOR BACKFILLING AS IT IS QUIETER THAN DOZERS OR LOADERS. USE MOTOR GRADERS RATHER THAN BULLDOZERS FOR FINAL GRADING.

II. EXISTING CONDITIONS

1. EXISTING TOPOGRAPHIC INFORMATION SHOWN ON THESE PLANS IS BASED UPON A FIELD TOPOGRAPHIC SURVEY OF THE PROJECT SITE BY BKF ENGINEERS, DATED JUNE 2009. ACTUAL CONDITIONS ENCOUNTERED ON SITE MAY VARY FROM THOSE SHOWN ON THE PLANS. CONTRACTOR SHALL REVIEW CONSTRUCTION DOCUMENTS AND CONDUCT THEIR OWN INVESTIGATIONS TO UNDERSTAND AND VERIFY EXISTING CONDITIONS AT THE SITE.

2. EXISTING SUBSURFACE IMPROVEMENTS AND UTILITIES SHOWN ON THESE PLANS WERE TAKEN FROM RECORD INFORMATION KNOWN TO THE ENGINEER AND FIELD SURVEY OF ABOVE GRADE FEATURES. THESE PLANS ARE NOT MEANT TO BE A FULL CATALOG OF EXISTING SUBSURFACE CONDITIONS. CONDUCT FIELD INVESTIGATION TO VERIFY THE LOCATIONS AND ELEVATIONS OF EXISTING SUBSURFACE IMPROVEMENTS AND UTILITIES, WHETHER SHOWN ON PLANS OR NOT, PRIOR TO START OF EXCAVATION. IF DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THESE PLANS ARE DISCOVERED, NOTIFY ENGINEER IMMEDIATELY AND REQUEST DISCREPANCY BE RESOLVED.

3. VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES PRIOR TO START OF CONSTRUCTION AFFECTING UTILITIES. POTHOLE WHERE NEEDED TO VERIFY LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES.

4. CONTACT USA (UNDERGROUND SERVICES ALERT) AT 1–800–227–2600, AND AFFECTED UTILITY COMPANIES A MINIMUM OF 2 WORKING DAYS PRIOR TO STARTING WORK TO REQUEST UTILITIES BE MARKED.

III. DEMOLITION

1. REMOVE FROM SITE AND DISPOSE OF IN LAWFUL MANNER EXISTING STRUCTURES, UTILITIES, AND OTHER FEATURES NOT REMOVED DURING DEMOLITION OR ROUGH GRADING AND ENCOUNTERED DURING WORK ON SITE.

    1.A. REMOVE WOOD OR CONCRETE STRUCTURES, SLABS, FOOTINGS, GRADE BEAMS, DECKS, DOCKS, AND OTHER SIMILAR STRUCTURES.

    1.B. REMOVE LANDSCAPING, UTILITIES AND IRRIGATION LINES AS SPECIFIED BY GEOTECHNICAL ENGINEER.

    1.C. REMOVE ABANDONED IN–GROUND STRUCTURES, SUCH AS CULVERTS, UTILITY VAULTS, AND FOUNDATIONS AS SPECIFIED BY GEOTECHNICAL ENGINEER.

IV. DEWATERING

1. DEWATER AREAS COVERED WITH STANDING WATER PRIOR TO PLACEMENT OF FILL.

2. DISPOSE OF WATER FROM DEWATERING OPERATION IN CONFORMANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

V. UTILITIES

1. DO NOT OPERATE WATER VALVES OR OTHER WATER DISTRICT FACILITIES. REQUIRED OPERATION WILL BE PERFORMED BY UTILITY DISTRICT PERSONNEL ONLY. NOTIFY UTILITY DISTRICT 2 WORKING DAYS PRIOR TO REQUIRING FACILITY OPERATION.

2. PROVIDE MINIMUM 12 INCH VERTICAL CLEARANCE BETWEEN ADJACENT UTILITY PIPES AT UTILITY CROSSINGS UNLESS OTHERWISE NOTED.

3. COMPLETE ELECTRIC, GAS, TELEPHONE, CABLE AND OTHER JOINT TRENCH WORK IN CONFORMANCE WITH THE REQUIREMENTS OF THE RESPECTIVE UTILITY PROVIDER. NOTIFY UTILITY PROVIDER MINIMUM 2 WORKING DAYS PRIOR TO COMMENCING WORK. IF EXISTING WATER, SEWER, GAS OR OTHER UTILITY SERVICES ARE DISTURBED OR DAMAGED DURING CONSTRUCTION, NOTIFY UTILITY OWNER IMMEDIATELY.

4. PROTECT UTILITIES FROM DAMAGE CAUSED BY CONTRACTOR'S WORK.

5. PROVIDE UTILITY STRUCTURES IN PAVED AREAS SUITABLE FOR H–20 LOADING.

6. PIPE LENGTHS SHOWN ON PLANS ARE FOR ENGINEERING CALCULATIONS ONLY AND ARE NOT INTENDED AS BID QUANTITIES OR FOR ORDERING MATERIALS.

7. CONSTRUCT GRAVITY FLOW UTILITIES FROM DOWNSTREAM CONNECTION POINT TO UPSTREAM TERMINUS.

8. COORDINATE WITH COUNTY OF SAN MATEO AND CRYSTAL SPRINGS SANITATION DISTRICT FOR INSPECTION OF WORK ON DISTRICT FACILITIES.

9. ALL WATER LATERALS AND SERVICES SHALL BE INSTALLED TO THE STANDARDS OF THE CALIFORNIA WATER SERVICE COMPANY. EXISTING WATER MAINS OR LATERALS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED AND TESTED TO THE SATISFACTION OF THE WATER COMPANY.

VI. EARTHWORK AND GRADING

1. OFF–SITE IMPORT FILL MATERIAL SHALL CONFORM TO THE SPECIFICATIONS AND THE REQUIREMENTS OF THE GEOTECHNICAL REPORT.

2. TOPSOIL, ROOTS, VEGETABLE MATTER, TRASH AND DEBRIS WILL NOT BE CONSIDERED ACCEPTABLE FILL MATERIAL.

3. REMOVE DEBRIS FROM AREAS OF EARTHWORK PRIOR TO PLACING FILL OR STARTING GRADING OPERATIONS.

4. PLACE AND COMPACT FILL MATERIAL AS RECOMMENDED IN GEOTECHNICAL REPORT. PLACE FILL MATERIAL IN MAXIMUM 8 INCH UNCOMPACTED THICKNESS. COMPACTION BY FLOODING, PONDING OR JETTING WILL NOT BE PERMITTED.

5. CONTRACTOR SHALL MAKE HIS OWN DETERMINATION OF EARTHWORK QUANTITIES.

VII RECORD DRAWINGS

1. KEEP ACCURATE RECORD OF THE FINAL LOCATION, ELEVATION AND DESCRIPTION OF WORK ON A COPY OF THE FINAL APPROVED CONSTRUCTION DOCUMENTS. NOTE THE LOCATIONS AND ELEVATIONS OF EXISTING IMPROVEMENTS ENCOUNTERED THAT VARY FROM THE LOCATIONS SHOWN ON THE IMPROVEMENT PLANS. PROVIDE COPY OF RECORD INFORMATION TO OWNER AT COMPLETION OF PROJECT AND WHEN REQUESTED.

VII. STATEMENT OF RESPONSIBILITY

1. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD BOTH DESIGN PROFESSIONAL AND THE COUNTY OF SAN MATEO HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF EITHER THE DESIGN PROFESSIONAL OR THE COUNTY OF SAN MATEO, RESPECTIVELY.

IX. UNAUTHORIZED CHANGES AND USES

1. THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND REQUIRE WRITTEN APPROVAL OF THE COUNTY ENGINEER AND THE PREPARER OF THESE PLANS.

X. DRAWING LANGUAGE

1. NOTES AND CALLOUTS ON DRAWINGS MAY USE IMPERATIVE LANGUAGE. REQUIREMENTS EXPRESSED IMPERATIVELY ARE TO BE PERFORMED BY THE CONTRACTOR UNLESS NOTED OTHERWISE.

CONDITIONS OF APPROVAL NOTES

CONSTRUCTION NOTES

1. THE FIRST PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY. THE REMAINDER OF CONSTRUCTION EQUIPMENT (70 PERCENT), WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL BE REQUIRED TO USE EMULSIFIED FUELS.

2. THE SECOND PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 2 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY AND 50 PERCENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS. THE REMAINING 20 PERCENT OF CONSTRUCTION EQUIPMENT, WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL USE EMULSIFIED FUELS.

3. FOR ALL LARGER VEHICLES, INCLUDING CEMENT MIXERS OR OTHER DEVICES THAT MUST BE DELIVERED BY LARGE TRUCKS, VEHICLES SHALL BE EQUIPPED WITH CARB LEVEL THREE VERIFIED CONTROL DEVICES.

4. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY.

5. COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR REQUIRE ALL TRUCKS TO MAINTAIN AT LEAST TWO FEET OF FREEBOARD.

6. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY NON–TOXIC SOIL STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.

7. SWEEP DAILY (WITH WATER SWEEPERS) ALL PAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.

8. SWEEP PUBLIC STREETS ADJACENT TO CONSTRUCTION SITES DAILY (WITH WATER SWEEPERS) IF VISIBLE SOIL MATERIAL IS CARRIED ONTO THE STREETS.

9. HYDROSEED OR APPLY NON–TOXIC SOIL STABILIZERS TO INACTIVE CONSTRUCTION AREAS (PREVIOUSLY GRADED AREAS INACTIVE FOR TEN DAYS OR MORE).

10. ENCLOSE, COVER, WATER TWICE DAILY, OR APPLY NON–TOXIC SOIL BINDERS TO EXPOSED STOCKPILES (DIRT, SAND, ETC.). LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.

11. LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.

12. INSTALL SANDBAGS OR OTHER EROSION CONTROL MEASURES TO PREVENT SILT RUNOFF TO PUBLIC ROADWAYS.

13. REPLANT VEGETATION IN DISTURBED AREAS AS SOON AS POSSIBLE.

14. INSTALL WHEEL WASHERS FOR ALL EXITING TRUCKS OR WASH OFF THE TIRES OR TRACKS OF ALL TRUCKS AND EQUIPMENT LEAVING THE CONSTRUCTION SITE.

15. INSTALL WIND BREAKS AT THE WINDWARD SIDES OF THE CONSTRUCTION AREAS.

16. SUSPEND EXCAVATION AND GRADING ACTIVITIES WHEN WIND (AS INSTANTANEOUS GUSTS) EXCEEDS 25 MILES PER HOUR.

NOISE NOTES

1. EQUIPMENT AND TRUCKS USED FOR PROJECT GRADING AND CONSTRUCTION WOULD UTILIZE THE BEST AVAILABLE NOISE CONTROL TECHNIQUES (E.G., IMPROVED EXHAUST MUFFLERS, EQUIPMENT REDESIGN, USE OF INTAKE SILENCERS, DUCTS, ENGINE ENCLOSURES, AND ACOUSTICALLY–ATTENUATING SHIELDS OR SHROUDS) IN ORDER TO MINIMIZE CONSTRUCTION NOISE IMPACTS.

2. EQUIPMENT USED FOR PROJECT GRADING AND CONSTRUCTION WOULD BE HYDRAULICALLY OR ELECTRICALLY POWERED IMPACT TOOLS (E.G., JACK HAMMERS AND PAVEMENT BREAKERS) WHEREVER POSSIBLE TO AVOID NOISE ASSOCIATED WITH COMPRESSED AIR EXHAUST FROM PNEUMATICALLY–POWERED TOOLS. COMPRESSED AIR EXHAUST SILENCERS WOULD BE USED ON OTHER EQUIPMENT. OTHER QUIETER PROCEDURES WOULD BE USED SUCH AS DRILLING RATHER THAN IMPACT EQUIPMENT WHENEVER FEASIBLE.

3. THE GRADING AND CONSTRUCTION ACTIVITY WOULD BE KEPT TO THE HOURS OF 7:00 AM TO 7:00 PM, MONDAY THROUGH FRIDAY. SATURDAY HOURS (8:00 AM TO 5:00 PM) ARE PERMITTED UPON THE DISCRETION OF COUNTY APPROVAL BASED ON INPUT FROM NEARBY RESIDENTS AND BUSINESSES. SATURDAY CONSTRUCTION (8:00 AM TO 5:00 PM) WOULD BE ALLOWED ONCE THE BUILDINGS ARE FULLY ENCLOSED. NOISE GENERATING GRADING AND CONSTRUCTION ACTIVITIES SHALL NOT OCCUR AT ANY TIME ON SUNDAYS, THANKSGIVING AND CHRISTMAS.

4. RESIDENTIAL PROPERTY OWNERS WITHIN 200 FEET OF PLANNED CONSTRUCTION AREAS SHALL BE NOTIFIED OF THE CONSTRUCTION SCHEDULE IN WRITING, PRIOR TO CONSTRUCTION; THE PROJECT SPONSOR SHALL DESIGNATE A "DISTURBANCE COORDINATOR" WHO SHALL BE RESPONSIBLE FOR RESPONDING TO ANY LOCAL COMPLAINTS REGARDING CONSTRUCTION NOISE; THE COORDINATOR (WHO MAY BE AN EMPLOYEE OF THE DEVELOPER OR GENERAL CONTRACTOR) SHALL DETERMINE THE CAUSE OF THE COMPLAINT AND SHALL REQUIRE THAT REASONABLE MEASURES WARRANTED TO CORRECT THE PROBLEM BE IMPLEMENTED; A TELEPHONE NUMBER OF THE NOISE DISTURBANCE COORDINATOR SHALL BE CONSPICUOUSLY POSTED AT THE CONSTRUCTION SITE FENCE AND ON THE NOTIFICATION SENT TO NEIGHBORS ADJACENT TO THE SITE.

ASBESTOS NOTES

1. IF NATURALLY OCCURRING ASBESTOS IS IDENTIFIED AT THE SITE, A SITE HEALTH AND SAFETY (H&S) PLAN INCLUDING METHODS FOR CONTROL OF AIRBORNE DUST SHALL BE PREPARED. THIS PLAN SHALL BE REVIEWED AND APPROVED BY THE COUNTY OF SAN MATEO PRIOR TO GRADING IN AREAS UNDERLAIN BY SERPENTINE–BEARING SOILS OR BEDROCK AND NATURALLY OCCURRING ASBESTOS. THE H&S PLAN SHALL STRICTLY CONTROL DUST–GENERATING EXCAVATION AND COMPACTION OF MATERIAL CONTAINING NATURALLY OCCURRING ASBESTOS. THE PLAN SHALL ALSO IDENTIFY SITE–MONITORING ACTIVITIES DEEMED NECESSARY DURING CONSTRUCTION (E.G., AIR MONITORING). WORKER MONITORING SHALL ALSO BE PERFORMED AS APPROPRIATE. THE PLAN SHALL DEFINE PERSONAL PROTECTION METHODS TO BE USED BY CONSTRUCTION WORKERS. ALL WORKER PROTECTION AND MONITORING SHALL COMPLY WITH PROVISIONS OF THE MINING SAFETY AND HEALTH ADMINISTRATION (MSHA) GUIDELINES, CALIFORNIA DIVISION OF OCCUPA–TIONAL SAFETY AND HEALTH (DOSH), AND THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).

2. IF NATURALLY OCCURRING ASBESTOS IS FOUND AT THE SITE, A SOIL MANAGEMENT PLAN SHALL BE DEVELOPED AND APPROVED BY THE COUNTY PLANNING DEPARTMENT TO PROVIDE DETAILED DESCRIPTIONS OF THE CONTROL AND DISPOSITION OF SOILS CONTAINING NATURALLY OCCURRING ASBESTOS. SERPENTINE MATERIAL PLACED AS FILL SHALL BE SUFFICIENTLY BURIED IN ORDER TO PREVENT EROSION BY WIND OR SURFACE WATER RUNOFF, OR EXPOSURE TO FUTURE HUMAN ACTIVITIES, SUCH AS LANDSCAPING OR SHALLOW TRENCHES. ADDITIONALLY, THE BAAQMD SHALL BE NOTIFIED PRIOR TO THE START OF ANY EXCAVATION IN AREAS CONTAINING NATURALLY OCCURRING ASBESTOS.

GRADING NOTES

1. NO GRADING SHALL BE ALLOWED DURING THE WINTER SEASON (OCTOBER 15 TO APRIL 30) TO AVOID POTENTIAL SOIL EROSION UNLESS APPROVED, IN WRITING, BY THE COMMUNITY DEVELOPMENT DIRECTOR. THE PROPERTY OWNERS SHALL SUBMIT A LETTER TO THE CURRENT PLANNING SECTION, AT LEAST TWO WEEKS PRIOR TO COMMENCEMENT OF GRADING, STATING THE DATE WHEN GRADING WILL BEGIN.

TREE PROTECTION NOTES

1. THE APPLICANT SHALL ESTABLISH AND MAINTAIN TREE PROTECTION ZONES THROUGHOUT THE ENTIRE LENGTH OF THE PROJECT. TREE PROTECTION ZONES SHALL BE DELINEATED USING 4–FOOT TALL ORANGE PLASTIC FENCING SUPPORTED BY POLES POUNDED INTO THE GROUND, LOCATED AS CLOSE TO THE DRIPLINES AS POSSIBLE WHILE STILL ALLOWING ROOM FOR CONSTRUCTION/GRADING TO SAFELY CONTINUE. THE APPLICANT SHALL MAINTAIN TREE PROTECTION ZONES FREE OF EQUIPMENT AND MATERIALS STORAGE AND SHALL NOT CLEAN ANY EQUIPMENT WITHIN THESE AREAS. SHOULD ANY LARGE ROOTS OR LARGE MASSES OF ROOTS NEED TO BE CUT, THE ROOTS SHALL BE INSPECTED BY A CERTIFIED ARBORIST OR REGISTERED FORESTER PRIOR TO CUTTING. ANY ROOT CUTTING SHALL BE MONITORED BY AN ARBORIST OR FORESTER AND DOCUMENTED. ROOTS TO BE CUT SHOULD BE SEVERED CLEANLY WITH A SAW OR TOPPERS. NORMAL IRRIGATION SHALL BE MAINTAINED, BUT OAKS SHOULD NOT NEED SUMMER IRRIGATION. THE ABOVE INFORMATION SHALL BE ON–SITE AT ALL TIMES.

VEGETATION REMOVAL/REPLACEMENT NOTES

1. VEGETATION REMOVED IN AREAS OUTSIDE OF BUILDING FOOTPRINTS, DRIVEWAYS, AND CONSTRUCTION ACCESS AREAS SHALL BE REPLACED WITH DROUGHT–TOLERANT, NON–INVASIVE PLANTS, IMMEDIATELY AFTER GRADING IS COMPLETE IN THAT AREA. PRIOR TO THE ISSUANCE OF ANY BUILDING PERMITS, THE APPLICANT SHALL SUBMIT PHOTOGRAPHS DEMONSTRATING COMPLIANCE WITH THIS CONDITION TO THE CURRENT PLANNING SECTION, SUBJECT TO REVIEW AND APPROVAL BY THE COMMUNITY DEVELOPMENT DIRECTOR.

2. THE APPLICANT SHALL REPLACE ALL VEGETATION REMOVED IN ALL AREAS NOT COVERED BY CONSTRUCTION WITH DROUGHT–TOLERANT, NON–INVASIVE PLANTS, ONCE CONSTRUCTION IS COMPLETED. PRIOR TO THE CURRENT PLANNING SECTION'S FINAL APPROVAL OF ANY BUILDING PERMIT, THE APPLICANT SHALL SUBMIT PHOTOGRAPHS DEMONSTRATING COMPLIANCE WITH THIS CONDITION, SUBJECT TO REVIEW AND APPROVAL BY THE COMMUNITY DEVELOPMENT DIRECTOR.

DUST CONTROL NOTES

1. ALL GRADED SURFACES AND MATERIALS, WHETHER FILLED, EXCAVATED, TRANSPORTED OR STOCKPILED, SHALL BE WETTED, PROTECTED OR CONTAINED IN SUCH A MANNER AS TO PREVENT ANY SIGNIFICANT NUISANCE FROM DUST, OR SPILLAGE UPON ADJOINING WATER BODY, PROPERTY, OR STREETS. EQUIPMENT AND MATERIALS ON THE SITE SHALL BE USED IN SUCH A MANNER AS TO AVOID EXCESSIVE DUST. A DUST CONTROL PLAN MAY BE REQUIRED AT ANYTIME DURING THE COURSE OF THE PROJECT.

2. A DUST PALLIATIVE SHALL BE APPLIED TO THE SITE WHEN REQUIRED BY THE COUNTY. THE TYPE AND RATE OF APPLICATION SHALL BE RECOMMENDED BY THE SOILS ENGINEER AND APPROVED BY THE DEPARTMENT OF PUBLIC WORKS, THE PLANNING AND BUILDING DEPARTMENT'S GEOTECHNICAL SECTION, AND THE REGIONAL WATER QUALITY CONTROL BOARD.

DISCOVERY OF HUMAN REMAINS NOTE

1. THE APPLICANT AND CONTRACTORS MUST BE PREPARED TO CARRY OUT THE REQUIREMENTS OF CALIFORNIA STATE LAW WITH REGARD TO THE DISCOVERY OF HUMAN REMAINS DURING CONSTRUCTION, WHETHER HISTORIC OR PREHISTORIC. IN THE EVENT THAT ANY HUMAN REMAINS ARE ENCOUNTERED DURING SITE DISTURBANCE, ALL GROUND–DISTURBING WORK SHALL CEASE IMMEDIATELY AND THE COUNTY CORONER SHALL BE NOTIFIED IMMEDIATELY. IF THE CORONER DETERMINES THE REMAINS TO BE NATIVE AMERICAN, THE NATIVE AMERICAN HERITAGE COMMISSION SHALL BE CONTACTED WITHIN 24 HOURS. A QUALIFIED ARCHAEOLOGIST, IN CONSULTATION WITH THE NATIVE AMERICAN HERITAGE COMMISSION, SHALL RECOMMEND SUBSEQUENT MEASURES FOR DISPOSITION OF THE REMAINS.

GEOTECHNICAL INSPECTION NOTE

1. PRIOR TO ISSUANCE OF BUILDING PERMITS, THE PROJECT GEOTECHNICAL CONSULTANT SHALL FIELD INSPECT (AND INVESTIGATE, AS NEEDED) ALL PROPOSED DRAINAGE DISCHARGE LOCATIONS AND VERIFY THAT PROPOSED DRAINAGE DESIGNS ARE ACCEPTABLE FROM A SLOPE STABILITY/EROSION PERSPECTIVE OR RECOMMEND APPROPRIATE MODIFICATIONS.

MITIGATION AQ–1

1. THE PROJECT APPLICANT SHALL REQUIRE THAT THE FOLLOWING BAAQMD RECOMMENDED AND ADDITIONAL PM10 REDUCTION PRACTICES BE IMPLEMENTED BY INCLUDING THEM IN THE CONTRACTOR CONSTRUCTION DOCUMENTS: THE FIRST PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY. THE REMAINDER OF CONSTRUCTION EQUIPMENT (70 PERCENT), WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL BE REQUIRED TO USE EMULSIFIED FUELS.

2. THE SECOND PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 2 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY AND 50 PERCENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS. THE REMAINING 20 PERCENT OF CONSTRUCTION EQUIPMENT, WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL USE EMULSIFIED FUELS.

3. FOR ALL LARGER VEHICLES, INCLUDING CEMENT MIXERS OR OTHER DEVICES THAT MUST BE DELIVERED BY LARGE TRUCKS, VEHICLES SHALL BE EQUIPPED WITH CARB LEVEL THREE VERIFIED CONTROL DEVICES.

4. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY.

2. COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR REQUIRE ALL TRUCKS TO MAINTAIN AT LEAST TWO FEET OF FREEBOARD.

3. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY NON–TOXIC SOIL STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.

4. SWEEP DAILY (WITH WATER SWEEPERS) ALL PAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.

5. SWEEP PUBLIC STREETS ADJACENT TO CONSTRUCTION SITES DAILY (WITH WATER SWEEPERS) IF VISIBLE SOIL MATERIAL IS CARRIED ONTO THE STREETS.

6. HYDROSEED OR APPLY NON–TOXIC SOIL STABILIZERS TO INACTIVE CONSTRUCTION AREAS (PREVIOUSLY GRADED AREAS INACTIVE FOR TEN DAYS OR MORE).

7. ENCLOSE, COVER, WATER TWICE DAILY, OR APPLY NON–TOXIC SOIL BINDERS TO EXPOSED STOCKPILES (DIRT, SAND, ETC.). LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.

8. LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.

9. INSTALL SANDBAGS OR OTHER EROSION CONTROL MEASURES TO PREVENT SILT RUNOFF TO PUBLIC ROADWAYS.

10. REPLANT VEGETATION IN DISTURBED AREAS AS SOON AS POSSIBLE.

11. INSTALL WHEEL WASHERS FOR ALL EXITING TRUCKS OR WASH OFF THE TIRES OR TRACKS OF ALL TRUCKS AND EQUIPMENT LEAVING THE CONSTRUCTION SITE.

12. INSTALL WIND BREAKS AT THE WINDWARD SIDES OF THE CONSTRUCTION AREAS.

13. SUSPEND EXCAVATION AND GRADING ACTIVITIES WHEN WIND (AS INSTANTANEOUS GUSTS) EXCEEDS 25 MILES PER HOUR.

MITIGATION NOI–1

1. THE PROJECT APPLICANT SHALL REQUIRE THAT THE FOLLOWING NOISE REDUCTION PRACTICES BE IMPLEMENTED BY INCLUDING THEM IN THE CONTRACTOR CONSTRUCTION DOCUMENTS:

2. EQUIPMENT AND TRUCKS USED FOR PROJECT GRADING AND CONSTRUCTION WOULD UTILIZE THE BEST AVAILABLE NOISE CONTROL TECHNIQUES (E.G., IMPROVED EXHAUST MUFFLERS, EQUIPMENT REDESIGN, USE OF INTAKE SILENCERS, DUCTS, ENGINE ENCLOSURES, AND ACOUSTICALLY–ATTENUATING SHIELDS OR SHROUDS) IN ORDER TO MINIMIZE CONSTRUCTION NOISE IMPACTS.

3. EQUIPMENT USED FOR PROJECT GRADING AND CONSTRUCTION WOULD BE HYDRAUL– ICALLY OR ELECTRICALLY POWERED IMPACT TOOLS (E.G., JACK HAMMERS AND PAVEMENT BREAKERS) WHEREVER POSSIBLE TO AVOID NOISE ASSOCIATED WITH COMPRESSED AIR EXHAUST FROM PNEUMATICALLY–POWERED TOOLS. COMPRESSED AIR EXHAUST SILENCERS WOULD BE USED ON OTHER EQUIPMENT. OTHER QUIETER PROCEDURES WOULD BE USED SUCH AS DRILLING RATHER THAN IMPACT EQUIPMENT WHENEVER FEASIBLE.

4. THE GRADING AND CONSTRUCTION ACTIVITY WOULD BE KEPT TO THE HOURS OF 7:00 AM TO 7:00 PM, MONDAY THROUGH FRIDAY. SATURDAY HOURS (8:00 AM TO 5:00 PM) ARE PERMITTED UPON THE DISCRETION OF COUNTY APPROVAL BASED ON INPUT FROM NEARBY RESIDENTS AND BUSINESSES. SATURDAY CONSTRUCTION (8:00 AM TO 5:00 PM) WOULD BE ALLOWED ONCE THE BUILDINGS ARE FULLY ENCLOSED. NOISE GENERATING GRADING AND CONSTRUCTION ACTIVITIES SHALL NOT OCCUR AT ANY TIME ON SUNDAYS, THANKSGIVING AND CHRISTMAS.

5. RESIDENTIAL PROPERTY OWNERS WITHIN 200 FEET OF PLANNED CONSTRUCTION AREAS SHALL BE NOTIFIED OF THE CONSTRUCTION SCHEDULE IN WRITING, PRIOR TO CONSTRUCTION; THE PROJECT SPONSOR SHALL DESIGNATE A "DISTURBANCE COORDI– NATOR" WHO SHALL BE RESPONSIBLE FOR RESPONDING TO ANY LOCAL COMPLAINTS REGARDING CONSTRUCTION NOISE; THE COORDINATOR (WHO MAY BE AN EMPLOYEE OF THE DEVELOPER OR GENERAL CONTRACTOR) SHALL DETERMINE THE CAUSE OF THE COMPLAINT AND SHALL REQUIRE THAT REASONABLE MEASURES WARRANTED TO CORRECT THE PROBLEM BE IMPLEMENTED; A TELEPHONE NUMBER OF THE NOISE DISTURBANCE COORDINATOR SHALL BE CONSPICUOUSLY POSTED AT THE CONSTRUCTION SITE FENCE AND ON THE NOTIFICATION SENT TO NEIGHBORS ADJACENT TO THE SITE.

BENCHMARK:

THE PROJECT BENCHMARK IS THE TOP OF AN IRON PIPE, ELEVATION OF 538.23, LOCATED WITHIN A MONUMENT BOX AT THE INTERSECTION OF THE CENTERLINES OF COBBLEHILL PLACE AND NEW BRUNSWICK DRIVE IN SAN MATEO, CALIFORNIA. THE ELEVATION SHOWN IN BASED UPON A SURVEY BY BKF ENGINEERS IN MARCH OF 2011 AND IS BASED UPON AN ASSUMED ELEVATION.

BASIS OF BEARINGS:

THE BEARING NORTH 76° 09' 00" EAST OF THE CENTERLINE OF COBBLE HILL PLACE AS SHOWN ON TRACT MAP NO. 723, THE HIGHLANDS, RECORDED ON AUGUST 26TH, 1955, IN VOLUME 43 OF MAPS AT PAGES 23–25, SAN MATEO COUNTY RECORDS.

811
Know what's **below.**
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BKF
ENGINEERS / SURVEYORS / PLANNERS

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REDWOOD CITY, CA 94065
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ROLAND N.V. HAGA
No. C043971
CIVIL

HIGHLAND ESTATES
LOT 8 IMPROVEMENT PLANS
GENERAL NOTES

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

No.	Revisions

Date 05/10/2018
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Sheet Number:
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PLOT DATE: 08–28–18 PLOTTED BY: holt

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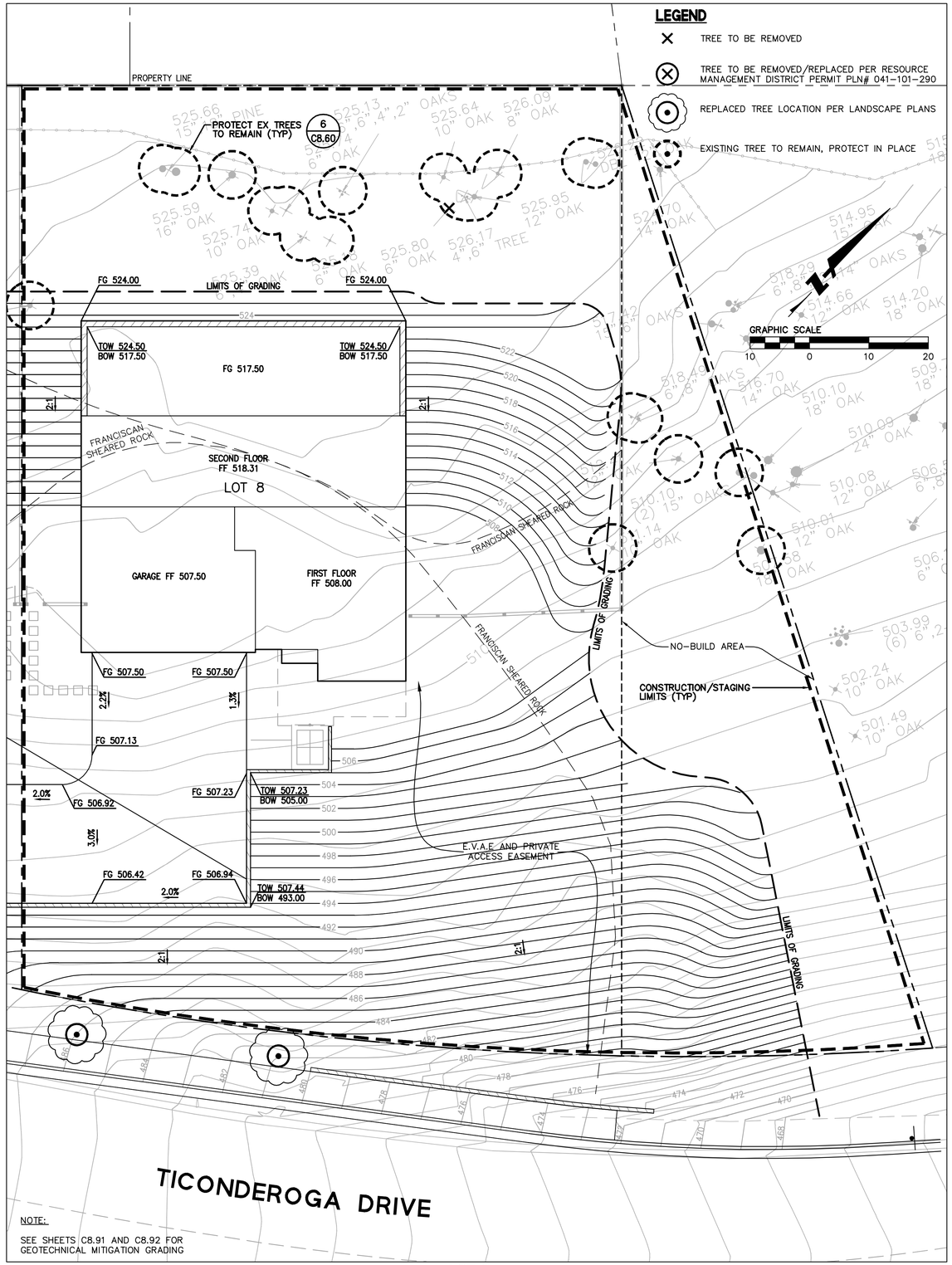
LOT 8
SITE PLAN
SCALE: 1"=10'



NOTE:

SEE SHEETS C8.91 AND C8.92 FOR GEOTECHNICAL MITIGATION GRADING

LOT 8
CLEARING, CONSTRUCTION, AND GRADING PLAN
SCALE: 1"=10'

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HIGHLAND ESTATES
LOT 8 IMPROVEMENT PLANS
SITE & CLEARING, CONSTRUCTION AND GRADING PLANS
CITY OF SAN MATEO CALIFORNIA
SAN MATEO COUNTY

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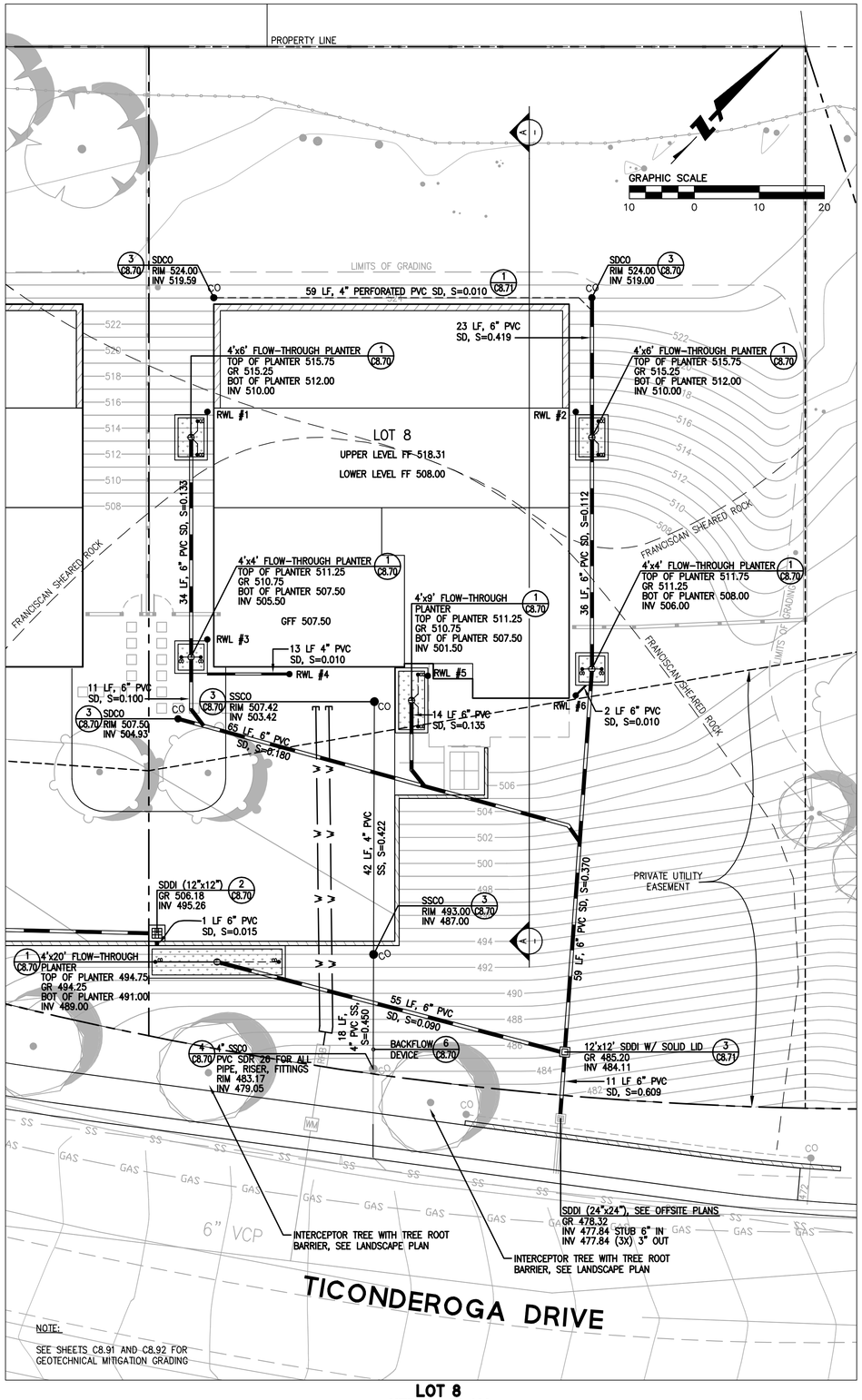
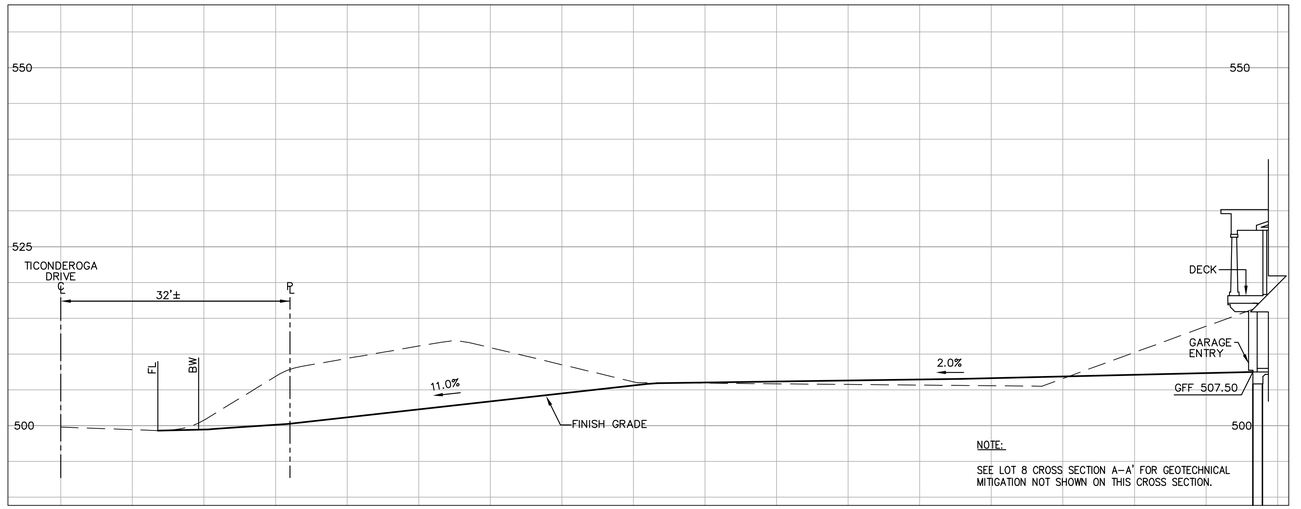


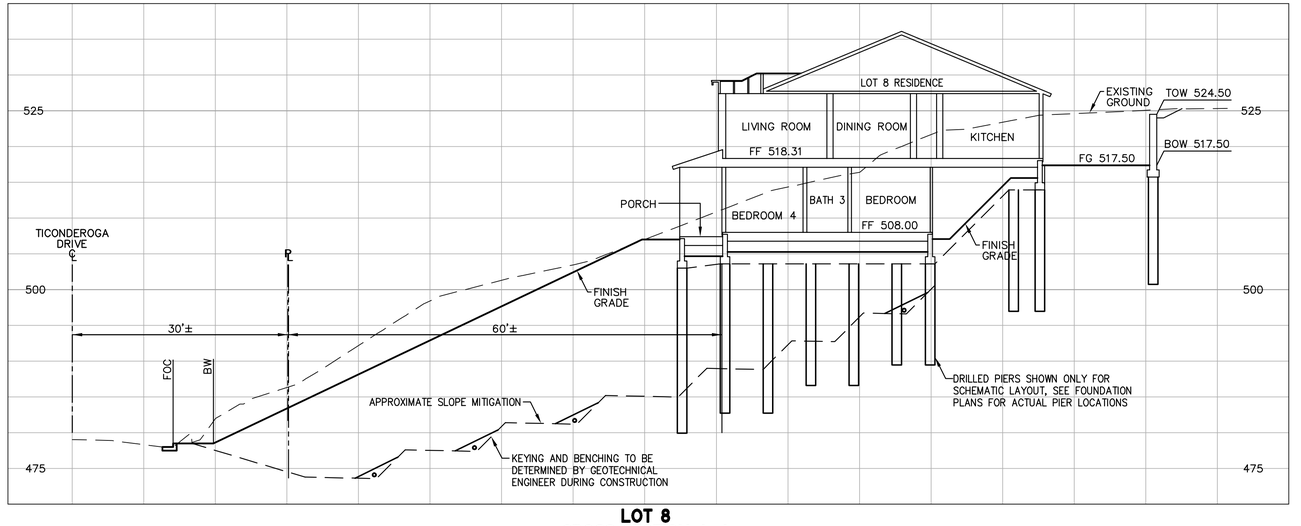
LOT 8
UTILITY PLAN
SCALE: 1"=10'



LOT 8
CROSS SECTION DWY CENTERLINE
SCALE: 1"=10'

NOTES:

1. PER THE GEOTECHNICAL REPORT, UNDOCUMENTED FILL WAS MAPPED AT LOT 5 AND IF THIS FILL IS TO BE LEFT IN PLACE DURING HOUSE AND DRIVEWAY GRADING, IT SHOULD BE REMOVED AND REPLACED AS PROPERLY COMPACTED ENGINEERED FILL.
2. PER THE GEOTECHNICAL REPORT, ALL EXISTING FILLS SHOULD BE COMPLETELY REMOVED FROM WITHIN PROPOSED HOUSE FOOTPRINT AND DRIVEWAY AREAS AND TO A LATERAL DISTANCE OF AT LEAST 5 FEET BEYOND THE EDGE OF THE IMPROVEMENTS OR AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER. ANY EXCESS MATERIAL SHALL BE DISPOSED OF OFF-SITE IN A LAWFUL MANNER.
3. PER THE GEOTECHNICAL REPORT, GEOTECHNICAL MITIGATION GRADING WILL BE PERFORMED ON LOT 8, SEE SHEETS C8.91 AND C8.92 FOR GRADING DETAILS OF THE MITIGATION
4. PER THE GEOTECHNICAL REPORT, ALL BUILDING AND RETAINING WALLS SHOULD BE SUPPORTED ON DRILLED PIERS. THE FOUNDATION SHOWN ON THIS PLAN ARE SCHEMATIC. REFER TO THE PROJECT STRUCTURAL PLANS FOR DETAILS ON THE DRILLED PIERS.



LOT 8
CROSS SECTION A-A
SCALE: 1"=10'

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HIGHLAND ESTATES
LOT 8 IMPROVEMENT PLANS
UTILITY PLAN AND CROSS SECTION

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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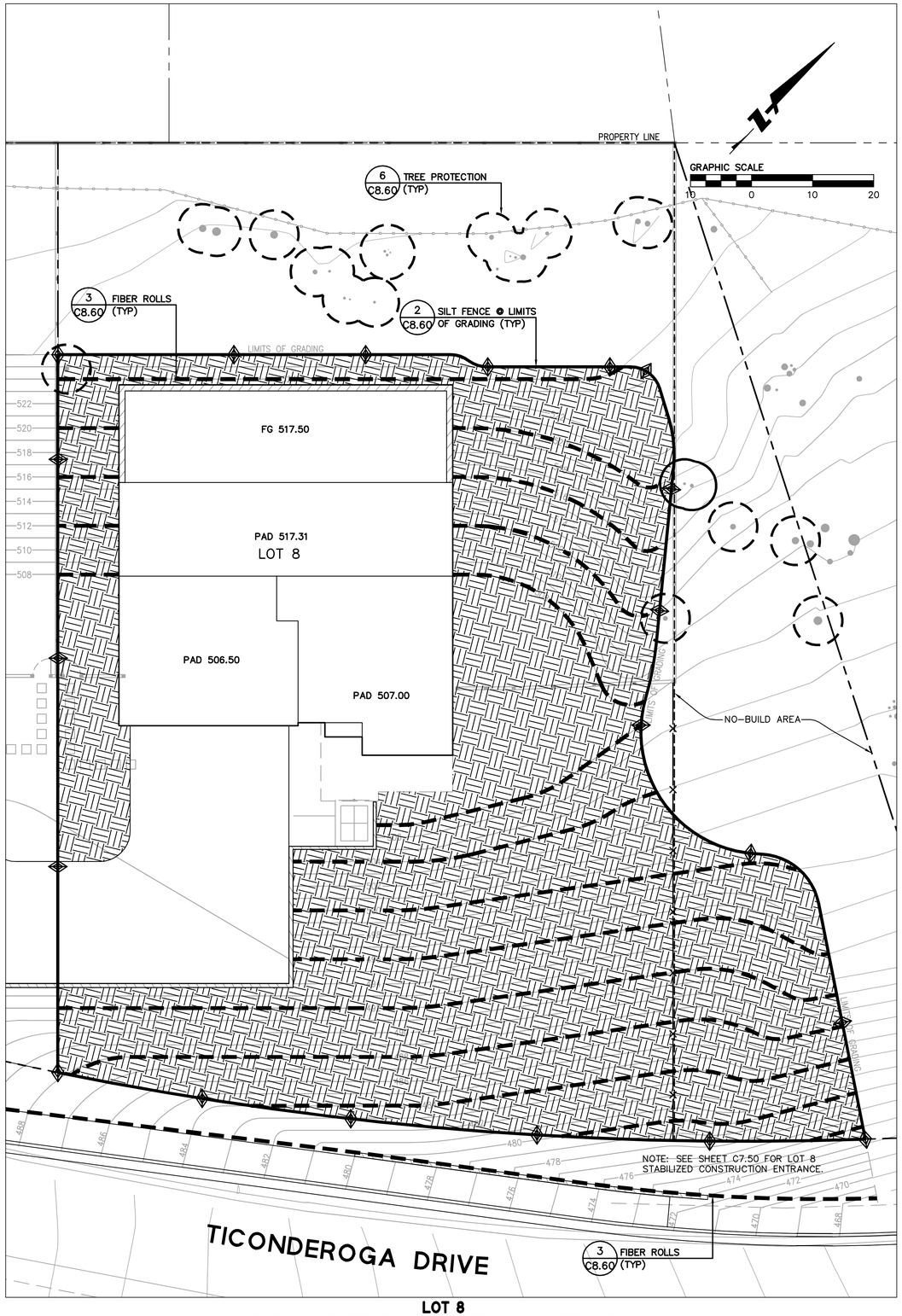
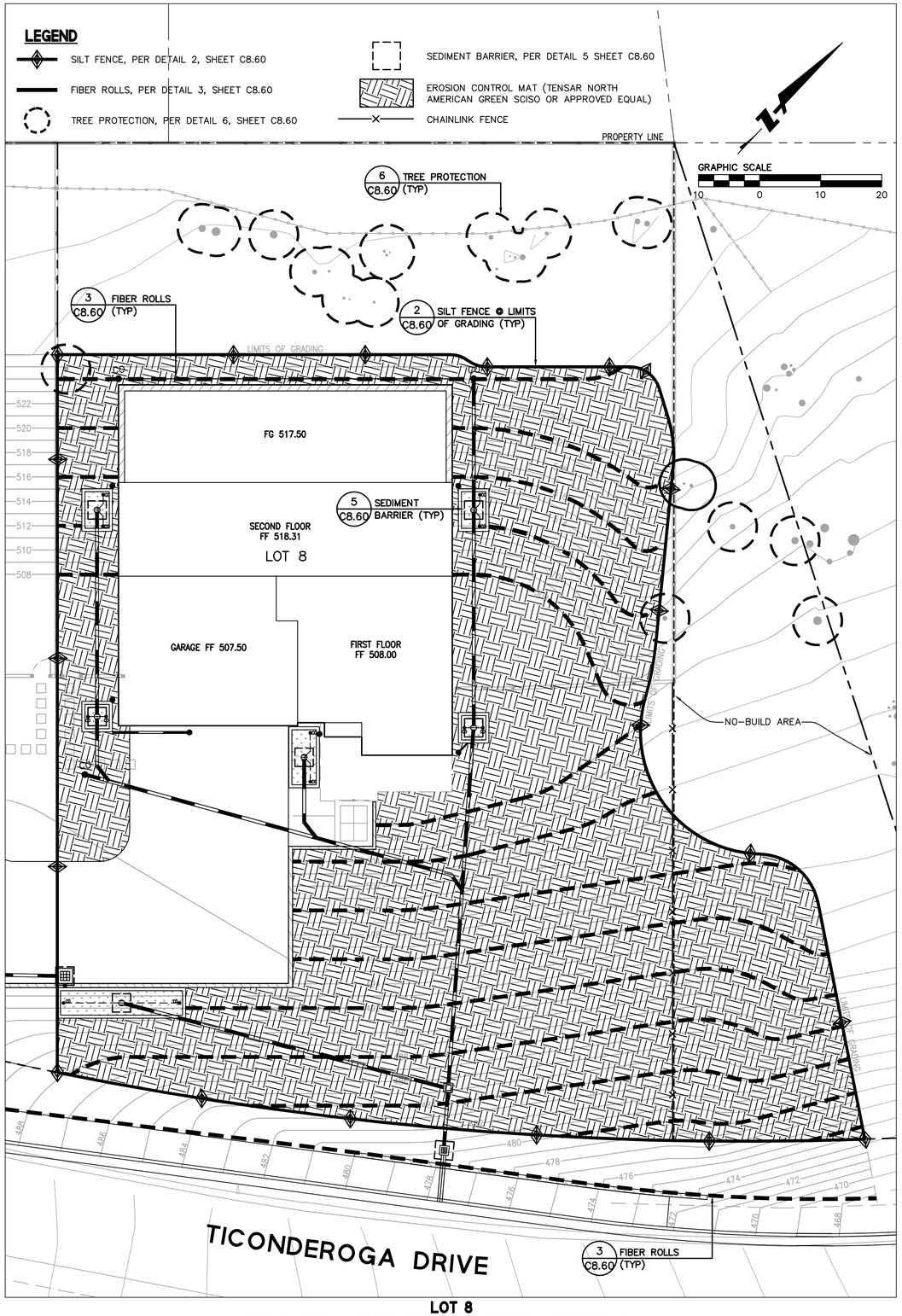


LOT 8
GRADING AND RETAINING WALL EROSION CONTROL PLAN
SCALE: 1"=10'



LOT 8
FOUNDATION AND CONSTRUCTION EROSION CONTROL PLAN
SCALE: 1"=10'

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REGISTERED PROFESSIONAL ENGINEER RAY T. HAYA No. 043971 CIVIL STATE OF CALIFORNIA

HIGHLAND ESTATES
LOT 8 IMPROVEMENT PLANS
EROSION CONTROL PLANS

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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PLOT DATE: 08-28-18 PLOTTED BY: holt

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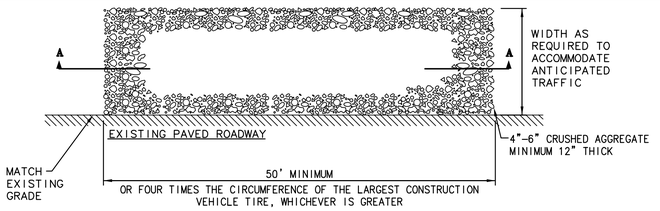
EROSION CONTROL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2. ALTHOUGH SPECIFIC LOCATIONS FOR SEDIMENT CONTROL FACILITIES ARE SHOWN ON THESE PLANS, IT IS INTENDED THIS EROSION CONTROL PLAN BE MODIFIED WHEN NECESSARY TO MEET FIELD CONDITIONS. BASIN AND TRAP SIZES AND ELEVATIONS MAY BE ADJUSTED AS LONG AS THE MINIMUM AREAS AND DEPTHS FOR SEDIMENT SETTLING AND STORAGE ARE NOT REDUCED.
3. THE INTENT OF THESE PLANS IS TO PROVIDE THE INITIAL CONCEPT FOR INTERIM EROSION CONTROL. THE CONTRACTOR SHALL UPDATE THE PLANS TO REFLECT CHANGING SITE CONDITIONS. PLAN UPDATES SHALL BE BASED UPON GENERAL SURVEY DATA. EROSION CONTROL EFFECTIVENESS SHALL ALSO BE MONITORED AND THE PLANS UPGRADED AS REQUIRED TO PREVENT SIGNIFICANT QUANTITIES OF SEDIMENT FROM ENTERING THE DOWNSTREAM DRAINAGE SYSTEM.
4. THIS PLAN MAY NOT COVER ALL THE SITUATIONS THAT ARISE DURING CONSTRUCTION DUE TO UNANTICIPATED FIELD CONDITIONS. IN GENERAL, THE CONTRACTOR IS RESPONSIBLE FOR KEEPING THE STORM RUN OFF FROM LEAVING THE SITE. FIBER ROLLS, SAND BAGS, AND SILT FENCES SHALL BE USED BY THE CONTRACTOR ON AN AS NEEDED BASIS TO INHIBIT SILT FROM LEAVING THE SITE AND ENTERING THE STORM DRAIN SYSTEM. ALL EXISTING, TEMPORARY, OR PERMANENT CATCH BASINS SHALL USE ONE OF THE SEDIMENT BARRIERS SHOWN.
5. THE CONTRACTOR WILL BE LIABLE FOR ANY AND ALL DAMAGES TO PUBLIC AND/OR PRIVATE OWNED AND MAINTAINED ROAD CAUSED BY THE CONTRACTOR'S GRADING ACTIVITIES, AND WILL BE RESPONSIBLE FOR THE CLEANUP OF ANY MATERIAL SPILLED ON ANY PUBLIC ROAD ON THE HAUL ROUTE. ADJACENT PUBLIC ROADS SHALL BE CLEANED AT THE END OF EACH WORKING DAY.
6. BEST MANAGEMENT PRACTICES SHALL BE OPERABLE YEAR AROUND.
7. DURING THE RAINY SEASON, ALL PAVED AREAS ARE TO BE KEPT CLEAR OF EARTH MATERIAL AND DEBRIS. THE SITE IS TO BE MAINTAINED SO AS TO MINIMIZE SEDIMENT-LADEN RUNOFF TO ANY STORM DRAIN SYSTEM.
8. ALL EROSION CONTROL FACILITIES MUST BE INSPECTED AND REPAIRED DAILY DURING THE RAINY SEASON. ALL SLOPES SHALL BE REPAIRED AS SOON AS POSSIBLE WHEN DAMAGED.
9. THE FIRST PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY. THE REMAINDER OF CONSTRUCTION EQUIPMENT (70 PERCENT), WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL BE REQUIRED TO USE EMULSIFIED FUELS.
10. THE SECOND PHASE OF CONSTRUCTION SHALL REQUIRE 30 PERCENT OF CONSTRUCTION EQUIPMENT TO MEET TIER 2 EPA CERTIFICATION STANDARDS FOR CLEAN TECHNOLOGY AND 50 PERCENT TO MEET TIER 1 EPA CERTIFICATION STANDARDS. THE REMAINING 20 PERCENT OF CONSTRUCTION EQUIPMENT, WHICH WOULD CONSIST OF OLDER TECHNOLOGIES, SHALL USE EMULSIFIED FUELS.
11. FOR ALL LARGER VEHICLES, INCLUDING CEMENT MIXERS OR OTHER DEVICES THAT MUST BE DELIVERED BY LARGE TRUCKS, VEHICLES SHALL BE EQUIPPED WITH CARB LEVEL THREE VERIFIED CONTROL DEVICES.
12. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY.
13. COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR REQUIRE ALL TRUCKS TO MAINTAIN AT LEAST TWO FEET OF FREEBOARD.
14. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY NON-TOXIC SOIL STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.
15. SWEEP DAILY (WITH WATER SWEEPERS) ALL PAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS AT THE CONSTRUCTION SITES.
16. SWEEP PUBLIC STREETS ADJACENT TO CONSTRUCTION SITES DAILY (WITH WATER SWEEPERS) IF VISIBLE SOIL MATERIAL IS CARRIED ONTO THE STREETS.
17. HYDROSEED OR APPLY NON-TOXIC SOIL STABILIZERS TO INACTIVE CONSTRUCTION AREAS (PREVIOUSLY GRADED AREAS INACTIVE FOR TEN DAYS OR MORE).
18. TEMPORARY AND PERMANENT SLOPES GREATER THAN 3 FEET SHALL BE SEEDED UNLESS ALTERNATIVE MEASURES ARE USED.
19. SEED MIX FOR REVEGETATION AND HYDROSEEDING:
    NORTHERN CALIFORNIA COVER MIX BY ACBRIGHT OR EQUAL

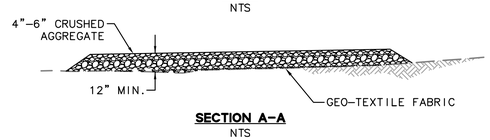
    30% BLUE WILDRYE
    30% MEADOW BARLEY
    20% ZORRO FESCUE
    10% PURPLE NEEDLE GRASS
    10% CALIFORNIA NATIVE WILDFLOWERS

    APPLY AT 40 POUNDS PER ACRE MINIMUM
20. ENCLOSE, COVER, WATER TWICE DAILY, OR APPLY NON-TOXIC SOIL BINDERS TO EXPOSED STOCKPILES (DIRT, SAND, ETC.). LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.
21. DISPOSAL AREAS FOR SEDIMENT TO BE DETERMINED IN FIELD. WHEN MATERIAL IS STOCKPILED, IT SHALL BE SURROUNDED BY A SILT FENCE/FIBER ROLLS.
22. LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MILES PER HOUR.
23. INSTALL SANDBAGS OR OTHER EROSION CONTROL MEASURES TO PREVENT SILT RUNOFF TO PUBLIC ROADWAYS.
24. REPLANT VEGETATION IN DISTURBED AREAS AS SOON AS POSSIBLE.
25. INSTALL WHEEL WASHERS FOR ALL EXITING TRUCKS OR WASH OFF THE TIRES OR TRACKS OF ALL TRUCKS AND EQUIPMENT LEAVING THE CONSTRUCTION SITE.
26. INSTALL WIND BREAKS AT THE WINDWARD SIDES OF THE CONSTRUCTION AREAS.
27. SUSPEND EXCAVATION AND GRADING ACTIVITIES WHEN WIND (AS INSTANTANEOUS GUSTS) EXCEEDS 25 MILES PER HOUR.
28. NO GRADING SHALL BE ALLOWED DURING THE WINTER SEASON (OCTOBER 1 TO APRIL 30) TO AVOID POTENTIAL SOIL EROSION UNLESS APPROVED, IN WRITING, BY THE COMMUNITY DEVELOPMENT DIRECTOR. THE PROPERTY OWNERS SHALL SUBMIT A LETTER TO THE CURRENT PLANNING SECTION, AT LEAST TWO WEEKS PRIOR TO COMMENCEMENT OF GRADING, STATING THE DATE WHEN GRADING WILL BEGIN.
29. STABILIZE ALL DENUDED AREAS AND MAINTAIN EROSION CONTROL MEASURES CONTINUOUSLY BETWEEN OCTOBER 1 AND APRIL 30. STABILIZING SHALL INCLUDE BOTH PROACTIVE MEASURES, SUCH AS THE PLACEMENT OF STRAW BALES OR COIR NETTING, AND PASSIVE MEASURES, SUCH AS MINIMIZING VEGETATION REMOVAL AND REVEGETATING DISTURBED AREAS WITH VEGETATION THAT IS COMPATIBLE WITH THE SURROUNDING ENVIRONMENT.
30. STORE, HANDLE, AND DISPOSE OF CONSTRUCTION MATERIALS AND WASTES PROPERLY, SO AS TO PREVENT THEIR CONTACT WITH STORMWATER.
31. CONTROL AND PREVENT THE DISCHARGE OF ALL POTENTIAL POLLUTANTS, INCLUDING PAVEMENT CUTTING WASTES, PAINTS, CONCRETE, PETROLEUM PRODUCTS, CHEMICALS, WASH WATER OR SEDIMENTS, AND NON-STORMWATER DISCHARGES TO STORM DRAINS AND WATERCOURSES.
32. USE SEDIMENT CONTROLS OR FILTRATION TO REMOVE SEDIMENT WHEN DEWATERING SITE AND OBTAINING ALL NECESSARY PERMITS.
33. AVOID CLEANING, FUELING, OR MAINTAINING VEHICLES ON-SITE, EXCEPT IN A DESIGNATED AREA WHERE WASH WATER IS CONTAINED AND TREATED.
34. DELINEATE WITH FIELD MARKERS CLEARING LIMITS, SETBACKS, AND DRAINAGE COURSES.
35. PROTECT ADJACENT PROPERTIES AND UNDISTURBED AREAS FROM CONSTRUCTION IMPACTS USING VEGETATIVE BUFFER STRIPS, SEDIMENT BARRIERS OR FILTERS, DIKES, MULCHING, OR OTHER MEASURES AS APPROPRIATE.
36. PERFORM CLEARING AND EARTH-MOVING ACTIVITIES ONLY DURING DRY WEATHER.
37. LIMIT AND TIME APPLICATIONS OF PESTICIDES AND FERTILIZERS TO PREVENT POLLUTED RUNOFF.
38. LIMIT CONSTRUCTION ACCESS ROUTES AND STABILIZE DESIGNATED ACCESS POINTS.
39. ALL GRADED SURFACES AND MATERIALS, WHETHER FILLED, EXCAVATED, TRANSPORTED OR STOCKPILED, SHALL BE WETTED, PROTECTED OR CONTAINED IN SUCH A MANNER AS TO PREVENT ANY SIGNIFICANT NUISANCE FROM DUST, OR SPILLAGE UPON ADJOINING WATER BODY, PROPERTY, OR STREETS. EQUIPMENT AND MATERIALS ON THE SITE SHALL BE USED IN SUCH A MANNER AS TO AVOID EXCESSIVE DUST. A DUST CONTROL PLAN MAY BE REQUIRED AT ANYTIME DURING THE COURSE OF THE PROJECT.
40. A DUST PALLIATIVE SHALL BE APPLIED TO THE SITE WHEN REQUIRED BY THE COUNTY. THE TYPE AND RATE OF APPLICATION SHALL BE RECOMMENDED BY THE SOILS ENGINEER AND APPROVED BY THE DEPARTMENT OF PUBLIC WORKS, THE PLANNING AND BUILDING DEPARTMENT'S GEOTECHNICAL SECTION, AND THE REGIONAL WATER QUALITY CONTROL BOARD.
41. IF NO WORK HAS PROGRESSED FOR A PERIOD OF 6-WEEKS, FINAL DRAINAGE AND EROSION CONTROL IMPROVEMENTS SHALL BE INSTALLED IN ACCORDANCE WITH AN APPROVED WINTERIZATION PLAN.
42. PADS SHALL BE GRADED TO MINIMIZE STANDING WATER. SPECIFIC LOCATIONS REQUIRING SUPPLEMENTAL GRADING TO ACHIEVE ACCEPTABLE DRAINAGE SHALL BE DETERMINED BY THE CONSTRUCTION MANAGER. ALL SPOILS AND SOIL STOCKPILES REMAINING ON SITE SHALL BE ENCIRCLED BY SILT FENCES/FIBER ROLLS.
43. STUBBED OUT ENDS OF PARTIALLY COMPLETED SUBDRAINS SHALL BE WRAPPED WITH AN APPROVED FABRIC TO PREVENT SOIL AND DEBRIS FROM ENTERING THE PIPE.
44. HAUL ROADS ARE CURRENTLY NOT SHOWN ON THE PLANS. EROSION CONTROL MEASURES SHALL BE TAKEN TO MINIMIZE EROSION RELATED TO HAUL ROADS.
45. GRADING SCHEDULE SHALL BE SUBMITTED FOR APPROVAL TO SAN MATEO COUNTY PUBLIC WORKS BY AUGUST 15.
46. EROSION CONTROL POINT OF CONTACT:
    NOEL CHAMBERLAIN, NEXGEN BUILDERS INC.
    225 DEMETER STREET
    EAST PALO ALTO, CA 94303
    PHONE #: 650-322-5800
    CELL #: 650-444-3089
    EMAIL: noel@nexgenbuilders.com
47. SHOULD IT APPEAR THAT THE EROSION CONTROL PLAN, OR ANY OTHER MATTER THERETO, IS NOT SUFFICIENTLY DETAILED OR EXPLAINED ON THESE PLANS, THE CONTRACTOR SHALL CONTACT THE BKF PROJECT ENGINEER AT (650) 482-6300 FOR SUCH FURTHER EXPLANATIONS AS MAY BE NECESSARY.
48. AREAS DELINEATED ON PLANS FOR PARKING, CLEARING & GRUBBING, STORAGE, ETC. SHALL NOT BE ENLARGED OR "RUN OVER."
49. CONSTRUCTION SITES ARE REQUIRED TO HAVE EROSION CONTROL MATERIALS ON-SITE DURING THE "OFF-SEASON."
50. DUST CONTROL IS REQUIRED YEAR-ROUND.
51. EROSION CONTROL MATERIALS SHALL BE STORED ON-SITE.
52. USE OF PLASTIC SHEETING BETWEEN OCTOBER 1ST AND APRIL 30TH IS NOT ACCEPTABLE, UNLESS FOR USE ON STOCKPILES WHERE THE STOCKPILE IS ALSO PROTECTED WITH FIBER ROLLS CONTAINING THE BASE OF THE STOCKPILE.
53. TREE PROTECTION SHALL BE IN PLACE BEFORE ANY GRADING, EXCAVATING OR GRUBBING IS STARTED.

ALL EROSION CONTROL MEASURES SHALL BE IN PLACE BY OCTOBER 1ST THROUGH APRIL 30TH AND MAINTAINED DURING ALL PHASES OF CONSTRUCTION.



PLAN
NTS

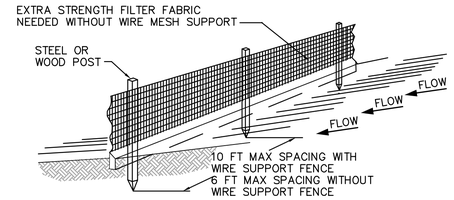


SECTION A-A
NTS

NOTES:

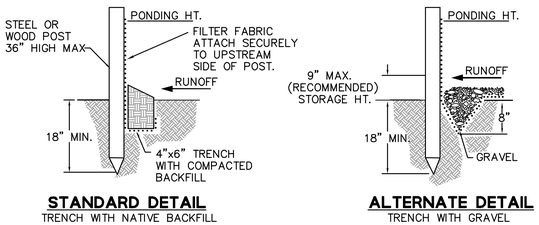
1. ALL CONSTRUCTION ENTRANCES SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USE TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAYS SHALL BE REMOVED IMMEDIATELY.
2. WHEELS SHALL BE CLEAN PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAYS. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE THROUGH USE OF INLET PROTECTION (E.G. SAND BAGS OR OTHER APPROVED METHODS).
3. THE MATERIAL FOR CONSTRUCTION OF THE PAD SHALL BE 4" TO 6" STONE.
4. THE THICKNESS OF THE PAD SHALL NOT BE LESS THAN 12".
5. THE WIDTH OF THE PAD SHALL NOT BE LESS THAN THE FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
6. THE LENGTH OF THE PAD SHALL NOT BE LESS THAN 50'.

1 – STABILIZED CONSTRUCTION ENTRANCE
NTS



NOTES:

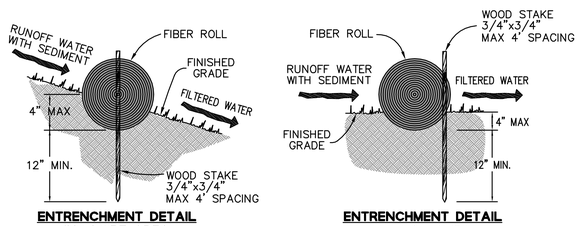
1. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
2. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
3. SILT FENCE SHALL BE PLACED ON SLOPE TO MAXIMIZE PONDING EFFICIENCY.



STANDARD DETAIL
TRENCH WITH NATIVE BACKFILL

ALTERNATE DETAIL
TRENCH WITH GRAVEL

2 – SILT FENCE
NTS



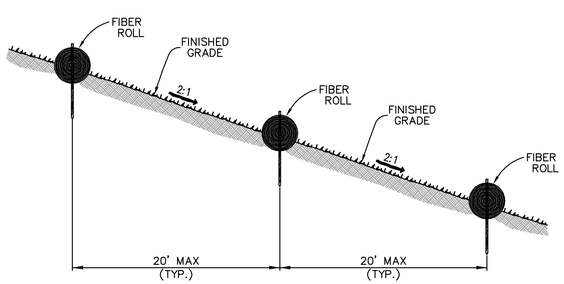
ENTRENCHMENT DETAIL IN SLOPE AREA

ENTRENCHMENT DETAIL IN FLAT AREA

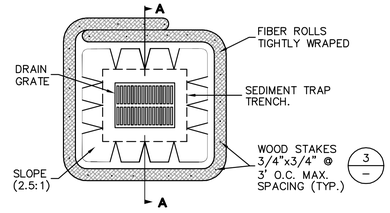
NOTES:

1. FIBER ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3" TO 4" DEEP, DUG ON CONTOUR.
2. ADJACENT ROLLS SHALL TIGHTLY ABUT.
3. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND FIBER ROLL.

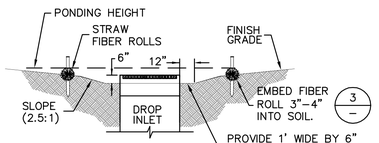
3 – FIBER ROLL
NTS



4 – FIBER ROLL INSTALLATION ON SLOPE
(TIME FRAME: BETWEEN FINAL PAVING OPERATIONS AND PROJECT COMPLETION)
NTS



PLAN VIEW



SECTION A-A

NOTES:

1. PLACE FIBER ROLLS AROUND THE INLET CONSISTENT WITH BASIN SEDIMENT BARRIER DETAIL ON THIS SHEET. (FIBER ROLLS ARE TUBES MADE FROM STRAW BOUND W/ PLASTIC NETTING. THEY ARE APPROX. 8" DIA. AND 20 – 30 FT. LONG.)
2. FIBER ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE FIBER ROLL IN A TRENCH, 3" – 4" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND FIBER ROLL.
3. THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BY-PASSING THE INLET. EXCAVATION OF A BASIN ADJACENT TO THE DROP INLET OR A TEMPORARY DIKE ON THE DOWNSLOPE OF THE STRUCTURE MAY BE NECESSARY.

5 – SEDIMENT BARRIER
(TIME FRAME: AREA DRAINS – BETWEEN AREA DRAIN INSTALLATION AND PROJECT COMPLETION
CURB INLETS – BETWEEN CURB INLET INSTALLATION AND FINAL PAVING OPERATIONS)
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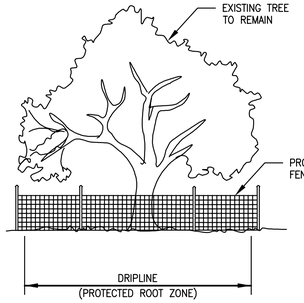

TREE PROTECTION FENCE

NOTES:

1. THE APPLICANT SHALL ESTABLISH AND MAINTAIN TREE PROTECTION ZONES THROUGHOUT THE ENTIRE LENGTH OF THE PROJECT.
2. TREE PROTECTION ZONES SHALL BE DELINEATED USING 4-FOOT TALL ORANGE PLASTIC FENCING SUPPORTED BY POLES POUNDED INTO THE GROUND, LOCATED AS CLOSE TO THE DRIPLINES AS POSSIBLE WHILE STILL ALLOWING ROOM FOR CONSTRUCTION/GRADING TO SAFELY CONTINUE.
3. THE APPLICANT SHALL MAINTAIN TREE PROTECTION ZONES FREE OF EQUIPMENT AND MATERIALS STORAGE AND SHALL NOT CLEAN ANY EQUIPMENT WITHIN THESE AREAS.
4. SHOULD ANY LARGE ROOTS OR LARGE MASSES OF ROOTS NEED TO BE CUT, THE ROOTS SHALL BE INSPECTED BY A CERTIFIED ARBORIST OR REGISTERED FORESTER PRIOR TO CUTTING. ANY ROOT CUTTING SHALL BE MONITORED BY AN ARBORIST OR FORESTER AND DOCUMENTED.
5. ROOTS TO BE CUT SHOULD BE SEVERED CLEANLY WITH A SAW OR TOPPERS.
6. NORMAL IRRIGATION SHALL BE MAINTAINED, BUT OAKS SHOULD NOT NEED SUMMER IRRIGATION.
7. THE ABOVE INFORMATION SHALL BE ON-SITE AT ALL TIMES.

6 – TREE PROTECTION FENCE
NTS

CALIFORNIA STORMWATER QUALITY ASSOCIATION (CASQA) STANDARD DETAIL REFERENCES

(CALIFORNIA STORMWATER BMP HANDBOOK CONSTRUCTION, DATED NOVEMBER 2009)

NOTE: ALTHOUGH SPECIFIC LOCATIONS FOR SPECIFIC BMPS ARE SHOWN ON THESE PLANS, IT IS INTENDED FOR THE CONTRACTOR TO APPLY APPROPRIATE BMPS WHEN NECESSARY TO MEET FIELD CONDITIONS.

EROSION CONTROL BMPS:

EC-1 SCHEDULING
EC-2 PRESERVATION OF EXISTING VEGETATION
EC-3 HYDRAULIC MULCH
EC-4 HYDROSEEDING
EC-5 SOIL BINDERS
EC-6 STRAW MULCH
EC-7 GEOTEXTILES & MATS
EC-8 WOOD MULCHING
EC-9 EARTH DIKES AND DRAINAGE SWALES
EC-10 VELOCITY DISSIPATION DEVICES
EC-11 SLOPE DRAINS
EC-12 STREAMBANK STABILIZATION
EC-14 COMPOST BLANKETS
EC-15 SOIL PREPARATION/ROUGHENING
EC-16 NON-VEGETATIVE STABILIZATION

TEMPORARY SEDIMENT CONTROL BMPS:

SE-1 SILT FENCE
SE-2 SEDIMENT BASIN
SE-3 SEDIMENT TRAP
SE-4 CHECK DAM
SE-5 FIBER ROLLS
SE-6 GRAVEL BAG BERM
SE-7 STREET SWEEPING AND VACUUMING
SE-8 SANDBAG BARRIER
SE-9 STRAW BALE BARRIER
SE-10 STORM DRAIN INLET PROTECTION
SE-11 ACTIVE TREATMENT SYSTEMS
SE-12 TEMPORARY SILT DIKE
SE-13 COMPOST SOCKS AND BERMS
SE-14 BIOFILTER BAGS

WIND EROSION CONTROL BMPS:

WE-1 WIND EROSION CONTROL

TEMPORARY TRACKING CONTROL BMPS:

TC-1 STABILIZED CONSTRUCTION ENTRANCE/EXIT
TC-2 STABILIZED CONSTRUCTION ROADWAY
TC-3 ENTRANCE/OUTLET TIRE WASH

NON-STORMWATER MANAGEMENT BMPS:

NS-1 WATER CONSERVATION PRACTICES
NS-2 DEWATERING OPERATIONS
NS-3 PAVING AND GRINDING OPERATIONS
NS-4 TEMPORARY STREAM CROSSING
NS-5 CLEAR WATER DIVERSION
NS-6 ILLICIT CONNECTION/DISCHARGE
NS-7 POTABLE WATER/IRRIGATION
NS-8 VEHICLE AND EQUIPMENT CLEANING
NS-9 VEHICLE AND EQUIPMENT FUELING
NS-10 VEHICLE AND EQUIPMENT MAINTENANCE
NS-11 PILE DRIVING OPERATIONS
NS-12 CONCRETE CURING
NS-13 CONCRETE FINISHING
NS-14 MATERIAL AND EQUIPMENT USE
NS-15 DEMOLITION ADJACENT TO WATER
NS-16 TEMPORARY BATCH PLANTS

WASTE MANAGEMENT & MATERIALS POLLUTION CONTROL BMPS:

WM-1 MATERIAL DELIVERY AND STORAGE
WM-2 MATERIAL USE
WM-3 STOCKPILE MANAGEMENT
WM-4 SPILL PREVENTION AND CONTROL
WM-5 SOLID WASTE MANAGEMENT
WM-6 HAZARDOUS WASTE MANAGEMENT
WM-7 CONTAMINATED SOIL MANAGEMENT
WM-8 CONCRETE WASTE MANAGEMENT
WM-9 SANITARY/SEPTIC WASTE MANAGEMENT
WM-10 LIQUID WASTE MANAGEMENT

255 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
PHONE: (650) 482-6300
FAX: (650) 482-6399

BKF ENGINEERS | SURVEYORS | PLANNERS

REGISTERED PROFESSIONAL ENGINEER M.T. HAYA No. 043971 CIVIL STATE OF CALIFORNIA

HIGHLAND ESTATES
LOT 8 IMPROVEMENT PLANS
EROSION CONTROL DETAILS AND NOTES

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

No.	Revisions

Date 05/10/2018
Scale AS SHOWN
Design JT
Drawn LE
Approved RH
Job No 950168-20

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PLOT DATE: 08-28-18
PLOTTED BY: holt

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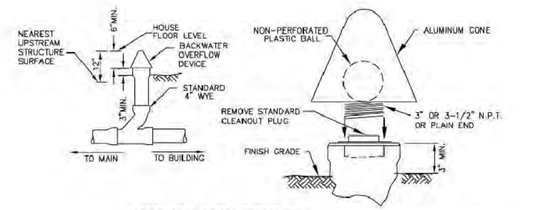
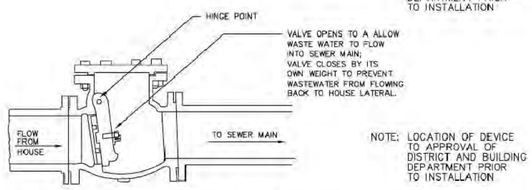
SAN MATEO COUNTY DEPARTMENT OF PUBLIC WORKS
REDWOOD CITY CALIFORNIA

DRAWN BY: N.M.A.
CHECK BY: R.O.
APPROVED BY: N.R.C.
SCALE: NONE
DATE: 6/95
REVISED:



OVERFLOW DEVICE

NOTE: LOCATION OF DEVICE TO APPROVAL OF DISTRICT AND BUILDING DEPARTMENT PRIOR TO INSTALLATION



NOTE: LOCATION OF DEVICE TO APPROVAL OF DISTRICT AND BUILDING DEPARTMENT PRIOR TO INSTALLATION

BACKFLOW DEVICE

OVERFLOW AND BACKFLOW DEVICE DETAIL

C-9

SAN MATEO COUNTY DEPARTMENT OF PUBLIC WORKS
REDWOOD CITY CALIFORNIA

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CHECK BY: J.A.L.
APPROVED BY: N.R.C.
SCALE: NONE
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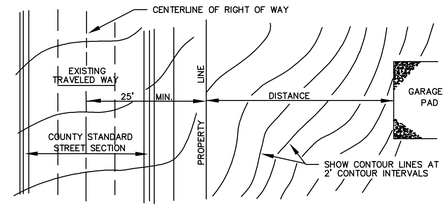
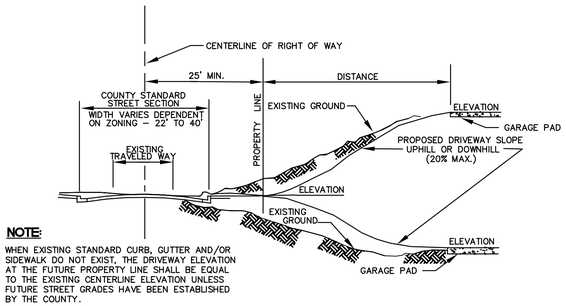


DRIVEWAY PLAN VIEW



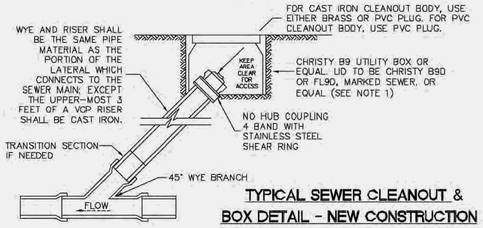
NOTE:
WHEN EXISTING STANDARD CURB, GUTTER AND/OR SIDEWALK DO NOT EXIST, THE DRIVEWAY ELEVATION AT THE FUTURE PROPERTY LINE SHALL BE EQUAL TO THE EXISTING CENTERLINE ELEVATION UNLESS FUTURE STREET GRADES HAVE BEEN ESTABLISHED BY THE COUNTY.

DRIVEWAY PROFILE VIEW

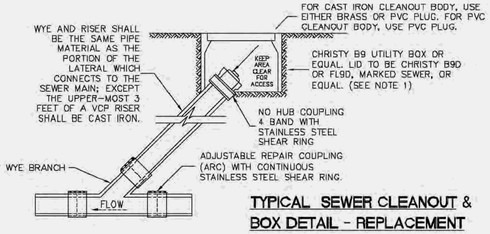
D-7

SAN MATEO COUNTY DEPARTMENT OF PUBLIC WORKS
REDWOOD CITY CALIFORNIA

DRAWN BY: N.M.
CHECK BY: A.M.S.
APPROVED BY: N.R.C.
SCALE: NONE
DATE: 8/06
REVISED:



TYPICAL SEWER CLEANOUT & BOX DETAIL - NEW CONSTRUCTION



TYPICAL SEWER CLEANOUT & BOX DETAIL - REPLACEMENT

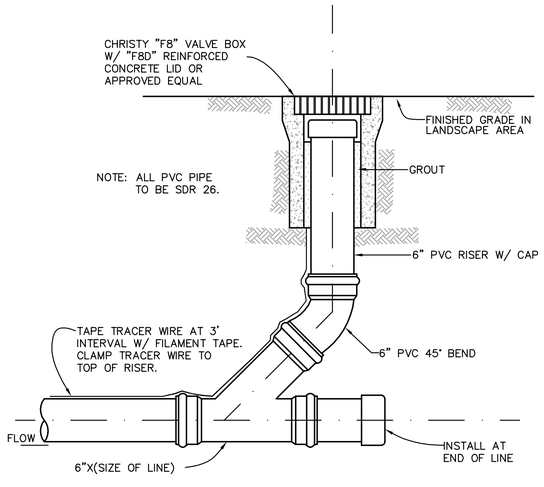
NOTES:
1. WHEN BOX IS SUBJECT TO TRAFFIC LOADING, PROVIDE CAST IRON LID.
2. BOX TO BE PLACED SUCH THAT CLEANOUT CAP CAN BE EASILY REMOVED. SEE ILLUSTRATION.
3. PROPERTY OWNER IS RESPONSIBLE FOR MAINTAINING LATERAL FROM THE PROPERTY STRUCTURE TO DISTRICT MAIN. DISTRICT PROVIDES COURTESY SERVICE FROM DISTRICT STANDARD PROPERTY LINE CLEANOUT TO THE MAIN.
4. SDR-26 WYE, RISER, CLEANOUT BODY AND CAP CAN BE USED ONLY WHEN LATERAL FROM PROPERTY LINE TO MAIN LINE IS REPLACED WITH SDR-26.
5. WHEN ENTIRE LATERAL IS REPLACED, LATERAL FROM PROPERTY LINE CLEANOUT TO MAIN LINE SHALL HAVE A 14-1-UF GUAGE MINIMUM SINGLE CONDUCTOR TRACER WIRE TAPED TO THE ENTIRE LENGTH OF THE PIPE.

CONSTRUCTION OF A STANDARD CLEANOUT REQUIRES MULTIPLE INSPECTIONS BY DISTRICT PERSONEL:
1. FIRST INSPECTION - TO INSPECT WYE AND RISER. WYE AND RISER MUST BE EXPOSED.
2. SECOND INSPECTION - TO INSPECT PLACEMENT OF BOX, LID AND LOCATION OF CLEANOUT WITHIN BOX .

C-3

6 SAN MATEO COUNTY OVERFLOW AND BACKFLOW DEVICE DETAIL

NTS

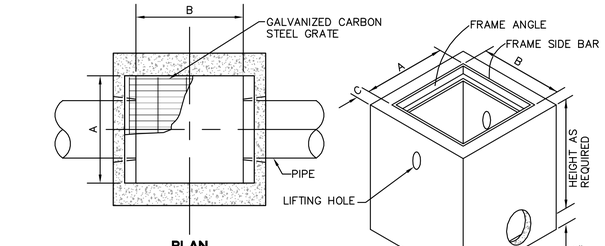


3 CLEANOUT

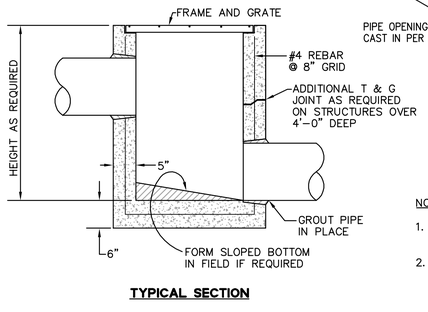
NTS

5 SAN MATEO COUNTY DRIVEWAY PLAN AND PROFILE VIEWS

NTS



PLAN



TYPICAL SECTION

ISOMETRIC

CENTRAL PRECAST

MODEL	A	B	C
CP1212	12	12	4
CP1818	18	18	4
CP2424	24	24	5

NOTES:

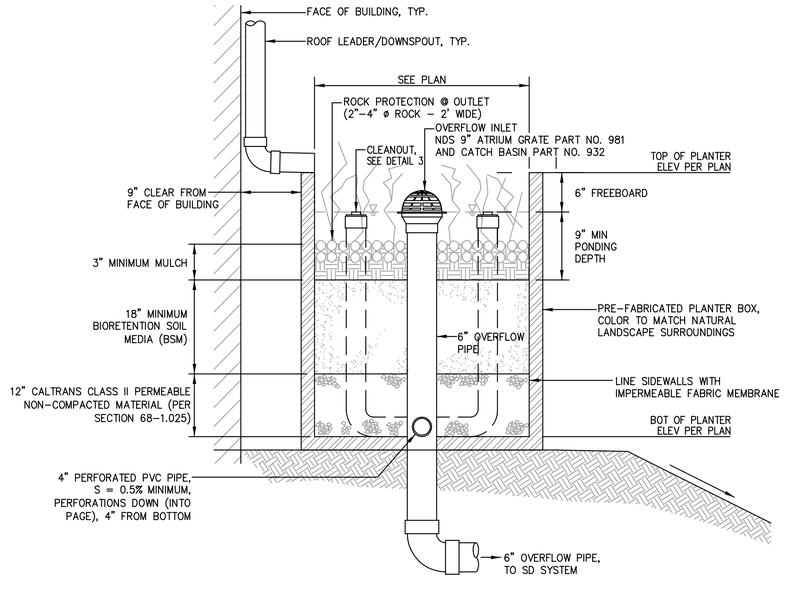
1. DROP INLET SHALL BE CENTRAL PRECAST OR APPROVED EQUAL.
2. AN ENGINEERED PRECAST DROP INLET UNIT CAN BE USED AS AN ALTERNATE.

2 DROP INLET

NTS

4 SAN MATEO COUNTY TYPICAL SEWER CLEANOUT & BOX DETAIL

NTS



1 FLOW-THROUGH PLANTER (FTP)

BKF ENGINEERS
255 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
PHONE: (650) 482-6300
FAX: (650) 482-6399
ENGINEERS | SURVEYORS | PLANNERS

REGISTERED PROFESSIONAL ENGINEER NATHAN M. TARKA No. 094971 CIVIL STATE OF CALIFORNIA

HIGHLAND ESTATES
LOT 8 IMPROVEMENT PLANS
CONSTRUCTION DETAILS

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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PLOTTED BY: holt

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SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS
REDWOOD CITY
CALIFORNIA

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CHECK BY: D.M.W.
APPROVED BY: N.R.C.

SCALE: NONE
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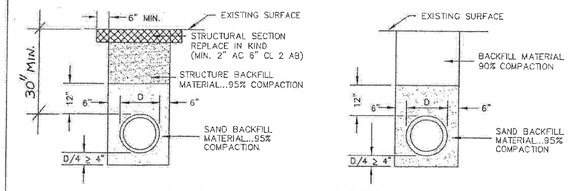
REVISED: 7/97



TYPE A (IN ROADWAY)

TYPE B (OUTSIDE ROADWAY)

NOTES

1. SAND.... MATERIAL FREE FROM ORGANIC MATTER AND CLAY WITH A SIEVE GRADATION BY WEIGHT AS FOLLOWS:

SIEVE SIZE	% PASSING SIEVE
No. 4	100
No. 200	0–5

2. STRUCTURE BACKFILL MATERIAL... MATERIAL WITH SAND EQUIVALENT NOT LESS THAN 20 AND SIEVE GRADATION BY WEIGHT AS FOLLOWS:

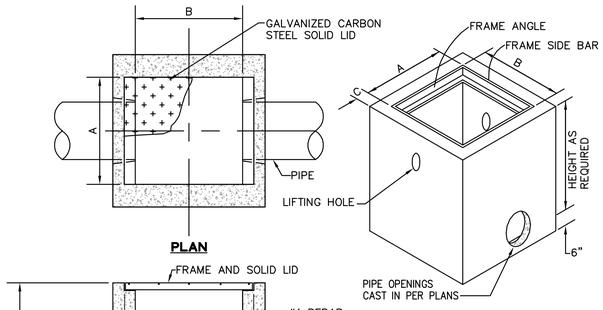
SIEVE SIZE	% PASSING SIEVE
3"	100
No. 4	35–100
No. 30	20–100

3. BACKFILL MATERIAL... MATERIAL FROM EXCAVATION, FREE FROM STONES OR LUMPS EXCEEDING 3 INCHES GREATEST DIMENSION, ORGANIC MATTER, OR OTHER UNSATISFACTORY MATERIAL.

STANDARD TRENCH BACKFILL AND BEDDING DETAIL

W–10

2 / – SAN MATEO COUNTY STANDARD TRENCH BACKFILL & BEDDING DETAIL
NTS



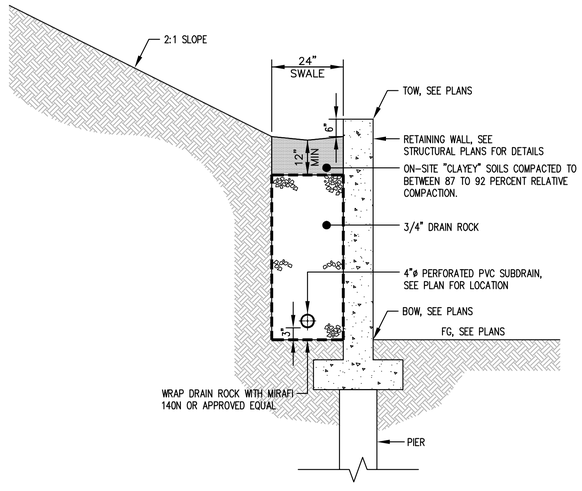
CENTRAL PRECAST

MODEL	A	B	C
CP1212	12	12	4

NOTES:

1. DROP INLET SHALL BE CENTRAL PRECAST OR APPROVED EQUAL.
2. AN ENGINEERED PRECAST DROP INLET UNIT CAN BE USED AS AN ALTERNATE.

3 / – DROP INLET
NTS



1 / – SUBDRAIN
NTS

BKF ENGINEERS
255 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
PHONE: (650) 482-6300
FAX: (650) 482-6399
ENGINEERS | SURVEYORS | PLANNERS

REGISTERED PROFESSIONAL ENGINEER SUNWAH WANG TANG No. 067726 CIVIL STATE OF CALIFORNIA

HIGHLAND ESTATES
LOT 8 IMPROVEMENT PLANS
CONSTRUCTION DETAILS

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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SITE KEY:

1. WASH OUT PIT, PER CASQA STANDARD WM-8, CONCRETE WASTE MANAGEMENT (REFER TO DETAIL 2, SHEET C8.90).
2. TOILETS AND HAND WASH STATION
3. MATERIALS STORAGE
4. DEBRIS BOX LOCATION
5. TOOL STORAGE LOCKER
6. JOB SITE TRAILER
7. STOCKPILE AREA
8. CONSTRUCTION EQUIPMENT PARKING

GRAPHIC SCALE
30 0 30 60

CONSTRUCTION NOTES:

1. CONSTRUCTION ACCESS ROUTE SHALL BE FROM TICONDEROGA DRIVE TO INTERSTATE 280:

   HEAD NORTHEAST ON TICONDEROGA DR TOWARD POLHEMUS RD.

   TURN RIGHT ONTO POLHEMUS RD.

   TURN LEFT TO MERGE ONTO CA-92 TOWARD I-280.
2. STOCKPILE TO CONFORM TO CASQA STANDARD WM-3, STOCKPILE MANAGEMENT (REFER TO DETAIL 1, SHEET C5.90).
3. CONSTRUCTION VEHICLE PARKING AREA SHALL HAVE 4"-6" AGGREGATE OVER GEO-TEXTILE FABRIC.

NEW BRUNSWICK DRIVE
COBBLEHILL PLACE
TICONDEROGA DRIVE
ALLEGHENY WAY
PROPERTY LINE
PROPOSED BUILDING ENVELOPE
PROPOSED BUILDING ENVELOPE
PROPOSED BUILDING ENVELOPE
PROPOSED BUILDING ENVELOPE
LOT 5
LOT 6
LOT 7
LOT 8
25' E.V.A.E. AND PRIVATE ACCESS EASEMENT
E.V.A.E AND PRIVATE ACCESS EASEMENT
E.V.A.E AND PRIVATE ACCESS EASEMENT
NO BUILD ZONE
(E) FIRE HYDRANT
18 TOTAL 8'x20' CONSTRUCTION PARKING SPACES
TICONDEROGA DRIVE

255 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
PHONE: (650) 482-6300
FAX: (650) 482-6399

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HIGHLAND ESTATES
LOT 8 IMPROVEMENT PLANS
LOGISTICS PLAN

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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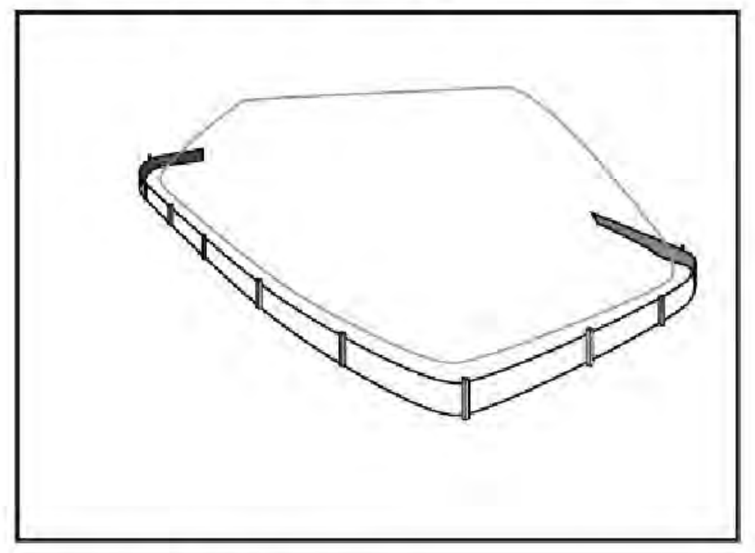
Stockpile Management WM-3



Categories

EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☒
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Category**
☒ **Secondary Category**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose
Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, soil amendments, sand, paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called "cold mix" asphalt), and pressure treated wood.

Suitable Applications
Implement in all projects that stockpile soil and other loose materials.

Limitations
- Plastic sheeting as a stockpile protection is temporary and hard to manage in windy conditions. Where plastic is used, consider use of plastic tarps with nylon reinforcement which may be more durable than standard sheeting.
- Plastic sheeting can increase runoff volume due to lack of infiltration and potentially cause perimeter control failure.
- Plastic sheeting breaks down faster in sunlight.
- The use of plastic materials should be avoided when feasible and photodegradable plastics should not be used.

Implementation
Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

Stockpile Management WM-3

- On larger sites, a minimum of 50 ft separation from concentrated flows of stormwater, drainage courses, and inlets is recommended.
- All stockpiles are required to be protected immediately if they are not scheduled to be used within 14 days.
- Protect all stockpiles from stormwater run-on using temporary perimeter sediment barriers such as compost berms (SE-13), temporary silt dikes (SE-12), fiber rolls (SE-5), silt fences (SE-1), sandbags (SE-8), gravel bags (SE-6), or biofilter bags (SE-14). Refer to the individual fact sheet for each of these controls for installation information.
- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information, see WE-1, Wind Erosion Control.
- Manage stockpiles of contaminated soil in accordance with WM-7, Contaminated Soil Management.
- Place bagged materials on pallets and under cover.
- Ensure that stockpile coverings are installed securely to protect from wind and rain.
- Some plastic covers withstand weather and sunlight better than others. Select cover materials or methods based on anticipated duration of use.

Protection of Non-Active Stockpiles
Non-active stockpiles of the identified materials should be protected further as follows:

Soil stockpiles
- Cover and project soil stockpiles with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- Consider temporary vegetation for topsoil piles that will be stockpiled for extended periods.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub base
- Provide covers and protect these stockpiles with a temporary perimeter sediment barrier at all times.

Stockpiles of "cold mix"
- Cover cold mix stockpiles and place them on plastic sheeting (or comparable material) and surround the stockpiles with a berm all times.

Stockpiles of fly ash, stucco, hydrated lime
- Cover stockpiles of materials that may raise the pH of runoff (i.e., basic materials) with plastic and surround the stockpiles with a berm at all times.

Stockpile Management WM-3

Stockpiles/Storage of wood (Pressure treated with chromated copper arsenate or ammoniacal copper zinc arsenate)
- Cover treated wood with plastic sheeting (or comparable material) and surround with a berm at all times.

Protection of Active Stockpiles
Active stockpiles of the identified materials should be protected as follows:

- All stockpiles should be covered and protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" and treated wood, and basic materials should be placed on and covered with plastic sheeting or comparable material and surrounded by a berm prior to the onset of precipitation.
- The downstream perimeter of an active stockpile should be protected with a linear sediment barrier or berm and runoff should be diverted around or away from the stockpile on the upstream perimeter.

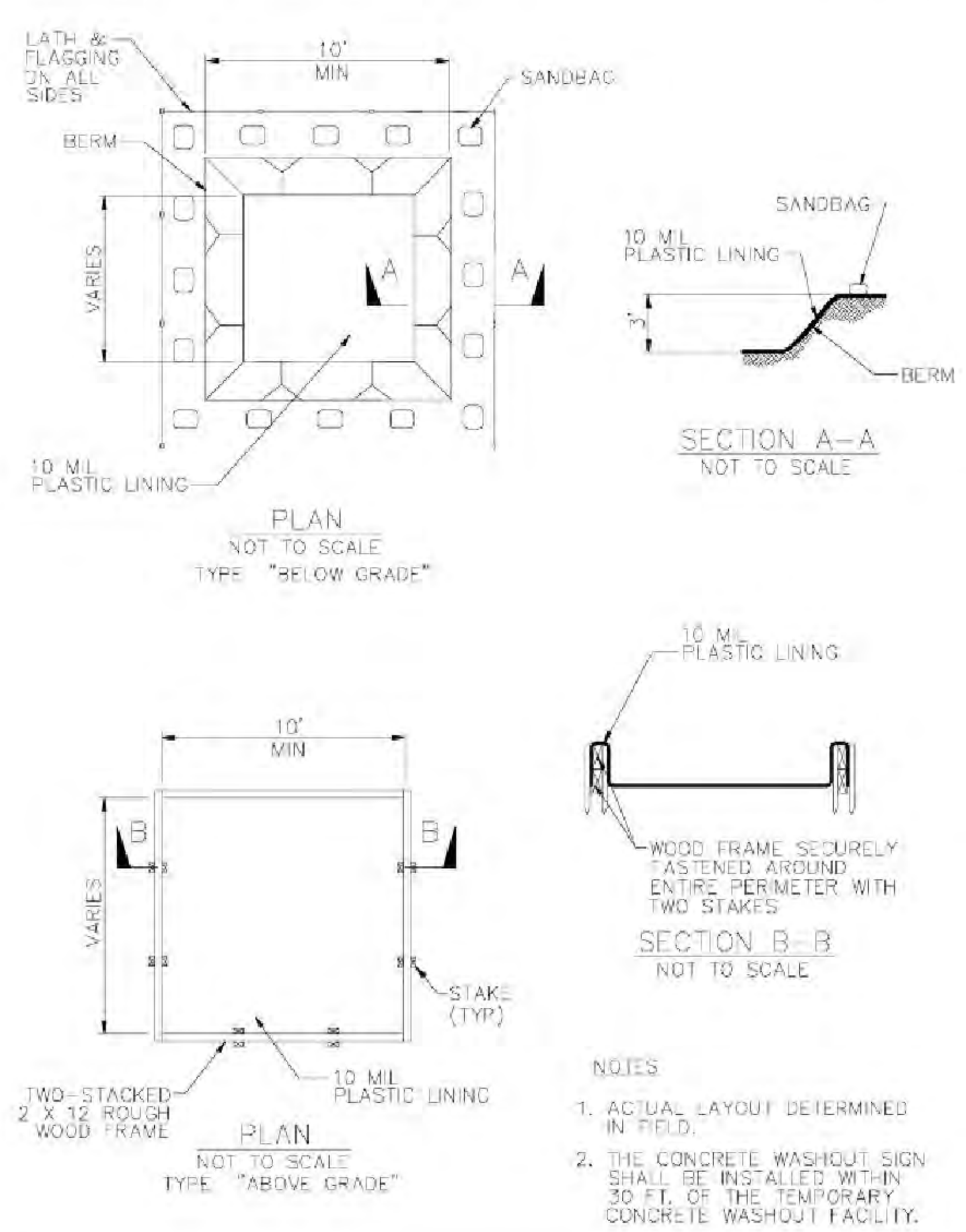
Costs
For cost information associated with stockpile protection refer to the individual erosion or sediment control BMP fact sheet considered for implementation (For example, refer to SE-1 Silt Fence for installation of silt fence around the perimeter of a stockpile.)

Inspection and Maintenance
- Stockpiles must be inspected in accordance with General Permit requirements for the associated project type and risk level. It is recommended that at a minimum, BMPs be inspected weekly, prior to forecasted rain events, daily during extended rain events, and after the conclusion of rain events.
- It may be necessary to inspect stockpiles covered with plastic sheeting more frequently during certain conditions (for example, high winds or extreme heat).
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.
- Sediment shall be removed when it reaches one-third of the barrier height.

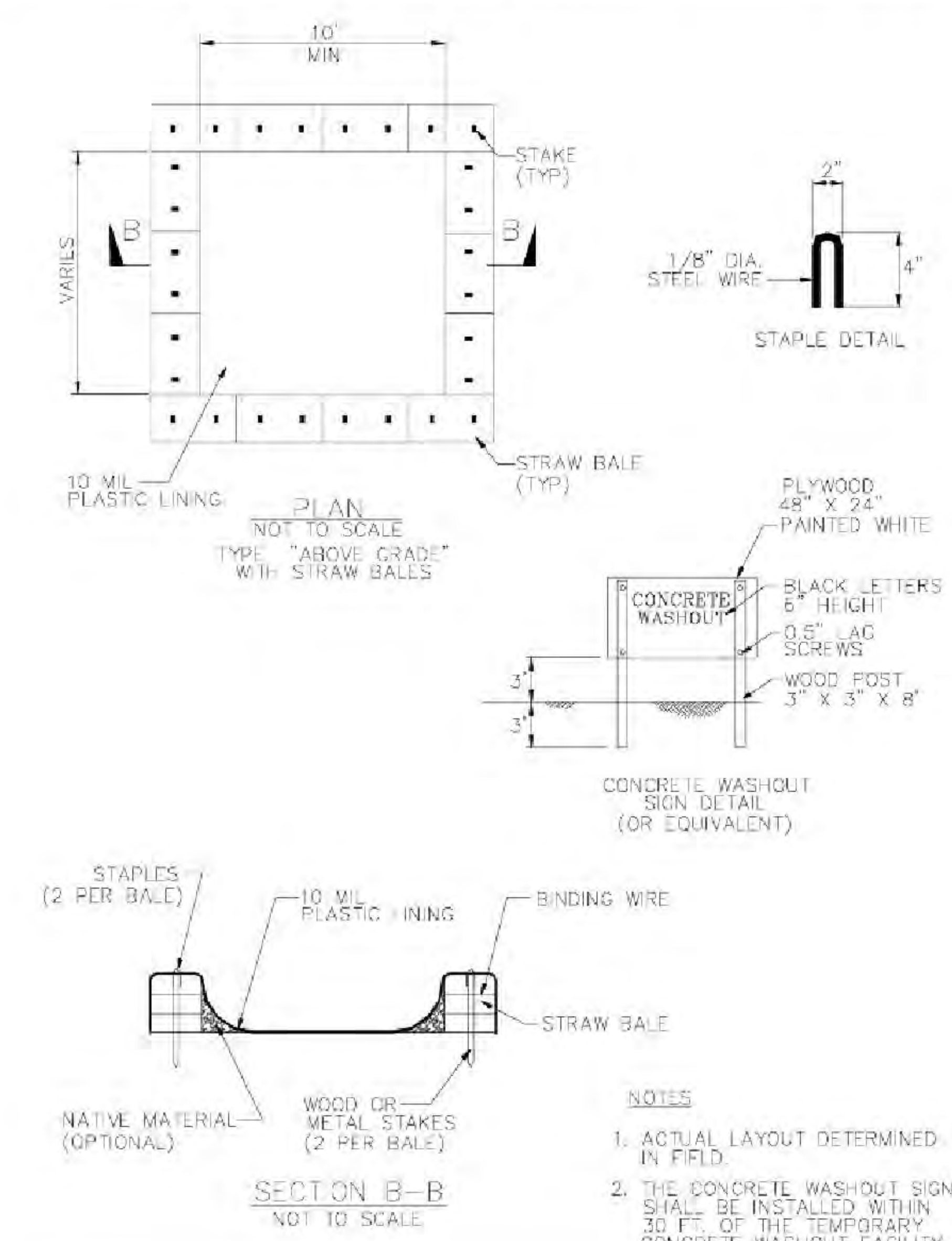
References
Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), March 2003.

WM-3 – STOCKPILE MANAGEMENT
NTS

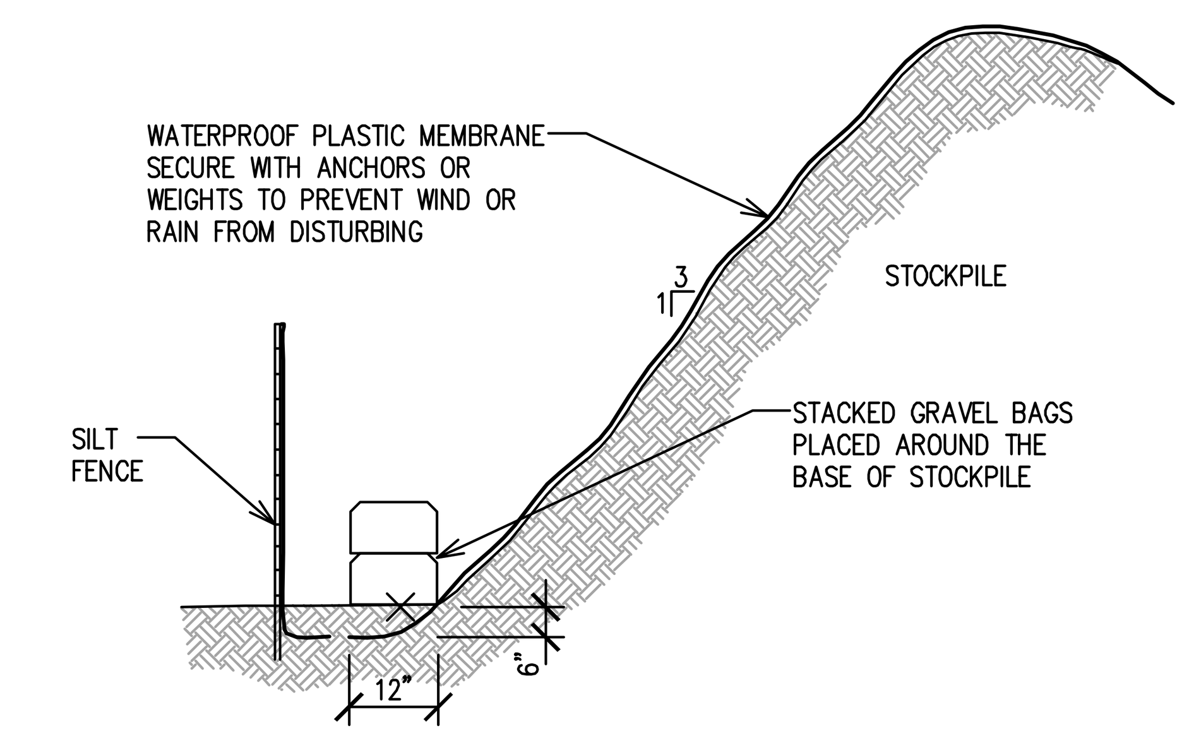
Concrete Waste Management WM-8



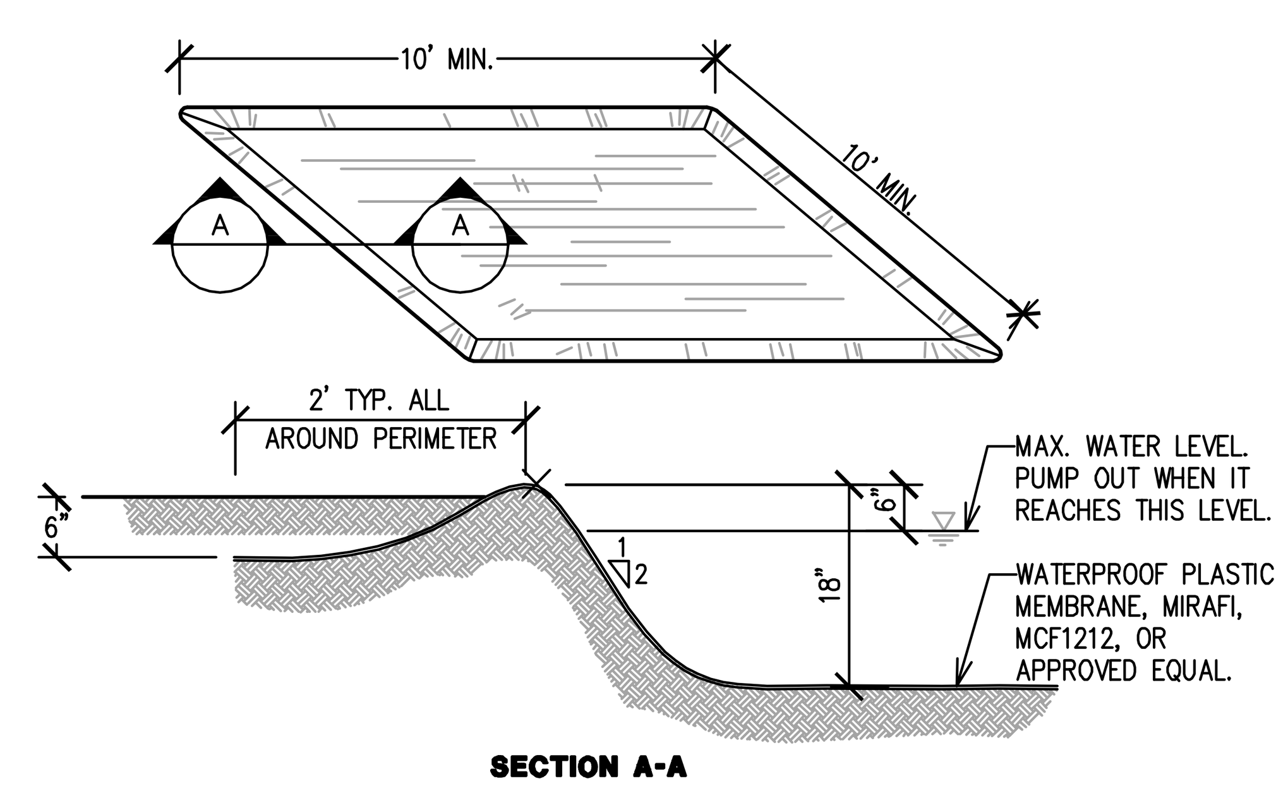
Concrete Waste Management WM-8



WM-8 – CONCRETE WASTE MANAGEMENT
NTS



1 – STOCKPILE COVERING
(PER CASQA STANDARD WM-3, STOCKPILE MANAGEMENT, SEE LEFT)
NTS



2 – TEMPORARY WASHOUT PIT
(PER CASQA STANDARD WM-8, CONCRETE WASTE MANAGEMENT, SEE LEFT)
NTS

BKF
ENGINEERS / SURVEYORS / PLANNERS
255 SHORELINE DRIVE, SUITE 200
REDWOOD CITY, CA 94065
PHONE: (650) 482-6300
FAX: (650) 482-6399

REGISTERED PROFESSIONAL ENGINEER – STATE OF CALIFORNIA – CIVIL

HIGHLAND ESTATES
LOT 8 IMPROVEMENT PLANS
CASQA STANDARD DETAILS
CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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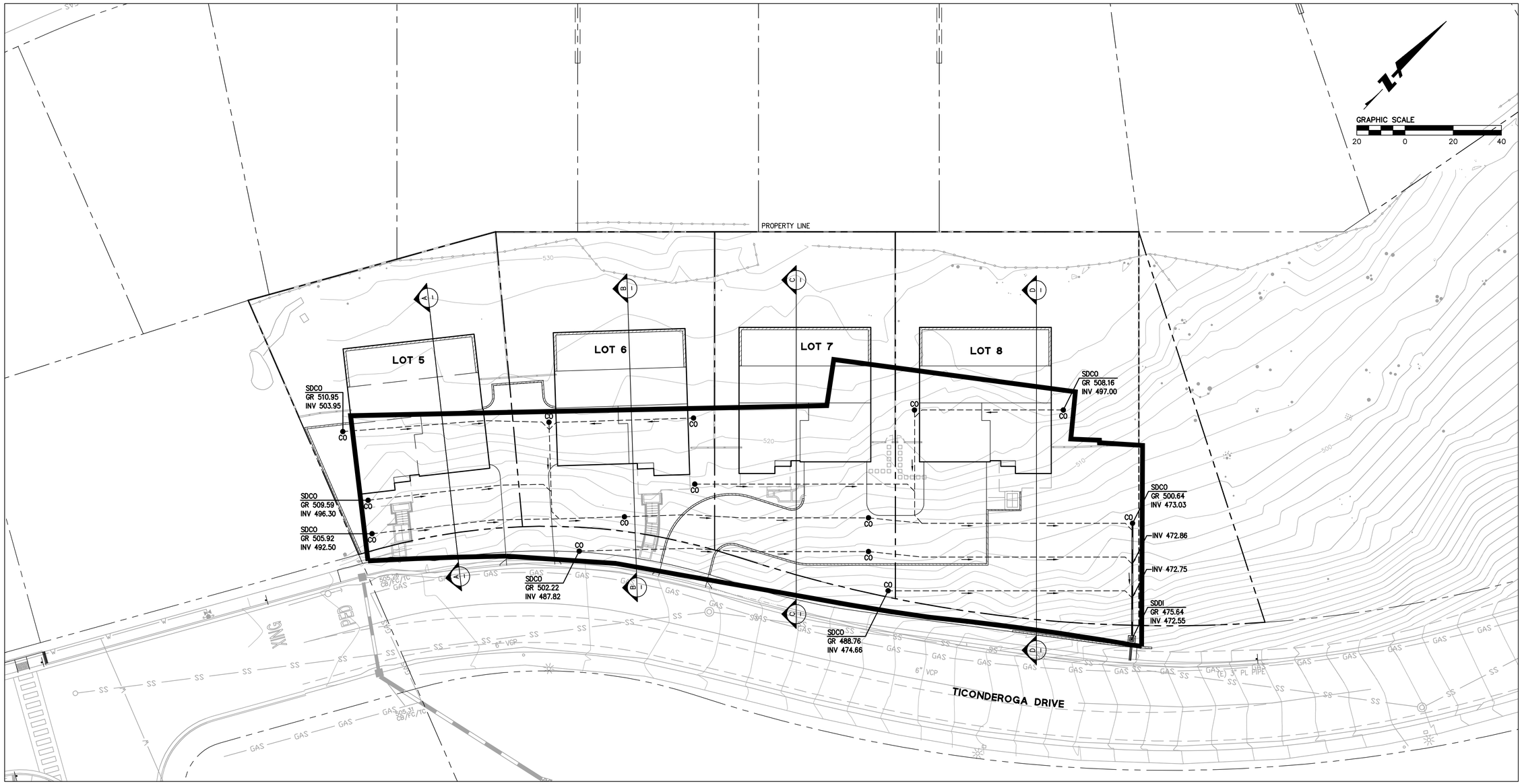

LEGEND

AREA OF GEOTECHNICAL MITIGATION GRADING (SEE GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION).

4" PERFORATED SUBDRAIN FOR KEYWAY. NOTE THE FINAL LOCATIONS OF THE SUBDRAIN WILL BE DETERMINED BY CORNERSTONE DURING CONSTRUCTION, ARROW IS ANTICIPATED DIRECTION OF FLOW

BKF HAS PREPARED THESE PLANS BASED ON CORNERSTONE EARTH GROUP GEOTECHNICAL INVESTIGATION AND RECOMMENDATIONS.

REGISTERED PROFESSIONAL ENGINEER
JONATHAN TANG
No. C67726
CIVIL
STATE OF CALIFORNIA

JONATHAN TANG, P.E.

THE UNDERSIGNED GEOTECHNICAL ENGINEER HAS PERFORMED A GEOTECHNICAL INVESTIGATION AT THE SITE INCLUDING PERFORMING FIELD INVESTIGATION, LABORATORY TESTING, ENGINEERING ANALYSIS, AND REPORT PREPARATION AS DESCRIBED IN THE OCTOBER 30, 2015 REPORT BY CORNERSTONE EARTH GROUP, INC. FOR THE PROJECT. THE GEOTECHNICAL ASPECTS OF THESE PLAN SHEETS HAVE BEEN PREPARED AND REVIEWED BY THE UNDERSIGNED GEOTECHNICAL ENGINEER AND ARE BASED UPON LIMITATIONS DESCRIBED IN THE GEOTECHNICAL INVESTIGATION REPORT. THESE PLANS ARE NOT A STAND-ALONE DOCUMENT AND SHOULD BE CONSIDERED AS PART OF THE GEOTECHNICAL INVESTIGATION REPORT. THE GEOTECHNICAL DESIGN ASPECTS IN THESE PLANS ARE CONTINGENT UPON A GEOTECHNICAL ENGINEER AND ENGINEERING GEOLOGIST OBSERVING CERTAIN ASPECTS OF THE PROJECT GRADING. THESE PLANS ARE SUBJECT TO MODIFICATION AND REVISION DURING CONSTRUCTION BASED ON THE FIELD CONDITIONS ENCOUNTERED.

REGISTERED PROFESSIONAL ENGINEER
SCOTT E. FITINGHOFF
No. 2379
GEOTECHNICAL
STATE OF CALIFORNIA

SCOTT E. FITINGHOFF, P.E., G.E.

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HIGHLAND ESTATES
LOT 8 IMPROVEMENT PLANS
GEOTECHNICAL MITIGATION PLAN (LOTS 5 TO 8)

CITY OF SAN MATEO SAN MATEO COUNTY CALIFORNIA

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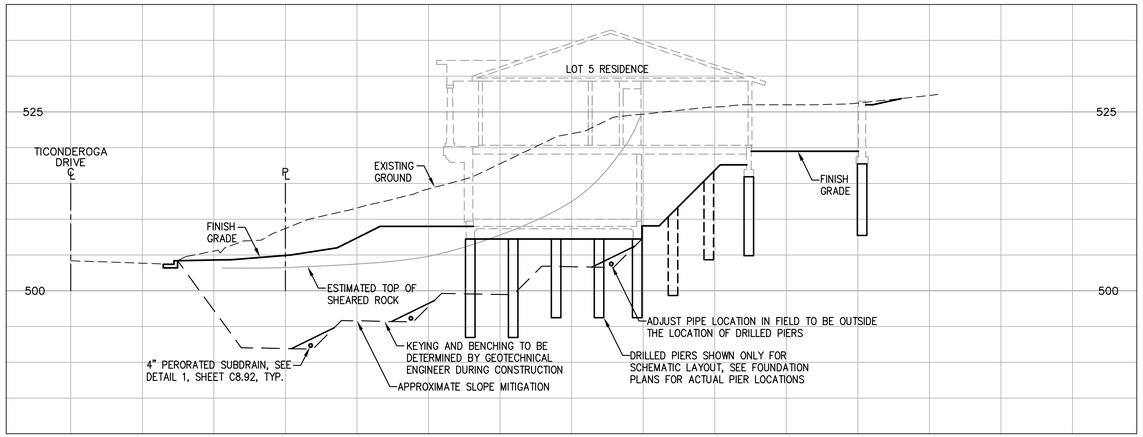

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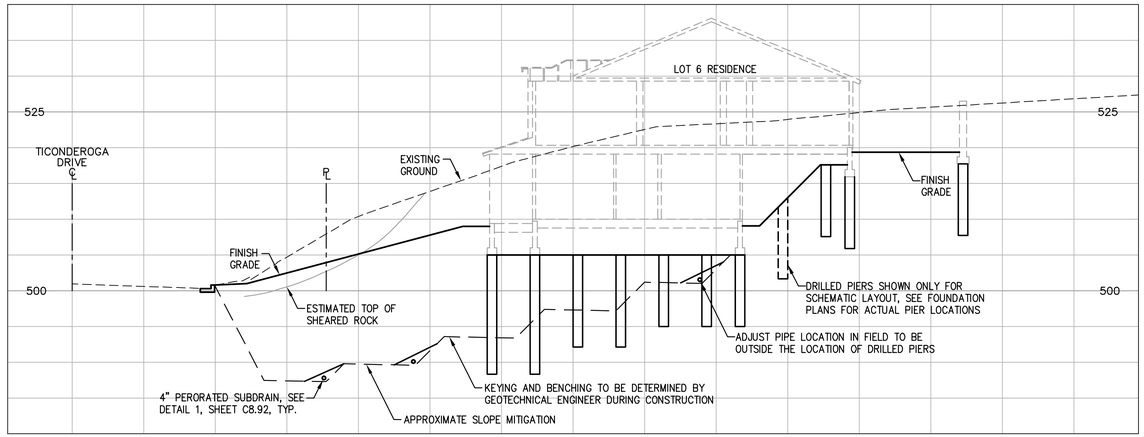

B-B CROSS SECTION
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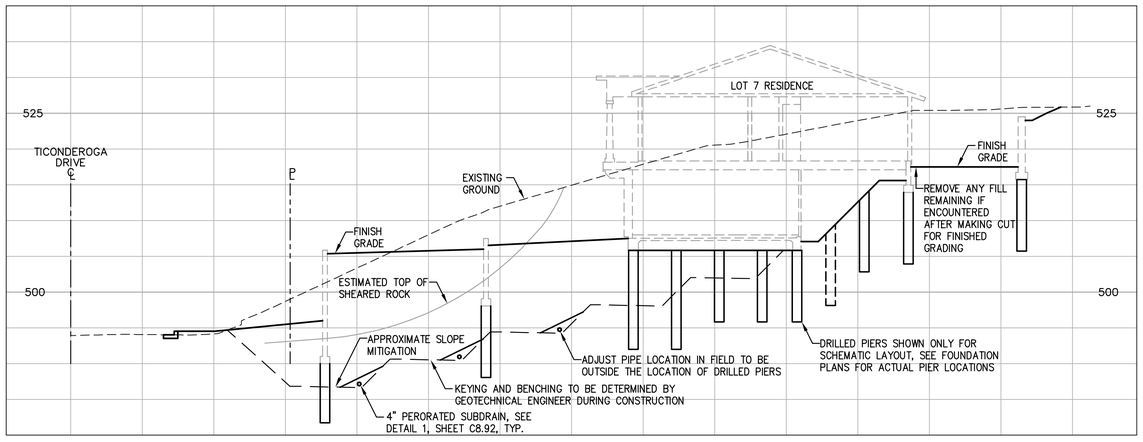


C-C CROSS SECTION
SCALE: 1"=10'

DRAINAGE MATERIAL

ALTERNATIVE 1

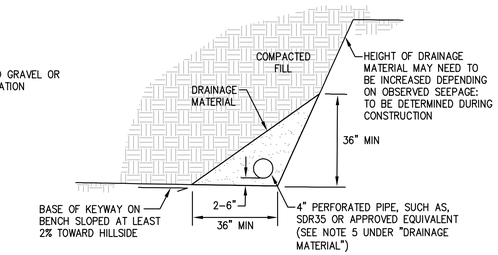
CLASS 2 PERMEABLE MATERIAL
(CALTRANS STANDARD SPECS LATEST EDITION)
MATERIAL SHALL CONSIST OF CLEAN, COARSE SAND AND GRAVEL OR CRUSHED STONE, CONFORMING TO THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE SIZE	% PASSING SIEVE
1"	100
3/4"	90–100
3/8"	40–100
#4	25–40
#8	18–33
#30	5–15
#50	0–7
#200	0–3

ALTERNATIVE 2

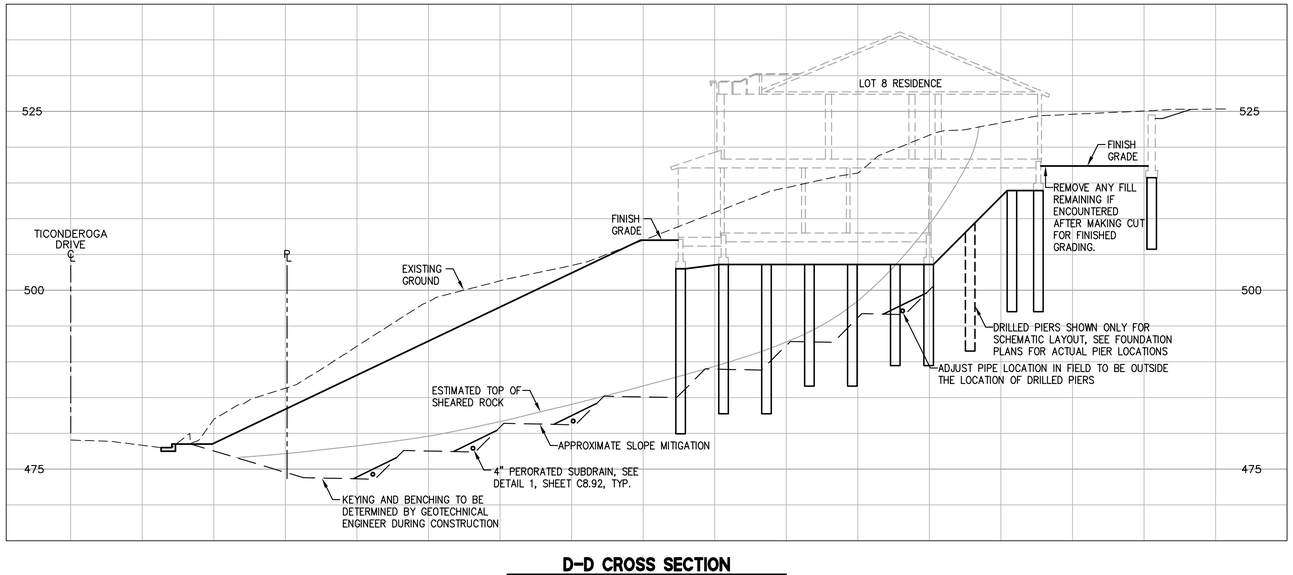
1/2 – TO 3/4– INCH CLEAN CRUSHED ROCK OR GRAVEL WRAPPED IN FILTER FABRIC
ALL NON–WOVEN FILTER FABRIC SHALL MEET THE FOLLOWING MINIMUM AVERAGE ROLL VALUES UNLESS OTHERWISE SPECIFIED BY CORNERSTONE EARTH GROUP

GRAB STRENGTH (ASTM D–4632):	180 LBS.
MASS PER UNIT AREA (ASTM D–4751):	5 OZ/YD
APPARENT OPENING SIZE (ASTM D–4751):	70–100 U.S. STD. SIEVE
FLOW RATE (ASTM D–4491):	80 GAL/MIN/FT
PUNCTURE STRENGTH (ASTM D–4833):	80 LBS.

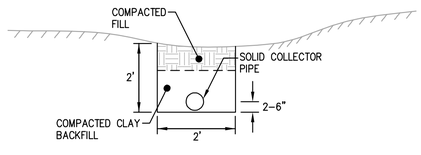


DETAIL 1 – TYPICAL BENCH AND KEYWAY SUBDRAIN
NTS

NOTES:
1. 1% FALL (MINIMUM) ALONG ALL KEYWAYS, BENCHES ANDSUBDRAIN LINES.
2. ALL PERFORATED PIPE PLACED PERFORATIONS DOWN.
3. ALL PIPE JOINTS SHALL BE GLUED.
4. ALL SUBDRAINS SHOULD BE DISCHARGED TO A FREE DRAINING OUTLET APPROVED BY THE CIVIL ENGINEER.
5. SUBDRAIN PIPE (PERFORATED OR SOLID CONNECTOR) SHOULD CONSIST OF SDR–35 PVC PIPE WHEN PLACED IN FILLS LESS THAN 30 FEET DEEP.
6. USE 4" PERFORATED PIPE ON KEYWAY OR BENCHES.
7. USE 6"SOLID PIPE FOR COLLECTOR PIPES OR 6" PERFORATED PIPE (DETAIL 2)
8. PIPE FITTINGS FOR CLEAN–OUTS AND OTHER 90° BENDS IN THE SUBDRAIN SYSTEM (EXCEPT THE CONNECTION BETWEEN THE 4"PERFORATED PIPES AND 6"COLLECTION PIPES) SHOULD BE "SWEEP 90'S" OR OTHER APPROVED EQUIVALENT.
9. CONTRACTOR TO PROVIDE ALL INCIDENTAL FITTINGS IN THEIR BID PRICE TO CONSTRUCT THE SUBDRAIN SYSTEM. NOT ALL INCIDENTAL FITTINGS ARE SHOWN ON THESE PLANS.
10. FINAL SUBDRAIN LAYOUT AND PLACEMENT TO BE DETERMINED BY GEOTECHNICAL ENGINEER AT TIME OF CONSTRUCTION. A SUBDRAIN SHOULD NOT CONFLICT WITH DRILLED PIERS.



D-D CROSS SECTION
SCALE: 1"=10'



NOTES:
1. THIS AREA MAY HAVE ACTIVE SEEPAGE DURING CONSTRUCTION.
2. COLLECTOR PIPE SHOULD BE 6" PERFORATED PIPE, SUCH AS SDR–35 OR SDR–23.5 OR APPROVED EQUIVALENT (SEE DETAIL 1 NOTE 5 UNDER "DRAINAGE MATERIAL")
3. PIPE FITTINGS FOR CLEAN–OUTS AND OTHER 90° BENDS IN THE SUBDRAIN SYSTEM (EXCEPT THE CONNECTION BETWEEN THE 4"PERFORATED PIPES AND 6" COLLECTION PIPES) SHOULD BE "SWEEP 90'S"OR OTHER APPROVED EQUIVALENT.
4. CONTRACTOR TO PROVIDE ALL INCIDENTAL FITTINGS IN THEIR BID PRICE TO CONSTRUCT THE SUBDRAIN SYSTEM. NOT ALL INCIDENTAL FITTINGS ARE SHOWN ON THESE PLANS.
5. FINAL SUBDRAIN LAYOUT AND PLACEMENT TO BE DETERMINED BY GEOTECHNICAL ENGINEER AT TIME OF CONSTRUCTION.

DETAIL 2 – SOLID COLLECTOR PIPE DETAIL
NTS

BKF HAS PREPARED THESE PLANS BASED ON CORNERSTONE EARTH GROUP GEOTECHNICAL INVESTIGATION AND RECOMMENDATIONS.

REGISTERED PROFESSIONAL ENGINEER JONATHAN TANG No. C67726 CIVIL STATE OF CALIFORNIA

JONATHAN TANG, P.E.

THE UNDERSIGNED GEOTECHNICAL ENGINEER HAS PERFORMED A GEOTECHNICAL INVESTIGATION AT THE SITE INCLUDING PERFORMING FIELD INVESTIGATION, LABORATORY TESTING, ENGINEERING ANALYSIS, AND REPORT PREPARATION AS DESCRIBED IN THE OCTOBER 30, 2015 REPORT BY CORNERSTONE EARTH GROUP, INC. FOR THE PROJECT. THE GEOTECHNICAL ASPECTS OF THESE PLAN SHEETS HAVE BEEN PREPARED AND REVIEWED BY THE UNDERSIGNED GEOTECHNICAL ENGINEER AND ARE BASED UPON LIMITATIONS DESCRIBED IN THE GEOTECHNICAL INVESTIGATION REPORT. THESE PLANS ARE NOT A STAND–ALONE DOCUMENT AND SHOULD BE CONSIDERED AS PART OF THE GEOTECHNICAL INVESTIGATION REPORT. THE GEOTECHNICAL DESIGN ASPECTS IN THESE PLANS ARE CONTINGENT UPON A GEOTECHNICAL ENGINEER AND ENGINEERING GEOLOGIST OBSERVING CERTAIN ASPECTS OF THE PROJECT GRADING. THESE PLANS ARE SUBJECT TO MODIFICATION AND REVISION DURING CONSTRUCTION BASED ON THE FIELD CONDITIONS ENCOUNTERED.

REGISTERED PROFESSIONAL ENGINEER SCOTT E. FITINGHOFF No. 2379 GEOTECHNICAL STATE OF CALIFORNIA

SCOTT E. FITINGHOFF, P.E., G.E.

BKF ENGINEERS | SURVEYORS | PLANNERS
255 SHORELINE DRIVE, SUITE 200
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HIGHLAND ESTATES
LOT 8 IMPROVEMENT PLANS
GEOTECHNICAL MITIGATION CROSS SECTIONS (LOTS 5 TO 8)
CITY OF SAN MATEO — SAN MATEO COUNTY, CALIFORNIA

Revisions

No.					
Date	09/11/2018				
Scale	AS SHOWN				
Design	RH				
Drawn	NH				
Approved	JT				
Job No	950168-20				

Sheet Number:
C8.92
OF

DRAWING NAME: K:\Eng95\950168\dwg\CD\Lot_8\C8.92.dwg
PLOT DATE: 09-11-18
PLOTTED BY: holt

APPENDIX D

Construction Air Quality Supporting Information (CalEEMod)

Annual Emission Summary

Original Project Unmitigated Construction- revision with CALEEMOD tpy

Unmitigated Construction Emissions	ROG	NOX	CO	SO2	PM10 total	Pm2.5 total
2021	0.14	1.22	1.16	0.00	0.16	0.10
2022	0.07	0.00	0.01	0.00	0.00	0.00
Maximum	**0.14**	**1.22**	**1.16**	**0.00**	**0.16**	**0.10**

Original Project Mitigated Construction- revision with CALEEMOD tpy

Mitigated Construction Emissions	ROG	NOX	CO	SO2	PM10 total	Pm2.5 total
2021	0.1363	1.22323	1.1556	2.1E-03	0.1137	0.0761
2022	0.0695	4.95E-03	6.59E-03	1.0E-05	3.90E-04	3.10E-04
Maximum	**0.14**	**1.22**	**1.16**	**0.00**	**0.11**	**0.08**

Average Daily Emission Summary

Days 2021	5/3/2021	1/1/2022	243
Days 2022	1/1/2022	1/11/2022	10

Original Project Unmitigated Construction- revision with CALEEMOD lb/day

Unmitigated Construction Emissions	ROG	NOX	CO	SO2	PM10 total	Pm2.5 total
2021	1.12	10.07	9.51	0.02	1.28	0.79
2022	13.90	0.99	1.32	0.00	0.08	0.06
Maximum	**13.90**	**10.07**	**9.51**	**0.02**	**1.28**	**0.79**

Original Project Mitigated Construction- revision with CALEEMOD lb/day

Mitigated Construction Emissions	ROG	NOX	CO	SO2	PM10 total	Pm2.5 total
2021	1.12	10.07	9.51	0.02	0.94	0.63
2022	13.90	0.99	1.32	0.00	0.08	0.06
Maximum	**13.90**	**10.07**	**9.51**	**0.02**	**0.94**	**0.63**

Annual Emission Summary

Revised Project Unmitigated Construction- revision with CALEEMOD tpy

Unmitigated Construction Emissions	ROG	NOX	CO	SO2	PM10 total	Pm2.5 total
2021	0.1552	1.5388	1.3629	2.6E-03	0.2498	0.1461
2022	0.0939	1.52E-01	1.65E-01	3.1E-04	9.87E-03	7.29E-03
Maximum	**0.16**	**1.54**	**1.36**	**0.00**	**0.25**	**0.15**

Revised Project Mitigated Construction- revision with CALEEMOD tpy

Mitigated Construction Emissions	ROG	NOX	CO	SO2	PM10 total	Pm2.5 total
2021	0.1552	1.5388	1.3629	2.6E-03	0.166	0.1054
2022	0.0939	1.52E-01	1.65E-01	3.1E-04	9.27E-03	7.14E-03
Maximum	**0.16**	**1.54**	**1.36**	**0.00**	**0.17**	**0.11**

Average Daily Emission Summary

Days 2021	5/3/2021	1/1/2022	243
Days 2022	1/1/2022	2/21/2022	51

Revised Project Unmitigated Construction- revision with CALEEMOD lb/day

Unmitigated Construction Emissions	ROG	NOX	CO	SO2	PM10 total	Pm2.5 total
2021	1.28	12.67	11.22	0.02	2.06	1.20
2022	3.68	5.96	6.45	0.01	0.39	0.29
Maximum	**3.68**	**12.67**	**11.22**	**0.02**	**2.06**	**1.20**

Revised Project Mitigated Construction- revision with CALEEMOD lb/day

Mitigated Construction Emissions	ROG	NOX	CO	SO2	PM10 total	Pm2.5 total
2021	1.28	12.67	11.22	0.02	1.37	0.87
2022	3.68	5.96	6.45	0.01	0.36	0.28
Maximum	**3.68**	**12.67**	**11.22**	**0.02**	**1.37**	**0.87**

Highland Estates Subdivision-Lots 5-8 Base Case

San Mateo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	4.00	Dwelling Unit	1.22	11,156.00	11

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	70
Climate Zone	5			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Highland Estates Subdivision-Lots 5-8 Base Case - San Mateo County, Annual

Project Characteristics -

Land Use - Based on BOS Staff report lot acreage and total floor area sqft.

Construction Phase - The original proposed grading schedule is based on roughly 4-5 weeks. Other phases are assumed to be similar to the original model allocated proportionally.

Off-road Equipment -

Off-road Equipment - From Urbemis report from original analysis.

Off-road Equipment - Loaders and water trucks for loading into export trucks.

Off-road Equipment - Based on urbemis grading phase inputs and the information from BFK Engineers on lots 5-8 construction sequencing/phasing.

Off-road Equipment - From original urbemix paving phase.

Off-road Equipment - Backhoe loader for sub-train utility installation and water truck.

Trips and VMT - average of 20 trips per day during site prep and grading phase based on 24 full time days and 12 part time days. Other trips are based on CALEEMOD Defaults. import trips are based on 167 round trips. one way trips are entered.

Grading -

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use -

Water And Wastewater -

Sequestration - Applicant to remove 7 trees as part of the total project. There will be 13 new trees planted on lots 5-8. So net new trees is 6.

Construction Off-road Equipment Mitigation - Based on AQ Mitigation Measure for Tier 1 and Tier 2 equipment usage.

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	26
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstructionPhase	NumDays	2.00	9.00
tblConstructionPhase	NumDays	4.00	25.00
tblConstructionPhase	NumDays	10.00	32.00
tblConstructionPhase	NumDays	200.00	108.00
tblConstructionPhase	NumDays	10.00	8.00
tblGrading	MaterialImported	0.00	2,000.00
tblLandUse	LandUseSquareFeet	7,200.00	11,156.00
tblLandUse	LotAcreage	1.30	1.22
tblOffRoadEquipment	HorsePower	9.00	10.00
tblOffRoadEquipment	HorsePower	231.00	399.00
tblOffRoadEquipment	HorsePower	89.00	145.00
tblOffRoadEquipment	HorsePower	187.00	174.00
tblOffRoadEquipment	HorsePower	130.00	100.00
tblOffRoadEquipment	HorsePower	80.00	95.00
tblOffRoadEquipment	HorsePower	247.00	357.00
tblOffRoadEquipment	HorsePower	97.00	108.00
tblOffRoadEquipment	HorsePower	97.00	108.00
tblOffRoadEquipment	HorsePower	97.00	108.00
tblOffRoadEquipment	HorsePower	97.00	108.00
tblOffRoadEquipment	HorsePower	402.00	189.00
tblOffRoadEquipment	HorsePower	402.00	189.00

tblOffRoadEquipment	LoadFactor	0.29	0.43
tblOffRoadEquipment	LoadFactor	0.20	0.30
tblOffRoadEquipment	LoadFactor	0.41	0.61
tblOffRoadEquipment	LoadFactor	0.42	0.62
tblOffRoadEquipment	LoadFactor	0.38	0.56
tblOffRoadEquipment	LoadFactor	0.40	0.59
tblOffRoadEquipment	LoadFactor	0.37	0.55
tblOffRoadEquipment	LoadFactor	0.37	0.55
tblOffRoadEquipment	LoadFactor	0.37	0.55
tblOffRoadEquipment	LoadFactor	0.37	0.55
tblOffRoadEquipment	LoadFactor	0.38	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblSequestration	NumberOfNewTrees	0.00	6.00
tblTripsAndVMT	HaulingTripLength	20.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	8.00

tblTripsAndVMT	HaulingTripNumber	250.00	334.00
tblTripsAndVMT	VendorTripLength	7.30	25.00
tblTripsAndVMT	VendorTripLength	7.30	25.00
tblTripsAndVMT	VendorTripLength	7.30	25.00
tblTripsAndVMT	VendorTripLength	7.30	25.00
tblTripsAndVMT	VendorTripLength	7.30	25.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripLength	10.80	25.00
tblTripsAndVMT	WorkerTripLength	10.80	25.00
tblTripsAndVMT	WorkerTripLength	10.80	25.00
tblTripsAndVMT	WorkerTripLength	10.80	25.00
tblTripsAndVMT	WorkerTripLength	10.80	25.00
tblTripsAndVMT	WorkerTripNumber	5.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	18.00	36.00
tblTripsAndVMT	WorkerTripNumber	1.00	8.00
tblTripsAndVMT	WorkerTripNumber	0.00	2.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1363	1.2323	1.1556	2.1200e-003	0.0958	0.0600	0.1558	0.0408	0.0553	0.0960	0.0000	187.8308	187.8308	0.0494	0.0000	189.0664
2022	0.0695	4.9500e-003	6.5900e-003	1.0000e-005	1.3000e-004	2.9000e-004	4.1000e-004	3.0000e-005	2.9000e-004	3.2000e-004	0.0000	0.9907	0.9907	6.0000e-005	0.0000	0.9921
Maximum	**0.1363**	**1.2323**	**1.1556**	**2.1200e-003**	**0.0958**	**0.0600**	**0.1558**	**0.0408**	**0.0553**	**0.0960**	**0.0000**	**187.8308**	**187.8308**	**0.0494**	**0.0000**	**189.0664**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1363	1.2323	1.1556	2.1200e-003	0.0544	0.0593	0.1137	0.0215	0.0546	0.0761	0.0000	187.8307	187.8307	0.0494	0.0000	189.0662
2022	0.0695	4.9500e-003	6.5900e-003	1.0000e-005	1.0000e-004	2.9000e-004	3.9000e-004	3.0000e-005	2.9000e-004	3.1000e-004	0.0000	0.9907	0.9907	6.0000e-005	0.0000	0.9921
Maximum	**0.1363**	**1.2323**	**1.1556**	**2.1200e-003**	**0.0544**	**0.0593**	**0.1137**	**0.0215**	**0.0546**	**0.0761**	**0.0000**	**187.8307**	**187.8307**	**0.0494**	**0.0000**	**189.0662**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**43.19**	**1.08**	**26.94**	**47.13**	**1.17**	**20.65**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	5-3-2021	8-2-2021	0.6366	0.6366
2	8-3-2021	11-2-2021	0.4387	0.4387
3	11-3-2021	2-2-2022	0.3681	0.3681
		Highest	0.6366	0.6366

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0759	8.6000e-004	0.0640	7.0000e-005		5.1100e-003	5.1100e-003		5.1100e-003	5.1100e-003	0.5084	0.1734	0.6818	1.0100e-003	3.0000e-005	0.7157
Energy	9.1000e-004	7.8000e-003	3.3200e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	18.3230	18.3230	5.9000e-004	2.5000e-004	18.4131
Mobile	8.7800e-003	0.0268	0.0990	3.4000e-004	0.0324	2.9000e-004	0.0327	8.7000e-003	2.7000e-004	8.9700e-003	0.0000	31.4706	31.4706	1.1400e-003	0.0000	31.4991
Waste						0.0000	0.0000		0.0000	0.0000	0.9378	0.0000	0.9378	0.0554	0.0000	2.3234
Water						0.0000	0.0000		0.0000	0.0000	0.0827	0.5775	0.6602	8.5200e-003	2.1000e-004	0.9345
Total	**0.0856**	**0.0355**	**0.1663**	**4.6000e-004**	**0.0324**	**6.0300e-003**	**0.0384**	**8.7000e-003**	**6.0100e-003**	**0.0147**	**1.5289**	**50.5445**	**52.0735**	**0.0667**	**4.9000e-004**	**53.8858**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0759	8.6000e-004	0.0640	7.0000e-005		5.1100e-003	5.1100e-003		5.1100e-003	5.1100e-003	0.5084	0.1734	0.6818	1.0100e-003	3.0000e-005	0.7157
Energy	9.1000e-004	7.8000e-003	3.3200e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	18.3230	18.3230	5.9000e-004	2.5000e-004	18.4131
Mobile	8.7800e-003	0.0268	0.0990	3.4000e-004	0.0324	2.9000e-004	0.0327	8.7000e-003	2.7000e-004	8.9700e-003	0.0000	31.4706	31.4706	1.1400e-003	0.0000	31.4991
Waste						0.0000	0.0000		0.0000	0.0000	0.9378	0.0000	0.9378	0.0554	0.0000	2.3234
Water						0.0000	0.0000		0.0000	0.0000	0.0827	0.5775	0.6602	8.5200e-003	2.1000e-004	0.9345
Total	**0.0856**	**0.0355**	**0.1663**	**4.6000e-004**	**0.0324**	**6.0300e-003**	**0.0384**	**8.7000e-003**	**6.0100e-003**	**0.0147**	**1.5289**	**50.5445**	**52.0735**	**0.0667**	**4.9000e-004**	**53.8858**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	4.4040
Total	**4.4040**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/3/2021	5/13/2021	5	9	
2	Grading/Slope Reconstruction	Grading	5/14/2021	6/17/2021	5	25	
3	Paving	Paving	6/18/2021	8/2/2021	5	32	
4	Building Construction	Building Construction	8/3/2021	12/30/2021	5	108	
5	Architectural Coating	Architectural Coating	12/31/2021	1/11/2022	5	8	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 22,591; Residential Outdoor: 7,530; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Off-Highway Trucks	1	8.00	189	0.50
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	108	0.55
Grading/Slope Reconstruction	Graders	1	6.00	174	0.61
Grading/Slope Reconstruction	Off-Highway Trucks	1	8.00	189	0.50
Grading/Slope Reconstruction	Rubber Tired Dozers	1	6.00	357	0.59
Grading/Slope Reconstruction	Tractors/Loaders/Backhoes	1	7.00	108	0.55
Paving	Cement and Mortar Mixers	4	6.00	10	0.56
Paving	Pavers	1	7.00	100	0.62
Paving	Rollers	1	7.00	95	0.56
Paving	Tractors/Loaders/Backhoes	1	7.00	108	0.55
Building Construction	Cranes	1	4.00	399	0.43
Building Construction	Forklifts	2	6.00	145	0.30
Building Construction	Tractors/Loaders/Backhoes	1	8.00	108	0.55
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	40.00	0.00	0.00	25.00	25.00	8.00	LD_Mix	HDT_Mix	HHDT
Grading/Slope Reconstruction	4	40.00	0.00	334.00	25.00	25.00	8.00	LD_Mix	HDT_Mix	HHDT
Paving	7	36.00	0.00	0.00	25.00	25.00	8.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	8.00	2.00	0.00	25.00	25.00	8.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	25.00	25.00	8.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use DPF for Construction Equipment

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0900e-003	0.0282	0.0248	6.0000e-005		1.3400e-003	1.3400e-003		1.2400e-003	1.2400e-003	0.0000	4.9781	4.9781	1.6100e-003	0.0000	5.0183
Total	**3.0900e-003**	**0.0282**	**0.0248**	**6.0000e-005**	**0.0000**	**1.3400e-003**	**1.3400e-003**	**0.0000**	**1.2400e-003**	**1.2400e-003**	**0.0000**	**4.9781**	**4.9781**	**1.6100e-003**	**0.0000**	**5.0183**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.1000e-004	6.4000e-004	6.6500e-003	3.0000e-005	3.2800e-003	2.0000e-005	3.3000e-003	8.7000e-004	2.0000e-005	8.9000e-004	0.0000	2.5894	2.5894	4.0000e-005	0.0000	2.5905
Total	**9.1000e-004**	**6.4000e-004**	**6.6500e-003**	**3.0000e-005**	**3.2800e-003**	**2.0000e-005**	**3.3000e-003**	**8.7000e-004**	**2.0000e-005**	**8.9000e-004**	**0.0000**	**2.5894**	**2.5894**	**4.0000e-005**	**0.0000**	**2.5905**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0900e-003	0.0282	0.0248	6.0000e-005		1.3400e-003	1.3400e-003		1.2400e-003	1.2400e-003	0.0000	4.9781	4.9781	1.6100e-003	0.0000	5.0183
Total	**3.0900e-003**	**0.0282**	**0.0248**	**6.0000e-005**	**0.0000**	**1.3400e-003**	**1.3400e-003**	**0.0000**	**1.2400e-003**	**1.2400e-003**	**0.0000**	**4.9781**	**4.9781**	**1.6100e-003**	**0.0000**	**5.0183**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.1000e-004	6.4000e-004	6.6500e-003	3.0000e-005	2.5400e-003	2.0000e-005	2.5600e-003	6.9000e-004	2.0000e-005	7.1000e-004	0.0000	2.5894	2.5894	4.0000e-005	0.0000	2.5905
Total	**9.1000e-004**	**6.4000e-004**	**6.6500e-003**	**3.0000e-005**	**2.5400e-003**	**2.0000e-005**	**2.5600e-003**	**6.9000e-004**	**2.0000e-005**	**7.1000e-004**	**0.0000**	**2.5894**	**2.5894**	**4.0000e-005**	**0.0000**	**2.5905**

3.3 Grading/Slope Reconstruction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0615	0.0000	0.0615	0.0316	0.0000	0.0316	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0346	0.3401	0.2722	4.2000e-004		0.0166	0.0166		0.0152	0.0152	0.0000	36.5801	36.5801	0.0118	0.0000	36.8758
Total	**0.0346**	**0.3401**	**0.2722**	**4.2000e-004**	**0.0615**	**0.0166**	**0.0781**	**0.0316**	**0.0152**	**0.0468**	**0.0000**	**36.5801**	**36.5801**	**0.0118**	**0.0000**	**36.8758**

3.3 Grading/Slope Reconstruction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.3000e-004	0.0281	0.0119	6.0000e-005	1.1200e-003	7.0000e-005	1.1900e-003	3.1000e-004	6.0000e-005	3.7000e-004	0.0000	6.1545	6.1545	7.8000e-004	0.0000	6.1739
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5400e-003	1.7700e-003	0.0185	8.0000e-005	9.1100e-003	5.0000e-005	9.1600e-003	2.4200e-003	5.0000e-005	2.4700e-003	0.0000	7.1928	7.1928	1.2000e-004	0.0000	7.1958
Total	**3.2700e-003**	**0.0299**	**0.0303**	**1.4000e-004**	**0.0102**	**1.2000e-004**	**0.0104**	**2.7300e-003**	**1.1000e-004**	**2.8400e-003**	**0.0000**	**13.3473**	**13.3473**	**9.0000e-004**	**0.0000**	**13.3697**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0277	0.0000	0.0277	0.0142	0.0000	0.0142	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0346	0.3401	0.2722	4.2000e-004		0.0166	0.0166		0.0152	0.0152	0.0000	36.5800	36.5800	0.0118	0.0000	36.8758
Total	**0.0346**	**0.3401**	**0.2722**	**4.2000e-004**	**0.0277**	**0.0166**	**0.0442**	**0.0142**	**0.0152**	**0.0294**	**0.0000**	**36.5800**	**36.5800**	**0.0118**	**0.0000**	**36.8758**

3.3 Grading/Slope Reconstruction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.3000e-004	0.0281	0.0119	6.0000e-005	9.0000e-004	7.0000e-005	9.7000e-004	2.5000e-004	6.0000e-005	3.2000e-004	0.0000	6.1545	6.1545	7.8000e-004	0.0000	6.1739
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5400e-003	1.7700e-003	0.0185	8.0000e-005	7.0600e-003	5.0000e-005	7.1100e-003	1.9200e-003	5.0000e-005	1.9700e-003	0.0000	7.1928	7.1928	1.2000e-004	0.0000	7.1958
Total	**3.2700e-003**	**0.0299**	**0.0303**	**1.4000e-004**	**7.9600e-003**	**1.2000e-004**	**8.0800e-003**	**2.1700e-003**	**1.1000e-004**	**2.2900e-003**	**0.0000**	**13.3473**	**13.3473**	**9.0000e-004**	**0.0000**	**13.3697**

3.4 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0185	0.1723	0.1694	2.5000e-004		0.0106	0.0106		9.8200e-003	9.8200e-003	0.0000	20.9407	20.9407	6.2400e-003	0.0000	21.0966
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0185**	**0.1723**	**0.1694**	**2.5000e-004**		**0.0106**	**0.0106**		**9.8200e-003**	**9.8200e-003**	**0.0000**	**20.9407**	**20.9407**	**6.2400e-003**	**0.0000**	**21.0966**

3.4 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9300e-003	2.0400e-003	0.0213	9.0000e-005	0.0105	6.0000e-005	0.0106	2.7900e-003	5.0000e-005	2.8500e-003	0.0000	8.2861	8.2861	1.4000e-004	0.0000	8.2896
Total	**2.9300e-003**	**2.0400e-003**	**0.0213**	**9.0000e-005**	**0.0105**	**6.0000e-005**	**0.0106**	**2.7900e-003**	**5.0000e-005**	**2.8500e-003**	**0.0000**	**8.2861**	**8.2861**	**1.4000e-004**	**0.0000**	**8.2896**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0185	0.1723	0.1694	2.5000e-004		9.9500e-003	9.9500e-003		9.1700e-003	9.1700e-003	0.0000	20.9407	20.9407	6.2400e-003	0.0000	21.0966
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0185**	**0.1723**	**0.1694**	**2.5000e-004**		**9.9500e-003**	**9.9500e-003**		**9.1700e-003**	**9.1700e-003**	**0.0000**	**20.9407**	**20.9407**	**6.2400e-003**	**0.0000**	**21.0966**

3.4 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9300e-003	2.0400e-003	0.0213	9.0000e-005	8.1300e-003	6.0000e-005	8.1900e-003	2.2100e-003	5.0000e-005	2.2700e-003	0.0000	8.2861	8.2861	1.4000e-004	0.0000	8.2896
Total	**2.9300e-003**	**2.0400e-003**	**0.0213**	**9.0000e-005**	**8.1300e-003**	**6.0000e-005**	**8.1900e-003**	**2.2100e-003**	**5.0000e-005**	**2.2700e-003**	**0.0000**	**8.2861**	**8.2861**	**1.4000e-004**	**0.0000**	**8.2896**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0600	0.6322	0.6028	9.8000e-004		0.0311	0.0311		0.0286	0.0286	0.0000	86.0294	86.0294	0.0278	0.0000	86.7250
Total	**0.0600**	**0.6322**	**0.6028**	**9.8000e-004**		**0.0311**	**0.0311**		**0.0286**	**0.0286**	**0.0000**	**86.0294**	**86.0294**	**0.0278**	**0.0000**	**86.7250**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.3000e-004	0.0246	0.0111	9.0000e-005	2.4000e-003	8.0000e-005	2.4800e-003	6.9000e-004	8.0000e-005	7.7000e-004	0.0000	8.7233	8.7233	7.2000e-004	0.0000	8.7414
Worker	2.1900e-003	1.5300e-003	0.0160	7.0000e-005	7.8700e-003	4.0000e-005	7.9100e-003	2.0900e-003	4.0000e-005	2.1300e-003	0.0000	6.2145	6.2145	1.1000e-004	0.0000	6.2172
Total	**3.0200e-003**	**0.0261**	**0.0271**	**1.6000e-004**	**0.0103**	**1.2000e-004**	**0.0104**	**2.7800e-003**	**1.2000e-004**	**2.9000e-003**	**0.0000**	**14.9378**	**14.9378**	**8.3000e-004**	**0.0000**	**14.9585**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0600	0.6322	0.6028	9.8000e-004		0.0311	0.0311		0.0286	0.0286	0.0000	86.0293	86.0293	0.0278	0.0000	86.7249
Total	**0.0600**	**0.6322**	**0.6028**	**9.8000e-004**		**0.0311**	**0.0311**		**0.0286**	**0.0286**	**0.0000**	**86.0293**	**86.0293**	**0.0278**	**0.0000**	**86.7249**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.3000e-004	0.0246	0.0111	9.0000e-005	1.9600e-003	8.0000e-005	2.0400e-003	5.9000e-004	8.0000e-005	6.6000e-004	0.0000	8.7233	8.7233	7.2000e-004	0.0000	8.7414
Worker	2.1900e-003	1.5300e-003	0.0160	7.0000e-005	6.1000e-003	4.0000e-005	6.1400e-003	1.6600e-003	4.0000e-005	1.7000e-003	0.0000	6.2145	6.2145	1.1000e-004	0.0000	6.2172
Total	**3.0200e-003**	**0.0261**	**0.0271**	**1.6000e-004**	**8.0600e-003**	**1.2000e-004**	**8.1800e-003**	**2.2500e-003**	**1.2000e-004**	**2.3600e-003**	**0.0000**	**14.9378**	**14.9378**	**8.3000e-004**	**0.0000**	**14.9585**

3.6 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	9.8200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1000e-004	7.6000e-004	9.1000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Total	**9.9300e-003**	**7.6000e-004**	**9.1000e-004**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.1277**	**0.1277**	**1.0000e-005**	**0.0000**	**0.1279**

3.6 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	0.0000	4.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0144	0.0144	0.0000	0.0000	0.0144
Total	**1.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0144**	**0.0144**	**0.0000**	**0.0000**	**0.0144**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	9.8200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1000e-004	7.6000e-004	9.1000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Total	**9.9300e-003**	**7.6000e-004**	**9.1000e-004**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.1277**	**0.1277**	**1.0000e-005**	**0.0000**	**0.1279**

3.6 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	0.0000	4.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0144	0.0144	0.0000	0.0000	0.0144
Total	**1.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0144**	**0.0144**	**0.0000**	**0.0000**	**0.0144**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0687					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.2000e-004	4.9300e-003	6.3500e-003	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.8936	0.8936	6.0000e-005	0.0000	0.8951
Total	**0.0694**	**4.9300e-003**	**6.3500e-003**	**1.0000e-005**		**2.9000e-004**	**2.9000e-004**		**2.9000e-004**	**2.9000e-004**	**0.0000**	**0.8936**	**0.8936**	**6.0000e-005**	**0.0000**	**0.8951**

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.4000e-004	0.0000	1.3000e-004	0.0000	1.3000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0970	0.0970	0.0000	0.0000	0.0971
Total	**3.0000e-005**	**2.0000e-005**	**2.4000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0970**	**0.0970**	**0.0000**	**0.0000**	**0.0971**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0687					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.2000e-004	4.9300e-003	6.3500e-003	1.0000e-005		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	0.8936	0.8936	6.0000e-005	0.0000	0.8951
Total	**0.0694**	**4.9300e-003**	**6.3500e-003**	**1.0000e-005**		**2.9000e-004**	**2.9000e-004**		**2.9000e-004**	**2.9000e-004**	**0.0000**	**0.8936**	**0.8936**	**6.0000e-005**	**0.0000**	**0.8951**

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.4000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0970	0.0970	0.0000	0.0000	0.0971
Total	**3.0000e-005**	**2.0000e-005**	**2.4000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0970**	**0.0970**	**0.0000**	**0.0000**	**0.0971**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	8.7800e-003	0.0268	0.0990	3.4000e-004	0.0324	2.9000e-004	0.0327	8.7000e-003	2.7000e-004	8.9700e-003	0.0000	31.4706	31.4706	1.1400e-003	0.0000	31.4991
Unmitigated	8.7800e-003	0.0268	0.0990	3.4000e-004	0.0324	2.9000e-004	0.0327	8.7000e-003	2.7000e-004	8.9700e-003	0.0000	31.4706	31.4706	1.1400e-003	0.0000	31.4991

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	38.08	39.64	34.48	87,277	87,277
Total	38.08	39.64	34.48	87,277	87,277

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.476244	0.050164	0.262181	0.139658	0.017521	0.006864	0.023236	0.006525	0.004137	0.003158	0.009064	0.000471	0.000777

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	9.2888	9.2888	4.2000e-004	9.0000e-005	9.3252
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	9.2888	9.2888	4.2000e-004	9.0000e-005	9.3252
NaturalGas Mitigated	9.1000e-004	7.8000e-003	3.3200e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	9.0342	9.0342	1.7000e-004	1.7000e-004	9.0879
NaturalGas Unmitigated	9.1000e-004	7.8000e-003	3.3200e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	9.0342	9.0342	1.7000e-004	1.7000e-004	9.0879

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	169295	9.1000e-004	7.8000e-003	3.3200e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	9.0342	9.0342	1.7000e-004	1.7000e-004	9.0879
Total		**9.1000e-004**	**7.8000e-003**	**3.3200e-003**	**5.0000e-005**		**6.3000e-004**	**6.3000e-004**		**6.3000e-004**	**6.3000e-004**	**0.0000**	**9.0342**	**9.0342**	**1.7000e-004**	**1.7000e-004**	**9.0879**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	169295	9.1000e-004	7.8000e-003	3.3200e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	9.0342	9.0342	1.7000e-004	1.7000e-004	9.0879
Total		**9.1000e-004**	**7.8000e-003**	**3.3200e-003**	**5.0000e-005**		**6.3000e-004**	**6.3000e-004**		**6.3000e-004**	**6.3000e-004**	**0.0000**	**9.0342**	**9.0342**	**1.7000e-004**	**1.7000e-004**	**9.0879**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	31930	9.2888	4.2000e-004	9.0000e-005	9.3252
Total		**9.2888**	**4.2000e-004**	**9.0000e-005**	**9.3252**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	31930	9.2888	4.2000e-004	9.0000e-005	9.3252
Total		**9.2888**	**4.2000e-004**	**9.0000e-005**	**9.3252**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0759	8.6000e-004	0.0640	7.0000e-005		5.1100e-003	5.1100e-003		5.1100e-003	5.1100e-003	0.5084	0.1734	0.6818	1.0100e-003	3.0000e-005	0.7157
Unmitigated	0.0759	8.6000e-004	0.0640	7.0000e-005		5.1100e-003	5.1100e-003		5.1100e-003	5.1100e-003	0.5084	0.1734	0.6818	1.0100e-003	3.0000e-005	0.7157

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.8500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0436					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0236	5.2000e-004	0.0343	7.0000e-005		4.9400e-003	4.9400e-003		4.9400e-003	4.9400e-003	0.5084	0.1248	0.6333	9.6000e-004	3.0000e-005	0.6660
Landscaping	9.0000e-004	3.4000e-004	0.0297	0.0000		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	0.0485	0.0485	5.0000e-005	0.0000	0.0497
Total	**0.0759**	**8.6000e-004**	**0.0640**	**7.0000e-005**		**5.1000e-003**	**5.1000e-003**		**5.1000e-003**	**5.1000e-003**	**0.5084**	**0.1734**	**0.6818**	**1.0100e-003**	**3.0000e-005**	**0.7157**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.8500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0436					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0236	5.2000e-004	0.0343	7.0000e-005		4.9400e-003	4.9400e-003		4.9400e-003	4.9400e-003	0.5084	0.1248	0.6333	9.6000e-004	3.0000e-005	0.6660
Landscaping	9.0000e-004	3.4000e-004	0.0297	0.0000		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	0.0485	0.0485	5.0000e-005	0.0000	0.0497
Total	**0.0759**	**8.6000e-004**	**0.0640**	**7.0000e-005**		**5.1000e-003**	**5.1000e-003**		**5.1000e-003**	**5.1000e-003**	**0.5084**	**0.1734**	**0.6818**	**1.0100e-003**	**3.0000e-005**	**0.7157**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.6602	8.5200e-003	2.1000e-004	0.9345
Unmitigated	0.6602	8.5200e-003	2.1000e-004	0.9345

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	0.260616 / 0.164301	0.6602	8.5200e-003	2.1000e-004	0.9345
Total		**0.6602**	**8.5200e-003**	**2.1000e-004**	**0.9345**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	0.260616 / 0.164301	0.6602	8.5200e-003	2.1000e-004	0.9345
Total		**0.6602**	**8.5200e-003**	**2.1000e-004**	**0.9345**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.9378	0.0554	0.0000	2.3234
Unmitigated	0.9378	0.0554	0.0000	2.3234

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	4.62	0.9378	0.0554	0.0000	2.3234
Total		**0.9378**	**0.0554**	**0.0000**	**2.3234**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	4.62	0.9378	0.0554	0.0000	2.3234
Total		**0.9378**	**0.0554**	**0.0000**	**2.3234**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	4.4040	0.0000	0.0000	4.4040

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Mixed Hardwood	6	4.4040	0.0000	0.0000	4.4040
Total		**4.4040**	**0.0000**	**0.0000**	**4.4040**

Highland Estates Subdivision-Lots 5-8 revised

San Mateo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	4.00	Dwelling Unit	1.22	11,156.00	11

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	70
Climate Zone	5			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Based on BOS Staff report lot acreage and total floor area sqft.

Construction Phase - based on Lots 5-8 grading, off-haul, and slope reconstruction sequencing by BKF Engineers summarized for CALEEMOD model. Other phases are assumed to be similar to the original construction schedule.

Off-road Equipment -

Off-road Equipment - From Urbemis report from original analysis.

Off-road Equipment - Loaders and water trucks for loading into export trucks.

Off-road Equipment - Based on urbemis grading phase inputs and the information from BFK Engineers on lots 5-8 construction sequencing/phasing.

Off-road Equipment - From original urbemix paving phase.

Off-road Equipment - Backhoe loader for sub-train utility installation and water truck.

Trips and VMT - average of 20 trips per day during site prep and grading phase based on 24 full time days and 12 part time days. Other trips are based on CALEEMOD Defaults. Off-haul is rounded up to full round trip (650) and one way trip numbers are entered.

Grading - Test

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use -

Water And Wastewater -

Sequestration - Applicant to remove 7 trees as part of the total project. There will be 13 new trees planted on lots 5-8. So net new trees is 6.

Construction Off-road Equipment Mitigation - Based on AQ Mitigation Measure for DPF Level 3 for off-highway trucks.

Fleet Mix -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	26
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstructionPhase	NumDays	10.00	8.00
tblConstructionPhase	NumDays	200.00	108.00
tblConstructionPhase	NumDays	4.00	54.00
tblConstructionPhase	NumDays	10.00	32.00
tblConstructionPhase	NumDays	2.00	9.00
tblGrading	MaterialExported	0.00	7,790.00
tblLandUse	LandUseSquareFeet	7,200.00	11,156.00
tblLandUse	LotAcreage	1.30	1.22
tblOffRoadEquipment	HorsePower	9.00	10.00
tblOffRoadEquipment	HorsePower	231.00	399.00
tblOffRoadEquipment	HorsePower	89.00	145.00
tblOffRoadEquipment	HorsePower	187.00	174.00
tblOffRoadEquipment	HorsePower	130.00	100.00
tblOffRoadEquipment	HorsePower	80.00	95.00
tblOffRoadEquipment	HorsePower	247.00	357.00
tblOffRoadEquipment	HorsePower	97.00	108.00
tblOffRoadEquipment	HorsePower	97.00	108.00
tblOffRoadEquipment	HorsePower	97.00	108.00
tblOffRoadEquipment	HorsePower	97.00	108.00
tblOffRoadEquipment	HorsePower	402.00	189.00
tblOffRoadEquipment	HorsePower	402.00	189.00

tblOffRoadEquipment	LoadFactor	0.29	0.43
tblOffRoadEquipment	LoadFactor	0.20	0.30
tblOffRoadEquipment	LoadFactor	0.41	0.61
tblOffRoadEquipment	LoadFactor	0.42	0.62
tblOffRoadEquipment	LoadFactor	0.38	0.56
tblOffRoadEquipment	LoadFactor	0.40	0.59
tblOffRoadEquipment	LoadFactor	0.37	0.55
tblOffRoadEquipment	LoadFactor	0.37	0.55
tblOffRoadEquipment	LoadFactor	0.37	0.55
tblOffRoadEquipment	LoadFactor	0.37	0.55
tblOffRoadEquipment	LoadFactor	0.38	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	6.00	7.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblSequestration	NumberOfNewTrees	0.00	6.00
tblTripsAndVMT	HaulingTripLength	20.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	8.00

tblTripsAndVMT	HaulingTripNumber	974.00	1,300.00
tblTripsAndVMT	VendorTripLength	7.30	25.00
tblTripsAndVMT	VendorTripLength	7.30	25.00
tblTripsAndVMT	VendorTripLength	7.30	25.00
tblTripsAndVMT	VendorTripLength	7.30	25.00
tblTripsAndVMT	VendorTripLength	7.30	25.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripLength	10.80	25.00
tblTripsAndVMT	WorkerTripLength	10.80	25.00
tblTripsAndVMT	WorkerTripLength	10.80	25.00
tblTripsAndVMT	WorkerTripLength	10.80	25.00
tblTripsAndVMT	WorkerTripLength	10.80	25.00
tblTripsAndVMT	WorkerTripNumber	5.00	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	40.00
tblTripsAndVMT	WorkerTripNumber	18.00	36.00
tblTripsAndVMT	WorkerTripNumber	1.00	8.00
tblTripsAndVMT	WorkerTripNumber	0.00	2.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1552	1.5388	1.3629	2.5700e-003	0.1785	0.0713	0.2498	0.0804	0.0657	0.1461	0.0000	230.0888	230.0888	0.0581	0.0000	231.5411
2022	0.0939	0.1520	0.1645	3.1000e-004	2.8100e-003	7.0600e-003	9.8700e-003	7.6000e-004	6.5200e-003	7.2900e-003	0.0000	27.2238	27.2238	7.5000e-003	0.0000	27.4112
Maximum	**0.1552**	**1.5388**	**1.3629**	**2.5700e-003**	**0.1785**	**0.0713**	**0.2498**	**0.0804**	**0.0657**	**0.1461**	**0.0000**	**230.0888**	**230.0888**	**0.0581**	**0.0000**	**231.5411**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1552	1.5388	1.3629	2.5700e-003	0.0953	0.0706	0.1660	0.0404	0.0650	0.1054	0.0000	230.0886	230.0886	0.0581	0.0000	231.5409
2022	0.0939	0.1520	0.1645	3.1000e-004	2.2000e-003	7.0600e-003	9.2700e-003	6.1000e-004	6.5200e-003	7.1400e-003	0.0000	27.2238	27.2238	7.5000e-003	0.0000	27.4112
Maximum	**0.1552**	**1.5388**	**1.3629**	**2.5700e-003**	**0.0953**	**0.0706**	**0.1660**	**0.0404**	**0.0650**	**0.1054**	**0.0000**	**230.0886**	**230.0886**	**0.0581**	**0.0000**	**231.5409**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**46.23**	**0.83**	**32.53**	**49.46**	**0.90**	**26.60**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	5-3-2021	8-2-2021	0.9843	0.9843
2	8-3-2021	11-2-2021	0.4231	0.4231
3	11-3-2021	2-2-2022	0.4173	0.4173
4	2-3-2022	5-2-2022	0.1199	0.1199
		Highest	0.9843	0.9843

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0759	8.6000e-004	0.0640	7.0000e-005		5.1100e-003	5.1100e-003		5.1100e-003	5.1100e-003	0.5084	0.1734	0.6818	1.0100e-003	3.0000e-005	0.7157
Energy	9.1000e-004	7.8000e-003	3.3200e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	18.3230	18.3230	5.9000e-004	2.5000e-004	18.4131
Mobile	8.7800e-003	0.0268	0.0990	3.4000e-004	0.0324	2.9000e-004	0.0327	8.7000e-003	2.7000e-004	8.9700e-003	0.0000	31.4706	31.4706	1.1400e-003	0.0000	31.4991
Waste						0.0000	0.0000		0.0000	0.0000	0.9378	0.0000	0.9378	0.0554	0.0000	2.3234
Water						0.0000	0.0000		0.0000	0.0000	0.0827	0.5775	0.6602	8.5200e-003	2.1000e-004	0.9345
Total	**0.0856**	**0.0355**	**0.1663**	**4.6000e-004**	**0.0324**	**6.0300e-003**	**0.0384**	**8.7000e-003**	**6.0100e-003**	**0.0147**	**1.5289**	**50.5445**	**52.0735**	**0.0667**	**4.9000e-004**	**53.8858**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0759	8.6000e-004	0.0640	7.0000e-005		5.1100e-003	5.1100e-003		5.1100e-003	5.1100e-003	0.5084	0.1734	0.6818	1.0100e-003	3.0000e-005	0.7157
Energy	9.1000e-004	7.8000e-003	3.3200e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	18.3230	18.3230	5.9000e-004	2.5000e-004	18.4131
Mobile	8.7800e-003	0.0268	0.0990	3.4000e-004	0.0324	2.9000e-004	0.0327	8.7000e-003	2.7000e-004	8.9700e-003	0.0000	31.4706	31.4706	1.1400e-003	0.0000	31.4991
Waste						0.0000	0.0000		0.0000	0.0000	0.9378	0.0000	0.9378	0.0554	0.0000	2.3234
Water						0.0000	0.0000		0.0000	0.0000	0.0827	0.5775	0.6602	8.5200e-003	2.1000e-004	0.9345
Total	**0.0856**	**0.0355**	**0.1663**	**4.6000e-004**	**0.0324**	**6.0300e-003**	**0.0384**	**8.7000e-003**	**6.0100e-003**	**0.0147**	**1.5289**	**50.5445**	**52.0735**	**0.0667**	**4.9000e-004**	**53.8858**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	4.4040
Total	**4.4040**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/3/2021	5/13/2021	5	9	
2	Grading/Slope Reconstruction	Grading	5/14/2021	7/28/2021	5	54	
3	Paving	Paving	7/29/2021	9/10/2021	5	32	
4	Building Construction	Building Construction	9/11/2021	2/9/2022	5	108	
5	Architectural Coating	Architectural Coating	2/10/2022	2/21/2022	5	8	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 22,591; Residential Outdoor: 7,530; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Off-Highway Trucks	1	8.00	189	0.50
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	108	0.55
Grading/Slope Reconstruction	Graders	1	6.00	174	0.61
Grading/Slope Reconstruction	Off-Highway Trucks	1	8.00	189	0.50
Grading/Slope Reconstruction	Rubber Tired Dozers	1	6.00	357	0.59
Grading/Slope Reconstruction	Tractors/Loaders/Backhoes	1	7.00	108	0.55
Paving	Cement and Mortar Mixers	4	6.00	10	0.56
Paving	Pavers	1	7.00	100	0.62
Paving	Rollers	1	7.00	95	0.56
Paving	Tractors/Loaders/Backhoes	1	7.00	108	0.55
Building Construction	Cranes	1	4.00	399	0.43
Building Construction	Forklifts	2	6.00	145	0.30
Building Construction	Tractors/Loaders/Backhoes	1	8.00	108	0.55
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	40.00	0.00	0.00	25.00	25.00	8.00	LD_Mix	HDT_Mix	HHDT
Grading/Slope Reconstruction	4	40.00	0.00	1,300.00	25.00	25.00	8.00	LD_Mix	HDT_Mix	HHDT
Paving	7	36.00	0.00	0.00	25.00	25.00	8.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	8.00	2.00	0.00	25.00	25.00	8.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	25.00	25.00	8.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use DPF for Construction Equipment

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0900e-003	0.0282	0.0248	6.0000e-005		1.3400e-003	1.3400e-003		1.2400e-003	1.2400e-003	0.0000	4.9781	4.9781	1.6100e-003	0.0000	5.0183
Total	**3.0900e-003**	**0.0282**	**0.0248**	**6.0000e-005**	**0.0000**	**1.3400e-003**	**1.3400e-003**	**0.0000**	**1.2400e-003**	**1.2400e-003**	**0.0000**	**4.9781**	**4.9781**	**1.6100e-003**	**0.0000**	**5.0183**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.1000e-004	6.4000e-004	6.6500e-003	3.0000e-005	3.2800e-003	2.0000e-005	3.3000e-003	8.7000e-004	2.0000e-005	8.9000e-004	0.0000	2.5894	2.5894	4.0000e-005	0.0000	2.5905
Total	**9.1000e-004**	**6.4000e-004**	**6.6500e-003**	**3.0000e-005**	**3.2800e-003**	**2.0000e-005**	**3.3000e-003**	**8.7000e-004**	**2.0000e-005**	**8.9000e-004**	**0.0000**	**2.5894**	**2.5894**	**4.0000e-005**	**0.0000**	**2.5905**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0900e-003	0.0282	0.0248	6.0000e-005		1.3400e-003	1.3400e-003		1.2400e-003	1.2400e-003	0.0000	4.9781	4.9781	1.6100e-003	0.0000	5.0183
Total	**3.0900e-003**	**0.0282**	**0.0248**	**6.0000e-005**	**0.0000**	**1.3400e-003**	**1.3400e-003**	**0.0000**	**1.2400e-003**	**1.2400e-003**	**0.0000**	**4.9781**	**4.9781**	**1.6100e-003**	**0.0000**	**5.0183**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.1000e-004	6.4000e-004	6.6500e-003	3.0000e-005	2.5400e-003	2.0000e-005	2.5600e-003	6.9000e-004	2.0000e-005	7.1000e-004	0.0000	2.5894	2.5894	4.0000e-005	0.0000	2.5905
Total	**9.1000e-004**	**6.4000e-004**	**6.6500e-003**	**3.0000e-005**	**2.5400e-003**	**2.0000e-005**	**2.5600e-003**	**6.9000e-004**	**2.0000e-005**	**7.1000e-004**	**0.0000**	**2.5894**	**2.5894**	**4.0000e-005**	**0.0000**	**2.5905**

3.3 Grading/Slope Reconstruction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1331	0.0000	0.1331	0.0683	0.0000	0.0683	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0747	0.7347	0.5880	9.0000e-004		0.0358	0.0358		0.0329	0.0329	0.0000	79.0129	79.0129	0.0256	0.0000	79.6518
Total	**0.0747**	**0.7347**	**0.5880**	**9.0000e-004**	**0.1331**	**0.0358**	**0.1689**	**0.0683**	**0.0329**	**0.1012**	**0.0000**	**79.0129**	**79.0129**	**0.0256**	**0.0000**	**79.6518**

3.3 Grading/Slope Reconstruction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.8400e-003	0.1095	0.0462	2.3000e-004	4.3600e-003	2.6000e-004	4.6200e-003	1.2000e-003	2.5000e-004	1.4500e-003	0.0000	23.9548	23.9548	3.0200e-003	0.0000	24.0302
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.4900e-003	3.8300e-003	0.0399	1.7000e-004	0.0197	1.1000e-004	0.0198	5.2300e-003	1.0000e-004	5.3300e-003	0.0000	15.5364	15.5364	2.6000e-004	0.0000	15.5430
Total	**8.3300e-003**	**0.1133**	**0.0861**	**4.0000e-004**	**0.0240**	**3.7000e-004**	**0.0244**	**6.4300e-003**	**3.5000e-004**	**6.7800e-003**	**0.0000**	**39.4911**	**39.4911**	**3.2800e-003**	**0.0000**	**39.5732**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0599	0.0000	0.0599	0.0307	0.0000	0.0307	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0747	0.7347	0.5880	9.0000e-004		0.0358	0.0358		0.0329	0.0329	0.0000	79.0128	79.0128	0.0256	0.0000	79.6517
Total	**0.0747**	**0.7347**	**0.5880**	**9.0000e-004**	**0.0599**	**0.0358**	**0.0957**	**0.0307**	**0.0329**	**0.0636**	**0.0000**	**79.0128**	**79.0128**	**0.0256**	**0.0000**	**79.6517**

3.3 Grading/Slope Reconstruction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.8400e-003	0.1095	0.0462	2.3000e-004	3.5100e-003	2.6000e-004	3.7700e-003	9.9000e-004	2.5000e-004	1.2400e-003	0.0000	23.9548	23.9548	3.0200e-003	0.0000	24.0302
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.4900e-003	3.8300e-003	0.0399	1.7000e-004	0.0153	1.1000e-004	0.0154	4.1500e-003	1.0000e-004	4.2500e-003	0.0000	15.5364	15.5364	2.6000e-004	0.0000	15.5430
Total	**8.3300e-003**	**0.1133**	**0.0861**	**4.0000e-004**	**0.0188**	**3.7000e-004**	**0.0191**	**5.1400e-003**	**3.5000e-004**	**5.4900e-003**	**0.0000**	**39.4911**	**39.4911**	**3.2800e-003**	**0.0000**	**39.5732**

3.4 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0185	0.1723	0.1694	2.5000e-004		0.0106	0.0106		9.8200e-003	9.8200e-003	0.0000	20.9407	20.9407	6.2400e-003	0.0000	21.0966
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0185**	**0.1723**	**0.1694**	**2.5000e-004**		**0.0106**	**0.0106**		**9.8200e-003**	**9.8200e-003**	**0.0000**	**20.9407**	**20.9407**	**6.2400e-003**	**0.0000**	**21.0966**

3.4 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9300e-003	2.0400e-003	0.0213	9.0000e-005	0.0105	6.0000e-005	0.0106	2.7900e-003	5.0000e-005	2.8500e-003	0.0000	8.2861	8.2861	1.4000e-004	0.0000	8.2896
Total	**2.9300e-003**	**2.0400e-003**	**0.0213**	**9.0000e-005**	**0.0105**	**6.0000e-005**	**0.0106**	**2.7900e-003**	**5.0000e-005**	**2.8500e-003**	**0.0000**	**8.2861**	**8.2861**	**1.4000e-004**	**0.0000**	**8.2896**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0185	0.1723	0.1694	2.5000e-004		9.9500e-003	9.9500e-003		9.1700e-003	9.1700e-003	0.0000	20.9407	20.9407	6.2400e-003	0.0000	21.0966
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0185**	**0.1723**	**0.1694**	**2.5000e-004**		**9.9500e-003**	**9.9500e-003**		**9.1700e-003**	**9.1700e-003**	**0.0000**	**20.9407**	**20.9407**	**6.2400e-003**	**0.0000**	**21.0966**

3.4 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9300e-003	2.0400e-003	0.0213	9.0000e-005	8.1300e-003	6.0000e-005	8.1900e-003	2.2100e-003	5.0000e-005	2.2700e-003	0.0000	8.2861	8.2861	1.4000e-004	0.0000	8.2896
Total	**2.9300e-003**	**2.0400e-003**	**0.0213**	**9.0000e-005**	**8.1300e-003**	**6.0000e-005**	**8.1900e-003**	**2.2100e-003**	**5.0000e-005**	**2.2700e-003**	**0.0000**	**8.2861**	**8.2861**	**1.4000e-004**	**0.0000**	**8.2896**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0445	0.4683	0.4466	7.3000e-004		0.0230	0.0230		0.0212	0.0212	0.0000	63.7255	63.7255	0.0206	0.0000	64.2407
Total	**0.0445**	**0.4683**	**0.4466**	**7.3000e-004**		**0.0230**	**0.0230**		**0.0212**	**0.0212**	**0.0000**	**63.7255**	**63.7255**	**0.0206**	**0.0000**	**64.2407**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.1000e-004	0.0182	8.2400e-003	6.0000e-005	1.7800e-003	6.0000e-005	1.8400e-003	5.1000e-004	6.0000e-005	5.7000e-004	0.0000	6.4617	6.4617	5.4000e-004	0.0000	6.4751
Worker	1.6300e-003	1.1300e-003	0.0118	5.0000e-005	5.8300e-003	3.0000e-005	5.8600e-003	1.5500e-003	3.0000e-005	1.5800e-003	0.0000	4.6034	4.6034	8.0000e-005	0.0000	4.6053
Total	**2.2400e-003**	**0.0193**	**0.0201**	**1.1000e-004**	**7.6100e-003**	**9.0000e-005**	**7.7000e-003**	**2.0600e-003**	**9.0000e-005**	**2.1500e-003**	**0.0000**	**11.0650**	**11.0650**	**6.2000e-004**	**0.0000**	**11.0804**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0445	0.4683	0.4466	7.3000e-004		0.0230	0.0230		0.0212	0.0212	0.0000	63.7254	63.7254	0.0206	0.0000	64.2406
Total	**0.0445**	**0.4683**	**0.4466**	**7.3000e-004**		**0.0230**	**0.0230**		**0.0212**	**0.0212**	**0.0000**	**63.7254**	**63.7254**	**0.0206**	**0.0000**	**64.2406**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.1000e-004	0.0182	8.2400e-003	6.0000e-005	1.4500e-003	6.0000e-005	1.5100e-003	4.3000e-004	6.0000e-005	4.9000e-004	0.0000	6.4617	6.4617	5.4000e-004	0.0000	6.4751
Worker	1.6300e-003	1.1300e-003	0.0118	5.0000e-005	4.5200e-003	3.0000e-005	4.5500e-003	1.2300e-003	3.0000e-005	1.2600e-003	0.0000	4.6034	4.6034	8.0000e-005	0.0000	4.6053
Total	**2.2400e-003**	**0.0193**	**0.0201**	**1.1000e-004**	**5.9700e-003**	**9.0000e-005**	**6.0600e-003**	**1.6600e-003**	**9.0000e-005**	**1.7500e-003**	**0.0000**	**11.0650**	**11.0650**	**6.2000e-004**	**0.0000**	**11.0804**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0137	0.1401	0.1502	2.5000e-004		6.7100e-003	6.7100e-003		6.1700e-003	6.1700e-003	0.0000	22.3058	22.3058	7.2100e-003	0.0000	22.4861
Total	**0.0137**	**0.1401**	**0.1502**	**2.5000e-004**		**6.7100e-003**	**6.7100e-003**		**6.1700e-003**	**6.1700e-003**	**0.0000**	**22.3058**	**22.3058**	**7.2100e-003**	**0.0000**	**22.4861**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-004	5.9000e-003	2.9100e-003	2.0000e-005	6.2000e-004	2.0000e-005	6.4000e-004	1.8000e-004	2.0000e-005	2.0000e-004	0.0000	2.2337	2.2337	1.9000e-004	0.0000	2.2384
Worker	5.4000e-004	3.6000e-004	3.8600e-003	2.0000e-005	2.0400e-003	1.0000e-005	2.0500e-003	5.4000e-004	1.0000e-005	5.5000e-004	0.0000	1.5522	1.5522	2.0000e-005	0.0000	1.5528
Total	**7.4000e-004**	**6.2600e-003**	**6.7700e-003**	**4.0000e-005**	**2.6600e-003**	**3.0000e-005**	**2.6900e-003**	**7.2000e-004**	**3.0000e-005**	**7.5000e-004**	**0.0000**	**3.7859**	**3.7859**	**2.1000e-004**	**0.0000**	**3.7912**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0137	0.1401	0.1502	2.5000e-004		6.7100e-003	6.7100e-003		6.1700e-003	6.1700e-003	0.0000	22.3057	22.3057	7.2100e-003	0.0000	22.4861
Total	**0.0137**	**0.1401**	**0.1502**	**2.5000e-004**		**6.7100e-003**	**6.7100e-003**		**6.1700e-003**	**6.1700e-003**	**0.0000**	**22.3057**	**22.3057**	**7.2100e-003**	**0.0000**	**22.4861**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-004	5.9000e-003	2.9100e-003	2.0000e-005	5.1000e-004	2.0000e-005	5.3000e-004	1.5000e-004	2.0000e-005	1.7000e-004	0.0000	2.2337	2.2337	1.9000e-004	0.0000	2.2384
Worker	5.4000e-004	3.6000e-004	3.8600e-003	2.0000e-005	1.5800e-003	1.0000e-005	1.5900e-003	4.3000e-004	1.0000e-005	4.4000e-004	0.0000	1.5522	1.5522	2.0000e-005	0.0000	1.5528
Total	**7.4000e-004**	**6.2600e-003**	**6.7700e-003**	**4.0000e-005**	**2.0900e-003**	**3.0000e-005**	**2.1200e-003**	**5.8000e-004**	**3.0000e-005**	**6.1000e-004**	**0.0000**	**3.7859**	**3.7859**	**2.1000e-004**	**0.0000**	**3.7912**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0785					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.2000e-004	5.6300e-003	7.2500e-003	1.0000e-005		3.3000e-004	3.3000e-004		3.3000e-004	3.3000e-004	0.0000	1.0213	1.0213	7.0000e-005	0.0000	1.0230
Total	**0.0794**	**5.6300e-003**	**7.2500e-003**	**1.0000e-005**		**3.3000e-004**	**3.3000e-004**		**3.3000e-004**	**3.3000e-004**	**0.0000**	**1.0213**	**1.0213**	**7.0000e-005**	**0.0000**	**1.0230**

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	3.0000e-005	2.8000e-004	0.0000	1.5000e-004	0.0000	1.5000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1109	0.1109	0.0000	0.0000	0.1109
Total	**4.0000e-005**	**3.0000e-005**	**2.8000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1109**	**0.1109**	**0.0000**	**0.0000**	**0.1109**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0785					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.2000e-004	5.6300e-003	7.2500e-003	1.0000e-005		3.3000e-004	3.3000e-004		3.3000e-004	3.3000e-004	0.0000	1.0213	1.0213	7.0000e-005	0.0000	1.0230
Total	**0.0794**	**5.6300e-003**	**7.2500e-003**	**1.0000e-005**		**3.3000e-004**	**3.3000e-004**		**3.3000e-004**	**3.3000e-004**	**0.0000**	**1.0213**	**1.0213**	**7.0000e-005**	**0.0000**	**1.0230**

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	3.0000e-005	2.8000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1109	0.1109	0.0000	0.0000	0.1109
Total	**4.0000e-005**	**3.0000e-005**	**2.8000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1109**	**0.1109**	**0.0000**	**0.0000**	**0.1109**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	8.7800e-003	0.0268	0.0990	3.4000e-004	0.0324	2.9000e-004	0.0327	8.7000e-003	2.7000e-004	8.9700e-003	0.0000	31.4706	31.4706	1.1400e-003	0.0000	31.4991
Unmitigated	8.7800e-003	0.0268	0.0990	3.4000e-004	0.0324	2.9000e-004	0.0327	8.7000e-003	2.7000e-004	8.9700e-003	0.0000	31.4706	31.4706	1.1400e-003	0.0000	31.4991

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	38.08	39.64	34.48	87,277	87,277
Total	38.08	39.64	34.48	87,277	87,277

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.476244	0.050164	0.262181	0.139658	0.017521	0.006864	0.023236	0.006525	0.004137	0.003158	0.009064	0.000471	0.000777

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	9.2888	9.2888	4.2000e-004	9.0000e-005	9.3252
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	9.2888	9.2888	4.2000e-004	9.0000e-005	9.3252
NaturalGas Mitigated	9.1000e-004	7.8000e-003	3.3200e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	9.0342	9.0342	1.7000e-004	1.7000e-004	9.0879
NaturalGas Unmitigated	9.1000e-004	7.8000e-003	3.3200e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	9.0342	9.0342	1.7000e-004	1.7000e-004	9.0879

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	169295	9.1000e-004	7.8000e-003	3.3200e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	9.0342	9.0342	1.7000e-004	1.7000e-004	9.0879
Total		**9.1000e-004**	**7.8000e-003**	**3.3200e-003**	**5.0000e-005**		**6.3000e-004**	**6.3000e-004**		**6.3000e-004**	**6.3000e-004**	**0.0000**	**9.0342**	**9.0342**	**1.7000e-004**	**1.7000e-004**	**9.0879**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	169295	9.1000e-004	7.8000e-003	3.3200e-003	5.0000e-005		6.3000e-004	6.3000e-004		6.3000e-004	6.3000e-004	0.0000	9.0342	9.0342	1.7000e-004	1.7000e-004	9.0879
Total		**9.1000e-004**	**7.8000e-003**	**3.3200e-003**	**5.0000e-005**		**6.3000e-004**	**6.3000e-004**		**6.3000e-004**	**6.3000e-004**	**0.0000**	**9.0342**	**9.0342**	**1.7000e-004**	**1.7000e-004**	**9.0879**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	31930	9.2888	4.2000e-004	9.0000e-005	9.3252
Total		**9.2888**	**4.2000e-004**	**9.0000e-005**	**9.3252**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	31930	9.2888	4.2000e-004	9.0000e-005	9.3252
Total		**9.2888**	**4.2000e-004**	**9.0000e-005**	**9.3252**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0759	8.6000e-004	0.0640	7.0000e-005		5.1100e-003	5.1100e-003		5.1100e-003	5.1100e-003	0.5084	0.1734	0.6818	1.0100e-003	3.0000e-005	0.7157
Unmitigated	0.0759	8.6000e-004	0.0640	7.0000e-005		5.1100e-003	5.1100e-003		5.1100e-003	5.1100e-003	0.5084	0.1734	0.6818	1.0100e-003	3.0000e-005	0.7157

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.8500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0436					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0236	5.2000e-004	0.0343	7.0000e-005		4.9400e-003	4.9400e-003		4.9400e-003	4.9400e-003	0.5084	0.1248	0.6333	9.6000e-004	3.0000e-005	0.6660
Landscaping	9.0000e-004	3.4000e-004	0.0297	0.0000		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	0.0485	0.0485	5.0000e-005	0.0000	0.0497
Total	**0.0759**	**8.6000e-004**	**0.0640**	**7.0000e-005**		**5.1000e-003**	**5.1000e-003**		**5.1000e-003**	**5.1000e-003**	**0.5084**	**0.1734**	**0.6818**	**1.0100e-003**	**3.0000e-005**	**0.7157**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.8500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0436					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0236	5.2000e-004	0.0343	7.0000e-005		4.9400e-003	4.9400e-003		4.9400e-003	4.9400e-003	0.5084	0.1248	0.6333	9.6000e-004	3.0000e-005	0.6660
Landscaping	9.0000e-004	3.4000e-004	0.0297	0.0000		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	0.0485	0.0485	5.0000e-005	0.0000	0.0497
Total	**0.0759**	**8.6000e-004**	**0.0640**	**7.0000e-005**		**5.1000e-003**	**5.1000e-003**		**5.1000e-003**	**5.1000e-003**	**0.5084**	**0.1734**	**0.6818**	**1.0100e-003**	**3.0000e-005**	**0.7157**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.6602	8.5200e-003	2.1000e-004	0.9345
Unmitigated	0.6602	8.5200e-003	2.1000e-004	0.9345

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	0.260616 / 0.164301	0.6602	8.5200e-003	2.1000e-004	0.9345
Total		**0.6602**	**8.5200e-003**	**2.1000e-004**	**0.9345**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	0.260616 / 0.164301	0.6602	8.5200e-003	2.1000e-004	0.9345
Total		**0.6602**	**8.5200e-003**	**2.1000e-004**	**0.9345**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.9378	0.0554	0.0000	2.3234
Unmitigated	0.9378	0.0554	0.0000	2.3234

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	4.62	0.9378	0.0554	0.0000	2.3234
Total		**0.9378**	**0.0554**	**0.0000**	**2.3234**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	4.62	0.9378	0.0554	0.0000	2.3234
Total		**0.9378**	**0.0554**	**0.0000**	**2.3234**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	4.4040	0.0000	0.0000	4.4040

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Mixed Hardwood	6	4.4040	0.0000	0.0000	4.4040
Total		**4.4040**	**0.0000**	**0.0000**	**4.4040**