Ascension Heights Water Tank Project

Addendum to the Ascension Heights Subdivision Final Environmental Impact Report

SCH No. 2013102009

JUNE 2023

PREPARED FOR

County of San Mateo
Planning and Building Department

PREPARED BY

SWCA Environmental Consultants

ASCENSION HEIGHTS WATER TANK PROJECT

ADDENDUM TO THE ASCENSION HEIGHTS SUBDIVISION FINAL ENVIRONMENTAL IMPACT REPORT

SCH NO. 2013102009

Prepared for

County of San Mateo
Planning and Building Department
455 County Center, 2nd Floor
Redwood City, CA 94063
Attn: Camille Leung, Senior Planner

Prepared by

SWCA Environmental Consultants
60 Stone Pine Road, Suite 100
Half Moon Bay, CA 94019
(650) 440-4160
www.swca.com

SWCA Project No. 70290

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CONTENTS

Appendices

Figures

CHAPTER 1. PURPOSE OF ADDENDUM

1.1 INTRODUCTION

The County of San Mateo (County) Planning and Building Department, serving as the lead agency under the California Environmental Quality Act (CEQA), adopted the Final Environmental Impact Report (Final EIR) for the Ascension Heights Subdivision Project (Approved Subdivision Project; State Clearinghouse #2013102009) on February 9, 2016. The Final EIR is herein referred to as the 2016 EIR. The Approved Subdivision Project (County Case number PLN 2002-00517) included the subdivision of a 13.32-acre site into 21 legal parcels and construction of 19 single-family dwellings. California Water Service (Cal Water) Station 031-Baywood Tank property is a 0.517- acre parcel at 1452 Bel Aire Road, San Mateo, CA 94402 (Assessor's Parcel Number APN 041-111-020); Proposed Project parcel) that contains an existing 216,000-gallon water reservoir tank located at the top of a hill surrounded by the Approved Subdivision Project parcel. The Proposed Project parcel was not included as part of the Approved Subdivision Project, although the Approved Subdivision Project did include some driveway and access upgrades to the parcel.

The Ascension Heights Water Tank Project (Proposed Project) (County Case number PLN 2021-00275) would add an additional approximately 59,000-gallon water tank at the Station 031-Baywood Tank property to serve the Ascension Heights Subdivision Project. Improvements to the Proposed Project parcel were not evaluated as part of the Approved Subdivision Project. The Proposed Project would modify the geographic boundaries of the Approved Subdivision Project to incorporate the Cal Water site and the addition of the water tank necessary to serve the Approved Subdivision Project. This document analyzes the environmental impacts of the addition of the water tank to the Approved Subdivision Project and is an Addendum to the 2016 EIR.

1.2 IDENTIFICATION OF ADDENDUM AS APPROPRIATE CEQA DOCUMENT

The purpose of this review is to evaluate potential environmental impacts associated with proposed changes to the previously Approved Subdivision Project, specifically, an additional water reservoir tank at the Cal Water Station 031-Baywood Tank property to serve the Approved Subdivision Project. Additional CEQA review beyond this addendum, in the form of a Supplemental EIR, would only be necessary if the proposed changes to the Approved Subdivision Project created new significant impacts or a substantial increase in the severity of significant impacts identified in the certified 2016 EIR.

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.

According to State CEQA Guidelines Section 15162:

(a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration 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 undertaken which will require major revisions of the previous EIR or Negative Declaration 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 with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:

(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

Additionally, State CEQA Guidelines Section 15164 provides the following guidance for preparation of an EIR addendum:

(a) The lead agency or responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred.

(b) An addendum need not be circulated for public review but can be included in or attached to the final EIR or adopted negative declaration.

(c) The decision making body shall consider the addendum with the final EIR or adopted negative declaration prior to making a decision on the project.

(d) A brief explanation of the decision not to prepare a subsequent EIR pursuant to Section 15162 should be included in an addendum to an EIR, the lead agency's findings on the project, or elsewhere in the record. The explanation must be supported by substantial evidence.

This document is an Addendum to the 2016 EIR and has been prepared to evaluate the impacts of modifications to the Approved Subdivision Project identified in the 2016 EIR; those modifications are referred to herein as the "Proposed Project." The Addendum focuses on the environmental effects associated with specific additions to the water supply component of the Approved Subdivision Project. Proposed Project modifications would not result in new significant impacts or a substantial increase in the severity of a previously identified significant impact; therefore, preparation of a Supplemental or Subsequent EIR is not required.

1.3SUMMARY OF CONCLUSIONS

This Addendum to the 2016 EIR demonstrates that the environmental analysis, impacts, and mitigation requirements identified in the 2016 EIR remain substantively unchanged by the project modifications described herein and supports the finding that the Proposed Project does not raise any new significant impacts and does not exceed the levels of impact significance identified in the 2016 EIR. Accordingly, preparation of a Subsequent EIR is not necessary pursuant to State CEQA Guidelines Sections 15162 and 15164. This decision is based on substantial evidence, as set forth in the following discussion of the Proposed Project modifications and the environmental impacts of those modifications.

Circulation of this Addendum for public review is not required (State CEQA Guidelines Section 15164(c)); however, the Addendum will be considered by the decision-making body, along with the previously certified 2016 EIR, prior to taking action to approve or deny the Proposed Project (State CEQA Guidelines Section 15164(d)).

The Addendum will be posted on the San Mateo County website at:
https://www.smcgov.org/planning/project-ceqa-documents

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CHAPTER 2. BACKGROUND

2.1 SUMMARY DESCRIPTION OF APPROVED SUBDIVISION PROJECT

The Approved Subdivision Project is on approximately 13.32 acres at the northeast corner of Bel Aire Road and Ascension Drive, east of Interstate (I-) 280 and northwest of State Route (SR-) 92, in the unincorporated community of San Mateo Highlands in San Mateo County, California (Figures 1 and 2). The Approved Subdivision Project subdivided six existing parcels into 21 legal lots and will result in the construction of 19 new single-family residences, and include a new access roadway and two common area parcels (approximately 7.6 acres total), which would be maintained as open space and include an undisturbed and protected area and common areas with foot trails.

The Approved Subdivision Project will also replace the existing access road to an existing water tank and cell transmitter on the Cal Water Station 031-Baywood Tank property, which is located at the top of the hill surrounded by the Approved Subdivision Project parcel. This Proposed Project site parcel was not included as part of the Approved Subdivision Project, although the Approved Subdivision Project did include some driveway and access upgrades to the parcel. The roadway is designed to accommodate maintenance vehicles that would require access to this parcel. The new roadway will terminate at the northwestern boundary of the Station 031 parcel. Additionally, as part of the Approved Subdivision Project, an approximately 18-foot wide, 120-foot-long connecting road will be constructed on the water tank parcel to connect the new access road with the structures on the parcel. The connecting road will be flanked by an approximately 3-foot-tall keystone block retaining wall on either side. Cal Water will maintain the access road within its dedicated parcel. In addition, 2,821 square feet of land east of the water tank/cell transmitter site is dedicated to Cal Water, the owner of the water tank. The cell transmitter is a Verizon antenna east of the CalWater site and will be replaced in summer 2023. A new fence surrounding the water tank will be provided as a project-sponsored improvement, as well as a new water main that will run through the property.

2.2 ENVIRONMENTAL REVIEW PROCESS

The County Planning and Building Department, serving as the lead agency under CEQA, prepared the Final EIR for the Approved Subdivision Project, as well as the Findings and Mitigation Monitoring and Reporting Program (MMRP) in accordance with State CEQA Guidelines Sections 15091 (Findings) and 15097 (Mitigation Monitoring or Reporting), respectively. The Findings document identified impacts resulting from the Approved Subdivision Project, and the MMRP outlines mitigation measures to reduce significant impacts to less-than-significant levels.

Figure 1. Project Location

Figure 2. Project Area

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CHAPTER 3. MODIFICATIONS TO THE IMPLEMENTATION OF THE APPROVED SUBDIVISION PROJECT

3.1 BACKGROUND AND PROJECT NEED

The existing 216,000-gallon water storage tank, approximately 40 feet in diameter and 24 feet in height, used on the subject site at 1452 Bel Aire Road, San Mateo, CA 94402 (Assessor's Parcel Number APN 041-111-020) was installed in the late 1950s and has been in service to support the surrounding community. The proposed water storage tank would be located adjacent to the existing water storage tank. The Proposed Project includes installation of a new water tank and boosting facility[1] adjacent to the existing Cal Water Station 31-Baywood Tank on Cal Water property to augment the Approved Subdivision Project domestic and fire water supply (see Figures 1 and 2, Appendix A) to the 19 new residences, currently under construction. Improvements to the Proposed Project parcel (Cal Water site) were not evaluated as part of the Approved Subdivision Project. The Proposed Project would modify the geographic boundaries of the Approved Subdivision Project to incorporate the Cal Water site and the addition of the water tank necessary to serve the Approved Subdivision Project. The Proposed Project presents minor modifications to the Approved Subdivision Project addressed in the 2016 EIR.

3.2SURROUNDING LAND USES AND SETTING

The Proposed Project is zoned R-1/S-8 (One family residential district/Combining District S-8) and is in the Low-Density Residential land use designation in unincorporated San Mateo County within the San Mateo Highlands area. The Proposed Project parcel (Cal Water site) was not evaluated as part of the Approved Subdivision Project. The Proposed Project would modify the geographic boundaries of the Approved Subdivision Project to incorporate the Cal Water site and the addition of the water tank necessary to serve the Approved Subdivision Project. Surrounding uses are predominantly residential, with single-family residences on all four sides of the Approved Subdivision Project. Other land uses include the College of San Mateo, located approximately 0.13 mile to the northeast. The Proposed Project site is 0.55-mile northwest of SR-92- and 0.9-mile northeast of I-280.

[1] A boosting facility is a mechanism that draws water from the storage tank and pressurizes it for distribution to the service area.

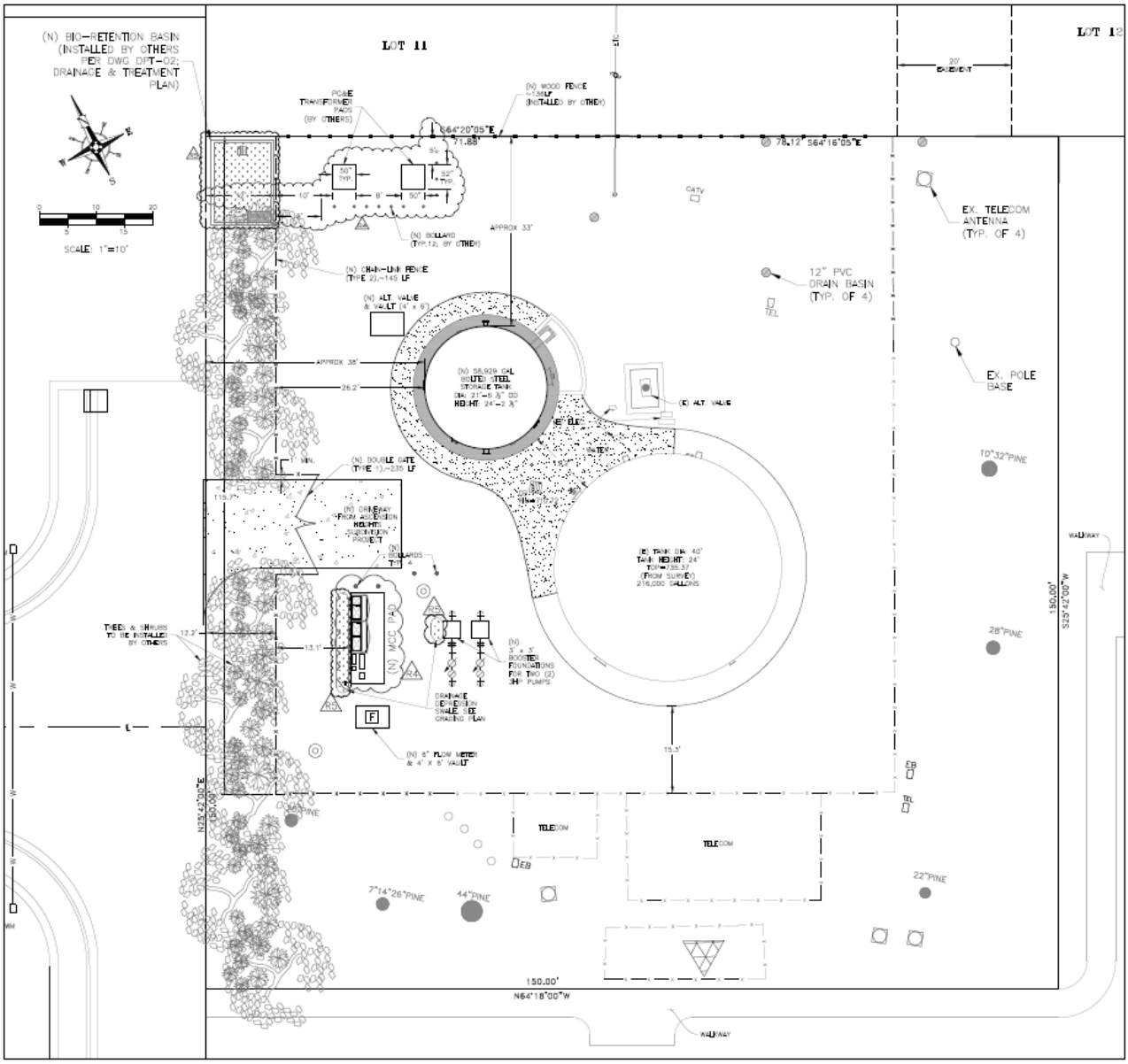

Figure 3. Proposed Site Plan.

3.3 PROPOSED PROJECT MODIFICATIONS

The Proposed Project proposes to install one 58,929-gallon bolted steel tank on a 0.06-acre (2,605-square-foot) portion of Cal Water Station 031-Baywood Tank (APN 041-111-020), adjacent to and northwest of the existing 216,000-gallon tank on the Cal Water property (see Figure 3, or Appendix A).

The elevation of the Proposed Project site is approximately 620 feet above mean sea level (MSL), and the topography is moderately-to-steeply sloping to the north, east, and west, with the existing tank south of the proposed site. The property is highly disturbed and supports minimal ruderal vegetation. There are several pine trees outside the fence line of the water tank site. Several of these trees have been removed due to storm damage and as part of site preparation for the Approved Subdivision Project. Cal Water has prepared an Erosion Control and Site Restoration Plan to restore the temporarily disturbed areas at the tank site. As part of the Approved Subdivision Project, screening trees will be planted to shield views of the tanks; the Proposed Project does not include planting of additional vegetation.

The Proposed Project includes the following modification to the Approved Subdivision Project:

- Construction of a new 58,929-gallon steel water tank approximately 21 feet 6.5 inches in diameter and 24 feet 2 inches in height and painted a tan color (CWS Grouse Tan). The new tank would be constructed approximately 12.2 feet northwest of the existing tank (Figure 3).

- Construction of new 4-foot-wide concrete apron with a 6-inch curb surrounding the new tank. Excess tank overflow would be captured and directed to a series of existing drainpipes and a concrete drainage channel and then directed to existing catch basins

- Construction of approximately 3,723 square feet of impervious surface area is proposed, resulting in a net increase of approximately 479 square feet of impervious surface over existing conditions.

- Construction of a 15-foot-wide paved access road that would extend from the driveway constructed on the eastern project boundary.

- Construction of new drainage facilities including the following:

    - A depression swale south of the proposed access road.

    - A bioretention pond in the site's the northwest corner. Stormwater would be captured onsite and directed to this bioretention pond.

- Installation of utility piping including a new 6-inch storm drain line which would connect the existing catch basin between the proposed tanks to a new bioretention pond located in the northwest corner of the parcel. A new 8-inch water line would be installed connecting the new tank with pump facilities just south of the proposed tank.

- Removal of existing fence and construction of a new eight-foot high wood fence on the north side and a new eight-foot gate and chain-link fence with inserted green slats along the south, east and west sides of the site.

- Removal of approximately 17 trees and replantation of approximately 40 trees on the west, east, and north sides of the subject property.

- Construction of a new PG&E transformer.

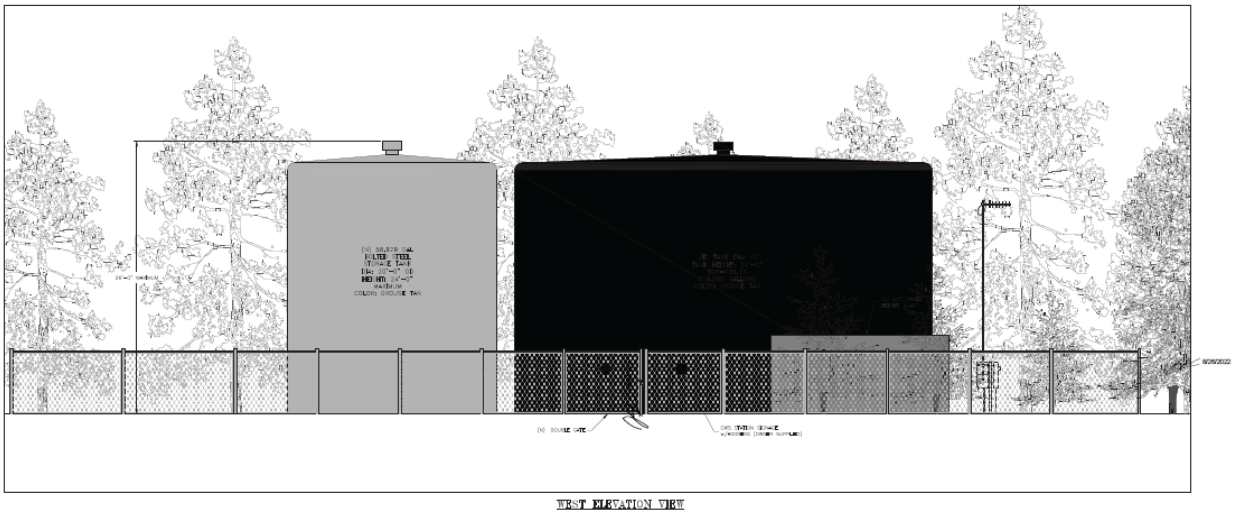

Figure 4. West Elevation View.

3.4 PROJECT CONSTRUCTION

Proposed Project construction would result in approximately 0.13 acre (5,690 square feet) of total disturbance and require approximately 100 cubic yards (CY) of cut and 70 CY of fill. Approximately 70 CY of fill material would be imported to the Proposed Project site with haul trucks, and 30 CY of excavated soils would remain onsite. Excavated soils would be replaced with an aggregate base to meet compaction requirements. Approximately 70 CY of excavated soil that would not be reused onsite would be hauled offsite to a landfill for disposal. The Proposed Project grading would be in addition to the Approved Subdivision Project's approximately 46,500 CY of cut and approximately 20,000 CY of engineered fill, for a Project total of 46,600 CY of cut and approximately 20,070 CY of fill.

The Proposed Project site would be accessed via the existing paved access road. A staging area would be located northeast of the new tank site at the subject property; during construction, there will be no vehicle parking on Bel Aire Road. CalWater has estimated that a crew of approximately four to five construction workers would be required.

Proposed Project construction is anticipated to begin in fall 2023 and last approximately 4 months. Cal Water customers would not experience any interruption of service during project implementation. The current tank is used for fire protection and is not the primary source for domestic water supply.

Construction of the tank would disturb approximately 0.13 acres, and result in a net increase of approximately 479 square feet of impervious surface over existing conditions. The project proponent would not be required to implement a Stormwater Pollution Prevention Plan (SWPPP) but would be required to implement a specific Erosion and Sediment Control Plan (ESCP).[2] The ESCP would include site-specific Best Management Practices (BMPs) that are designed to prevent runoff from construction areas to reduce potential impacts to surface water quality during Proposed Project construction, including temporary construction fencing, inlet protection, and fiber rolls.

3.5 PROJECT OPERATION

Operation of the Proposed Project would not require additional personnel or generate additional trips above existing conditions. The schedule for maintenance activities for the new water tank would be the same or similar to the schedule for the existing tank.

3.6 AGENCY APPROVALS

The County, as the CEQA Lead Agency, has primary discretionary approval authority over the Proposed Project. The Proposed Project would also be required to obtain, at a minimum, the following agency approvals:

- San Mateo County: Use Permit
- San Mateo County: Building Permit
- State Water Resources Control Board (SWRCB), Division of Drinking Water: Amended Water Supply Permit

CHAPTER 4. ENVIRONMENTAL IMPACT ANALYSIS

The 2016 EIR for the Approved Subdivision Project evaluated the following environmental issues: aesthetic resources; air quality and greenhouse gas emissions; biological resources; geology and soils; hazards and hazardous materials; hydrology and water quality; land use; noise and vibration; population and housing; public services, utilities, and recreation; and transportation and circulation. In 2019, the CEQA checklist was revised to include sections for the analysis of energy, tribal cultural resources, and wildfire. All issue areas required to be evaluated under the 2019 CEQA revisions have been evaluated or reevaluated in this Addendum for the proposed construction of the water tank. This evaluation determines whether the Proposed Project would result in any new significant impacts or substantially more severe impacts than those identified in the 2016 EIR.

[2] San Francisco Regional Water Quality Control Board (RWQCB). 2015. *Municipal Regional Stormwater NPDES Permit.* California Regional Water Quality Control Board, San Francisco Bay Region. Order No. R2-2015-0049. NPDES Permit No. CAS612008. November 19. Available at: https://www.smcgov.org/media/73431/download?inline= . Accessed June 26, 2022.

4.1 ENVIRONMENTAL RESOURCE TOPICS DETERMINED TO HAVE NO IMPACT IN THE 2016 EIR

The following topic areas were screened out of the 2016 EIR in accordance with State CEQA Guidelines Section 15063 (Initial Study). The Initial Study, in conjunction with comments received during scoping, were used to focus the EIR on effects determined to be potentially significant; as a result, the following resource areas were not included in the 2016 EIR.

- Agriculture and Forest Resources
- Cultural Resources
- Minerals

The proposed changes to the Approved Project would not modify the Initial Study analysis and conclusion, and further evaluation of impacts in these resource areas is not required.

4.2 ENVIRONMENTAL RESOURCE TOPICS DETERMINED TO REQUIRE NO UPDATE IN THE ADDENDUM

The Proposed Project would have similar, less-than-significant impacts on the resource areas listed below as described in the 2016 EIR. The Proposed Project is consistent with the Approved Subdivision Project evaluated in the 2016 EIR because the proposed changes would neither increase the severity of any impacts associated with the Approved Subdivision Project nor result in new or substantially different environmental effects. Therefore, the Proposed Project would not change the analyses or conclusions reached in the Final EIR and the impacts on these environmental topic areas would remain less than significant. All mitigation measures in the 2016 EIR remain applicable and in this EIR Addendum, only measures needing minor edits or changes to accommodate the Proposed Project revisions are identified and summarized in the sections below.

4.2.1 Air Quality and Greenhouse Gas Emissions

Air Quality and Greenhouse Gas Emissions impacts for the Approved Subdivision Project were analyzed in Section 4.2 of the 2016 EIR. Since certification of the Final EIR, and due to the timing of project implementation, diesel emission control technologies for off-road construction equipment fleets have improved and warrant modifications to Mitigation Measure 4.2-1b. Additionally, the construction years proposed for the project have been updated to 2023 and 2024 and equipment would be expected to meet EPA's Tier 4 standards. Implementing Tier 1 and Tier 2 mitigation for off-road equipment, as specified in the 2016 EIR mitigation measure, results in higher mitigated emissions than unmitigated emissions. Therefore, Mitigation Measure 4.2-1b, as detailed below, is revised, with outdated information shown in strikethrough. See the updated MMRP, included as Appendix D. New mitigation measures for off-road equipment are not needed to keep the project below thresholds of significance and therefore, the project would continue to have a less than significant impact without mitigation.

The Proposed Project is not expected to result in new significant effects or a substantial increase in the severity of previously identified environmental effects related to air quality. The Proposed Project has the potential to generate criteria pollutants and greenhouse gas (GHG) emissions during construction. The Proposed Project proposes additional minor excavation and grading activities, including approximately 70 CY of fill material to be imported to the Proposed Project site with haul trucks. Approximately 70 CY of excavated soil that would not be reused onsite would be hauled offsite to a landfill for disposal, which would result in a negligible increase in air quality and GHG emissions. The Proposed Project grading would be in addition to the Approved Subdivision Project's approximately 46,500 CY of cut and approximately 20,000 CY of engineered fill, for a Project total of 46,600 CY of cut and approximately 20,070 CY of fill. Given that the project proposes an additional 70 CY of fill to be hauled offsite, the Proposed Project would result in criteria air pollutant emission levels below these thresholds and would result in a negligible increase in air quality emissions beyond what was analyzed in the 2016 EIR. This increase does not result in a cumulatively considerable net increase in the level of nonattainment criteria air pollutants (ozone precursors or PM) given the additional grading and hauling activities.

Because there is no change to the proposed land uses, the project is expected to remain consistent with the applicable air quality plan. Since 2016 EIR certification increases in construction equipment efficiency, have lessened criteria air pollutant emissions. The Proposed Project would not contribute to a cumulatively considerable air quality impact.

The emission reduction credits required as part of Mitigation Measure 4.2-8 have been purchased, and Mitigation Measure 4.2-1b has been edited to include cleaner Tier 4 engines, resulting in a reduction of GHG emissions from the Proposed Project as compared to the Approved Subdivision Project. The construction and operation of a single water tank and any associated components would be subject to all mitigation measures identified in the 2016 EIR. Emissions from the proposed water tank would be offset by the reduction from the project's completed Mitigation Measure 4.2-8 and revised Mitigation Measure 4.2-1b. Furthermore, the newly updated BAAQMD GHG thresholds would continue to be met, consistent with the current CEQA checklist.

The Proposed Project would implement Mitigation Measures 4.2-1a and 4.2-1b as revised to ensure that adverse effects on air quality and greenhouse gases would be less than significant with mitigation and would not be cumulatively considerable.

Mitigation Measures 4.2-1a, 4.2-1b and 4.2-8 *apply. Mitigation 4.2-1b is edited below to include regulatory updates to air quality BMPs and applies to the Proposed Project.*

> ***Mitigation Measure 4.2-1b:*** *The project applicant shall ensure though contractual obligations with construction contractors that the following Best Management Practices (BMPs) shall be implemented during all stages of construction:*
>
> - *All heavy duty construction equipment be equipped with diesel particulate matter filters.*
> - *Only low ROG coatings shall be utilized.*

- ~~*The applicant shall use only Tier 2 or better heavy-duty construction equipment.*~~ *The project applicant shall use Tier 4 Interim engines for all 75 horsepower or greater diesel-powered equipment, except where the project applicant establishes to the satisfaction of the County that Tier 4 Interim equipment is not available.*

Conclusion: Implementation of the Proposed Project would not result in new or more severe impacts to air quality and greenhouse gas than previously disclosed in the 2016 EIR. No new mitigation is necessary, and the impacts are not cumulatively considerable.

4.2.2 Geology and Soils

Geology and soils impacts for the Approved Subdivision Project were analyzed under Section 4.4, Geology and Soils, in the 2016 EIR. Project geologic conditions have not changed since certification of the 2016 EIR. The Proposed Project proposes additional minor grading activities that have the potential to result in structural damage and injury from seismic activity and related geologic hazards. Grading is proposed for the new water tank and 15-foot access road, an area totaling 0.13 acre (5,690 square feet) of disturbed area, in addition to the Approved Subdivision Project's 13.3 acres of disturbance. Approximately 70 CY of fill material would be imported to the Proposed Project site with haul trucks. Excavated soils would be replaced with an aggregate base to meet compaction requirements. Approximately 70 CY of excavated soil that would not be reused onsite would be hauled offsite to a landfill for disposal. The Proposed Project grading would be in addition to the Approved Subdivision Project's approximately 46,500 CY of cut and approximately 20,000 CY of engineered fill, for a Project total of 46,600 CY of cut and approximately 20,070 CY of fill. Construction activities have the potential to cause landslides and erosion. Implementation of BMPs and County's construction erosion control inspection program would ensure that development of the Proposed Project would result in less-than-significant impacts with mitigation and would not be cumulatively considerable with mitigation.

Mitigation Measures 4.4-1a and 4.4-1b, Mitigation Measure 4.4-2a, 4.4-2b and 4.4-2c, and Mitigation Measure 4.4-3a and 4.4-3b *applies to the Proposed Project.*

Conclusion: Implementation of the Proposed Project would not result in new or more severe impacts to geology and soils than previously disclosed in the 2016 EIR. No new mitigation is necessary, and the impacts are not cumulatively considerable.

4.2.3 Hazards and Hazardous Materials

Hazards and hazardous materials impacts for the Approved Subdivision Project were analyzed under Section 4.7, Hazards and Hazardous Materials, of the 2016 EIR. The Proposed Project's use and handling of hazardous materials would be similar to the Approved Subdivision Project. The Proposed Project has the potential to use and expose people to hazardous materials. The Proposed Project would result in impacts that are less than significant with mitigation and would not be cumulatively considerable with implementation of mitigation measures.

Mitigation Measure 4.7-1, Mitigation Measure 4.7-3a and 4.7-3b *applies to the Proposed Project.*

Conclusion: Implementation of the Proposed Project would not result in new or more severe impacts to hazards and hazardous materials than previously disclosed in the 2016 EIR. No new mitigation is necessary, and the impacts are not cumulatively considerable.

4.2.4 Land Use

Land Use impacts for the Approved Subdivision Project were analyzed in Section 4.5 of the 2016 EIR. While the Proposed Project represents an intensification of use on the site, the Proposed Project does not include any new roads or barriers and would be consistent with land use plans.

Conclusion: Implementation of the Proposed Project would not result in new or more severe impacts to land use than previously disclosed in the 2016 EIR. No new mitigation is necessary, and the impacts are not cumulatively considerable.

4.2.5 Noise

Noise and Vibration impacts for the Approved Subdivision Project were analyzed in Section 4.8 on the 2016 EIR. Noise conditions in the Project area have not changed since certification of the 2016 EIR. The Proposed Project's noise contribution would be similar to the Approved Subdivision Project and would expose residents to similar noise levels as analyzed for the Approved Subdivision Project. The Proposed Project has the potential to result in an increase in noise levels in the vicinity during construction and expose sensitive receptors to construction traffic noise. Development of the Proposed Project would result in impacts that are less than significant with mitigation and would not be cumulatively considerable with implementation of mitigation measures.

Mitigation Measure 4.8-1 *applies to the Proposed Project.*

Conclusion: Implementation of the Proposed Project would not result in new or more severe impacts to noise than previously disclosed in the 2016 EIR. No new mitigation is necessary, and the impacts are not cumulatively considerable.

4.2.6 Population and Housing

Population and Housing impacts for the Approved Subdivision Project were analyzed in Section 4.9 of the 2016 EIR. The Proposed Project would have a less-than-significant impact on population growth in the area. The Proposed Project is intended to provide drinking water and fire water supply to the 19 new residences in the Approved Subdivision Project. The project would be consistent with applicable County General Plan policies, including land use and zoning ordinances, and would support housing needs identified in the County General Plan. The Proposed Project would serve the residences of the Approved Subdivision Project and would not create or serve additional residential development. Impacts on Population and Housing would remain less than significant and would not be cumulatively considerable.

Conclusion: Implementation of the Proposed Project would not result in new or more severe impacts to population and housing than previously disclosed in the 2016 EIR. No new mitigation is necessary, and the impacts are not cumulatively considerable.

4.2.7 Public Services and Recreation

Public Services and Recreation impacts for the Approved Subdivision Project were analyzed in Section 4.10 Public Services, Utilities and Recreation of the 2016 EIR. Implementation of the Proposed Project would not result in a change of service levels nor recreation access from those analyzed in the 2016 EIR. The Proposed Project would serve the residences of the Approved Subdivision Project and would not create or serve additional residential development. Development of the Proposed Project would result in impacts that are less than significant with mitigation and would not be cumulatively considerable with implementation of mitigation measures.

Mitigation Measure 4.10-2a, 4.10-2b and 4.10-2c apply. Mitigation Measure 4.10-3, and Mitigation Measure 4.10-5 *apply to the Proposed Project.*

Conclusion: Implementation of the Proposed Project would not result in new or more severe impacts to public services and recreation than previously disclosed in the 2016 EIR. No new mitigation is necessary, and the impacts are not cumulatively considerable.

4.3 ENVIRONMENTAL RESOURCE TOPICS DETERMINED TO REQUIRE AN UPDATE IN THE ADDENDUM

The Proposed Project would have similar, less-than-significant impacts on the resource areas described below as in the 2016 EIR; however, alterations to the mitigation measures in the 2016 EIR would be required. The Proposed Project differs from the Approved Subdivision Project in that it covers a smaller area with less vegetation, and the responsibility for implementing the project and its mitigation measures lies with Cal Water. In all other aspects, the Proposed Project is consistent with the Approved Subdivision Project evaluated in the 2016 EIR because the proposed changes would neither increase the severity of any impacts associated with the Approved Subdivision Project or result in new or substantially different environmental effects. Applicable mitigation measures are listed below. Therefore, although the analyses for the Proposed Project are altered slightly, those analyses do not alter the conclusions reached in the Final EIR and the impacts on these resource areas would remain less than significant.

4.3.1 Aesthetics

Aesthetic resources were discussed under Section 4.1, Aesthetics, in the 2016 EIR.

All impact conclusions remain the same from the 2016 EIR. Applicable mitigation measures are listed below.

4.3.1.1 Environmental Setting

Section 4.1 of the 2016 EIR analyzed potential aesthetic impacts associated with the Ascension Heights Subdivision. The Proposed Project site is located within unincorporated San Mateo County, in a residential area of the San Mateo Highlands. The Proposed Project proposes construction of an approximately 59,000-gallon potable water reservoir on private property. The area is primarily characterized by single-family residences. The immediate surroundings are part of the Ascension Heights Subdivision, which is currently under construction. The Proposed Project site is located on a hilltop on Cal Water property and adjacent to an existing 216,000-gallon reservoir tank. The entire site is enclosed by fencing and surrounded by non-native grasses and shrubs and Monterey pine (*Pinus radiata*) trees located at the top of the knoll. Several knobcone pine (*P. attenuata*) trees fell during the winter storms of 2022-2023, reducing existing and proposed tank screening. See Figures 5 through 7 for views of the project site. The Proposed Project site is located approximately 630 feet southwest of the College of San Mateo.

Figure 5. Looking East from project site.

Figure 6. Existing Trees and Fencing, looking South.

Figure 7. Looking South/Southwest from Parrot Drive.

4.3.1.2 Impacts and Mitigation

a) Would the Project have a substantial adverse effect on a scenic vista?

Based on the 2016 EIR, the primary views of the Proposed Project site are experienced by residents along Parrott Drive, Bel Aire Road, Ascension Drive, Los Altos Drive, Polhemus Road, and Bunker Hill Drive. In addition, the Proposed Project site is visible from the College of San Mateo and I-280 and is topographically prominent with some obstructing vegetation to the south and east. All viewers have an open view of the Proposed Project site (Figures 5 through 7). The failure of 6 screening trees due to poor tree health and damage from winter storms of 2022-2023 made the project site more visible from all public vantage points. For these trees, CalWater would provide tree replacement of 1:1 ratio. An additional 11 trees in the project site were removed due to construction of the Approved Subdivision Project; these trees will be replaced at a 3:1 ratio per Mitigation Measure 4.1-1b. The applicant proposes to replace the trees with over 40 trees, exceeding the minimum required 39 replacement trees. In general, new trees would be planted on the same side as where they were removed from, as further discussed below. See Tree Removal and Replacement Plans in APPENDIX D.

The 2016 EIR stated that the now Approved Subdivision Project would result in a visual change but would result in less than significant impacts with mitigation. The installation of an additional water tank, access road and drainage and pump infrastructure would result in an intensification of development on the site, but does not constitute a change in character or quality of the area given that the Proposed Project site already contains one existing water tank and associated water supply infrastructure, cell transmitter and access road. Replacement trees will be planted on all sides of the project parcel, particularly the west, east, and north sides (fewer trees were removed on the south side). However, on the north side of the subject site, fewer replacement trees will be planted than were removed due to space and equipment constraints (Cal Water proposes to minimize tree replacements within its fencing to limit potential hazard and future conflicts with equipment; the project parcel directly abuts Lot 11 to the north which will be separately landscaped). However, as proposed, the two replacement trees on the north side will be 25 feet or taller at maturity to screen the approximately 25-foot-tall tanks, a solid eight-foot-high wood fence will screen the tanks from Lot 11, and the tanks will be painted a tan color to match the existing tank, surrounding environment, and regional hillside landscape. As proposed, replacement trees would provide adequate screening of the new and old tanks. Mitigation Measures 4.1-1a and 4.1-1b would remain applicable to ensure that the adverse effects on a scenic vista remain *less than significant with mitigation*.

> ***Impact 4.1-1 (2016 EIR). Less than significant with implementation of Mitigation Measures 4.1-1a, 4.1-1b.*** *See page 4.1-16 of the 2016 EIR.*

b) Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

As discussed in Table 4.1-1 of the 2016 EIR, I-280 is listed as a scenic highway. During construction, the Proposed Project site would have short-term visual impacts. Once construction and landscaping are in place, there would be no significant change in the visual quality of the corridor. The Approved Subdivision Project will plant trees obscuring views of the Proposed Project site in a three-to-one ratio for trees removed as part of the Approved Subdivision Project. In addition, the largest portion of open space remaining onsite would be visible from I-280. *No impact* would occur.

c) Would the Project, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

The Proposed Project is located on a hilltop on Cal Water property, adjacent to an existing 216,000-gallon reservoir tank. The Proposed Project would not change or degrade the existing visual character or quality of public views of the Proposed Project site and its surroundings. While there would be an increase in the amount of development on the parcel (see Figure 4), the type of development would not change. Views of the parcel would be partially shielded by trees planted as part of the Approved Subdivision Project. Similar to the discussion in Table 4.1-1 of the 2016 EIR, the Proposed Project would not conflict with

applicable zoning and other regulations governing scenic quality. Impacts would remain *less than significant*.

d) Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Emergency lights are proposed and would be located inside the pump motor control panels. These lights would turn on during maintenance activities conducted by CalWater to access electrical controls. The finish for the water tank would be of a non-glare substance. Therefore, the Proposed Project would not result in any permanent increase in light or glare. Similar to the Approved Subdivision Project, *no impact* would occur.

Conclusion: Implementation of the Proposed Project would not result in new or more severe impacts to visual and aesthetics resources than previously disclosed in the 2016 EIR. No new mitigation is necessary, and the impacts are not cumulatively considerable.

4.3.2 Biological Resources

Potential impacts to biological resources associated with the Approved Subdivision Project were analyzed in Section 4.3 of the 2016 EIR. A Project-specific Biological Resources Survey Report (BRSR)[3] was prepared, and the results of the survey are incorporated by reference into the subsections below. Surveys were conducted within a defined biological study area (BSA), and nesting raptor surveys included tree groves on adjacent properties, including the Approved Subdivision Project site. The Proposed Project would be constructed on an existing developed Cal Water parcel with an existing water tank.

All impact conclusions remain the same from the 2016 EIR. Applicable mitigation measures are listed below.

4.3.2.1 Environmental Setting

The Proposed Project site currently contains an existing water tank and cell transmitter equipment and is characterized by ruderal and developed land. It is located at the top of a hill, approximately 620 feet above MSL, and slopes downhill on all sides. According to the 2016 EIR, it is surrounded by knobcone pine forest to the northeast, northwest, and southwest and annual brome grasslands to the southeast. Several knobcone pine (*P. attenuata*) trees fell during the winter storms of 2022-2023. There are no waters or wetlands on the Proposed Project site.

Biological and botanical surveys for the 2016 EIR were conducted on July 25, 2013, and March 3 and 27, 2015. Botanical surveys concluded that the Approved Subdivision Project site had the potential to support 11 special-status plant species. Of these, the annual grassland habitat adjacent to the Proposed Project site had the potential to support the following five special-status plant species: bent-flowered fiddleneck

[3] Coast Ridge Ecology. 2015. *Results of 2015 Rare Plant Surveys and Update Mission Blue/Pardalis Blue Butterfly Habitat and Nesting Raptor Survey on the Ascension Heights Subdivision Project Site, San Mateo County, California*. April 11.

(*Amsinckia lunaris*; -/-/ 1B.2),[4] fragrant fritillary (*Fritillaria liliacea*; -/-/1B.2), Dudley's lousewort (*Pedicularis dudleyi*; -/ Rare/1B.2), white-rayed pentachaeta (*Pentachaeta bellidiflora*; E/E/1B.1),[5] and San Francisco campion (*Silene verecunda* ssp. *verecunda*; -/-/1B.2). The knobcone pine habitat adjacent to the Proposed Project site had the potential to support arcuate bush-mallow (*Malacothamnus arcuatus*; -/-/1B.2). In addition, the shaded portions of the access road had the potential to support suitable habitat for San Mateo wooly sunflower (*Eriophyllum latilobum*; -/-/1B.1). None of these species were observed during botanical surveys conducted during evident and identifiable blooming periods; therefore, it was concluded that the species were not present on the Approved Subdivision Project site.

According to the 2016 EIR, there was potential habitat for the Mission blue butterfly (*Plebejus icarioides*) on the Approved Subdivision Project site, but over the course of 24 biological surveys in 2005, 2008, and 2012, in addition to surveys in 2013 and 2015, no host plants (summer lupine [*Lupinus formosus*]) were found. Therefore, the 2016 EIR concluded there is no potential for the Mission blue butterfly to occur on the Approved Subdivision Project site.

According to the 2016 EIR, the annual grassland adjacent to the Proposed Project site provided suitable foraging and nesting habitat for burrowing owl (*Athene cunicularia;* -/SSC),[6] northern harrier (*Circus cyaneus*; -/SSC), and white-tailed kite (*Elanus leucurus*; -/FP).[7] However, the 2015 nesting raptor survey found no evidence of nesting raptors and concluded that it was "highly unlikely these species would nest on site due to a lack of suitable nesting habitat."

The Proposed Project site was reviewed by a SWCA Environmental Consultants biologist on July 5, 2022. The Proposed Project site is developed with a small amount of ruderal vegetation and enclosed by a chain-link fence. Construction of the Approved Subdivision Project has cleared out the majority of the habitat on the north, northeast, and northwest sides of the parcel that were observed in the 2015 surveys, including the knobcone pine trees to the north of the Proposed Project site and closest to the new tank location. Tree clearing was conducted in accordance with the mitigation measures included in the 2016 EIR. Most of the habitat to the east, south, and west remains intact.

[4] The parenthesis include special-status plant federal/state/California Native Plant Society protected status, as follows: – = no protected status; 1B.2 = Rare or Endangered, Moderately threatened in California

[5] E = Endangered; 1B.1 = Rare or Threatened, Seriously threatened in California

[6] The parenthesis indicate special-status animal federal/state protection status, as follows: - = no protection status; SSC = State Species of Special Concern

[7] FP = State Fully Protected species

4.3.2.2 Impacts and Mitigation

a) Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Based on the 2016 EIR, 2015 biological survey, and 2022 site visit conducted by an SWCA Environmental Consultants biologist, the Proposed Project site does not contain suitable habitat for any candidate, sensitive, or special-status species. The Proposed Project site is disturbed and contains no potential habitat for special-status plants. Surveys conducted for the Approved Subdivision Project did not detect any special-status plants or summer lupine (*Lupinus formosus*), which is the host plant for Mission blue butterfly.

The adjacent knobcone pine and non-native grassland south of the tank site may provide marginal foraging and nesting habitat for raptors; however, the habitat is considered marginal due to wind exposure and lack of large supportive branches that could support raptor nests. Burrowing owl, northern harrier, and white-tailed kite are highly unlikely to nest adjacent to the Proposed Project site due to the lack of suitable nesting habitat such as ground squirrel burrows, dense vegetation, and suitable topography.[8]

The 2016 EIR identified potentially significant impacts to nesting or forging habitat for burrowing owl, northern harrier, and white-tailed kite. Mitigation Measure 4.3-3a requires protocol-level preconstruction surveys for nesting raptors, and Mitigation Measure 4.3-3b provides instructions for if nesting raptors are found to be present, which would reduce this impact to a less than significant level. The Proposed Project site is disturbed and contains no potential habitat for special-status plants. The impact would be *less than significant*.

The entire site is enclosed by fencing and surrounded by non-native grasses and shrubs and Monterey pine (*Pinus radiata*) trees located at the top of the knoll (Figures 5 through 7). Much of the area surrounding the Proposed Project site is an ongoing construction zone. Although the majority of the adjacent knobcone pine trees have been removed as part of the Approved Subdivision Project, knobcone pine and non-native grassland still exist south of the Proposed Project site and may provide marginal foraging and nesting habitat for raptors. All tree planting associated with the approximately four trees that fell during the winter storms would be replanted outside of the fenced area along the north, east and west sides of the project at a 1:1 ratio. An additional 12 trees are proposed to be removed to make room for the second tank. Those trees would be replaced at a 3:1 ratio, totaling approximately 40 replanted trees as part of project activities. As discussed in Section 4.3.4 of the 2016 EIR, construction noise has the potential to disturb nesting raptors. Mitigation Measures 4.3-3a and 4.3-3b would reduce this potentially significant impact to a less-than-significant level. Therefore, impacts would be *less than significant with mitigation*.

[8] Coast Ridge Ecology. 2015. *Results of 2015 Rare Plant Surveys and Update Mission Blue/Pardalis Blue Butterfly Habitat and Nesting Raptor Survey on the Ascension Heights Subdivision Project Site, San Mateo County, California*. April 11.

Impact 4.3-3 (2016 EIR). Less than significant with implementation of Mitigation Measures 4.3-3a and 4.3-3b. *See page 4.3-23 of the 2016 EIR.*

b) Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

Per the 2016 EIR, there is no riparian habitat or other sensitive natural community on the Proposed Project site. *No impact* would occur.

c) Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

The Proposed Project is located on a hilltop. There are no wetlands or waters on or adjacent to the Proposed Project site. *No impact* would occur.

d) Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The Proposed Project is located on a hilltop. There are no migratory wildlife corridors on the Proposed Project site. There are no wetlands or waters on or adjacent to the Proposed Project site. *No impact* would occur.

The 2016 EIR identified the potential for nesting birds in the annual grassland in the vicinity of the Proposed Project. Potential disruption of nesting migratory birds and other birds of prey during construction could result in nest abandonment or mortality. Likewise, increased human activity and traffic, elevated noise levels, and operation of machinery could also impact birds if their nests are located within the vicinity of development areas. Mitigation Measure 4.3-4a requires preconstruction surveys for nesting birds if construction occurs during the nesting season. Mitigation Measure 4.3-4b sets requirements in case an active nest is found. Mitigation Measure 4.3-4c requires tree removal be conducted outside of nesting bird season. Much of the area surrounding the Proposed Project site is an ongoing construction zone. Although the majority of the adjacent knobcone pine trees have been removed as part of the Approved Subdivision Project, knobcone pine and non-native grassland still exist south of the Proposed Project site and may provide habitat for nesting birds. Construction noise has the potential to disturb nesting birds. Mitigation Measures 4.3-4a 4.3-4b and 4.4-4c would reduce this potentially significant impact to a less-than-significant level. Therefore, this impact would be *less than significant with mitigation*.

Impact 4.3-4 (2016 EIR). Less than significant with implementation of Mitigation Measures 4.3-4a 4.3-4b and 4.3-3c. *See page 4.3-25 of the 2016 EIR.*

e) Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

As identified in the 2016 EIR, the County tree ordinance protects "significant" trees, being identified as any live tree which has a circumference measuring at or greater than 38 inches at a height of 4.5 feet above the ground or immediately below the lowest branch, whichever is lower. "Community of Trees" refers to an aesthetic grouping of trees, the removal of which would cause significant ecological, aesthetic, or environmental impact in the immediate area. An "Indigenous Tree" is one known to be native to the County including any native willow, box elder, buckeye, madrone, oak, or laurel tree.

Tree removal is proposed as part of project activities. All tree planting associated with the approximately four trees that fell during the winter storms would be replanted outside of the fenced area along the north, east and west sides at a 1:1 ratio. An additional 12 trees are proposed to be removed to make room for the second tank. Those trees would be replaced at a 3:1 ratio, totaling approximately 40 replanted trees as part of project activities. Any potential impacts to protected trees would be addressed with Mitigation Measures 4.3-6. This impact would be *less than significant with mitigation*.

Impact 4.3-6 (2016 EIR). Less than significant with implementation of Mitigation Measures 4.3-6. *See page 4.3-26 of the 2016 EIR.*

f) Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

There are no adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans in the project area. *No impact* would occur.

As discussed in the 2016 EIR, cumulative projects in the vicinity of the project site, including growth resulting from build-out of the County General Plan, are anticipated to permanently remove plant and wildlife resources. However, the Proposed Project would be implemented on a developed site with no existing vegetation or nesting or foraging habitat for wildlife. The County would implement mitigation measures designed to avoid, reduce, or mitigate potential impacts to special-status species. With incorporation of mitigation measures, the contribution of the Proposed Project to regional impacts to biological resources would not be cumulatively considerable.

Impact 4.3-7 (2016 EIR): *Less than significant with implementation of Mitigation Measures 4.3-7. See page 4.3-27.*

Conclusion: Implementation of the Proposed Project would not result in new or more severe impacts to biological resources than previously disclosed in the 2016 EIR. No new mitigation is necessary, and with incorporation of mitigation measures, the contribution of the Proposed Project to regional impacts to biological resources would not be cumulatively considerable.

4.3.3 Energy

Energy resources were not discussed in the 2016 EIR. Since certification of the Final EIR in February 2016, legislative changes at the state level include comprehensive amendments to the State CEQA Guidelines. On December 28, 2018, California adopted the revised guidelines, which incorporate a new subdivision on energy impacts (Section 15126.2(b)), which clarifies that CEQA requires consideration of whether a project will result in significant environmental effects due to "wasteful, inefficient, or unnecessary consumption of energy" and states that agencies "shall mitigate" any wasteful energy use giving rise to significant impacts.

All impact conclusions remain the same from the 2016 EIR. Applicable mitigation measures are listed below.

4.3.3.1 Environmental Setting

The Proposed Project site is located within unincorporated San Mateo County, in a residential area of the San Mateo Highlands. The Proposed Project proposes construction of an approximately 59,000-gallon potable water reservoir on private property.

Electricity and natural gas are provided to the County and project site by the Pacific Gas and Electric Company (PG&E). There are existing overhead electrical utility lines adjacent to the Proposed Project site along Bel Aire Road and Ascension Drive. Comcast Corporation provides telecommunications services in the area.

Natural gas is measured in British thermal units (Btu), and electricity is measured in kilowatt hours (kWh). In 2020 total natural gas consumption in San Mateo County was 200 million Btu, which was down from the 2019 consumption of 214 million Btu.[9] In 2020 total energy electricity consumption in San Mateo County was 4,167 million kWh, which was down from the 2019 consumption of 4,342 million kWh.[10]

4.3.3.2 Impacts and Mitigation

a) Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

The Proposed Project would construct an additional water tank and boosting facility that could utilize existing water supplies. Construction of the Proposed Project would result in indirect energy consumption from construction traffic and the use of construction materials. The primary energy demand during construction would occur from use of gasoline- and diesel-powered mobile construction equipment and

[9] California Energy Commission (CEC). 2019. *Gas Consumption by County.* Available at: https://ecdms.energy.ca.gov/gasbycounty.aspx. Accessed July 6, 2022.

[10] California Energy Commission (CEC). 2019. *Electricity Consumption by County*. Available at: http://www.ecdms.energy.ca.gov/elecbycounty.aspx. Accessed July 6, 2022.

vehicles to transport workers and materials to and from the construction site. Electricity would also be used for construction lighting, field services, and electrically driven construction devices such as air compressors, pumps, and other equipment.

The Proposed Project would result in very little indirect energy consumption as a result of post-construction traffic (i.e., operational traffic), such as vehicle trips associated with standard maintenance procedures. Although the Proposed Project would result in increased indirect energy consumption, the amount of transportation fuel and potential electricity use required for Proposed Project operation is not considered an inefficient or wasteful use of energy.

Implementation of the Proposed Project would result in energy use for the proposed water pumps. While the Proposed Project would result in slightly more energy use, the Proposed Project would have a more efficient water pumping system. Emergency lights are proposed and would be located inside the pump motor control panels. These lights would turn on during maintenance activities conducted by CalWater to access electrical controls. Therefore, the Proposed Project would not represent a substantial increase in energy consumption or a wasteful, inefficient, or unnecessary use of energy, and impacts would be *less than significant*.

b) Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

San Mateo County's General Plan Climate Change Element and Community Climate Action Plans (CCAP) are designed to reduce emissions to meet or exceed State goals. The Proposed Project includes development to serve housing that is currently under construction as part of the Approved Subdivision Project. The Proposed Project is compliant with the Water and Wastewater strategies outlined in the 2022 CCAP.[11] The Proposed Project is consistent with the following policies for GHG reduction:

- WW 1: Water efficiency retrofits for existing buildings
- WW 3: Water efficiency in new construction.

The Proposed Project would not conflict with or obstruct a local plan for renewable energy. Therefore, *no impact* would occur.

Conclusion: Implementation of the Proposed Project would not result in new or more severe impacts to energy than previously disclosed in the 2016 EIR. No new mitigation is necessary, and the impact is not cumulatively considerable.

4.3.4 Greenhouse Gas Emissions

Greenhouse Gas Emissions were discussed under Section 4.2, Air Quality and Greenhouse Gas Emissions, in the 2016 EIR.

[11] County of San Mateo. 2022. *Community Climate Action Plan*. Available at: https://www.smcsustainability.org/wp-content/uploads/SMC-CCAP.pdf Accessed March 1, 2023.

All impact conclusions remain the same from the 2016 EIR. Applicable mitigation measures are listed below.

4.3.4.1 Environmental Setting

As discussed in the 2016 EIR, the County's EECAP set a goal to achieve a 17% reduction below 2005 baseline emissions by 2020—exceeding the reduction goal of AB 32. The County met that goal early, achieving a 33% reduction in emissions over 1990 levels in 2017.

Today, the County has a goal of 45% emissions reduction by 2030 and carbon neutrality by 2040. To meet that goal, the County will implement various GHG reduction policies, programs, and activities. The CCAP[12] outlines the County's strategies, and actions are structured around four focus areas including:

Building Efficiency: Buildings are the second largest contributor to GHG emissions in unincorporated areas of the county, accounting for 32% of all emissions.

Transportation: In 2017 emissions in the transportation sector from vehicle miles traveled (VMT) represented 40% of the county's emissions inventory and was the largest GHG emissions contributor when compared to other sectors.

Waste: Waste represents a 26% share of overall county emissions. County goals include measures to prevent materials from entering landfills through source reduction and waste diversion actions.

Working Lands: County priorities include active management of working lands to increase carbon sequestration rates in soils and vegetation.

The CCAP includes a list of 16 strategies and policies, with supportive actions and sub-policies intended to reduce communitywide GHG emissions.

4.3.4.2 Impacts and Mitigation

Since certification of the 2016 EIR, and in response to AB 32, which requires the reduction of GHG emissions to 1990 below levels by 2030, the BAAQMD has updated their CEQA checklist questions. All other impacts and mitigation measures identified in the 2016 EIR remain applicable to the Proposed Project. According to the newly updated BAAQMD GHG thresholds, land-use building project plans must meet one of two requirements:

a) *Projects must feature an all-electric project design, with no natural gas appliances or plumbing, and not result in any wasteful, inefficient, or unnecessary energy usage. Projects must also achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average or meet a locally adopted target and achieve compliance with CALGreen Tier 2 off-street electric vehicle requirements. Or,*

[12] County of San Mateo County. 2022. *Community Climate Action Plan.* Available at: https://www.smcsustainability.org/wp-content/uploads/SMC-CCAP.pdf. Accessed March 1, 2023.

b) Projects must be consistent with a local GHG reduction strategy that meets the criteria under state CEQA guidelines Section 15183.5(b).

The Proposed Project does not contain any natural gas appliances or plumbing and would not result in any wasteful, inefficient, or unnecessary energy usage (as stated in Section 4.3.3, Energy, above). The project is compliant with the 2020 San Mateo County Reach Code,[13] which requires that no gas or propane plumbing is installed in new buildings, and that electricity be used as the energy source for water, space heating, cooking, and clothes drying appliances.

The Proposed Project is compliant with the Water and Wastewater strategies outlined in the 2022 CCAP.[14] The Proposed Project is consistent with the following policies for GHG reduction:

- WW 1: Water efficiency retrofits for existing buildings
- WW 3: Water efficiency in new construction.

Impact 4.2-8 (2016 EIR). Less than significant with implementation of Mitigation Measure 4.2-8. *See page 4.2-29 of the 2016 EIR.*

Conclusion: Implementation of the Proposed Project would not result in new or more severe impacts to greenhouse gas emissions than previously disclosed in the 2016 EIR. No new mitigation is necessary, and the impact is not cumulatively considerable.

4.3.5 Hydrology and Water Quality

Hydrology and water quality were discussed under Section 4.6, Hydrology and Water Quality, in the 2016 EIR.

All impact conclusions remain the same from the 2016 EIR. Applicable mitigation measures are listed below.

4.3.5.1 Environmental Setting

The Proposed Project site is located approximately 9 miles east of the Pacific Ocean and approximately 7 miles west of the San Francisco Bay within the 1,200-square-mile San Francisco Subbasin (18050004) of the San Francisco Subregion, which includes a 4,470-square-mile area that drains to South San Francisco Bay. The project site is not located within the 100- and 500- year floodplain. The soils onsite

[13] County of San Mateo. 2022. *Community Climate Action Plan*. Available at: https://www.smcsustainability.org/wp-content/uploads/SMC-CCAP.pdf Accessed March 1, 2023.

[14] County of San Mateo. 2022. *Community Climate Action Plan*. Available at: https://www.smcsustainability.org/wp-content/uploads/SMC-CCAP.pdf Accessed March 1, 2023.

are well-drained but have a slow infiltration rate and therefore, high runoff potential when thoroughly wet.[15]

According to the 2016 EIR, the Approved Subdivision Project site does not contain any water features that are waters of the United States or state. Water flow on the site generally drains in a south or westerly direction towards Polhemus Creek. Historically, there was widespread soil erosion onsite. Currently, the site is being graded for the Approved Subdivision Project and has erosion control measures in place. A temporary construction access road has been developed along Bel Aire Road. The project site is fenced with both chain link construction fencing and silt fencing along the fence base. A bioretention basin has been developed in the northwest corner to capture stormwater runoff from the Approved Subdivision Project site.

4.3.5.2 Impacts and Mitigation

a) Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Construction of the Proposed Project would involve grading, clearing, and landscaping activities associated with the development of one water tank and pumping system. Construction would result in the temporary disturbance of soil and expose disturbed areas to potential storm events, which could generate accelerated runoff, localized erosion, and sedimentation of local waterways. The Proposed Project would disturb an area of approximately 0.13 acre (5,690 square feet) (See Appendix C, Drainage and Treatment Plan). Disturbed areas and stockpiled soils exposed to winter rainfall could lead to sediment discharge into surface waters, resulting in a degradation of water quality. In addition, construction equipment and materials have the potential to leak, thereby discharging additional pollutants into local waterways. Pollutants potentially include particulate matter, sediment, oils and greases, and construction supplies such as concrete, paints, and adhesives. Changes to drainage patterns resulting from construction activities could result in discharge of these pollutants into surface waterways causing an exceedance of water quality objectives, which could adversely impact beneficial uses of downstream water resources.

The SMCWPPP[16] is a partnership of the City/County Association of Governments (C/CAG), the County, and each incorporated city and town in the county who share a common NPDES permit, also referred to as the Municipal Regional Stormwater Permit (MRP). Similar to the Approved Subdivision Project, construction of the Proposed Project is required to comply with the most recent version of the California NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ). Since the Proposed Project would disturb approximately 0.13 acre of land, it would not be required to implement a Stormwater Pollution Prevention Plan (SWPPP) but would be required to implement a specific Erosion and Sediment Control Plan (ESCP), which would

[15] NRCS, 2019. Custom Soil Survey Report for San Mateo County, California: Ascension Heights Subdivision Project. WebSoil Survey available online at: http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm. Accessed March 3, 2023.

[16] County of San Mateo. 2020. *San Mateo Countywide Water Pollution Prevention Program. Construction Webpage*. Available at: https://www.flowstobay.org/construction. Accessed June 26, 2022.

include BMPs designed to prevent surface runoff from construction from contaminating adjacent waterbodies.

The MRP, adopted by the SWRCB in November 2015, includes requirements for incorporating Low Impact Development (LID) measures into new development and redevelopment projects. These requirements are known as Provision C.3 requirements. Effective December 1, 2012, specific sizes of small projects must meet site design requirements in Provision C.3.i of the MRP, but not the stormwater treatment or hydromodification measures.[17] This applies to projects that create and/or replace at least 2,500 but less than 10,000 square feet of impervious surface. The Proposed Project would create approximately 479 square feet of additional impervious surface; therefore, Provision C.3 would not be applicable.

The Proposed Project would add approximately 479 square feet of impervious surface area to the existing Cal Water site. In addition, a bioretention area totaling 4,138 square feet would be added. The site design with the bioretention basin would result in a net decrease from existing conditions in the stormwater runoff volume from 0.43 cubic feet per second (cfs) to 0.34 cfs from a 10-year storm event.[18] Since the project design would decrease surface runoff from project operation, no operational impacts would occur.

In the case of emergency pressure changes, the new tank would be equipped with an overflow water system, which would discharge into the onsite storm drain to the bio-retention basin and then offsite to the catch basin to the northwest. The overflow volume would be approximately 3.34 cfs.[19]

Mitigation Measure 4.4-1b requires that an ESCP shall prepared in accordance with regulatory requirements. As discussed above, implementation of the Proposed Project requires obtaining a San Mateo County Grading Permit, which includes the development of a site-specific ESCP. These regulations would reduce non-point source pollutants from construction through the implementation of BMPs and other control measures that minimize or eliminate pollutants from urban runoff, thereby protecting downstream water sources. BMPs implemented to address commercial pollutant sources generally involve maintenance of storm drain facilities, parking lots, vegetated areas, and dissemination of educational materials. Mitigation Measure 4.4-1b would be implemented and the impact would remain *less than significant with mitigation*.

Impact 4.4-1b (2016 EIR). Less than significant with implementation of Mitigation Measure 4.4-1b *of the 2016 EIR.*

[17] San Mateo Countywide Water Pollution Prevention Program. 2020. *C.3 Regulated Projects Guide Version 1.0.* Available at: C.3 Regulated Projects Guide (flowstobay.org). Accessed March 13, 2023.

[18] A 10-year storm is a storm event which would be likely to happen once every ten years. It is defined as a storm of 10-minute duration and 2.10 inches per hour rainfall intensity.

[19] Personal email from Julie Huynh (CalWater) to Diana Shu (San Mateo County). RE: PLN2021-00275: New Water Tank - Ascension Heights EIR Addendum Template, dated March 16, 2023.

Since the project design would include a bioretention basin and decrease surface runoff from project operation, operational runoff would not result in an increase in urban runoff. Therefore, with implementation of Mitigation Measure 4.6-2, the impact is reduced to *less than significant*.

Impact 4.6-2 (2016 EIR). Less than significant with implementation of Mitigation Measures 4.6-2a, 4.6-2b, 4.6-2c. *See page 4.6-13 of the 2016 EIR.*

b) Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

As stated in the 2016 EIR, the Proposed Project site does not contain a high groundwater table, evidenced by site surveys and test borings conducted on the Proposed Project site by Michelucci in 2013. The soils on the Proposed Project site are well-drained with a high runoff potential, which reduces the ability of the Proposed Project site to contribute to groundwater recharge of the underlying basin.[20] There are no aquifers below the site or in the vicinity of the Proposed Project site. No pumping activities or drilling of groundwater wells are proposed as part of the Proposed Project. Potable water demands created by the Proposed Project would be served by Cal Water, which is supplied by the Hetch Hetchy Reservoir.

Implementation of the Proposed Project would result in an increase of approximately 479 square feet of impervious surface. The Proposed Project would remove a portion of an existing concrete pad and construct a new adjacent water tank northwest of the existing tank. Although the Proposed Project would increase impervious surface onsite, the proposed installation of catchment areas would allow for treatment and percolation of water into the underlying soils, which would, in turn, contribute to groundwater recharge. Because the Proposed Project does not involve an increase in groundwater extraction, the Proposed Project would not substantially interfere with groundwater recharge such that there would be a net deficit in aquifer volume or lowering of the local groundwater table. The impact would be *less than significant.*

c) Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which:

i) Would result in a substantial erosion or siltation on- or off-site?

As stated in response 4.3.5.2.a, the Proposed Project is required to comply with the most recent version of the California NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ), which mandates the development and implementation of a site-specific ESCP. Mitigation Measure 4.4-1b outlines the BMPs that shall be incorporated, at a minimum, into the ESCP prepared in accordance with regulatory requirements.

[20] NRCS, 2019. Custom Soil Survey Report for San Mateo County, California: Ascension Heights Subdivision Project. WebSoil Survey available online at: http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm. March 3, 2023.

Operational runoff from all proposed impervious surfaces would be directed to the onsite facilities where water quality treatment would begin. Bioretention areas remove pollutants by filtering runoff slowly through an active layer of soil. As shown in the updated Impervious Surface and Drainage Exhibit prepared by Lea and Braze Engineering, Inc,[21] the containment and treatment of stormwater is proposed via the bioretention basin in the northwest corner of the Proposed Project site and a swale in the western portion of the Proposed Project site.

The Proposed Project would result in an additional 479 square feet of impervious surface and includes a bioretention basin. The existing tank overflow drain is currently connected to an existing 6-inch storm drain line on the project parcel. This storm drain line extends to the northeast side of the parcel along a 20-foot-wide easement that ends between 1526 and 1538 Parrot Drive and feeds to a main storm drain line. The Proposed Project's tank overflow line will drain to the bioretention basin in the northwest corner of the Proposed Project area to capture the overflow. The proposed catch basin connects to the onsite 6-inch storm drain that flows to Parrot Drive. Around both tanks are concrete berms with slopes of 1% and 3% to direct runoff to the onsite bioretention basin, as shown on the Tank Foundation and Berm Details figure provided by Cal Water.[22]

Mitigation Measure 4.6-3a is included to require regular maintenance to ensure proper performance of stormwater retention facilities. To ensure off-site drainage associated with the Proposed Project would not exceed the capacity of existing stormwater drainage systems, Mitigation Measure 4.6-3b is included from the Approved Subdivision Project. Therefore, the impact determination for Impact 4.6-3 is *less than significant with mitigation.*

Impact 4.6-3 (2016 EIR). Less than significant with implementation of Mitigation Measures 4.6-3a and 4.6-3b. *See page 4.6-16 of the 2016 EIR.*

ii) Would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

The Proposed Project incorporates strategies to reduce and manage runoff. Temporary pollution prevention and permanent stormwater BMPs have been designed to minimize the introduction of pollutants into streambeds and drainages. During construction, the contractor would be required to use filter fabric, gravel bags, straw wattles, or similar measures to collect sediment and filter water before allowing its discharge to downstream facilities. This would also require that disturbed areas be seeded to help stabilize un-vegetated areas.

Permanent BMPs include construction of a bioretention basin to capture post-development stormwater runoff during rain events. Additionally, the bioretention basin in the northwest corner of the Proposed Project site would be equipped with overflow drains to minimize inundation on paved surfaces during

[21] Lea & Braze Engineering, Inc. 2023. *Impervious Surface and Drainage Exhibit*. February 6. (Appendix B)

[22] California Water Service (Cal Water). 2021. Site Plans: Foundation Details and Accessories, Drawing MPS-5643 R3 Detail E on Sheet 2 of 7. April 20. (Appendix A)

larger storm events. With these design measures and implementation of BMPs, impacts would be *less than significant*.

iii) Would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

During storm events, rainwater collects atmospheric pollutants and, upon surface impact, gathers roadway contaminant deposits, including oxygen-consuming constituents, suspended solids/particulates, nutrients, heavy metals, trace organics, and microorganisms.

A peak year summary outlined by Lea and Braze Engineering notes that mitigated post-construction peak flows would result in a reduction of 0.09 cfs over existing conditions.[23] Discharge generated from project development would be managed and treated with the construction BMPs through project construction and operation, and construction of the bioretention basin and a swale in the western portion of the Proposed Project site. The Proposed Project has adequate capacity to treat stormwater runoff.

Provisions of the NPDES permit incorporate various prescribed measures into the project design. The Proposed Project would add approximately 479 square feet of impervious surface and is not required to meet the County's C.3 Provisions. Potentially significant effects to water quality resulting from urban runoff would be reduced to less than significant through Proposed Project design features (as required by the NPDES permit and the County's Drainage Manual) and through implementation of the BMPs included in Mitigation Measure 4.6-1 for construction; therefore, *impacts would be less than significant with mitigation*.

iv) Would impede or redirect flood flows?

Refer to responses 4.3.5.2.c.ii and 4.3.5.2.c.iii above for discussion of hydrological impacts. Impacts on flood flows would be *less than significant*.

d) Would the Project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

As discussed in the 2016 EIR, the Proposed Project site is in an area designated Zone X on the Federal Emergency Management Act (FEMA) Flood Map Service Center. Zone X is defined as "(a)reas determined to be outside the 0.2 percent annual chance of a flood plain."[24] Additionally, there are no waterbodies or unstable soil types within or adjacent to the Proposed Project site that could lead to inundation by seiche, tsunami, or mudflow. *No impact* would occur.

[23] Lea & Braze Engineering, Inc. 2023. *Impervious Surface and Drainage Exhibit*. February 6. (Appendix B)
[24] FEMA, 2023. Flood Map Service Center. Available at: https://msc.fema.gov/portal/home. Accessed March 1, 2023.

e) Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

During Proposed Project construction and operation, temporary and permanent BMPs and erosion control measures would be put in place to reduce construction and post-construction erosion and siltation. For more information on BMPs, see responses 4.3.5.2.ci through 4.3.5.2.ciii. The Proposed Project would not conflict with a groundwater management plan or water quality control plan, and impacts would be *less than significant*.

Conclusion: Implementation of the Proposed Project would not result in new or more severe impacts to hydrology and water quality than previously disclosed in the 2016 EIR. No new mitigation is necessary, and the impact is not cumulatively considerable.

4.3.6 Transportation

Transportation resources were discussed under Section 4.11, Transportation and Circulation, in the 2016 EIR.

4.3.6.1 Environmental Setting

The Proposed Project site is located within the unincorporated community of San Mateo Highlands in San Mateo County, at the northeast corner of Bel Aire Road and Ascension Drive, east of I-280 and west of SR-92. Neighboring cities and communities include the city of San Mateo to the northeast, Foster City to the east, and the unincorporated community of Highlands – Baywood Park to the west. Access to the Proposed Project site is primarily provided by Bel Aire Road, Ascension Drive, and Polhemus Road. These roads would provide direct access to the Proposed Project site, temporary construction easements, and staging areas. The Proposed Project area is governed by the CCAG, Countywide Transportation Plan,[25] and Transportation Element of the San Mateo County General Plan.[26]

Roadways that provide circulation to and from the Proposed Project area include:

- Polhemus Road is classified in the County General Plan as a two-lane north/south-oriented arterial highway roadway. Polhemus Road terminates at Crystal Springs Road north of the Proposed Project site and terminates at Ralston Avenue south of the Proposed Project site.
- Ascension Drive, Bel Aire Road, and Laurie Lane are two-lane residential streets that serve the Ascension Heights residential neighborhood. Parking on these streets is generally allowed on either side of the street.

[25] City/County Association of Governments of San Mateo County (CCAG). *2040 Countywide Transportation Plan.* Available at: https://ccag.ca.gov/programs/countywide-transportation-plan/. Accessed July 8, 2022.

[26] County of San Mateo. 1986. *1986 General Plan. Chapter 12, Circulation*. Available at: https://www.smcgov.org/media/101521/download?inline=. Accessed July 8, 2022.

- Parrott Drive is a two-lane north/south arterial roadway that originates at De Anza Boulevard and terminates at Columbia Drive north of the Proposed Project site. Parking along Parrott Drive is generally allowed on either side of the street.
- CSM Drive is a two-lane north/south minor collector that connects Parrott Drive on the west to West Hillsdale Boulevard on the east at the College of San Mateo.

The transportation conditions have not changed since the certification of the 2016 EIR, and all impact conclusions remain the same from the 2016 EIR. Applicable mitigation measures are listed below.

4.3.6.2 Impacts and Mitigation

Since certification of the 2016 EIR, the 2019 update to the CEQA checklist has added one question and altered some language in the remaining CEQA Transportation section questions. All other impacts and mitigations identified in the 2016 EIR remain applicable to the Proposed Project.

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 VMT instead of a vehicle level of service (LOS) analysis. VMT per capita is calculated as the total annual miles of vehicle travel divided by the total population in an urbanized area. LOS 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 used LOS analysis to determine transportation-related environmental impacts under CEQA. The method now being used by the County to measure development-related environmental impacts under CEQA is to assess VMT, using modified California Office of Planning and Research (OPR) recommendations.[27]

a) Would the Project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

The Proposed Project is consistent with applicable local and regional transportation plans, including the County General Plan Transportation Element and Countywide Transportation Plan.[28,29] Construction-related traffic impacts would be temporary and localized, occurring over the 4-month construction period. The Proposed Project would not result in any road closures or obstruction of alternative transportation infrastructure such as pedestrian walkways, bike paths, or transit stops. Therefore, impacts associated with conflict with local transportation or circulation plans would be *less than significant.*

[27] County of San Mateo. 2020. *Change to Vehicle Miles Traveled as Metric to Determine Transportation Impacts under CEQA Analysis, Attachment A.* County of San Mateo, Inter-Departmental Correspondence, Department of Public Works to Board of Supervisors. September 23. Available at: https://www.smcgov.org/media/46081/download?inline=. Accessed March 14, 2022.

[28] County of San Mateo. 2013. *San Mateo County General Plan Policies. Chapter 12. Transportation Element.*, Available at: https://www.smcgov.org/planning/general-plan-policies. Accessed March 14, 2023.

[29] City/County Association of Governments of San Mateo County (CCAG). *2040 Countywide Transportation Plan.* Available at: https://ccag.ca.gov/programs/countywide-transportation-plan/. Accessed July 8, 2022.

The Proposed Project would not significantly change operations and maintenance activities at Cal Water Station 31, Baywood Tank, and would not result in an operational increase in traffic on local roadways. The impact would be *less than significant*.

Construction worker commuter trips would generate the most traffic during the construction period. The Proposed Project would have an average of less than 10 construction workers per day. Construction workers would park onsite during construction in the staging areas, workers would not park on neighborhood roads. Approximately 70 CY of fill material would be imported to the project site with haul trucks. Approximately 70 CY of excavated soil that would not be reused onsite would be hauled offsite to a landfill for disposal. Assuming the trucks are 10 CY capacity, the total Proposed Project haul trips for grading would be 14 trips. Soil importation would be completed at once, and over the course of two days, where the Proposed Project would generate an estimated total of approximately seven round-trip haul truck trips. As stated in the 2016 EIR, the Approved Subdivision Project is not anticipated to result in an unsafe condition for pedestrians and bicyclists, as the implementation of Mitigation Measure 4.11-3 which requires the Approved Subdivision Project to install street lighting. The impact of the Proposed Project would be *less than significant with mitigation*.

> ***Impact 4.11-3 (2016 EIR). Less than significant with implementation of Mitigation Measure 4.11-3.*** *See page 4.11-10 of the 2016 EIR.*

b) Would the Project conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?

State CEQA Guidelines Section 15064.3(b) contains criteria for analyzing transportation impacts. Projects that may have a significant impact include land use projects that result in an increase in VMT that exceed an applicable threshold of significance and transportation projects that increase VMT. The Proposed Project does not increase the capacity of Bel Aire Road or Ascension Drive Road and is not anticipated to increase operational-related VMT, considering the Proposed Project is an autonomous facility and would require occasional maintenance trips. The County has not adopted VMT thresholds and relies on the California OPR December 2018 Technical Advisory, which recommends a screening threshold of 110 trips per day. The estimated project trip generation during construction and operation is well below the 110 trips per day screening threshold.

As discussed above, the Proposed Project would generate approximately seven hauling roundtrip trips total . This is well below the 110 vehicle trips per day screening threshold for significance. With additional construction phase trips, the impact would be less than significant. A temporary minor increase in VMT would occur during project construction resulting from worker trips to the Proposed Project site, materials delivery, and material hauling. The completed project would not increase VMT permanently, and given the low trip generation rate, impacts would be *less than significant*.

c) Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The Proposed Project does not include new streets or introduce incompatible uses, but the Approved Subdivision Project does. Proposed Project staging and construction would occur on an existing, private Cal Water parcel, and the Approved Subdivision Project would require implementation of Mitigation Measure 4.11-4 to ensure impacts are *less than significant with mitigation*.

Impact 4.11-4 (2016 EIR). Less than significant with implementation of Mitigation Measure 4.11-4. *See page 4.11-10 of the 2016 EIR.*

d) Would the Project result in inadequate emergency access?

Construction and staging of the Proposed Project would occur on a private parcel and would not impede emergency access. The impact is considered *less than significant*.

In the 2016 EIR, the analysis of transportation focused on the year 2030 conditions. Construction of the Proposed Project would be completed before 2030, and operations and maintenance would not change from existing conditions. Therefore, the Proposed Project would not cause impacts to traffic, bikeway and pedestrian facilities, or mass transit in the year 2030, and the impact would be *less than significant*.

Conclusion: Implementation of the Proposed Project would not result in new or more severe impacts to transportation than previously disclosed in the 2016 EIR. No new mitigation is necessary, and the impact is not cumulatively considerable.

4.3.7 Tribal Cultural Resources

Tribal Cultural Resources were not discussed in the 2016 EIR.

4.3.7.1 Environmental Setting

AB 52, passed in 2014, required an update to the State CEQA Guidelines to include questions related to tribal cultural resources. Changes to the State CEQA Guidelines were approved as part of the 2018 CEQA Update. Cultural Resources were screened out of the 2016 EIR, and although AB 52 does not require consultation for an addendum, on March 7, 2023, the County sent letters to the following tribe:

- Tamien Nation of Greater Santa Clara County.

The letter notified the tribe of the Proposed Project and requested comments or questions on the Proposed Project. No responses were received.

4.3.7.2 Impacts and Mitigation

a) Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?

No tribal cultural resources are known to exist on the Proposed Project site, and no consultation requests were received from the identified local tribe. *No impact* would occur.

i) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?

No tribal cultural resources are known to exist on the Proposed Project site, and no consultation requests were received from the identified local tribe. *No impact* would occur.

Conclusion: Implementation of the Proposed Project would not result in impacts to tribal cultural resources. No mitigation is necessary, and the impact is not cumulatively considerable.

4.3.8 Utilities

Utilities resources were discussed under Section 4.10, Public Services, Utilities, and Recreation, in the 2016 EIR.

All impact conclusions remain the same from the 2016 EIR. Applicable mitigation measures are listed below.

4.3.8.1 Environmental Setting

The Cal Water Bayshore District (BSD) (also known as Mid-Peninsula District) provides potable water supply to the Proposed Project site and surrounding areas. It is estimated that the BSD's service area population was 137,486 in 2020. Cal Water has an annual purchased water supply from the City and County of San Francisco's Regional Water System, operated by the San Francisco Public Utilities

Commission (SFPUC), of approximately 13 million gallons per day (mgd) (14,563-acre feet per year [AFY]) in normal hydrologic years.[30]

The Proposed Project site is not connected to sewer facilities. Electricity and natural gas are provided by PG&E to the County and project site. There are existing overhead electrical utility lines adjacent to the Proposed Project site along Bel Aire Road and Ascension Drive. Per Condition 5, all utilities serving the subdivision are required to be installed underground, where utility construction is currently underway.

All impact conclusions remain the same from the 2016 EIR. Applicable mitigation measures are listed below.

4.3.8.2 Impacts and Mitigation

a) Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

The Proposed Project includes development of a water tank and boosting facility pump. The Proposed Project would connect to and utilize local wastewater services, including the sewer systems owned and operated by Cal Water and the Town of Hillsborough and the wastewater treatment plant (WWTP) owned and operated by the City of San Mateo. There would be no service disruption during project construction.

The Proposed Project would connect the existing and new tank site into the stormwater system. As discussed in Section 4.3.5 of this EIR Addendum, the project would add approximately 479 square feet of impervious surface area but would also add approximately 4,138 square feet of a bioretention basin (See Appendix B, Impervious Surface and Drainage Exhibit). As a net result, the Proposed Project would decrease existing runoff rate from the Proposed Project site by 0.9 cfs.

The Proposed Project would supply water but would not use water; the Approved Subdivision Project requires construction of new water facilities. Mitigation Measure 4.10-2a includes compliance with water shortage contingency plan. Mitigation Measure 4.10-2b from the 2016 EIR includes the installation of pumping facilities at the Proposed Project site. Mitigation Measure 4.10-2c includes relocation of two water mains to allow for Cal Water Easements along Parrot Drive and Bel Aire Drive. Mitigations outlined in the 2016 EIR would still apply, and the impact of the Proposed Project would be considered *less than significant with mitigation.*

Impact 4.10-2 (2016 EIR). ***Less than significant with implementation of Mitigation Measure 4.10-2a, 4.10-2b and 4.10-2c.*** *See page 4.10-26 in the 2016 EIR.*

As discussed above, the Proposed Project would decrease existing runoff rate from the Proposed Project site by 0.9 cfs. The Approved Subdivision Project has installed bioretention basin and swale facilities,

[30] California Water Service, 2021. *2020 Urban Water Management Plan, Mid-Peninsula District*. Available online at: https://www.calwater.com/docs/uwmp2020/MPS_2020_UWMP_FINAL.pdf. Accessed July 8, 2022.

which has been completed. Mitigation Measure 4.10-3 has been completed and does not apply to the Proposed Project. Impacts would remain *less than significant with mitigation.*

> ***Impact 4.10-3 (2016 EIR). Less than significant with implementation of Mitigation Measures 4.10-3.*** *See page 4.10-27 of the 2016 EIR.*

As discussed above, the Proposed Project would decrease existing runoff rate from the site by 0.9 cfs. Mitigation Measure 4.6-3a is included to require regular maintenance to ensure proper performance of stormwater retention facilities. To ensure off-site drainage associated with the Proposed Project would not exceed the capacity of existing stormwater drainage systems, Mitigation Measure 4.6-3b is included from the Approved Subdivision Project. Therefore, the impact determination for Impact 4.10-4 is *less than significant with mitigation.*

> ***Impact 4.10-4 (2016 EIR). Less than significant with implementation of Mitigation Measures 4.6-3a and 4.6-3b and 4.10-4.*** *See pages 4.6-16 and 4.10-27 of the 2016 EIR.*

b) Would the Project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

The Proposed Project site is currently connected to municipal water, and operation of the Proposed Project would result in increased water supply. The Proposed Project would use negligible water during construction and would not use water during project operation. The potable water would be used for the new residential development associated with the Approved Subdivision Project. Therefore, impacts would be *less than significant*.

c) Would the Project result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

The Proposed Project would not generate wastewater. There are no wastewater connections proposed as part of the project. The impact of the Proposed Project would be *less than significant*.

d) Would the Project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

All waste produced in unincorporated communities is sent to Corinda Los Trancos Landfill (Ox Mountain), operated by Browning Ferris Industries. According to the California Department of Resources Recycling and Recovery (CalRecycle) Facilities Search, the Corinda Los Trancos Landfill has a cease operation date of January 1, 2034; therefore, the landfill has capacity to accept the Proposed Project waste.[31]

[31] California Department of Resources Recycling and Recovery (CalRecycle). 2019. SWIS Facility Detail: Corinda Los Trancos Landfill. Available at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/1561?siteID=3223. Accessed March 2, 2023.

Construction of the Proposed Project would require the disposal of up to 70 CY of fill. Clean materials could be deposited at various locations available to Cal Water; materials may be reused onsite, used for fill at another location, or sold. If determined to be hazardous (e.g., pesticide residuals, heavy metals), the material may require disposal at an approved facility.

Operation and maintenance of the Proposed Project would include periodic maintenance by Cal Water employees, which would generate a minimal amount of solid waste. The Proposed Project would not require new or expanded solid waste facilities. *No impact* would occur.

e) Would the Project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

The primary state legislation regarding solid waste is AB 939, the California Integrated Waste Management Act, adopted in 1989. AB 939 required local jurisdictions to achieve a minimum 50% solid waste diversion rate by 2000. The Proposed Project would include construction and materials disposal and recycling. The Proposed Project would comply San Mateo County Code Chapter 4.04, which describes the responsibilities and requirements for owners, occupants, and service providers regarding solid waste collection, storage, recycling, and disposal. All waste produced in unincorporated communities is sent to Corinda Los Trancos Landfill (Ox Mountain), operated by Browning Ferris Industries. The Proposed Project would not conflict with state or local laws governing construction or operational solid waste diversion and would comply with local implementation requirements. Therefore, impacts would be *less than significant*.

Conclusion: Implementation of the Proposed Project would not result in new or more severe impacts to utilities than previously disclosed in the 2016 EIR. No new mitigation is necessary, and the impact is not cumulatively considerable.

4.3.9 Wildfire

Wildfire was discussed under Section 4.7, Hazards and Hazardous Materials, in the 2016 EIR.

Since certification of the Final EIR in February 2016, legislative changes at the state level have altered the CEQA checklist 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 so it is no longer a subset of hazards and hazardous materials.

4.3.9.1 Environmental Setting

The Proposed Project site is located within the County Local Responsibility Area (LRA) produced by the California Department of Forestry and Fire Protection (CAL FIRE). CAL FIRE maps designate the project site in a Very High Fire Hazard Severity Zone (VHFHSZ).[32] This designation is based on data and

[32]California Department of Forestry and Fire Protection (CalFIRE). 2022. FHSZ Viewer. Available: https://egis.fire.ca.gov/FHSZ .Accessed December 20, 2022.

models of potential fuels over a 30-to 50-year time horizon and their associated and expected fire behavior and expected burn probabilities to quantify the likelihood and nature of vegetation fire exposure (including firebrands) to buildings. The County designates the project site and surrounding areas as a Community at Risk Zone. Housing developments, a community college, and other urban residential development surround the project site. This area east of I-280 contains more than 95% of the urbanized land in the county and is developed with a mix of principal urban land uses, including industrial, commercial, and residential.[33] The existing 216,000-gallon tank on the Proposed Project site is used for fire protection and is not the primary source for domestic usages.

4.3.9.2 Impacts and Mitigation

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones,

a) Would the Project substantially impair an adopted emergency response plan or emergency evacuation plan?

The Proposed Project area is located in a County LRA that is a VHFHSZ. The Proposed Project would change the private road alignment through construction of a new driveway on the Proposed Project site's western border. This driveway would be developed in accordance with County standards and would connect to Bel Aire Road. Construction activities could occur within County roadways; however, the Proposed Project site is at the terminus of a dead end road. Given the location of construction and the duration of the construction period, construction activities would not impair evacuation procedures in the event of an emergency, and there would be *no impact*. Operation and maintenance would include periodic visits by one or two employees and would not impact emergency response plans. The project would improve the water supply for fighting fires.

b) Would the Project due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

The Proposed Project is located in a County LRA that is a VHFHSZ. The Proposed Project activities would require construction and maintenance crews in the area during construction and operation. There is a potential that a fire could expose workers to risk of injury or death involving wildland fires. Implementation of Mitigation Measures 4.7-3a and 4.7-3b would ensure that impacts are considered *less than significant with mitigation*.

> ***Impact 4.7-3 (2016 EIR). Less than significant with implementation of Mitigation Measure 4.7-3a and 4.7-3b.*** *See page 4.7-11 of the 2016 EIR.*

[33] County of San Mateo. 1986. *1986 General Plan. Chapter 12, Circulation*. Available at: https://www.smcgov.org/media/101521/download?inline=. Accessed July 8, 2022.

c) Would the Project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

The construction and operation of the Proposed Project would require connections to existing utility infrastructure, which are proposed to be undergrounded, posing no risk to fire combustion. The Proposed Project proposes a new 15-foot access road on the western side of the Proposed Project site and new water supply infrastructure. The existing water tank on the Proposed Project site is used for fire protection and is not the primary source for domestic usage. Therefore, impacts would be *less than significant*.

d) Would the Project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

The Proposed Project area is located in a County LRA that is a VHFHSZ. Because geologic conditions have not changed since the 2016 EIR, findings made in the site-specific 2013 Geotechnical Investigation conducted by Michelucci & Associates would still apply.

Mitigation Measures 4.4-2a, 4.4-2b, and 4.4-2c would ensure that development of the water tank would not increase downslope flooding or landslide potential. Therefore, impacts would be *less than significant with mitigation*.

Mitigation Measure 4.4-2a, 4.4-2b, and 4.4-2c. *See Page 4.4-14 of the 2016 EIR.*

Conclusion: Implementation of the Proposed Project would not result in new or more severe impacts to wildfire than previously disclosed in the 2016 EIR. No new mitigation is necessary, and the impact is not cumulatively considerable.

4.4 GROWTH INDUCEMENT

Completion of the project as presently proposed with modifications for development of the water tank and supporting infrastructure would not affect the project's potential for growth inducement, beyond what was analyzed in the 2016 EIR. As the proposed water tank and associated infrastructure would only serve the residences of the Approved Subdivision Project, the total amount of development and population associated with the approved project remains unchanged.

4.5 CUMULATIVE IMPACTS

The cumulative analysis in Chapter 5.2 of the 2016 EIR evaluated cumulative impacts using a combined approach of a list of reasonably foreseeable projects along with the specifications of the adopted General Plan. The list of reasonably foreseeable projects is shown in EIR Table 5-1, Foreseeable Development Projects (see pp. 5-1 of the January 2016 Final EIR). 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.

The Ascension Heights Subdivision Project has not been fully implemented, and the Proposed Project is 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.34 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 significantly increased as a result of the project modifications necessary to develop the additional water tank.

[34] 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.

CHAPTER 5. CONCLUSION

On the basis of the discussion and analysis presented above, the information presented in the Ascension Heights Subdivision Project EIR certified by the Board on February 9, 2016, remains valid and requires only minor modifications, and all conclusions in the Final EIR are applicable to the approved project.

Minor changes to Mitigation Measure 4.2-1b 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, diesel emission control technologies for off-road construction equipment fleets have improved and thus warrant modifications to the approved construction air quality mitigation measure.

As demonstrated by the updated analysis, the original project and the project as modified would not exceed significance thresholds after implementation of mitigation measures. Therefore, there are no changed circumstances relevant to the undertaking of the project, as modified for completion, that would cause new significant environmental impacts or cause a substantial increase in the severity of previously identified significant effects. No new information has become available that would substantially 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

Site Plan

MPS - SAN MATEO
STATION 031 - ASCENSION DR & BEL AIRE RD
INSTALL TANK AND BOOSTER PUMP

STATION ADDRESS

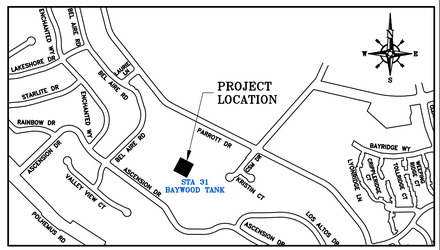
OFF OF BEL AIRE ROAD, SAN MATEO, CA
94551 ALAMEDA COUNTY
APN# 098-034802000

LEGEND:

- = TEE
- = ELBOW, 45°
- = ELBOW, 90°
- = BLOWOFF (PROPOSED)
- = BLOWOFF (EXISTING)
- = GATE VALVE (PROPOSED)
- = GATE VALVE (EXISTING)
- = REDUCER (PROPOSED)
- = REDUCER (EXISTING)
- = SOLID PLUG
- = PROPOSED WATER MAIN
- = EXISTING WATER MAIN
- = WALL
- = SANITARY SEWER
- = STORM DRAIN
- = FIRE HYDRANT (PROPOSED)
- = FIRE HYDRANT (EXISTING)
- = BUTTERFLY VALVE
- = CHECK VALVE
- = FLEX CPLG.
- = ALTITUDE VALVE

LANDSCAPE LEGEND:

- PROPOSED TREES
- PROPOSED SHRUBS
- EXISTING TREES



VICINITY MAP
Not to Scale

CONTACT INFO:

PROJECT ENGINEER: JULIE HUYNH
CALIFORNIA WATER SERVICE COMPANY
1720 N. FIRST ST.
SAN JOSE, CA 95112
PH: 408-367-8394
EMAIL: JHUYNH@CALWATER.COM

LEIGTON LOW
BAYSHORE SUPERINTENDENT
341 DELAWARE STREET
SAN MATEO, CA 94401
(650) 642-4557
EMAIL: LLOW@CALWATER.COM

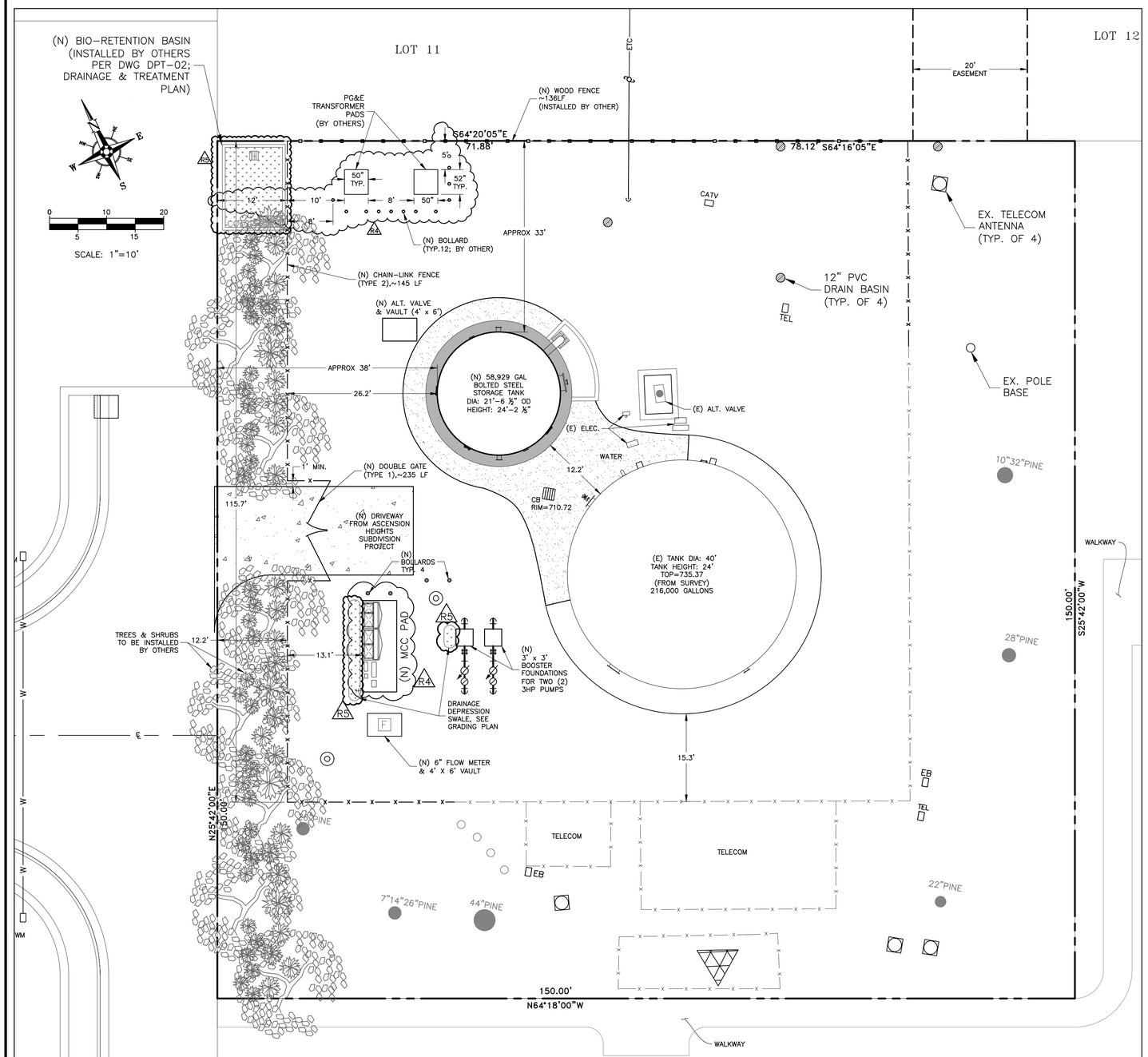
GEOTECHNICAL ENGINEER-OF-RECORDS:
JOSEPH MICHELUCCI
MICHELUCCI & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS
1801 MURCHISON DRIVE, SUITE 210
BURLINGAME, CALIFORNIA, 94010
joe@michelucci.com
(650) 692-0163

PROPOSED FACILITIES:

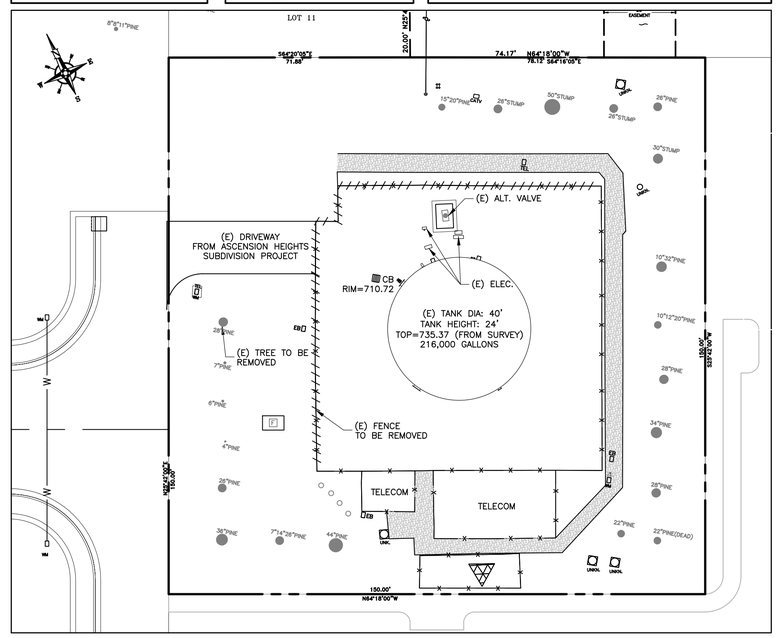
- 50,000 GALLON STEEL TANK BOLTED TANK 20'-0" FT DIAMETER, 24 FT HEIGHT (COLOR GROUSE TAN) A1
- IMPERVIOUS SURFACE:
  3,000 SF (ON PROPERTY),
  500 SF (PRIVATE DRIVEWAY)
- BOOSTER PUMPS/ACOUSTIC SHELTER (COLOR GROUSE TAN) A2
- TANK LEVEL TRANSDUCER AND ENCLOSURE
- BOOSTER PUMP CONTROL PANEL (MCC) (COLOR GROUSE TAN) A3
- FLOWMETER AND ALTITUDE VALVE IN VAULTS

SEISMIC DESIGN PARAMETERS: A2

1. USE GROUP	=	I
2. IMPORTANCE FACTOR	=	1.0
3. SITE SOIL CLASS	=	B
4. 0.2-SECOND MAPPED SPECTRA ACCELERATION	=	2.313g
5. 1-SECOND MAPPED SPECTRA ACCELERATION	=	0.967g
6. SHORT PERIOD SITE COEFFICIENT	=	0.9
7. LONG PERIOD SITE COEFFICIENT	=	0.8
8. IMPULSIVE DESIGN ACCELERATION	=	1.388g
9. CONVECTIVE DESIGN ACCELERATION	=	0.516g
10. VERTICAL DESIGN ACCELERATION	=	0.300g



PROPOSED SITE PLAN
SCALE: 1" = 10'



EXISTING SITE PLAN
SCALE: 1" = 20'

GENERAL NOTES:

1. PROPERTY BOUNDARY SHOWN HEREON IS APPROXIMATE FOR REFERENCE ONLY. ELEVATION DATA IS BASED ON AN ASSUMED DATUM AND IS NOT BASED ON AN ESTABLISHED CITY OR STATE ELEVATION DATUM.
2. TANK, EXTERIOR APPURTENANCES AND ABOVE GROUND PIPING SHALL BE PAINTED CWS "GROUSE TAN".
3. EXTERIOR FINISH COLOR SHALL BE SHERWIN WILLIAMS CWS (COLOR GROUSE TAN) OR APPROVED EQUIVALENT.
4. SEE DRAWING NO. MPS-5642 FOR EROSION CONTROL REQUIREMENTS.
5. CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS, CLEARLY MARKED TO SHOW ALL CHANGES FROM THE CONSTRUCTION DRAWINGS. PROJECT ALL SITE ELEMENTS WHICH ARE NOT INDICATED FOR REMOVAL, INCLUDING BUT NOT LIMITED TO PAVING, STRUCTURES, SIGNS, TREES AND VEGETATION.
6. ALL MATERIALS GENERATED BY DEMOLITION ACTIVITIES, WHICH ARE NOT INDICATED FOR SALVAGE FOR RE-USE, SHALL BE LEGALLY DISPOSED OF OFF THE COMPANY'S PROPERTY.
7. EXTREME CARE SHALL BE TAKEN TO PROTECT THE ROOT SYSTEMS OF EXISTING TREES THAT ARE WITHIN 6' OF THE CONSTRUCTION ZONE.

DRAWING INDEX:

ENGINEERING

CALIFORNIA WATER SERVICE™

DEPARTMENT

REVISIONS:
R1-(7/19/21) UPDATED DRAWING INDEX
R2-(8/9/21) PER COUNTY REVIEW COMMENTS
R3-(9/24/21) PER COUNTY REVIEW COMMENTS
R4-(6/24/2022) ADD NEW TRANSFORMER & MCC PADS DH
R5-ADD SD LINE & BIO-RETENTION 2/17/23

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC	X	

PLAT SHEET NO.: SM-31-22
SCALE: AS SHOWN
DRAWN BY: D. HEARN
DESIGNED BY: J. HUYNH
TECH REVIEW: DATE:
CHECKED BY: DATE: 5/31/2023
APPROVED BY: DATE: 6/1/2023

REGISTERED PROFESSIONAL ENGINEER
DEVI SEKHAR PRASANNA
No. C76302
CIVIL
STATE OF CALIFORNIA

MPS - SAN MATEO STA 031
INSTALL TANK AND BOOSTER PUMP
PLOT PLAN & ELEVATION

TITLE:
DISTRICT: 116-MPS
SAN MATEO
DATE: 4/7/2021
PROJECT ID.: 00118772
DRAWING NO.: MPS-5629 R5
SHT 1 OF 3

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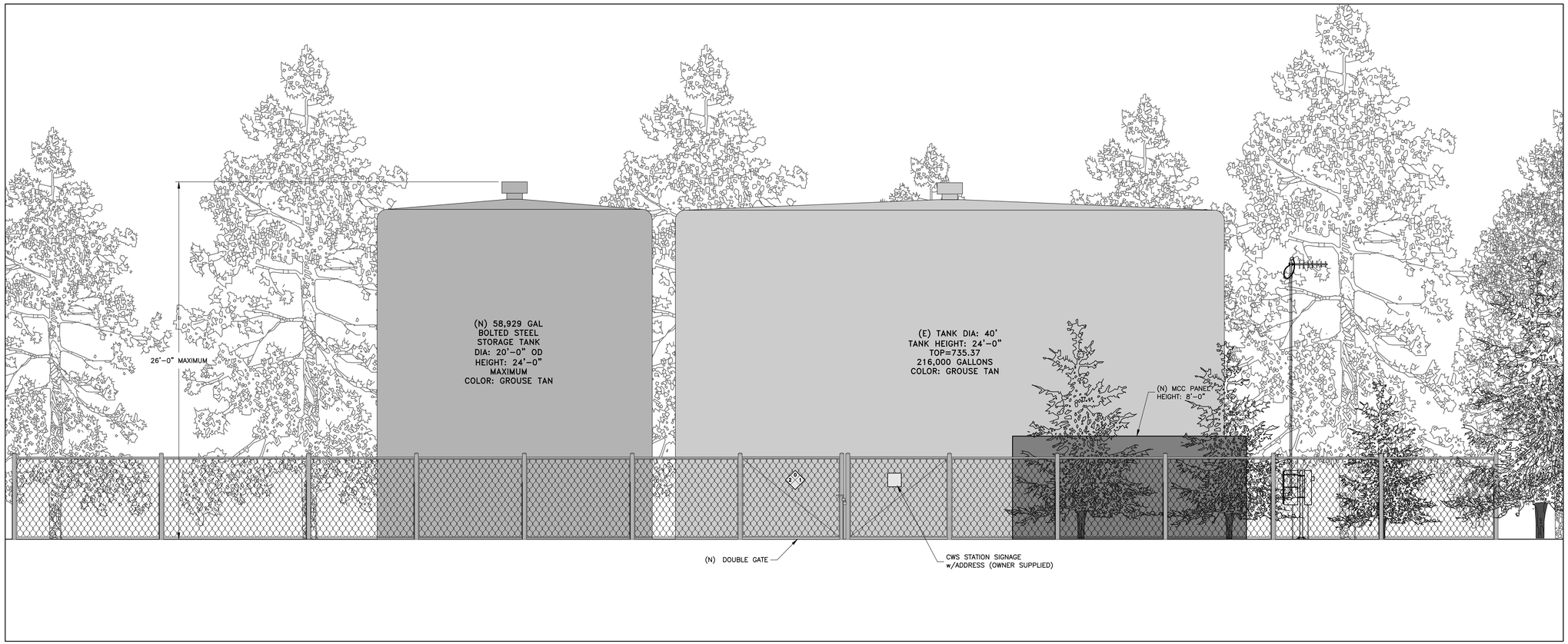
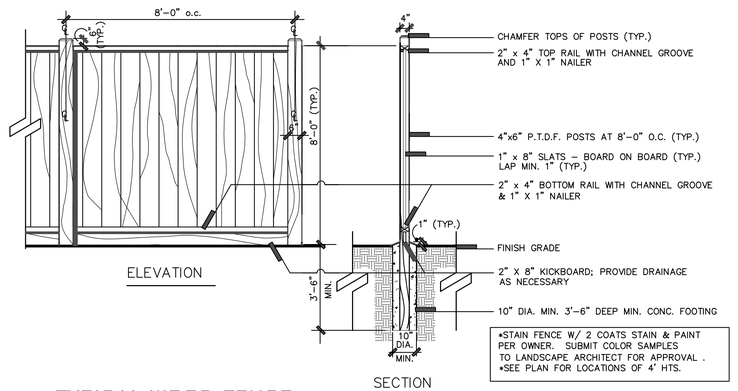


WEST ELEVATION VIEW

N.T.S.



TYPICAL WOOD FENCE

SCALE: 1/2" = 1' – 0"

ENGINEERING

CALIFORNIA WATER SERVICE™

DEPARTMENT

REVISIONS:
R1-(7/19/21) UPDATED DRAWING INDEX
R2-(9/9/21) PER COUNTY REVIEW COMMENTS
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R4-(6/24/2022) ADD NEW TRANSFORMER & MCC PADS ON RS-ADD SD LINE & BIO-RETENTION
2/17/23

	DATE:	INIT.
DISTRIBUTION MAP	☐	
PLAT SHEET	☐	
SYSTEM SCHEMATIC	☐	
STATION SCHEMATIC	☒	

PLAT SHEET NO.: SM-31-22

SCALE: AS SHOWN

DRAWN BY: D. HEARN

DESIGNED BY: J. HUYNH

TECH REVIEW: DATE: 5/18/2023

CHECKED BY: DATE:

APPROVED BY: DATE: 6/1/2023

REGISTERED PROFESSIONAL ENGINEER
DEVI SEKHAR PRASANNA
No. C76302
CIVIL
STATE OF CALIFORNIA

TITLE:
MPS – SAN MATEO STA 031
INSTALL TANK AND BOOSTER PUMP
PLOT PLAN & ELEVATION

DISTRICT: 116-MPS

SAN MATEO

DATE: 4/7/2021

PROJECT ID.: 00118772

DRAWING NO.: MPS-5629 R5

SHT 2 OF 3

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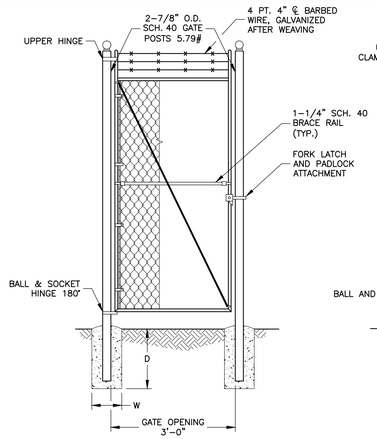
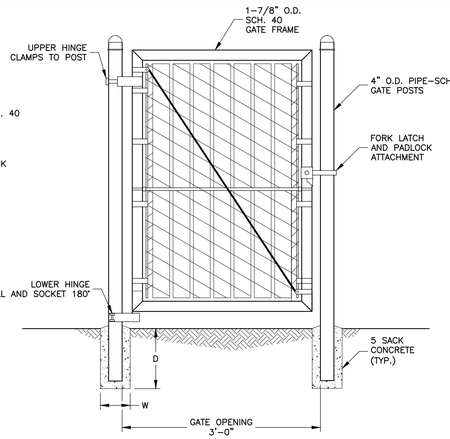
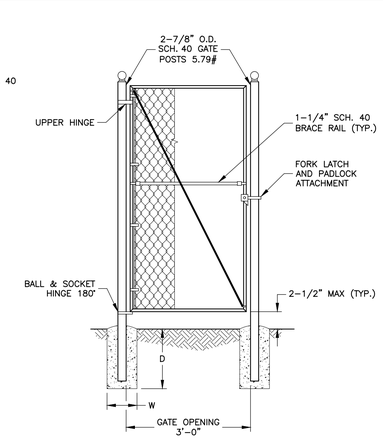


SINGLE GATE
TYPE 1



SINGLE GATE
TYPE 2



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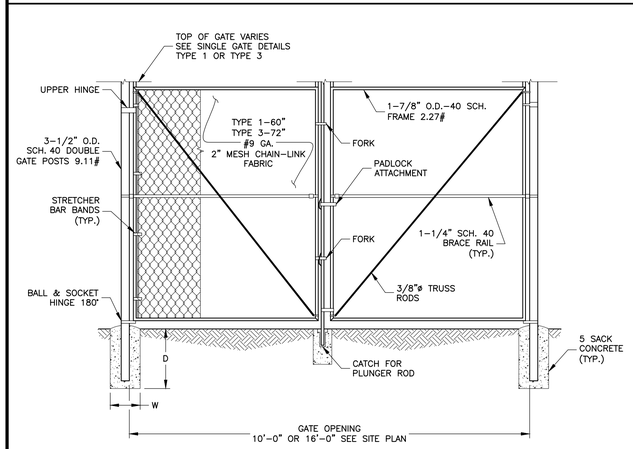
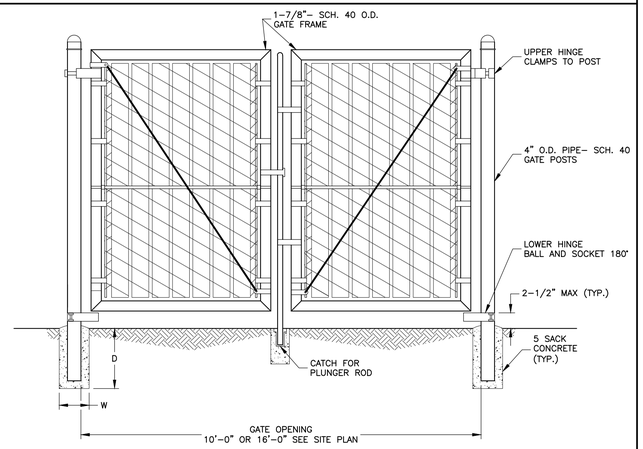
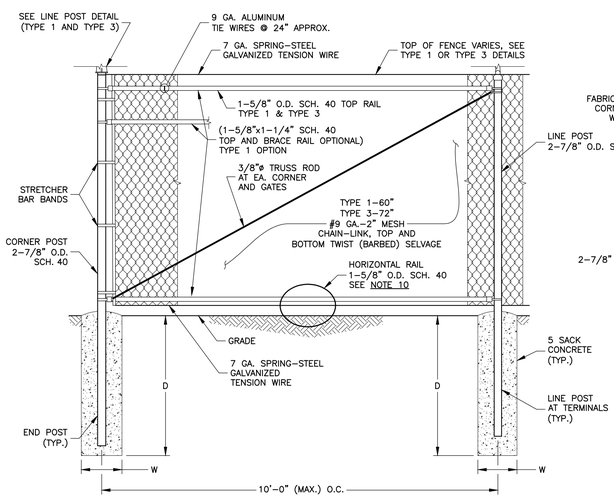
TYPE 3



DOUBLE GATE
(TYPE 1 AND TYPE 3)

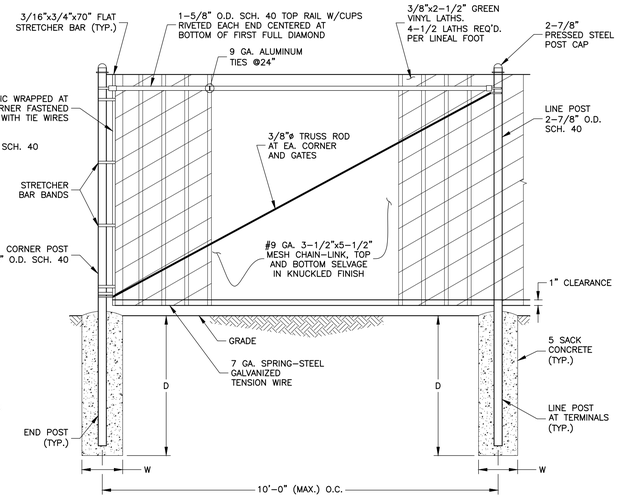


DOUBLE GATE
TYPE 2

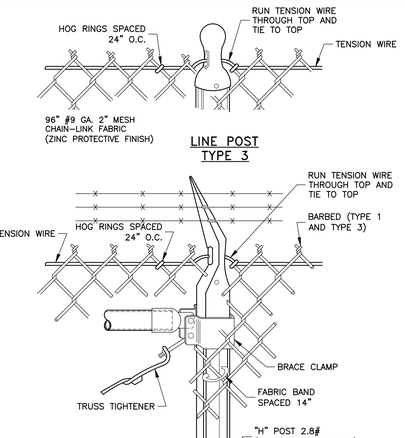


FENCE ASSEMBLY (TYPE 1 AND TYPE 3)

1. ALL PIPE SIZES ARE OUTSIDE DIAMETER
2. ALL BOLTS ARE 3/8"ø x 1-1/4" CARRIAGE BOLTS

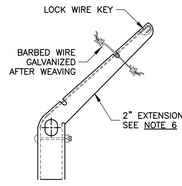


FENCE ASSY TYPE 2

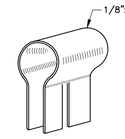


LINE POST
TYPE 3

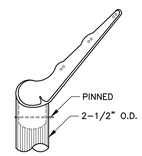
LINE POST
TYPE 1 AND TYPE 3



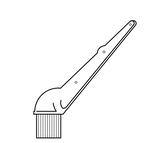
LINE POST TOP 45°



FOR "H" POSTS
TYPE 2



BARBED WIRE ARM END 45°

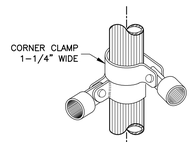


BARBED WIRE ARM CORNER 45°

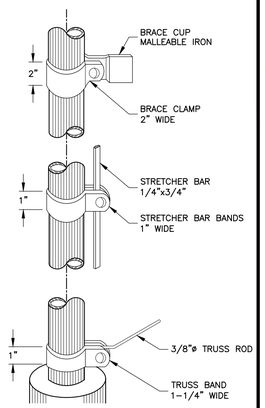
FENCE TYPE: (CHECK ONE)
☐ TYPE 1 ☒ TYPE 2 ☐ TYPE 3

NOTES:

1. BARBED WIRE SHOULD BE EVENLY SPACED, POLYMER COATED 12 GAUGE STEEL WIRE WITH 4-POINT ROUND STEEL BARBS. CONCERTINA WIRES TO BE ADDED IN CONJUNCTION WITH BARBED WIRE AS NEEDED.
2. PULL POSTS ARE REQUIRED AT ALL ABRUPT CHANGES OF GROUND SLOPE AND AT A MAXIMUM OF 300' SPACING ON STRAIGHT RUNS OR UNIFORM SLOPES.
3. GATE HINGES ARE TO BE HEAVY, STRONG, MALLEABLE IRON WITH WELDED PIN OR HEX BOLT DESIGN.
4. ALL GATES ARE TO BE EQUIPPED WITH CATCH POSTS AND GATE STOPS TO HOLD GATE IN OPEN POSITION.
5. EXTENSION ARMS SHALL BE MALLEABLE IRON OR 14GA. MIN. THICKNESS PRESSED STEEL.
6. END, CORNER, ANGLE AND LINE POSTS TO BE 2-7/8" O.D., SCH. 40 AND 2" ARM EXTENSIONS TO BE POINTED AWAY FROM PROPERTY.
7. DOUBLE DRIVE GATES ARE TO HAVE PLUNGER TYPE LATCH AND PADLOCK ATTACHMENT. FLUSH PLATE AND ANCHOR TO RECEIVE PLUNGER BAR TO BE SET IN CONCRETE.
8. DIAGONAL BRACE OF 3/8" TRUSS ROD WITH TURN BUCKLE TO BE INSTALLED AT END, GATE, CORNER, ANGLE AND PULL POSTS.
9. FABRIC SHOULD ALSO BE TIED TO RAILS AND LINE POSTS WITHIN FOUR (4) INCHES OF THE TOP AND BOTTOM OF THE FABRIC WITH 9-GAUGE HOG RINGS.
10. BOTTOM OF FENCE FABRIC SHOULD BE SECURED TO BOTTOM RAIL AND SECURED AT MIDPOINT BETWEEN THE FENCE POSTS ALONG THE FENCE LINE. BOTTOM RAIL SHOULD BE SECURE IN-BETWEEN POLES USING GALVANIZED ALUMINUM EYEBOLT EMBEDDED IN CONCRETE. PLEASE SEE FENCING FOOTING SCHEDULE FOR CONCRETE DEPTH.
11. THESE STANDARDS ARE INTENDED TO ESTABLISH A MINIMUM QUALITY REQUIREMENT. SUITABLE EQUIVALENTS MAY BE ACCEPTED BY THE ENGINEER.



CORNER POST



END AND GATE POST

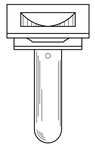
LATCH FORK

LOCK KEEPER GUIDE

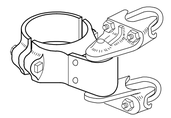
LATCH FORK

LOCK KEEPER

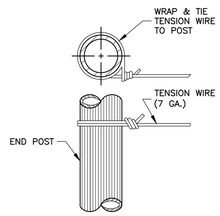
LOCK KEEPER GUIDE



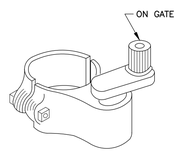
CATCH FOR
PLUNGER ROD



UPPER HINGE ASSY



TENSION WIRE DETAIL



LOWER HINGE
BALL AND SOCKET

COMMON DETAILS

FENCE FOOTING SCHEDULE

HEIGHT	GATE OPENING/ POST SPACING	DEPTH "D"	WIDTH "W"
6'-0"	3'-0"	3'-0"	12"
6'-0"	10'-0"	3'-0"	12"
6'-0"	16'-0"	3'-0"	12"
8'-0"	3'-0"	3'-0"	12"
8'-0"	10'-0"	3'-0"	12"
8'-0"	16'-0"	3'-0"	16"

NOTES:

1. CONCRETE USED FOR FOOTING SHALL BE A MINIMUM 2500 PSI AT 28 DAYS OF AGE.
2. WITH HARD GROUND OR PAVEMENT, FENCE MUST REACH WITHIN 2 INCHES OF SURFACE. IF SOFT GROUND, FENCING MUST REACH BELOW THE SURFACE DEEP ENOUGH TO COMPENSATE FOR SHIFTING SOIL AND SAND AND TO DETER ENTRY BY EASILY DIGGING BELOW THE FENCE.

ENGINEERING

CALIFORNIA WATER SERVICE™

DEPARTMENT

REVISIONS:
R1-(7/19/21) UPDATED DRAWING INDEX
R2-(8/9/21) PER COUNTY REVIEW COMMENTS
R3-(9/24/21) PER COUNTY REVIEW COMMENTS
R4-(6/24/2022) ADD NEW TRANSFORMER & MCC PADS OH
R5-ADD SO LINE & BIO-RETENTION 2/17/23

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC	X	

PLAT SHEET NO.:
SM-31-22

SCALE:
AS SHOWN

DRAWN BY:
D. HEARN

DESIGNED BY:
J. HUYNH

TECH REVIEW: DATE:
5/18/2023

CHECKED BY: DATE:

APPROVED BY: DATE:
6/1/2023

REGISTERED PROFESSIONAL ENGINEER
DEVI SEKHAR PRASANNA
No. C76302
CIVIL
STATE OF CALIFORNIA

TITLE:
MPS - SAN MATEO STA 031
INSTALL TANK AND BOOSTER PUMP
PLOT PLAN & ELEVATION

DISTRICT:
116-MPS

SAN MATEO

DATE:
4/7/2021

PROJECT ID.:
00118772

DRAWING NO.:
MPS-5629 R5

SHT 3 OF 3

USERNAME: Dhearn 4/24/2023 7:47 AM
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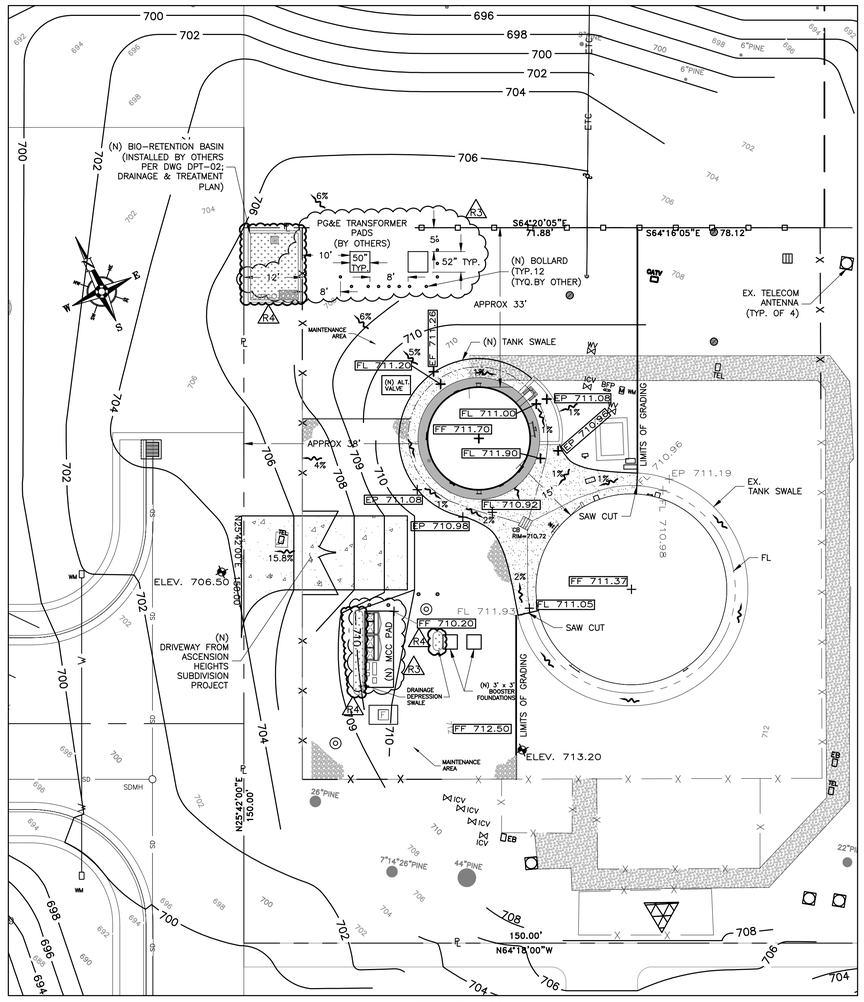


SITE PLAN
SCALE: 1" = 15'

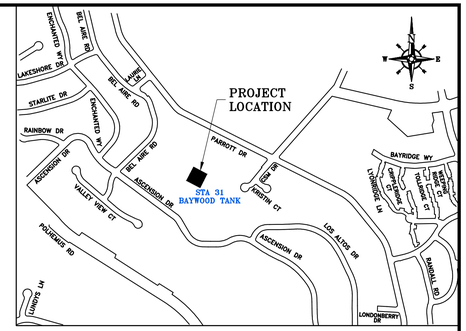
SITE & GRADING LEGEND:

- FF XXX.XX — PROPOSED FINISH FOUNDATION OR FLOOR
- P XXX.XX — PROPOSED PAVEMENT ELEVATION
- FG XXX.XX — PROPOSED FINISH GRADE
- XXX.XX — EXISTING GRADE
- FINAL SURFACE DRAINAGE FLOW DIRECTION (1% SLOPE MIN.)
- MAINTENANCE AREA
- CONCRETE PAVING (SEE CONCRETE DRIVEWAY DETAILS ON SHEET 2)
- ASPHALT; CLASS II AB, 90% RC
- X — CHAIN-LINK FENCE
- XXX — PROPOSED CONTOUR (R3)
- XXX — EXISTING CONTOUR

LEGEND

- = TEE
- = ELBOW, 45°
- = ELBOW, 90°
- = BLOWOFF (PROPOSED)
- = BLOWOFF (EXISTING)
- = GATE VALVE (PROPOSED)
- = GATE VALVE (EXISTING)
- = REDUCER (PROPOSED)
- = REDUCER (EXISTING)
- = SOLID PLUG
- = PROPOSED WATER MAIN
- = EXISTING WATER MAIN
- = WALL
- = SANITARY SEWER
- = STORM DRAIN
- = FIRE HYDRANT (PROPOSED)
- = FIRE HYDRANT (EXISTING)
- = BUTTERFLY VALVE
- = CHECK VALVE
- = FLEX CPLG.
- = BOOSTER PUMP
- = FLEX-TEND

SITE BENCHMARK
SURVEY CONTROL
SET MAG NAIL IN ASPHALT
ELEV=706.50' AND 713.20'



VICINITY MAP
Not to Scale

DEMOLITION & GRADING NOTES:

1. THE LIST OF MATERIALS FOR THIS PROJECT IS FOR REFERENCE PURPOSES ONLY, AND IS NOT INTENDED AS A FULL TAKE-OFF OF ALL MATERIALS REQUIRED TO COMPLETE THE PROJECT AS PER CWS CO. STANDARD SPECIFICATIONS.
2. ALL SITE WORK SHALL BE COMPLETED IN ACCORDANCE WITH REQUIREMENTS OUTLINED IN THE GEOTECHNICAL REPORT.
3. CONTRACTOR SHALL PREPARE SITE BY STRIPPING AND REMOVING ALL LOOSE MATERIAL, VEGETATION, CONCRETE, GRAVEL FROM ACCESS ROAD, DEBRIS, DELETERIOUS MATERIAL AND TREES DESIGNATED FOR REMOVAL FROM THE AREAS TO BE OCCUPIED BY THE NEW TANK.
4. SPOILS SHALL NOT REMAIN ON-SITE, DISPOSAL OF ALL PROJECT GENERATED SPOILS SHALL BE AT A FACILITY LICENSED AND CLASSIFIED TO ACCEPT THE MATERIALS. CONTRACTOR TO PROVIDE OWNER WITHA FORMAL RECEIPT FROM THE ACCEPTING FACILITY.
5. TEMPORARY CUT SLOPES STEEPER THAN 1 (H): 1 (V) MAY NOT STAND DUE TO THE LOCALIZED CONSISTENCY OF THE NATURAL SOILS. IN AREAS TO BE FILLED, THE EXPOSED SURFACE SHOULD BE SCARIFIED TO AT LEAST AN 8-INCH DEPTH, MOISTURE CONDITIONED TO AT LEAST OPTIMUM MOISTURE CONTENT AND COMPACTED TO AT LEAST 90 PERCENT RELATIVE COMPACTION BASED ON ASTM D-1557-07.
6. THE TANK PAD AREA SHALL BE OVER EXCAVATED A MINIMUM RADIAL DISTANCE OF 5 FEET BEYOND TO OUTSIDE EDGE OF PLANNED RINGWALL FOUNDATION. IN ADDITION, THE CONCRETE RINGWALL SHALL BE CONSTRUCTED ON A MINIMUM OF 1-FOOT OF ENGINEERED FILL. IN AREAS TO BE FILLED, THE EXPOSED SURFACE SHALL BE SCARIFIED TO AT LEAST AN 8-INCH DEPTH, MOISTURE CONDITIONED TO AT LEAST OPTIMUM MOISTURE CONTENT AND COMPACTED TO AT LEAST 95% RELATIVE COMPACTION BASED ON ASTM D-1557-07.
7. EXCAVATED ONSITE MATERIAL MAY BE REUSED AS COMPACTED FILL PROVIDED IT MEETS THE REQUIREMENTS FOR IMPORTED FILL. STORAGE OF SUITABLE COMPACTED FILL MAY BE ALLOWED ONSITE, QUANTITY AND LOCATION SHALL BE DETERMINED BY AND COORDINATED WITH DISTRICT STAFF.
8. IMPORTED FILL SHALL BE FREE OF ORGANIC MATTER, MATERIAL LARGER THAN 4-INCHES IN DIAMETER AND SHALL HAVE A PLASTICITY INDEX (P.I) OF LESS THAN 16.
9. COMPACTED FILL SHALL BE PLACED IN HORIZONTAL LIFTS NOT EXCEEDING 8-INCHES IN LOOSE THICKNESS, MOISTURE CONDITIONED TO AT LEAST OPTIMUM MOISTURE CONTENT AND COMPACTED TO AT LEAST 95-PERCENT RELATIVE COMPACTION BENEATH STRUCTURES, SLABS AND WITHIN 18-INCHES OF THE AGGREGATE BASE ROCK FOR PAVEMENTS, AND 90-PERCENT RELATIVE COMPACTION ELSEWHERE.
10. PAVEMENT SECTIONS SHALL CONSIST OF A MINIMUM OF 3-INCHES ASPHALT CONCRETE (AC) OVER A MINIMUM OF 9-INCHES OF AGGREGATE BASE ROCK (AB). AC SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 39 OF THE CALTRANS STANDARD SPECIFICATIONS; AB SHALL CONFORM TO THE PROVISION OF SECTION 26 (CALTRANS) FOR ¾-INCH MAXIMUM CLASS 2 AB AND SHALL BE COMPACTED TO AT LEAST 95-PERCENT RELATIVE COMPACTION BASED ON ASTM D-1557-07 RATHER THAN CALTRANS METHOD 216.
11. AFTER GENERAL COMPACTION AND COMPACTION OF UTILITY TRENCH BACKFILLS, THE PROPOSED PAVEMENT AREAS AND TANK ACCESS SUBGRADE SURFACE SHALL BE CHECKED FOR YIELDING AREAS BY PROOF-ROLLING WITH A LOADED WATER TRUCK OR EQUIVALENT. ANY YIELDING AREAS SHALL BE EXCAVATED AND REPLACED WITH COMPACTED FILL. THE UPPER 12-INCHES SHALL BE MOISTURE CONDITIONED TO AT LEAST OPTIMUM MOISTURE CONTENT AND COMPACTED TO AT LEAST 95-PERCENT RELATIVE COMPACTION.
12. MAINTENANCE AREA SHALL BE GRADED TO 4-INCH BELOW PROPOSED FINAL ELEVATIONS AND THEN SCARIFIED, WATERED AND COMPACTED TO 85% RELATIVE COMPACTION PER ASTM D1557. PLACE 4-INCH OF CLASS 2 A.B. COMPACTED TO 90% RELATIVE COMPACTION. THE ENTIRE SITE, EXCEPT STEEP SLOPES AND EQUIPMENT AREAS, IS TO BE CONSIDERED MAINTENANCE AREA.
13. CONTRACTOR SHALL PROVIDE A MINIMUM OF 48 HOURS NOTICE TO CWS ENGINEER PRIOR TO FILLING WITH COMPACTED FILL OR POURING OF CONCRETE FOUNDATIONS AT ALL EXCAVATION, COMPACTION AND GRADING ACTIVITIES TO ALLOW FOR COORDINATION OF INSPECTION BY A GEOTECHNICAL ENGINEER OR THEIR REPRESENTATIVE.

GENERAL NOTES:

1. THE OWNER IS REQUIRED TO OBTAIN THE PLANNING PERMIT AND BUILDING PERMIT FROM THE CITY OF SAN MATEO. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL OTHER PERMITS FROM OTHER AGENCIES NECESSARY FOR THE CONSTRUCTION OF THE PROJECT.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ADHERING TO AND COMPLYING WITH LOCAL GOVERNING AGENCY PERMIT RESTRICTIONS, WHICH MAY AFFECT ALLOWABLE WORKING HOURS AND NOISE LEVELS. WORKING HOURS SHALL BE RESTRICTED TO THE HOURS OF 8:00 A.M. TO 5:00 P.M., MONDAY THROUGH FRIDAY.
3. SUBJECT PROPERTY IS OWNED BY:
   CALIFORNIA WATER SERVICE CO. (CWS CO.)
   1720 N. FIRST ST.
   SAN JOSE, CA. 95112

   THIS PLAN HAS BEEN PREPARED BY CALIFORNIA WATER SERVICE CO. ENGINEERING DEPARTMENT, JULIE HUYNH, P.E. (PROJECT COORDINATOR/EFFECTIVE CONTROL OF WORK) (408) 367-8394 AN EMPLOYEE THEREIN.
4. FACILITY IS A WATER UTILITY SUPPLY AND STORAGE INSTALLATION, NOT A PLACE OF EMPLOYMENT, PUBLIC ACCOMMODATION OR COMMERCIAL FACILITY. THEREFORE, THIS PROJECT IS NOT SUBJECT TO THE A.D.A. PROVISIONS OF TITLE 24 IN THE CALIFORNIA BUILDING CODE.
5. SANITARY SEWER CONNECTION WILL NOT BE MADE. NO SEPTIC SYSTEM WILL BE INSTALLED. NO SEWAGE, TRASH OR GARBAGE WILL BE GENERATED ON THIS SITE.
6. CONTRACTOR SHALL BECOME FAMILIAR WITH PROJECT SURROUNDINGS, WORKING CONDITIONS, AND SITE LIMITATIONS AND INCLUDE ALLOWANCES IN THEIR BID TO COVER ANY PROJECT CONSTRAINTS. CONTRACTOR SHOULD BE AWARE THAT GROUND WATER MAY BE ENCOUNTER DURING EXCAVATION ACTIVITIES THAT MAY REQUIRE DEWATERING.
7. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH 2019 C.B.C., 2019 C.F.C., AND MOST CURRENT NFPA AND NEC AWWA E101 & C600.
8. CONTRACTOR SHALL COMPLY WITH ALL PERMIT REQUIREMENTS AND NOTIFY THE GOVERNING AGENCY AND OWNER FOR REQUIRED INSPECTIONS.
9. ALL DESIGN AND CONSTRUCTION SHALL CONFORM TO THE CITY OF SAN MATEO'S DESIGN AND CONSTRUCTION STANDARDS, AS APPLICABLE.
10. IF THERE IS ANY CONFLICT, CONTRACTOR MUST BRING TO OWNER'S ATTENTION AND OBTAIN OWNER'S APPROVAL FOR CHANGE.
11. CONTRACTOR SHALL APPLY COUNTY OF SAN MATEO COUNTYWIDE CONSTRUCTION BEST MANAGEMENT PRACTICES (BMPs) AND CALTRANS BEST MANAGMENT PRACTICES TO PREVENT WATER AND SEDIMENT FROM ENTERING NAVIGABLE WATERWAYS. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND INSTALLING THE APPLICABLE AND APPROPRIATE BMP's IDENTIFIED IN THE CALTRANS CONSTRUCTION BEST MANAGEMENT PRACTICES (BMP) MANUAL (MAY 2017) SOME OF THE REQUIRED PRACTICES MAY OR MAY NOT BE SHOWN ON THIS SITE PLAN.
12. CONSTRUCTION OPERATIONS DUST SHALL BE CONTROLLED. DUST CONTROL MUST BE MAINTAINED TO THE CITY OF LIVERMORE'S SATISFACTION.
13. WASTEWATER GENERATED DURING CONSTRUCTION SHALL NOT BE DISCHARGED TO THE STORM DRAINAGE SYSTEM. THIS INCLUDES WASTE FROM PAINTING, SAW CUTTING, CONCRETE WORK ETC. THE CONTRACTOR SHALL MAKE ARRANGEMENTS TO ELIMINATE DISCHARGES TO THE STORM DRAINAGE SYSTEM. IF NECESSARY PROVIDE AN AREA FOR ON-SITE WASHING ACTIVITIES DURING CONSTRUCTION. MATERIALS THAT COULD CONTAMINATE STORM RUNOFF SHALL BE STORED IN AREAS WHICH ARE DESIGNATED TO PREVENT EXPOSURE TO RAINFALL AND TO NOT ALLOW STORM WATER TO RUN ONTO THE AREA.
14. PAVEMENT CLEANING-FLUSHING OF STREETS/PARKING LOTS TO REMOVE DIRT AND CONSTRUCTION DEBRIS IS PROHIBITED UNLESS SEDIMENT CONTROLS ARE USED. PREFERABLY, AREAS REQUIRED CLEANING SHOULD BE SWEPT.
15. CONTRACTOR MUST KEEP THE SITE CLEAN AT ALL TIME, AND MINIMIZE NEGATIVE IMPACT TO THE SURROUNDING AREAS AND NEIGHBORS. MATERIAL, TOOLS AND EQUIPMENT MUST BE KEPT SAFE AND OUT OF PUBLIC DANGER AT ALL TIME DURING CONSTRUCTION. CONTRACTOR TO PROVIDE ADEQUATE DUST CONTROL MEASURES DURING CONSTRUCTION.
16. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES WITHOUT ADDITIONAL COST TO OWNER. CONTRACTOR SHALL CONTACT "UNDERGROUND SERVICES ALERT" 48 HOURS PRIOR TO ANY EXCAVATION.
17. THE LIST OF MATERIALS FOR THIS PROJECT IS FOR REFERENCE PURPOSES ONLY, AND IS NOT INTENDED AS A FULL TAKE-OFF OF ALL MATERIALS REQUIRED TO COMPLETE THE PROJECT AS PER CWS STANDARD SPECIFICATIONS.
18. CONTRACTOR MUST SHARE THE SITE AND SITE ACCESS WITH OWNER AND OTHER CONTRACTORS.
19. CONTRACTOR SHALL WORK CONTINUOUSLY WITHOUT ANY UNDUE DELAY.
20. CONTRACTOR MAY NEED TO REMOVE SMALL TREES AND LIMBS TO ALLOW ACCESS FOR SOME EQUIPMENT. CARE SHALL BE TAKEN TO MINIMIZE ALL CUTTING ACTIVITY. ALL CUTS SHALL BE COORDINATED WITH THE OWNER'S CONSTRUCTION SUPERINTENDENT.
21. ELEVATION DATA IS BASED ON ARBITRARY DATUM AND IS NOT BASED ON AN ESTABLISHED CITY OR STATE ELEVATION DATUM. THIS IS NOT A MAP OF A BOUNDARY SURVEY. NO PROPERTY CORNERS HAVE BEEN SET AS PART OF THIS WORK. SURVEY MONUMENTS FOUND IN THE COURSE OF THIS MAPPING ARE SET BY OTHERS, AND HAVE BEEN USED ONLY AS A REFERENCE FOR THE PURPOSE OF TOPOGRAPHIC MAPPING, WITHOUT OUR VERIFICATION OF THEIR AGREEMENT WITH APPLICABLE LEGAL DESCRIPTIONS AND SENIORITY OF DEEDS. RELATION OF TOPOGRAPHIC FEATURES (I.E., FENCES, WALLS, TREES, POWER POLES, ETC.) TO PROPERTY LINES AS SHOWN ON THIS MAP IS SUBJECT TO THE ADJUSTMENTS THAT A BOUNDARY SURVEY MAY REQUIRE.

PIPING DEMOLITION / ABANDONMENT

1. UNDERGROUND PIPING WILL BE ABANDONED IN PLACE AT LEAST 24-INCHES BELOW GRADE.
   1.1 PIPE THAT ENDS SHALL BE PLUGGED WITH PLUGGED FITTINGS ARE ALL APPROPRIATELY SIZED.
2. ANY VAULT OR VALVE CAN WILL BE BACK-FILLED WITH IMPORT MATERIAL TO GRADE AND COMPACTED TO CITY STANDARDS.
3. ANY WORK INVOLVING ASBESTOS CEMENT PIPE SHALL BE COMPLETED IN ACCORDANCE WITH ALL LATEST APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS AND REGULATION AS WELL AS APPLICABLE AWWA STANDARD.
4. FERROUS PIPING WILL EITHER BE ABANDONED IN PLACE OR RECYCLED. NON-FERROUS PIPING WILL EITHER BE ABANDONED IN PLACE OR DISPOSED AT A LANDFILL.

GRADING EARTHWORK QUANTITIES:

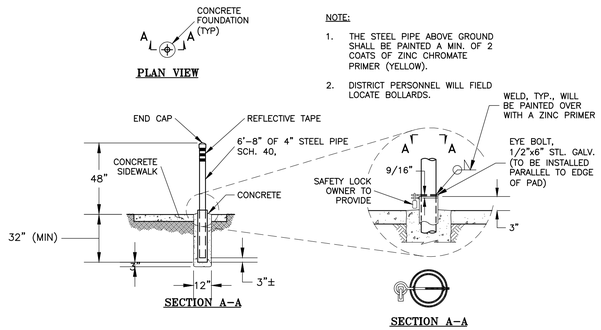
CUT: 100 CY
FILL: 70 CY
SITE IMPORT: 70 CY

NOTE:
EARTHWORK QUANTITIES ARE APPROXIMATE FOR PERMITTING PURPOSES ONLY. NO SHRINK OR SWELL FACTORS HAVE BEEN APPLIED TO THESE VALUES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL GRADING REQUIRED TO OBTAIN FINISH GRADES AS SHOWN.

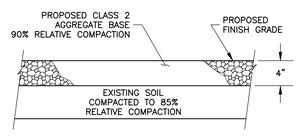
GEOTECHNICAL INVESTIGATION:

ALL GRADING ACTIVITIES AND SITE PREPARATION SHALL COMPLY WITH THE GEOTECHNICAL INVESTIGATION PREPARED BY MICHELUCCI & ASSOCIATES, INC., JOB NO. 01-3186 DATE DECEMBER 16, 2002. AND UPDATED SEISMIC CRITERIA LETTER DATED 9/7/2021

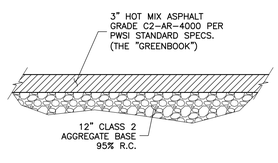
R1



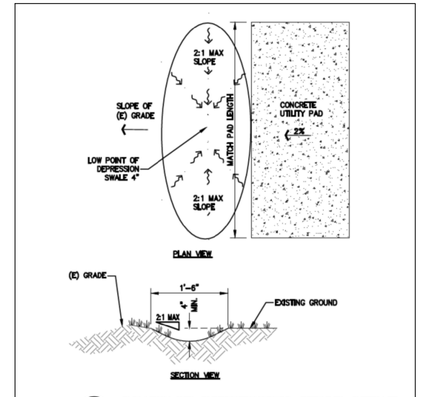
REMOVABLE BOLLARD
N.T.S.



MAINTENANCE AREA GRADING DETAIL
N.T.S.



ASPHALT PAVING DETAIL
N.T.S.



2 (MP-10) **DRAINAGE DEPRESSION SWALE DETAIL** NTS

NOTE:
DRAINAGE SWALE TO BE MINIMUM 1FT FROM EDGE OF FOUNDATION

ENGINEERING

CALIFORNIA WATER SERVICE ™

DEPARTMENT

REVISIONS:
R1-(9/9/21) PER COUNTY REVIEW COMMENTS
R2-(9-27-2021) CHANGE DIAMETER OF TANK
R3-(6/24/2022) ADD NEW TRANSFORMER & MCC PADS & ADDED CONTOURS SH
R4-ADD SD LINE & BIO-RETENTION 2/17/23

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC		X

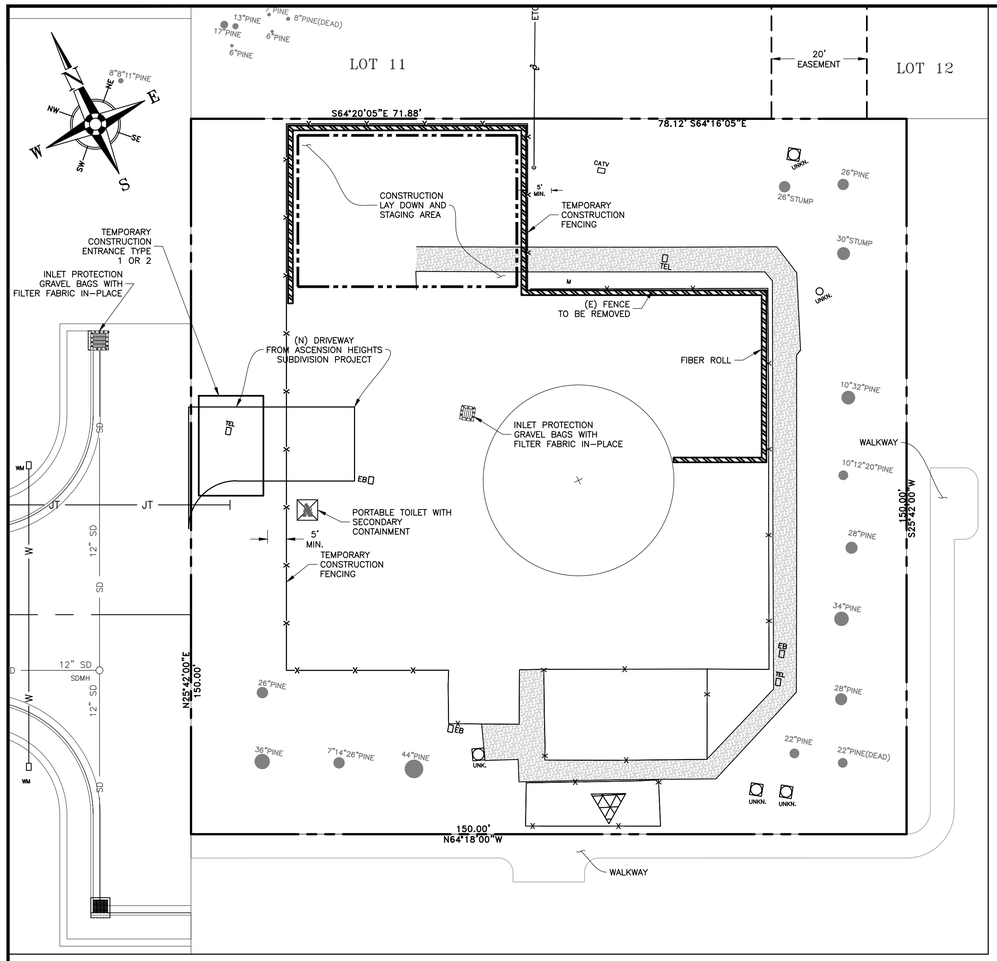
PLAT SHEET NO.: SM-31-22
SCALE: AS SHOWN
DRAWN BY: D. HEARN
DESIGNED BY: J. HUYNH
TECH REVIEW: DATE:
CHECKED BY: DATE: 5/31/2023
APPROVED BY: DATE: 6/1/2023

REGISTERED PROFESSIONAL ENGINEER — DEVI SEKHAR PRASANNA — No. C76302 — CIVIL — STATE OF CALIFORNIA

TITLE:
MPS - SAN MATEO STA 031
STANDARD BOLTED STEEL STORAGE TANK
GRADING PLAN

DISTRICT: 116-MPS
SAN MATEO
DATE: 2/3/2021
PROJECT ID.: 00116772
DRAWING NO.: MPS-5641 R4
SHT 1 OF 1

USERNAME: jhuynh 5/31/2023 3:55 PM
FILENAME: G:\Capital_Projects\116_Mid_Peninsula\00118772_Sta_31_ASCENSION HEIGHTS BAYWOOD TANK\2 - DESIGN\500 - Drawings\working drawings\MPS5641_Grading Plan 4-24-2023.dwg



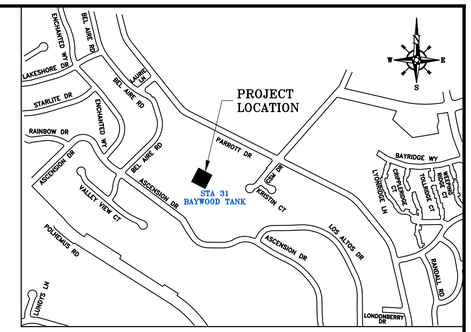
EROSION CONTROL PLAN
SCALE: 1" = 15'

LEGEND

- LAYDOWN / STAGING
- WADDLES/FIBER ROLLS
- INLET PROTECTION
- EXISTING FENCE
- TEMPORARY CONSTRUCTION FENCING

STATION ADDRESS

OFF OF BEL AIRE ROAD, SAN MATEO, CA
94551 ALAMEDA COUNTY
APN# 098-034802000



VICINITY MAP
Not to Scale

EROSION CONTROL NOTES:

1. CONTRACTOR SHALL APPLY CALTRAN BEST MANAGEMENT PRACTICES TO PREVENT WATER AND SEDIMENT FROM ENTERING NAVIGABLE WATERWAYS. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND INSTALLING THE APPLICABLE AND APPROPRIATE BMP'S IDENTIFIED IN THE CASQA SMBMP HANDBOOK (JANUARY 2003) AVAILABLE ONLINE AT HTTP://WWW.CABMPHANDBOOKS.COM SOME OF THE REQUIRED PRACTICES MAY OR MAY NOT BE SHOWN ON THIS SITE PLAN.
2. FOLLOWING BMP'S FROM CASQA SMBMP HANDBOOK (JANUARY 2003) WILL BE IMPLEMENTED:
   a. SE-5 TEMPORARY STRAW WATTLES
   b. SE-10 STORM DRAIN INLET PROTECTION
   c. SP STOCKPILE MANAGEMENT
   d. WM-8 CONCRETE WASTE MANAGEMENT
   e. TC-1 TEMPORARY CONSTRUCTION ENTRANCE AND EXIT
3. CONSTRUCTION OPERATIONS – DUST SHALL BE CONTROLLED. WASTEWATER GENERATED DURING CONSTRUCTION SHALL NOT BE DISCHARGED TO THE STORM DRAIN SYSTEM. THIS INCLUDES WATER FROM PAINTING, SAW CUTTING, CONCRETE WORK ETC. THE CONTRACTOR SHALL MAKE ARRANGEMENTS TO ELIMINATE DISCHARGES TO THE STORM DRAIN SYSTEM AND THE EXISTING SUMP. IF NECESSARY PROVIDE AN AREA FOR ON-SITE WASHING ACTIVITIES DURING CONSTRUCTIONS. MATERIALS THAT COULD CONTAMINATE STORM RUNOFF SHALL BE STORED IN AREA WHICH IS DESIGNATED TO PREVENT EXPOSURE TO RAINFALL AND TO NOT ALLOW STORM WATER TO RUN ONTO THE AREA.
4. AREAS REQUIRED CLEANING SHOULD BE SWEEP. THIS INCLUDES RESIDUES FROM SAW CUTTING, GRINDING AND PAVING.
5. CONTRACTOR MUST KEEP THE SITE CLEAN AT ALL TIME, AND MINIMIZE NEGATIVE IMPACT TO THE SURROUNDING AREAS AND NEIGHBORS. MATERIALS, TOOLS AND EQUIPMENT MUST BE KEPT SAFE AND OUT OF PUBLIC DANGER AT ALL TIME DURING CONSTRUCTION.
6. EROSION CONTROL MEASURES ARE TEMPORARY AND TO BE USED ONLY DURING CONSTRUCTION.
7. DUE TO LIMITED LAYDOWN AREA, CONTRACTOR SHALL PLACE CONCRETE WASHOUT, PORTABLE TOILETS, REFUSE PILES, DEBRIS BOXES AND STOCKPILES ONSITE AS NECESSARY. ALL POTENTIAL CONTAMINATES SHALL BE PROTECTED FROM RUNOFF AND LOCATED AWAY FROM SURFACE WATER LOCATIONS AND STORM DRAIN INLETS.
8. PROVIDE INLET PROTECTION USING GRAVEL BAG WITH FILTER FABRIC IN PLACE FOR SECOND EXISTING CATCH BASIN LOCATED SOUTH EAST OF CATCH BASIN SHOWN ON PLAN VIEW.

ENGINEERING

CALIFORNIA WATER SERVICE™

DEPARTMENT

REVISIONS:
R1-(9/9/21) PER COUNTY REVIEW COMMENTS
R2-(9/24/21) PER COUNTY REVIEW COMMENTS
R3-(8/23/22) UPDATE PE STAMP

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC		

PLAT SHEET NO.: SM-31-22
SCALE: AS SHOWN
DRAWN BY: D. HEARN
DESIGNED BY: J. HUYNH
TECH REVIEW: DATE:
CHECKED BY: DATE: 8/26/2022
APPROVED BY: DATE: 9/7/2022

REGISTERED PROFESSIONAL ENGINEER
AMIVINOD KASHYAP
No. C78945
EXP. 03-31-24
CIVIL
STATE OF CALIFORNIA

TITLE:
MPS - SAN MATEO STA 031
58,929 GALLON BOLTED STEEL TANK
EROSION CONTROL

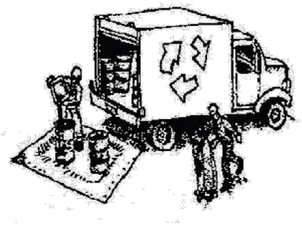
DISTRICT: 116-MPS
SAN MATEO
DATE: 1/8/2021
PROJECT ID.: 00118772
DRAWING NO.: MPS-5642 R3
SHT 1 OF 3

SAN MATEO COUNTYWIDE
Water Pollution Prevention Program
Clean Water. Healthy Community.

Construction Best Management Practices (BMPs)

Construction projects are required to implement the stormwater best management practices (BMP) on this page, as they apply to your project, all year long.

Materials & Waste Management



Non-Hazardous Materials

- ❑ Berm and cover stockpiles of sand, dirt or other construction material with tarps when rain is forecast or if not actively being used within 14 days.
- ❑ Use (but don't overuse) reclaimed water for dust control.

Hazardous Materials

- ❑ Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with city, county, state and federal regulations.
- ❑ Store hazardous materials and wastes in water tight containers, store in appropriate secondary containment, and cover them at the end of every work day or during wet weather or when rain is forecast.
- ❑ Follow manufacturer's application instructions for hazardous materials and be careful not to use more than necessary. Do not apply chemicals outdoors when rain is forecast within 24 hours.
- ❑ Arrange for appropriate disposal of all hazardous wastes.

Waste Management

- ❑ Cover waste disposal containers securely with tarps at the end of every work day and during wet weather.
- ❑ Check waste disposal containers frequently for leaks and to make sure they are not overfilled. Never hose down a dumpster on the construction site.
- ❑ Clean or replace portable toilets, and inspect them frequently for leaks and spills.
- ❑ Dispose of all wastes and debris properly. Recycle materials and wastes that can be recycled (such as asphalt, concrete, aggregate base materials, wood, gyp board, pipe, etc.)
- ❑ Dispose of liquid residues from paints, thinners, solvents, glues, and cleaning fluids as hazardous waste.

Construction Entrances and Perimeter

- ❑ Establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from site and tracking off site.
- ❑ Sweep or vacuum any street tracking immediately and secure sediment source to prevent further tracking. Never hose down streets to clean up tracking.

Equipment Management & Spill Control

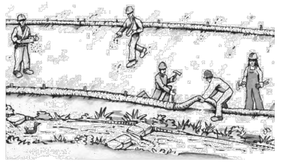
Maintenance and Parking

- ❑ Designate an area, fitted with appropriate BMPs, for vehicle and equipment parking and storage.
- ❑ Perform major maintenance, repair jobs, and vehicle and equipment washing off site.
- ❑ If refueling or vehicle maintenance must be done onsite, work in a bermed area away from storm drains and over a drip pan or drop cloths big enough to collect fluids. Recycle or dispose of fluids as hazardous waste.
- ❑ If vehicle or equipment cleaning must be done onsite, clean with water only in a bermed area that will not allow rinse water to run into gutters, streets, storm drains, or surface waters.
- ❑ Do not clean vehicle or equipment onsite using soaps, solvents, degreasers, or steam cleaning equipment.

Spill Prevention and Control

- ❑ Keep spill cleanup materials (e.g., rags, absorbents and cat litter) available at the construction site at all times.
- ❑ Inspect vehicles and equipment frequently for and repair leaks promptly. Use drip pans to catch leaks until repairs are made.
- ❑ Clean up spills or leaks immediately and dispose of cleanup materials properly.
- ❑ Do not hose down surfaces where fluids have spilled. Use dry cleanup methods (absorbent materials, cat litter, and/or rags).
- ❑ Sweep up spilled dry materials immediately. Do not try to wash them away with water, or bury them.
- ❑ Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
- ❑ Report significant spills immediately. You are required by law to report all significant releases of hazardous materials, including oil. To report a spill: 1) Dial 911 or your local emergency response number, 2) Call the Governor's Office of Emergency Services Warning Center, (800) 852-7550 (24 hours).

Earthmoving

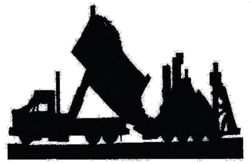


- ❑ Schedule grading and excavation work during dry weather.
- ❑ Stabilize all denuded areas, install and maintain temporary erosion controls (such as erosion control fabric or bonded fiber matrix) until vegetation is established.
- ❑ Remove existing vegetation only when absolutely necessary, and seed or plant vegetation for erosion control on slopes or where construction is not immediately planned.
- ❑ Prevent sediment from migrating offsite and protect storm drain inlets, gutters, ditches, and drainage courses by installing and maintaining appropriate BMPs, such as fiber rolls, silt fences, sediment basins, gravel bags, berms, etc.
- ❑ Keep excavated soil on site and transfer it to dump trucks on site, not in the streets.

Contaminated Soils

- ❑ If any of the following conditions are observed, test for contamination and contact the Regional Water Quality Control Board:
  - Unusual soil conditions, discoloration, or odor.
  - Abandoned underground tanks.
  - Abandoned wells
  - Buried barrels, debris, or trash.

Paving/Asphalt Work



- ❑ Avoid paving and seal coating in wet weather or when rain is forecast, to prevent materials that have not cured from contacting stormwater runoff.
- ❑ Cover storm drain inlets and manholes when applying seal coat, tack coat, slurry seal, fog seal, etc.
- ❑ Collect and recycle or appropriately dispose of excess abrasive gravel or sand. Do NOT sweep or wash it into gutters.
- ❑ Do not use water to wash down fresh asphalt concrete pavement.

Sawcutting & Asphalt/Concrete Removal

- ❑ Protect nearby storm drain inlets when saw cutting. Use filter fabric, catch basin inlet filters, or gravel bags to keep slurry out of the storm drain system.
- ❑ Shovel, abosorb, or vacuum saw-cut slurry and dispose of all waste as soon as you are finished in one location or at the end of each work day (whichever is sooner!).
- ❑ If sawcut slurry enters a catch basin, clean it up immediately.

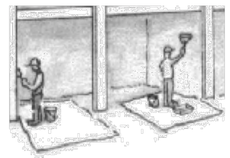
Concrete, Grout & Mortar Application

- ❑ Store concrete, grout, and mortar away from storm drains or waterways, and on pallets under cover to protect them from rain, runoff, and wind.
- ❑ Wash out concrete equipment/trucks offsite or in a designated washout area, where the water will flow into a temporary waste pit, and in a manner that will prevent leaching into the underlying soil or onto surrounding areas. Let concrete harden and dispose of as garbage.
- ❑ When washing exposed aggregate, prevent washwater from entering storm drains. Block any inlets and vacuum gutters, hose washwater onto dirt areas, or drain onto a bermed surface to be pumped and disposed of properly.

Landscaping

- ❑ Protect stockpiled landscaping materials from wind and rain by storing them under tarps all year-round.
- ❑ Stack bagged material on pallets and under cover.
- ❑ Discontinue application of any erodible landscape material within 2 days before a forecast rain event or during wet weather.

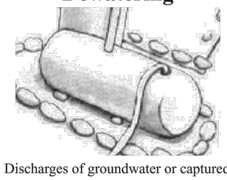
Painting & Paint Removal



Painting Cleanup and Removal

- ❑ Never clean brushes or rinse paint containers into a street, gutter, storm drain, or stream.
- ❑ For water-based paints, paint out brushes to the extent possible, and rinse into a drain that goes to the sanitary sewer. Never pour paint down a storm drain.
- ❑ For oil-based paints, paint out brushes to the extent possible and clean with thinner or solvent in a proper container. Filter and reuse thinners and solvents. Dispose of excess liquids as hazardous waste.
- ❑ Paint chips and dust from non-hazardous dry stripping and sand blasting may be swept up or collected in plastic drop cloths and disposed of as trash.
- ❑ Chemical paint stripping residue and chips and dust from marine paints or paints containing lead, mercury, or tributyltin must be disposed of as hazardous waste. Lead based paint removal requires a state-certified contractor.

Dewatering



- ❑ Discharges of groundwater or captured runoff from dewatering operations must be properly managed and disposed. When possible send dewatering discharge to landscaped area or sanitary sewer. If discharging to the sanitary sewer call your local wastewater treatment plant.
- ❑ Divert run-on water from offsite away from all disturbed areas.
- ❑ When dewatering, notify and obtain approval from the local municipality before discharging water to a street gutter or storm drain. Filtration or diversion through a basin, tank, or sediment trap may be required.
- ❑ In areas of known or suspected contamination, call your local agency to determine whether the ground water must be tested. Pumped groundwater may need to be collected and hauled off-site for treatment and proper disposal.

Storm drain polluters may be liable for fines of up to $10,000 per day!

ENGINEERING

CALIFORNIA WATER SERVICE

DEPARTMENT

REVISIONS:
R1-(9/9/21) PER COUNTY REVIEW COMMENTS
R2-(9/24/21) PER COUNTY REVIEW COMMENTS
R3-(8/23/22) UPDATE PE STAMP

	DATE:	INIT.
DISTRIBUTION MAP	☐	
PLAT SHEET	☐	
SYSTEM SCHEMATIC	☐	
STATION SCHEMATIC	☐	

PLAT SHEET NO.: SM-31-22
SCALE: AS SHOWN
DRAWN BY: D. HEARN
DESIGNED BY: J. HUYNH
TECH REVIEW: DATE:
CHECKED BY: DATE: 8/26/2022
APPROVED BY: DATE: 9/7/2022

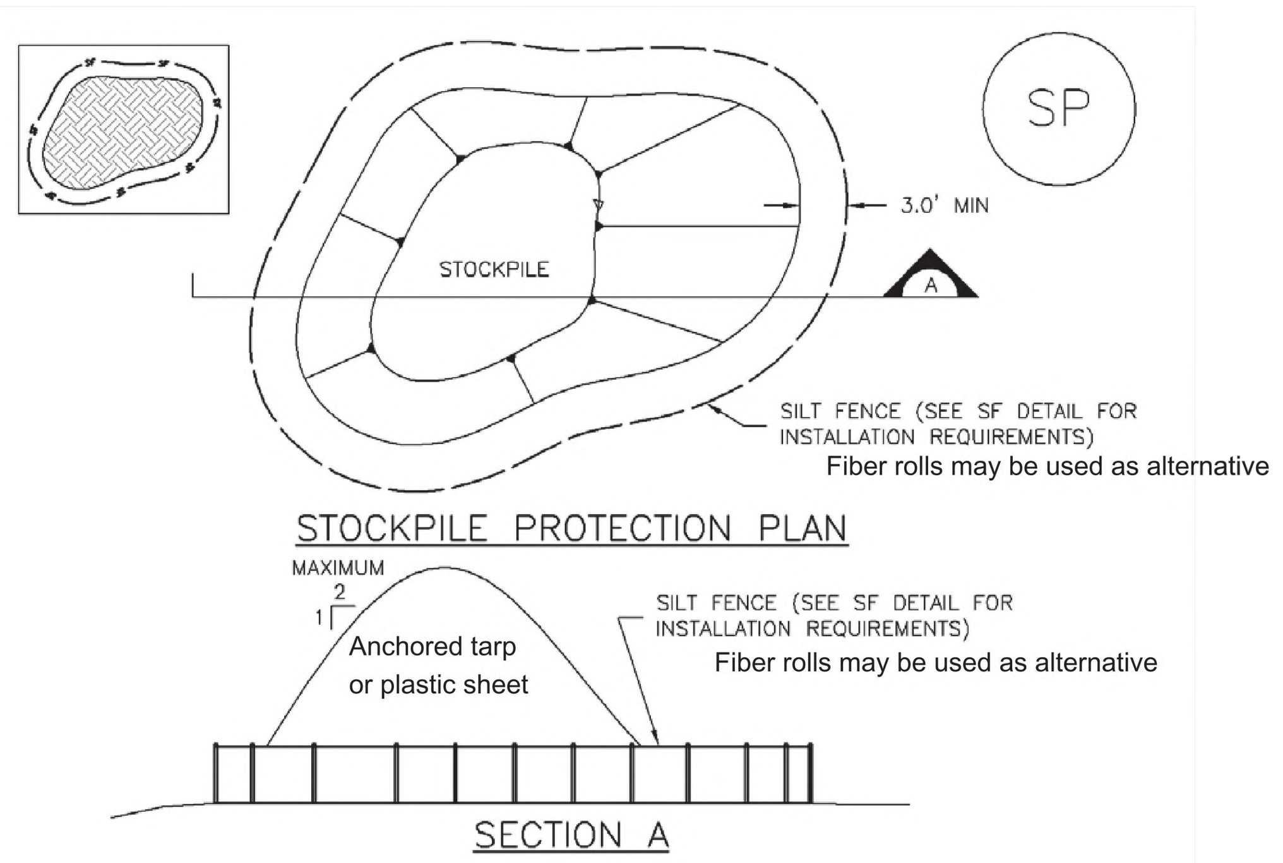
REGISTERED PROFESSIONAL ENGINEER
PRASHANT VINOD KASLIWAL
No. C78945
EXP. 03-31-24
CIVIL
STATE OF CALIFORNIA

MPS - SAN MATEO STA 031
58,929 GALLON BOLTED STEEL TANK
EROSION CONTROL

TITLE:
DISTRICT: 116-MPS
SAN MATEO
DATE: 1/8/2021
PROJECT ID.: 00118772
DRAWING NO.: MPS-5642 R3
SHT 2 OF 3

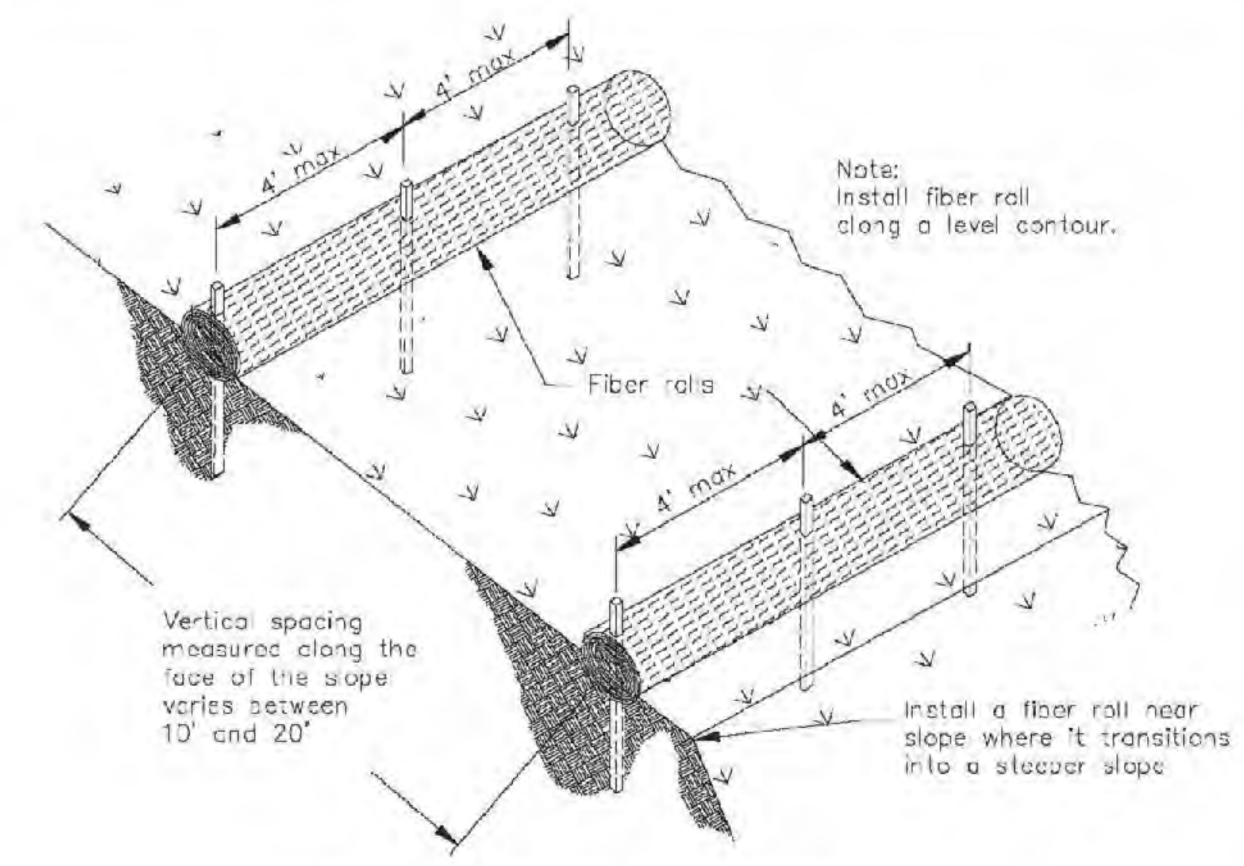
USERNAME: Dhearn 8/24/2022 8:27 AM
FILENAME: G:\Capital_Projects\116_Mid_Peninsula\00118772_Sta_31_ASCENSION HEIGHTS BAYWOOD TANK\2 - DESIGN\500 - Drawings\working drawings\MPS-5642 erosion control 8-24-2022.dwg

Stockpile Management (SP)

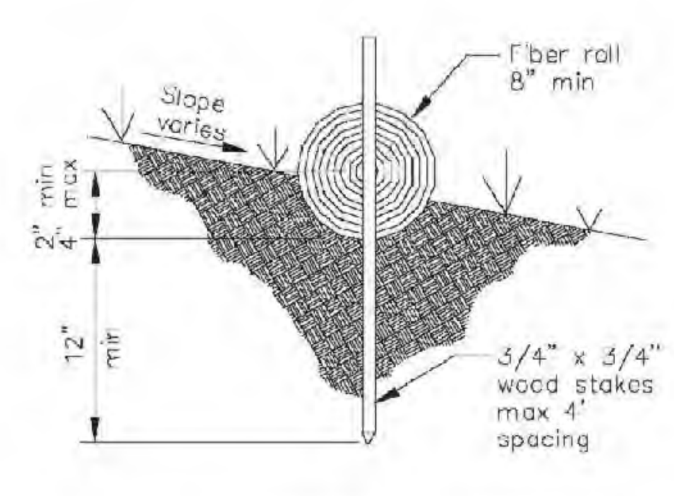


SP–1. STOCKPILE PROTECTION

Fiber Rolls SE-5



TYPICAL FIBER ROLL INSTALLATION
N.T.S.

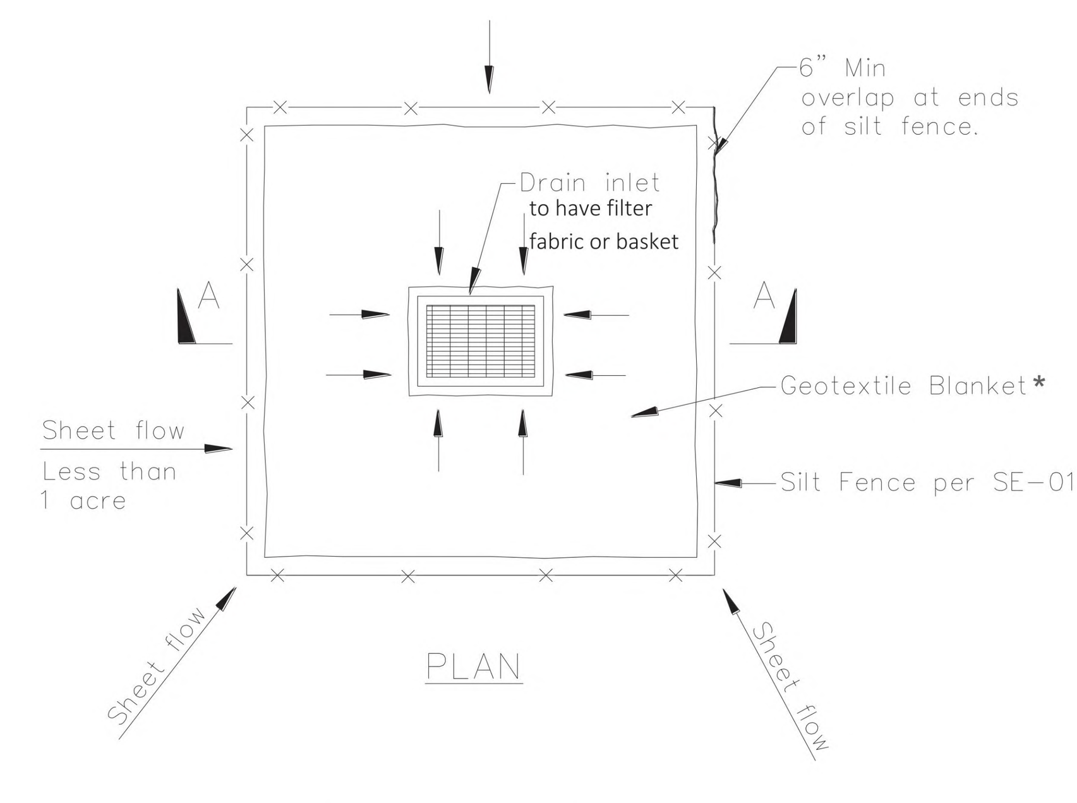


ENTRENCHMENT DETAIL
N.T.S.

NOTES:
If more than one fiber roll is placed in a row, the rolls must be overlapped, not abutted.
Turn the ends of the fiber roll up-slope to prevent runoff from going around the roll.

Storm Drain Inlet Protection SE-10

SECTION A–A

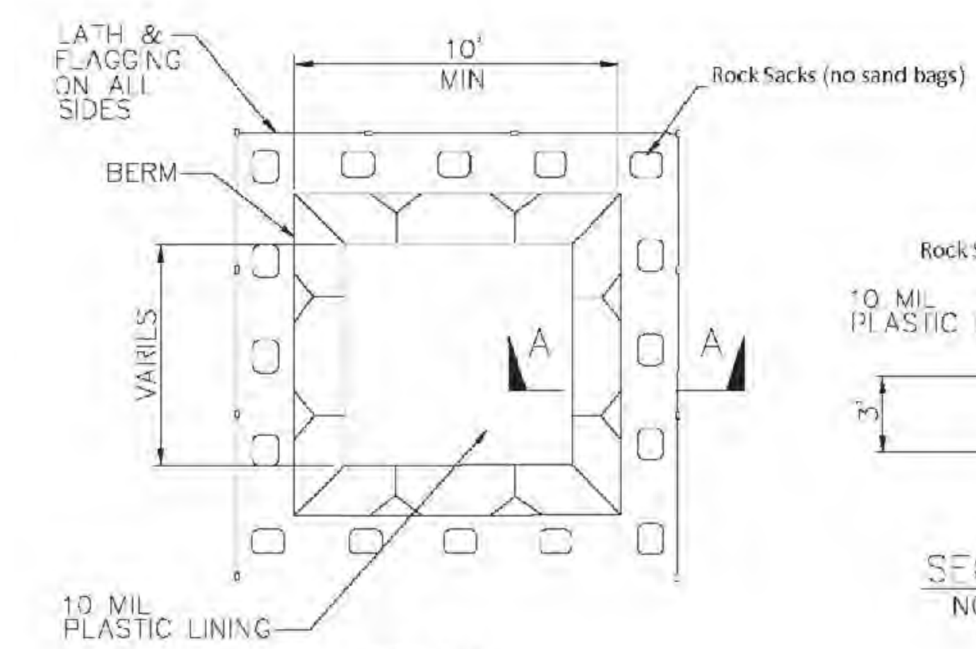


PLAN

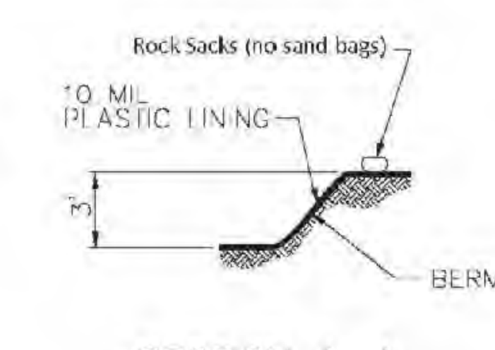
DI PROTECTION TYPE 1
NOT TO SCALE

NOTES:
1. For use in areas where grading has been completed and final soil stabilization and seeding are pending.
2. Not applicable in paved areas.
3. Not applicable with concentrated flows.

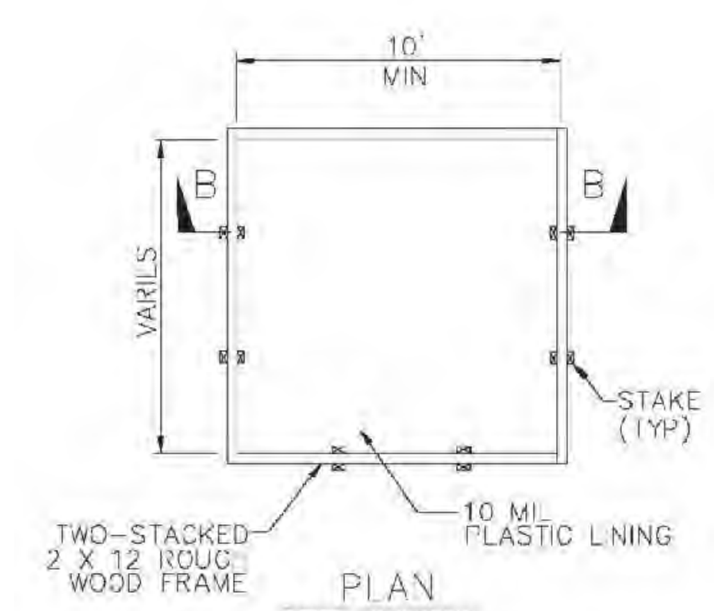
Concrete Waste Management WM-8



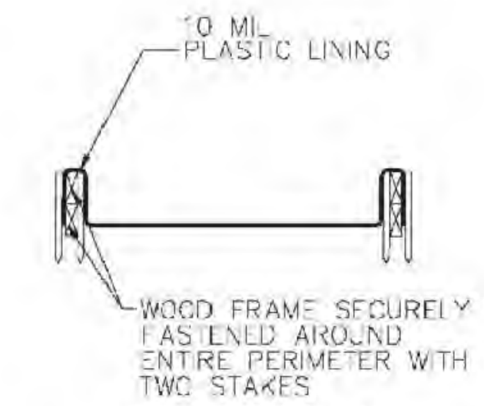
PLAN
NOT TO SCALE
TYPE "BELOW GRADE"



SECTION A–A
NOT TO SCALE



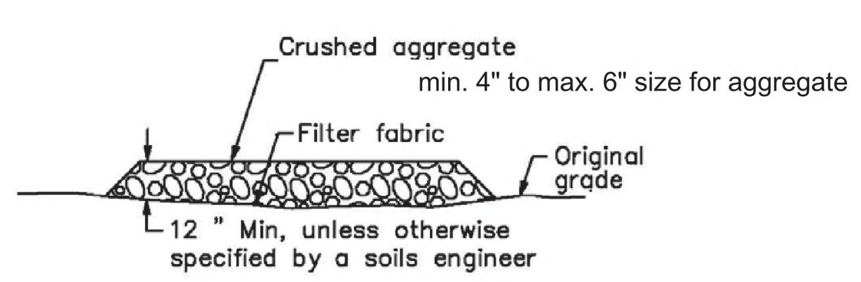
PLAN
NOT TO SCALE
TYPE "ABOVE GRADE"



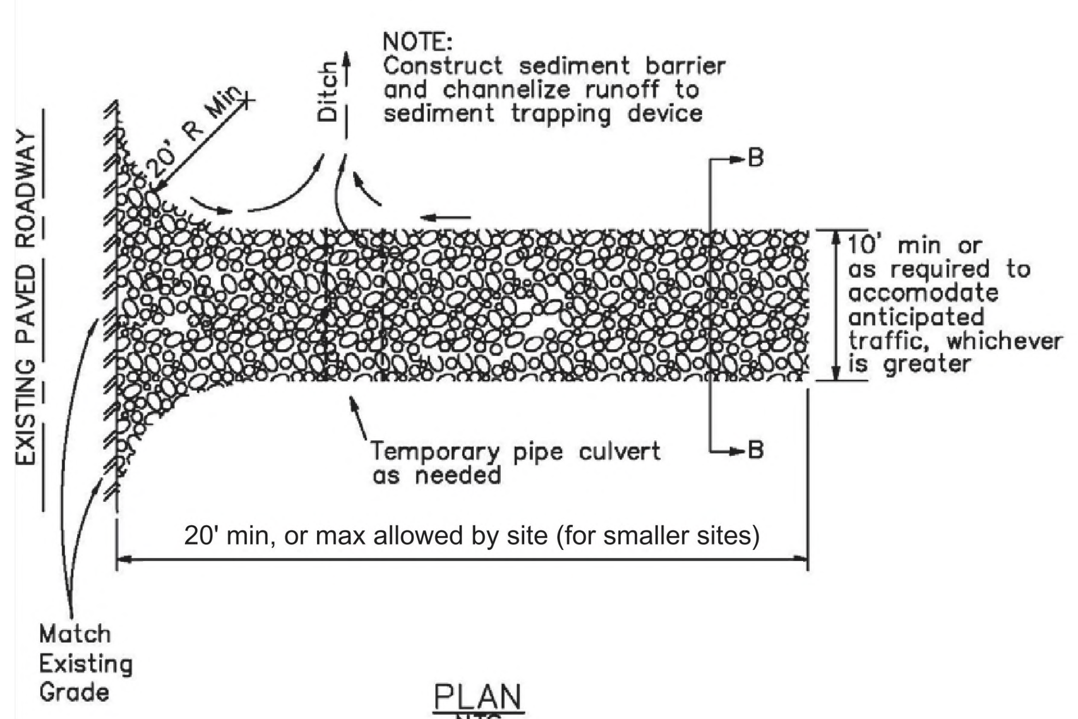
SECTION B–B
NOT TO SCALE

NOTES
1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

Stabilized Construction Entrance/Exit TC-1



SECTION B–B
NTS



PLAN
NTS

ENGINEERING
DEPARTMENT

REVISIONS:
R1–(9/9/21) PER COUNTY REVIEW COMMENTS
R2–(9/24/21) PER COUNTY REVIEW COMMENTS
R3–(8/23/22) UPDATE PE STAMP

	DATE:	INIT.
DISTRIBUTION MAP ☐		
PLAT SHEET ☐		
SYSTEM SCHEMATIC ☐		
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REGISTERED PROFESSIONAL ENGINEER
RASHMI VINOD KASHYAP
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TITLE: MPS – SAN MATEO STA 031
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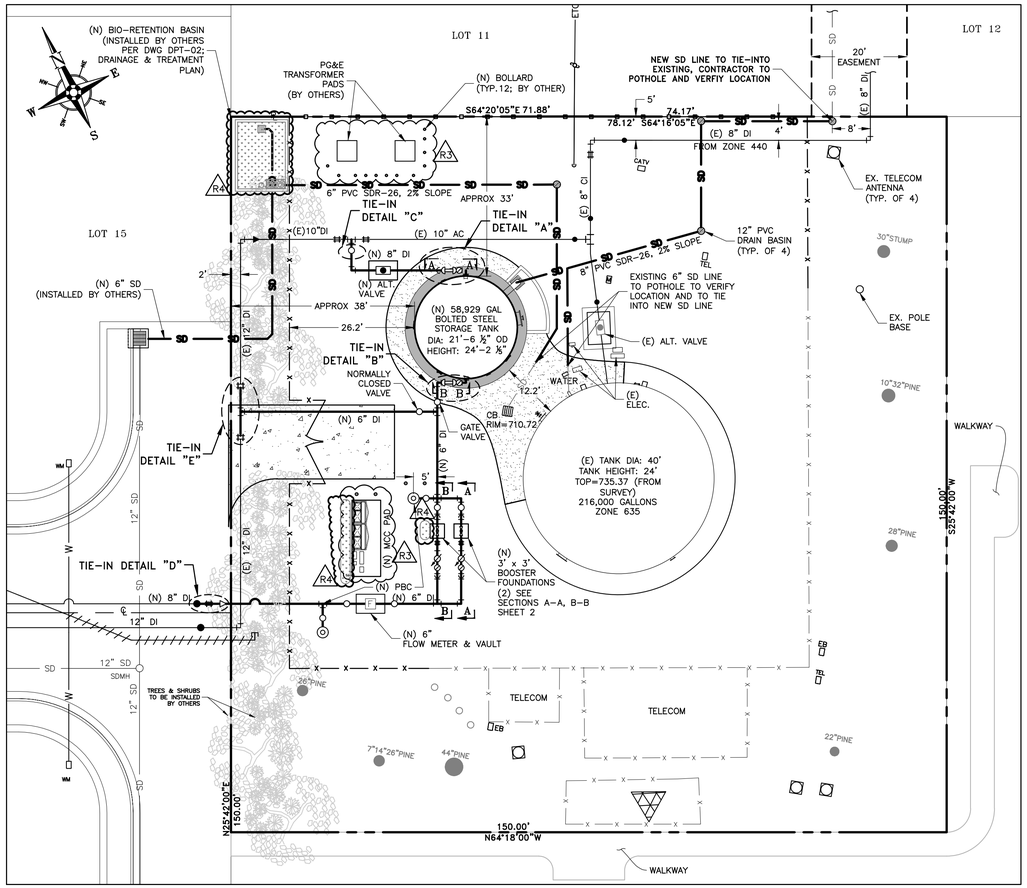
MPS - SAN MATEO
STATION 031 - ASCENSION DR & BEL AIRE RD
INSTALL TANK AND BOOSTER PUMP



PROPOSED SITE PLAN

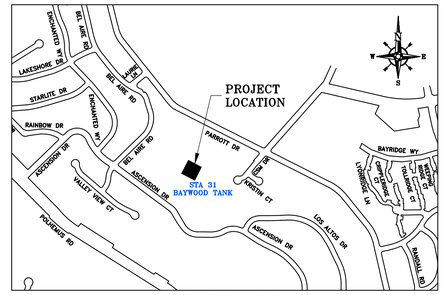
SCALE: 1" = 15'

STATION ADDRESS

OFF OF BEL AIRE ROAD, SAN MATEO, CA
94551 ALAMEDA COUNTY
APN# 098-034802000

LEGEND:

- = TEE
- = ELBOW, 45°
- = ELBOW, 90°
- = BLOWOFF (PROPOSED)
- = BLOWOFF (EXISTING)
- = GATE VALVE (PROPOSED)
- = GATE VALVE (EXISTING)
- = REDUCER (PROPOSED)
- = REDUCER (EXISTING)
- = SOLID PLUG
- = PROPOSED WATER MAIN
- = EXISTING WATER MAIN
- = WALL
- = SANITARY SEWER
- = STORM DRAIN
- = FIRE HYDRANT (PROPOSED)
- = FIRE HYDRANT (EXISTING)
- = BUTTERFLY VALVE
- = CHECK VALVE
- = FLEX CPLG.
- = ALTITUDE VALVE
- = FLOOR DRAIN PLAN



VICINITY MAP

Not to Scale

BILL OF MATERIALS
BOOSTER PUMPS

QTY	DESCRIPTION
±15 LF	8" DI PIPE w/RESTRAINT GASKETS
±130 LF	6" DI PIPE w/RESTRAINT GASKETS
1	8" GATE VALVE, PO w/RESTRAINT GASKETS
2	8" ELL, 90° FLG, 150#
1	8" ELL, 90° PO X FLG 150# w/RESTRAINT GASKETS
1	8" ELL, 90° PO w/RESTRAINT GASKETS
1	8" CL&C FOE-POE 150# (6'-0" LONG), CUT TO FIT
1	8" DI FOE-POE, 150# (6'-0" LONG), CUT TO FIT
1	8" BUTTERFLY VALVE FLG, 150#
2	8" SOW, FLG 150#
3	6" BUTTERFLY VALVE FLG, 150#
6	6" ELL, 90° FLG, 150#
5	6" ELL, 90° PO X FLG 150# w/RESTRAINT GASKETS
2	6" ELL, 90° PO w/RESTRAINT GASKETS
1	6" STEEL CML PIPE, FBE (6'-0" LONG), 150#
7	6" GATE VALVE, PO w/RESTRAINT GASKETS
2	6" CHECK VALVE, FLG, 150#
5	6" CL&C FOE-POE 150# (6'-0" LONG), CUT TO FIT
5	6" SOW, FLG 150#
4	6" STEEL CML PIPE, FOE-POE (1'-6" LONG), 150#
2	SET OF TIE RODS AND CLIPS
2	6" STEEL CML PIPE, FBE (1'-6" LONG), 150#
4	6" STEEL CML PIPE, FBE (1'-0" LONG), 150#
1	6" DI FOE-POE, 150# (6'-0" LONG), CUT TO FIT
3	6" TEE PO w/RESTRAINT GASKETS
1	6" CROSS PO w/RESTRAINT GASKETS
2	ACOUSTICAL SHELTERS (OWNER FURNISH)
2	2" WELDED THREAD-O-LET W/2" BALL VALVE AND PLUG
1	½" SENSING LINE TAP, CORP COCK AND ASSEMBLIES
1	8"FLEX-TEND EXPANSION JOINT (OWNER FURNISH)
1	6"FLEX-TEND EXPANSION JOINT (OWNER FURNISH)
1	6" MAGMETER (OWNER FURNISH)
1	8" CLA-VAL (OWNER FURNISH)
1	48" X 72" ARMORCAST VAULT
1	48" X 60" ARMORCAST VAULT
2	6" RESTRAINED FLANGE ADAPTER OR MEGA FLANGE
2	8" RESTRAINED FLANGE ADAPTER OR MEGA FLANGE
2	3"X6" WEDGEMOUNT AIR LOC HD
9	VALVE CASING COVER AND ASSEMBLY

FIRE HYDRANT CONNECTION

QTY	DESCRIPTION
2	INSTALL 6" CLOW 960 FIRE HYDRANT AND 6" GATE VALVE (SEE HYDRANT DETAILS ON DWG :CW-DWG)

MISCELLANEOUS

AS REQ'D	THRUST BLOCKS REQUIRED ON ALL FITTINGS
AS REQ'D	TRACER WIRE #12 AWG STRANDED COPPER, THWN INSULATED
AS REQ'D	LINEGUARD TAPE
AS REQ'D	POLYWRAP TUBING
AS REQ'D	PVC TAPE
AS REQ'D	METAL GUARD #301
AS REQ'D	RES-BIT WRAP (100' ROLL)
AS REQ'D	2" BLOW OF ASSEMBLIES FOR TESTING, DISINFECTION, AND FLUSHING
MISC.	MATERIALS INCLUDING CAPS FOR TESTING, DISINFECTION, AND FLUSHING

REFERENCE LIST ONLY – CONTRACTOR TO VERIFY AND OBTAIN ALL MATERIALS REQUIRED TO COMPLETE THE PROJECT.

STORM DRAIN

95 LF ±	6" PVC SDR-26
110±	8" PVC SDR-26
1	2'x2' CONCRETE CATCH BASIN
4	12" Ø D PVC DRAIN BASIN w/ ROUND DUCTILE IRON GRATE
MISC.	COUPLINGS AND FITTINGS FOR TIE-IN

GENERAL NOTES:

1. CONTRACTOR SHALL BECOME FAMILIAR WITH PROJECT SURROUNDINGS, WORKING CONDITIONS, AND SITE LIMITATIONS AND WILL INCLUDE ALLOWANCES IN THEIR BID TO COVER ANY PROJECT CONSTRAINTS.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR ADHERING TO AND COMPLYING WITH LOCAL GOVERNING AGENCY PERMIT RESTRICTIONS, WHICH MAY AFFECT ALLOWABLE WORKING HOURS AND NOISE LEVELS.
3. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL AS REQUIRED BY APPLICABLE LOCAL GOVERNING AGENCY. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN PER CALTRANS STANDARDS TO OWNER PRIOR TO CONSTRUCTION, IF REQUIRED. WORK REQUIRING TRAFFIC CONTROL SHALL BE CONDUCTED BETWEEN THE HOURS OF 9:00 A.M. AND 3:30 P.M., MONDAY THRU FRIDAY, OR AS OTHERWISE AUTHORIZED BY LOCAL GOVERNING AGENCY REPRESENTATIVE.
4. CONTRACTOR SHALL APPLY CALTRAN BEST MANAGEMENT PRACTICES TO PREVENT WATER AND SEDIMENT FROM ENTERING NAVIGABLE WATERWAYS. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND INSTALLING THE APPLICABLE AND APPROPRIATE BMP'S IDENTIFIED IN THE CALTRANS CONSTRUCTION SITE BMP MANUAL (MAY 2017) AVAILABLE ONLINE AT HTTP://WWW.DOT.CA.GOV/HQ/CONSTRUC/STORMWATER/MANUALS.HTM. SOME OF THE REQUIRED PRACTICES MAY OR MAY NOT BE SHOWN ON THIS SITE PLAN.
5. CONTRACTOR TO CONTACT "UNDERGROUND SERVICE ALERT" 48 HOURS PRIOR TO ANY EXCAVATION.
6. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXACT LOCATION AND DEPTH OF ALL EXISTING UTILITIES.
7. TRENCH TO BE SHORED IN ACCORDANCE WITH CALIFORNIA OSHA REGULATIONS.
8. PLACE A CONTINUOUS WIRE AND STRIP OF DETECTOR TAPE OVER ALL PIPES AND EXTEND UP INTO ALL VALVE BOXES. TRACER WIRE IS REQUIRED ON ALL PIPE. (SEE LATEST REVISION OF DRAWING CW-850).
9. SEE LATEST REVISION OF DRAWING CW-435 FOR TYPICAL THRUST BLOCK INSTALLATION. IN ADDITION TO RESTRAINT GASKETS, ALL FITTINGS TO HAVE THRUST BLOCKS.
10. FACILITIES SEPARATION:
    A) WATER MAIN SHALL BE INSTALLED AT LEAST 10 FEET HORIZONTALLY FROM AND ONE FOOT VERTICALLY ABOVE ANY PARALLEL PIPELINE CONVEYING SEWAGE (UNTREATED, PRIMARY, OR SECONDARY), DISINFECTED SECONDARY RECYCLED WATER, OR HAZARDOUS FLUIDS.
    B) WATER MAIN SHALL BE INSTALLED AT LEAST 4 FEET HORIZONTALLY FROM AND ONE FOOT VERTICALLY ABOVE ANY PIPELINE CONVEYING TERTIARY RECYCLED WATER OR STORM DRAINAGE.
    C) AT CROSSINGS, WATER MAIN SHALL BE CONSTRUCTED NO LESS THAN 45-DEGREES TO AND AT LEAST ONE FOOT VERTICALLY ABOVE ANY PIPELINES INDICATED IN A AND B ABOVE.
    D) NO CONNECTION JOINTS SHALL BE MADE IN THE WATER MAIN WITHIN EIGHT (8) HORIZONTAL FEET OF CROSSING ANY PIPELINES INDICATED IN A AND B ABOVE.
    E) WATER MAIN SHALL NOT BE INSTALLED WITHIN 100 HORIZONTAL FEET OF ANY SANITARY LANDFILL, WASTEWATER DISPOSAL POND, OR HAZARDOUS WASTE DISPOSAL SITE.
    F) WATER MAIN SHALL NOT BE INSTALLED WITHIN 25 HORIZONTAL FEET OF ANY CESSPOOL, SEPTIC TANK, SEWAGE LEACH FIELD, SEEPAGE PIT, UNDERGROUND HAZARDOUS MATERIAL STORAGE TANK, OR GROUNDWATER RECHARGE PROJECT SITE.
11. WHEN ASSEMBLING A PVC C-900 PIPE TO AN IRON FITTING (PUSH-ON OR MECHANICAL JOINT), REMOVE ALL BUT 1/4 INCH OF THE FACTORY-MADE BEVEL FROM THE SPIGOT END OF THE PIPE PRIOR TO INSTALLATION.
12. VALVE CANS AND COVERS SHALL BE PLACED OVER ALL VALVES. COVERS SHALL BE SET TO EXISTING FINISHED GRADE AND RESET IF NECESSARY ONCE THE STREET IS AT FINAL GRADE. (SEE LATEST REVISION OF DRAWINGS CW-14 AND CW-439).
13. NO VALVE COVERS ARE TO LIE IN SIDEWALKS, CROSS GUTTER, CURB OR DRIVEWAYS. EACH SERVICE SHOULD ALSO BE LOCATED TO PROVIDE PROTECTION TO THE METER BOX FROM VEHICLE TRAFFIC AND PARKING.
14. PROTECT UNDERGROUND FLEXIBLE COUPLINGS, BARE STEEL, MJ x MJ SLEEVES, AND ALL BOLTS (INCLUDING STAINLESS STEEL) AS FOLLOWS:
    A) THE ENTIRE AREA OF THE FITTING MUST BE DRY AND FREE OF DUST, DIRT, AND OTHER FOREIGN MATTER. RUST OR OTHER FOREIGN MATTER MUST BE REMOVED BY SCRAPING OR WIRE BRUSHING. WIPING WITH A DRY CLEAN CLOTH MAY BE NECESSARY TO REMOVE THE PARTICLES FROM BRUSH CLEANING. ANY OIL OR GREASE MUST BE REMOVED BY USING A LOW RESIDUE, VOLATILE PETROLEUM SOLVENT BEFORE APPLICATION OF GREASE AND WRAPPING.
    B) THE EXPOSED AREA SHOULD BE COATED WITH A HEAVY COATING OF METALGUARD 301 GREASE BY THE GLOVE METHOD TO A THICKNESS OF AT LEAST 1/4".
    C) FIRMLY WRAP THE ENTIRE GREASE AREA WITH ONE LAYER, HALF-LAPPED, OF A WOVEN GLASS FILAMENT MESH (RES OR BIT WRAP, 4" WIDE).
    D) APPLY A SECOND LAYER OF METALGUARD 301 GREASE ON TOP OF THE GLASS FILAMENT BY THE GLOVE METHOD TO A THICKNESS OF AT LEAST 1/4".
    E) FIRMLY WRAP THE ENTIRE GREASE AREA WITH A SECOND LAYER, HALF-LAPPED, OF THE WOVEN GLASS FILAMENT MESH.
    F) COVER THE ENTIRE MESH WRAPPED AREA OF THE FITTING WITH A THIRD AND FINAL COATING AT LEAST 1/4" THICK OF METALGUARD 301 GREASE BY THE GLOVE METHOD.
    G) FIRMLY APPLY 2 LAYERS OF POLYWRAP, HALF-LAPPED, OVER ALL AREAS OF THE COATED AND WRAPPED FITTING. BACKFILLING MAY FOLLOW IMMEDIATELY AFTER THIS WRAPPING.
15. TRENCH BACKFILL AND PAVING SHALL CONFORM TO TRENCH SECTION DETAILS AND ALL GOVERNING AGENCY REQUIREMENTS.
16. NEW PIPELINE SHALL BE INSTALLED WITH 4 FEET OF COVER, EXCEPT WHERE SPECIFIED.
17. CONTRACTOR SHALL LIMIT DAILY TRENCHING OPERATIONS TO THE LENGTH OF PIPE THAT CAN BE INSTALLED AND BACKFILLED THAT DAY.
18. CONTRACTOR SHALL INSTALL NEW MAIN AND ADJUST FROM NOMINAL LINE AND GRADE TO MATCH THE EXISTING FACILITIES AT ALL LOCATIONS. THE CONTRACTOR SHALL INSTALL A TEMPORARY CAP AND BLOW-OFF AT TIE-IN LOCATIONS FOR TESTING, (SEE LATEST REVISION OF DRAWINGS CW-122 & CW-638). CONTRACTOR WILL TIE THE NEW MAIN FROM THIS LOCATION.
19. THE NEW PIPELINE SHALL BE TESTED AT 150 PSI FOR A PERIOD OF 4 HOURS. SEE SPECIFICATIONS TO DETERMINE EXACT TESTING REQUIREMENTS.
20. TIE-INS TO BE MADE AT A TIME THAT IS CONVENIENT TO OWNER WHICH MAY BE AT NIGHTS OR WEEKENDS. THE ADDITIONAL COST DUE TO OVERTIME PAY SHALL BE AT OWNER'S EXPENSE.
21. CONTRACTOR SHALL PROVIDE MISC. MATERIAL REQUIRED TO COMPLETE THE TIE-IN SUCH AS, BUT NOT LIMITED TO: PROTECTION COATING MATERIAL FOR PIPE AND FITTINGS, LINEGUARD TAPE, CONCRETE FOR THRUST BLOCKS, EMBEDMENT BACKFILL AROUND AND OVER THE PIPE, FINAL BACKFILL TO MEET COMPACTION REQUIREMENTS, AND PAVEMENT REPLACEMENT.
22. CONTRACTOR SHALL BE RESPONSIBLE TO ABANDON ALL PIPE ENDS BY PLUGGING WITH BRICK AND MORTAR. ABANDON ALL GATE VALVES BY REMOVING COVER, CUT CASING DOWN TO SUBGRADE, AND BACKFILL VALVE CASING WITH CONCRETE SLURRY TO REMOVE VOIDS. REPLACE BASE ROCK AND PERMANENT PAVEMENT AS NECESSARY. WHEN REMOVING EXISTING FITTINGS, CONTRACTOR SHALL ALSO REMOVE EXISTING CONCRETE THRUST BLOCK.
23. CONTRACTOR SHALL RESTORE LAWN, GUTTER, PAVEMENT, BERM, AND CURB TO MATCH EXISTING PER GOVERNING AGENCY'S STANDARDS.
24. SPOILS SHALL NOT REMAIN ON-SITE. DISPOSAL OF ALL PROJECT-GENERATED SPOILS SHALL BE AT A FACILITY LICENSED AND CLASSIFIED TO ACCEPT THE MATERIALS. CONTRACTOR TO PROVIDE OWNER WITH A FORMAL RECEIPT FROM THE ACCEPTING FACILITY. ALL MATERIALS THAT WILL REQUIRE TESTING PRIOR TO DISPOSAL SHALL BE SAMPLED AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE DISPOSAL FACILITY IN ADVANCE OF THE NEED FOR DISPOSAL.
25. THE LIST OF MATERIALS FOR THIS PROJECT IS FOR CWS CO. ESTIMATING AND REFERENCE PURPOSES ONLY, AND IS NOT INTENDED AS A FULL TAKE-OFF OF ALL MATERIALS REQUIRED TO COMPLETE THE PROJECT PER CWS CO. STANDARD SPECIFICATIONS.
26. AT TIE-INS, CONTRACTOR SHALL SPRAY OR SWAB ALL FITTINGS WITH CHLORINE SOLUTION FOR DISINFECTION PRIOR TO FINAL CONNECTIONS.
27. CONTRACTOR TO ENSURE AIR IN THE PIPELINE IS REMOVED USING EXISTING OUTLETS SUCH AS FIRE HYDRANTS AND BLOW OFFS. CONTRACTOR IS RESPONSIBLE FOR INSTALLING AIR RELEASES IF EXISTING OUTLETS ARE INSUFFICIENT.
28. ALL WORK SHALL COMPLY WITH CAL WATER SPECIFICATIONS FOR MATERIALS, INSTALLATION, DISINFECTION AND DECHLORINATION PER LATEST REVISION OF DRAWING CW-863.
29. ALL SLIP-ON WELDING FLANGES SHALL BE RAISED-FACE SLIP-ON WELDING FLANGES.

ENGINEERING

CALIFORNIA WATER SERVICE ™

DEPARTMENT

REVISIONS:
R1-(9/9/21) PER COUNTY REVIEW COMMENTS
R2-(9/27/21) CHANGED DIAMETER OF TANK
R3-(6/24/2022) ADD NEW TRANSFORMER & MCC PADS
DH
R4-ADD SD LINE & BIO-RETENTION
2/17/23

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC	X	

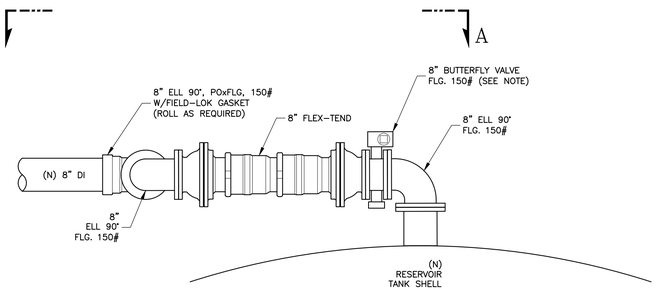
PLAT SHEET NO.: SM-31-22
SCALE: AS SHOWN
DRAWN BY: D. HEARN
DESIGNED BY: J. HUYNH
TECH REVIEW: DATE:
CHECKED BY: DATE: 6/2/2023
APPROVED BY: DATE: 6/2/2023

REGISTERED PROFESSIONAL ENGINEER
DEVI SEKHAR PRASANNA
No. C76302
CIVIL
STATE OF CALIFORNIA

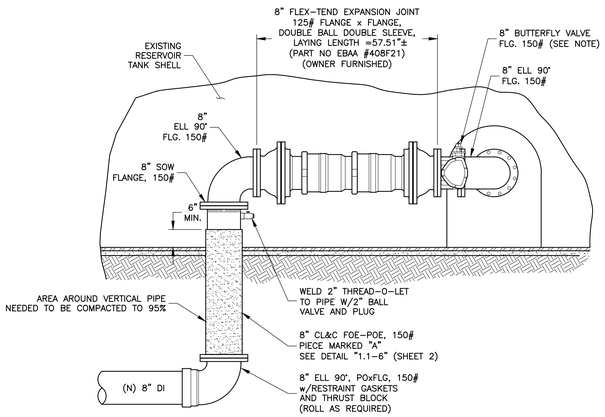
MPS - SAN MATEO STA 031
INSTALL TANK AND BOOSTER PUMP
PIPING PLAN

TITLE:
DISTRICT: 116-MPS
SAN MATEO
DATE: 4/6/2021
PROJECT ID.: 00118772
DRAWING NO.: MPS-5630 R4
SHT 1 OF 3

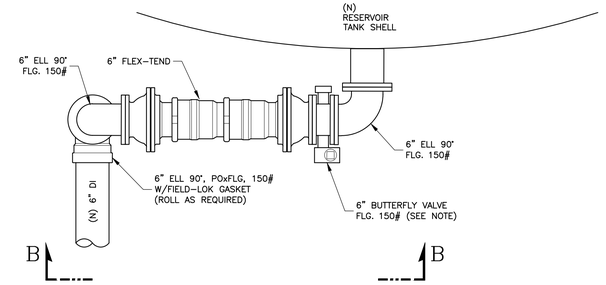
USERNAME: Jhuynh 5/31/2023 4:20 PM
FILENAME: G:\Capital_Projects\116_Mid_Peninsula\00118772_Sta_31_ASCENSION HEIGHTS BAYWOOD TANK\2 - DESIGN\500 - Drawings\working drawings\MPS5630_Piping_Plan 4-24-2023.dwg

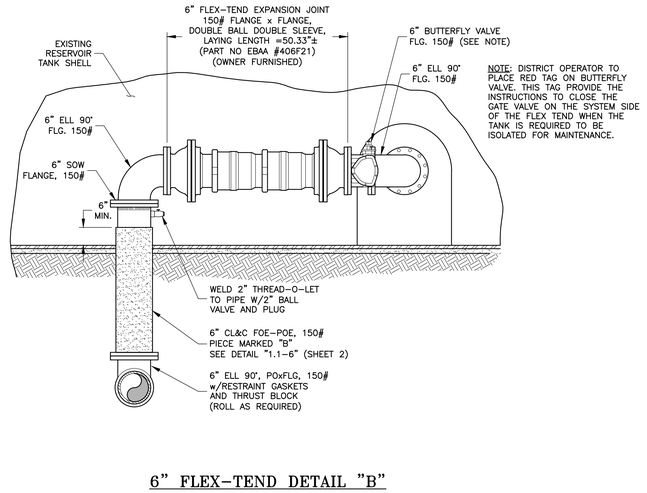


NOTE: DISTRICT OPERATOR TO PLACE RED TAG ON BUTTERFLY VALVE. THIS TAG PROVIDE THE INSTRUCTIONS TO CLOSE THE GATE VALVE ON THE SYSTEM SIDE OF THE FLEX TEND WHEN THE TANK IS REQUIRED TO BE ISOLATED FOR MAINTENANCE.



8" FLEX-TEND DETAIL "A" SECTION "A-A"
N.T.S.





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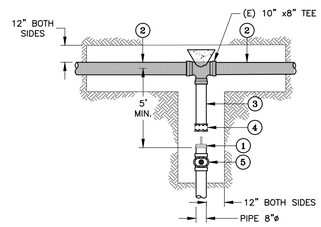
6" FLEX-TEND DETAIL "B" SECTION "B-B"
N.T.S.

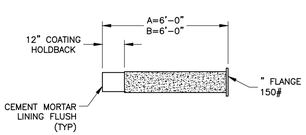


TIE-IN DETAIL "C"
N.T.S.

1. THE COMPANY'S CONTRACTOR SHALL INSTALL A TEMPORARY CAP AND BLOWOFF AT THIS LOCATION.
2. EXISTING MAIN, 10" DI PIPE
3. 5' – 8" DUCTILE IRON PIPE
4. 1 – 8" SOLID SLEEVE MJ RESTRAINED, 10" SLEEVE
5. 1 – 8" GATE VALVE, PO w/RESTRAINT GASKETS

NOTES:

1. STEEL CYLINDER PER A.S.A. WITH ASTM A53 TEST PRESSURE AND ASTM A36 PHYSICAL PROPERTIES.
2. COATING SHALL BE REINFORCED WITH 14 GAUGE WIRE MESH OR 14 GAUGE WIRE SPIRALLY WOUND IN CENTER OF COATING PER LATEST REVISION OF AWWA STANDARD C205.
3. WELDING FITTINGS SHALL BE ASTM A234 GRADE B.

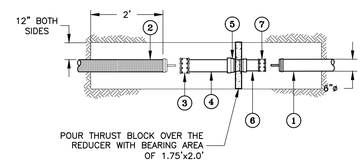


PIECE MARKED "A & B"
N.T.S.

PIECE "MARKED"	QTY	PIPE STEEL CYL. (OD)	SCH.	CML	CMC
A	1	8.63"	20	3/8"	3/4"
B	5	6.63"	40	3/8"	3/4"

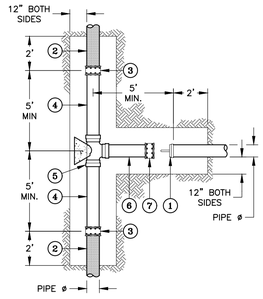
CEMENT MORTAR LINING, CML
CEMENT MORTAR COATING, CMC

DD 1.1-6 CL&C FABRICATION DETAIL
N.T.S.



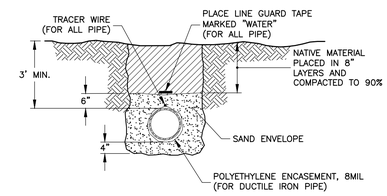
TIE-IN DETAIL "D"
N.T.S.

1. THE COMPANY'S CONTRACTOR SHALL INSTALL A TEMPORARY CAP AND BLOWOFF AT THIS LOCATION.
2. EXISTING MAIN, 8" DI PIPE
3. 1 – 8" SOLID SLEEVE MJ RESTRAINED, 10" SLEEVE
4. 5' – 8" DUCTILE IRON PIPE
5. 1 – 8" x 6" REDUCER PO w/RESTRAINT GASKETS
6. 1 – 6" DUCTILE IRON PIPE
7. 1 – 6" SOLID SLEEVE MJ RESTRAINED, 10' SLEEVE

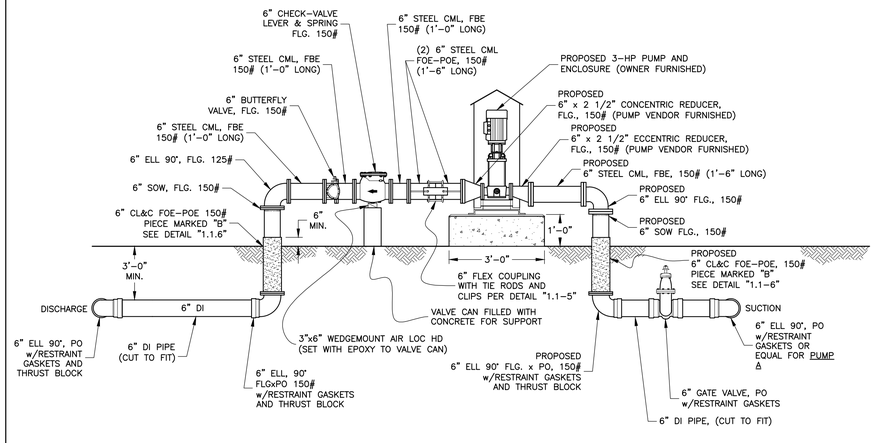


TIE-IN DETAIL "E"
N.T.S.

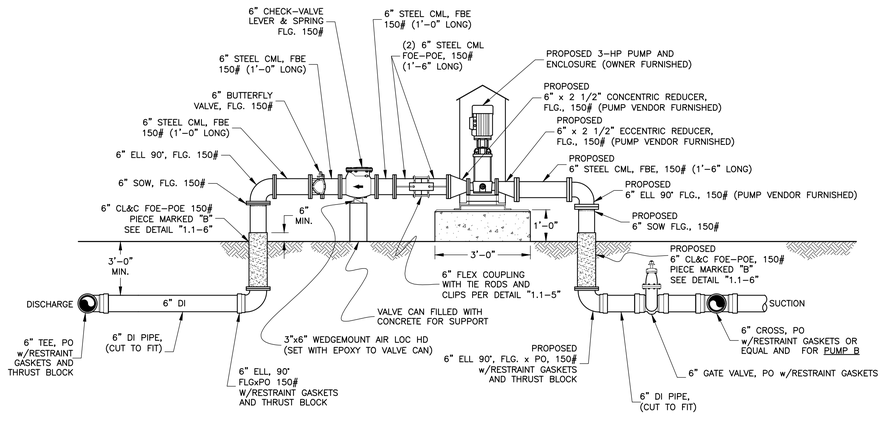
1. THE COMPANY'S CONTRACTOR SHALL INSTALL A TEMPORARY CAP AND BLOWOFF AT THIS LOCATION.
2. EXISTING MAIN, 12" DUCTILE IRON PIPE
3. 1 – 12" SOLID SLEEVE MJ RESTRAINED, 10" SLEEVE (2 TOTAL)
4. 5' – 12" DUCTILE IRON PIPE (10' TOTAL)
5. 1 – 12" x 6" TEE PO w/ RESTRAINT GASKETS AND THRUST BLOCK
6. 5' – 6" DUCTILE IRON PIPE
7. 1 – 6" SOLID SLEEVE MJ RESTRAINED, 10" SLEEVE



DD 1.3-4 ON-SITE TRENCH DETAIL
N.T.S.



SECTION "A-A" PUMP BOOSTER PROFILE
N.T.S.



SECTION "B-B" PUMP BOOSTER PROFILE
N.T.S.

ENGINEERING

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	DATE:	INIT.
DISTRIBUTION MAP	☐	
PLAT SHEET	☐	
SYSTEM SCHEMATIC	☐	
STATION SCHEMATIC	☒	

PLAT SHEET NO.: SM-31-22
SCALE: AS SHOWN
DRAWN BY: D. HEARN
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MPS - SAN MATEO STA 031
INSTALL TANK AND BOOSTER PUMP
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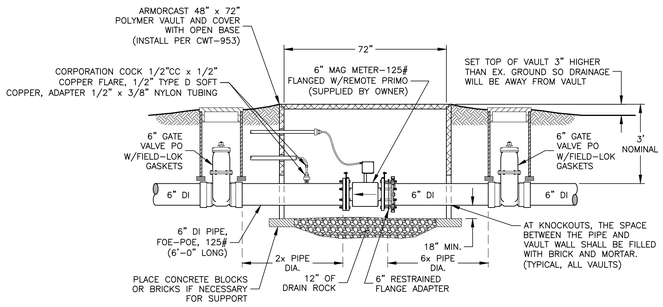
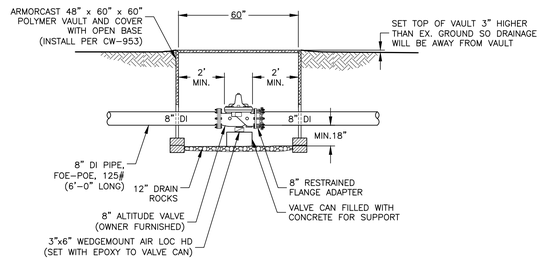
DISTRICT: 116-MPS
SAN MATEO
DATE: 4/6/2021
PROJECT ID.: 00118772
DRAWING NO.: MPS-5630 R4
SHT 2 OF 3

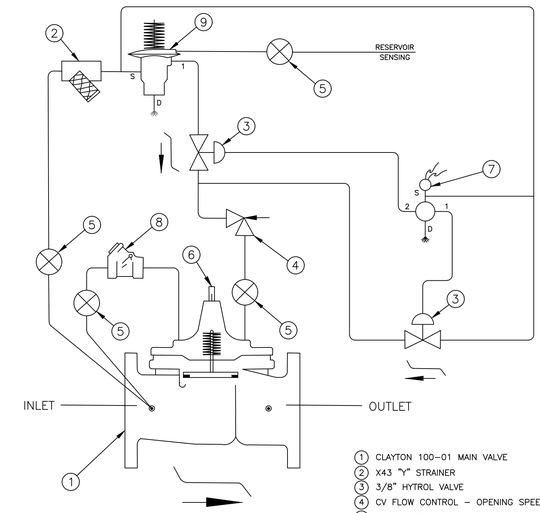
USERNAME: DLE 6/1/2023 2:27 PM
FILENAME: G:\Capital_Projects\116_Mid_Peninsula\00118772_Sta_31_ASCENSION HEIGHTS BAYWOOD TANK\2 - DESIGN\500 - Drawings\working drawings\MPS5630_Piping_Plan 4-24-2023.dwg



DETAIL "E"
6" MAG METER WITH HYDRO CONDUIT
N.T.S.



DETAIL "F"
8" ALTITUDE VALVE & PIPING PROFILE
N.T.S.

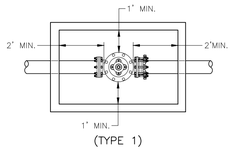


ENERGIZE SOLENOID TO CLOSE MAIN VALVE
NOTE: VALVE WILL OPEN IF INLET PRESSURE DROPS BELOW OUTLET PRESSURE REGARD-LESS OF SOLENOID VALVE POSITION.

1. CLAYTON 100-01 MAIN VALVE
2. X43 "Y" STRAINER
3. 3/8" HYTROL VALVE
4. CV FLOW CONTROL - OPENING SPEED
5. CK2 SHUTOFF COCKS
6. X101 VALVE POSITION INDICATOR
7. CSM11-A2-2 SOLENOID VALVE
8. CSC CHECK VALVE
9. CDS5 ALTITUDE CONTROL

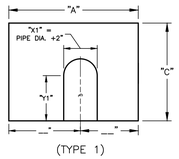
CW-852 ALTITUDE/SOLENOID VALVE
N.T.S.

SPACING REQUIREMENTS FOR VALVES



(TYPE 1)

MOUSE HOLE DETAIL



(TYPE 1)

STANDARD SIZES

SPECIFY QUANTITY	INSIDE DIMENSIONS		SPECIFY	
	A-WIDTH	B-LENGTH	C-DEPTH	*LOAD RATING
1	48"	60"	60"	10K
1	48"	72"	60"	10K

* SPECIFY LOAD RATING REQUIRED
10K-PEDESTRIAN ONLY
20K-INCIDENTAL TRAFFIC

NOTE: CHECK ARMORCAST CATALOG FOR CUSTOM SIZES TO FIT TYPE 2 INSTALLATIONS.

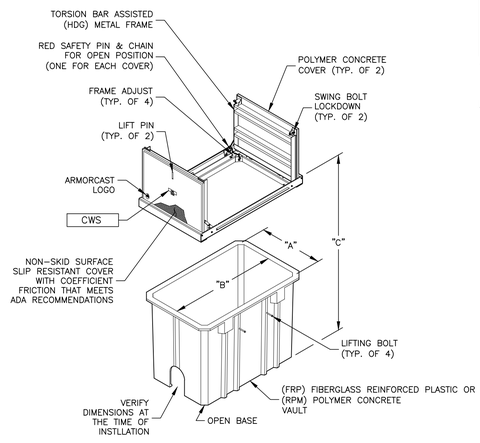
INSTALLATION PROCEDURE

1. Compact and level the bottom of the excavation.
2. Place 8 inch layer of tamped 3/4" crushed drain rocks.
3. Place the vault so that the cover is at finished grade elevation.
4. Temporarily brace the inside of the vault in at least three locations against the opposite sidewalls during the backfill operation. One brace should be against the center, and the other two placed equally 18 inches from the center brace.
5. Backfill around the vault with sand cement slurry. (Minimum 1 Sack Mix)
6. Backfill in evenly distributed 12" lifts and cover the full length and width of the entire fill area before the next layer of material is placed.
7. Remove bracing after backfill operation is completed. Allow cement slurry to set before removing bracing.
8. Installation procedure is applicable for vaults up to 50" in depth.

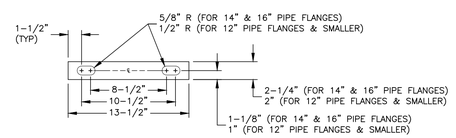
   In addition to the above, contractors shall follow the local agency's requirements for installation and all applicable Codes.

NOTE:

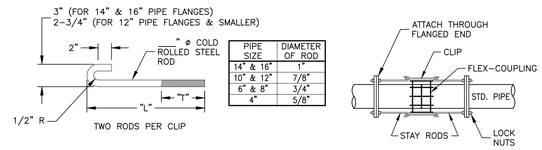
VAULT MUST BE LOCATED BEHIND THE CURB, OUTSIDE THE TRAVELED WAY. IF VAULT MUST BE LOCATED IN TRAVELED WAY, A CONCRETE UTILITY VAULT WITH MANHOLE COVER SHALL BE USED.



CWT 953-R5 POLYMER VAULT WITH TORSION ASSISTED COVER



CLIP DETAIL
N.T.S.



PIPE SIZE	DIAMETER OF ROD
14" & 16"	1"
10" & 12"	7/8"
6" & 8"	3/4"
4"	5/8"

STAY ROD DETAIL
N.T.S.

TOP VIEW
N.T.S.

INSTALLATION	DIAMETER OF ROD	NUMBER OF RODS	NUMBER OF HEAVY HEX NUTS (2 PER ROD)	"L"	"T"	NUMBER OF CLIPS
BOOSTER	3/4"	4	8	18"	8"	2

* VERIFY FOE-POE LENGTH IN THE FIELD

NOTE:

1) LENGTH OF "L" SHALL EQUAL THE LENGTH OF FOE-POE.
2) ROD DIAMETER SHALL BE THE SAME DIAMETER AS THE FLANGE BOLT.
3) USE 1/2" THICK BAR STOCK FOR CLIPS.

DD 1.1-5 STAY ROD AND CLIP DETAIL
N.T.S.

ENGINEERING

CALIFORNIA WATER SERVICE™

DEPARTMENT

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PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC	X	

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SM-31-22
SCALE:
AS SHOWN
DRAWN BY:
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USERNAME: DLE 5/31/2023 3:49 PM
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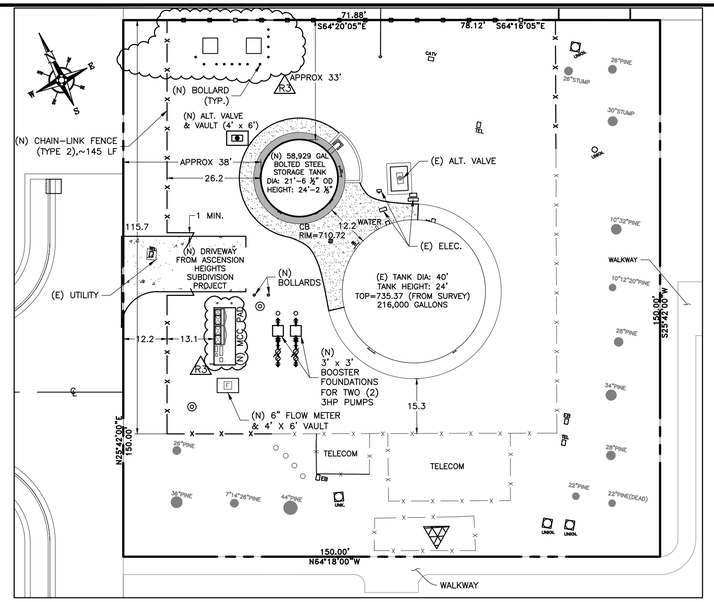
STANDARD BOLTED STEEL STORAGE TANK
STATION 031, SAN MATEO, CA.



SITE PLAN
1" = 20'

GENERAL NOTES:

1. THIS CONTRACT SHALL BE FOR THE DETAILED DESIGN, FABRICATION, AND CONSTRUCTION OF THE PROPOSED BOLTED STEEL STORAGE TANK INCLUDING FOUNDATION, CATHODIC PROTECTION SYSTEM, INTERIOR AND EXTERIOR COATING SYSTEMS, TESTING AND DISINFECTION ACCORDING TO THE LATEST VERSION OF AWWA D-103.
2. CAL WATER TO COORDINATE WORK BETWEEN TANK CONTRACTOR AND FUTURE PUMP BUILDING, SITE-WORK, AND PIPING CONTRACTORS, AS NEEDED.
3. EXTERIOR WATER PIPING WORK WILL BE PERFORMED BY OTHERS AT A LATER DATE.
4. CAL WATER WILL PROVIDE TANK CONTRACTOR WITH ELEVATION BENCHMARK FOR EXCAVATION AND FOUNDATION WORK, AND TANK CENTER POINT LAYOUT.
5. TANK WORK SHALL BE AS PER CAL WATER SPECIFICATIONS. SEE "CALIFORNIA WATER SERVICE SPECIFICATION FOR FABRICATION AND ERECTION OF BOLTED STEEL TANK" IN THE CONTRACT BID PACKAGE.
6. UPON COMPLETION, TANK SHALL BE CLEANED, TESTED, AND DISINFECTED PER CAL WATER STANDARDS BY THE TANK CONTRACTOR. CONTRACTOR MAY BE REQUIRED TO PROVIDE WATER FOR CLEANING IF NONE IS AVAILABLE AT THE SITE.
7. TANK CONTRACTOR TO PROVIDE ADEQUATE DUST CONTROL MEASURES DURING CONSTRUCTION.
8. TANK CONTRACTOR MAY SUBSTITUTE HIS OWN DESIGN FOR ANY OF THESE ACCESSORIES IF APPROVED IN ADVANCE BY THE CAL WATER PROJECT ENGINEER.
9. LOCATION, SIZE AND DESIGN OF ALL ACCESSORIES SHALL MEET OSHA REQUIREMENTS.
10. TANK CONTRACTOR SHALL PROVIDE A DETAILED SHOP-DRAWING PACKAGE OF TANK AND FOUNDATION DESIGN DETAILS TO THE CAL WATER PROJECT ENGINEER FOR REVIEW AND STAMPED APPROVAL PRIOR TO FABRICATION.
11. CATHODIC PROTECTION SYSTEM REQUIREMENTS SHALL BE AS PER THE SPECIFICATION UNDER APPENDIX 'A' IN THE CONTRACT BID PACKAGE.
12. ALL SHOP PAINTING SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF THE CALIFORNIA WATER SERVICE CO. SPECIFICATIONS FOR PAINTING STEEL WATER STORAGE TANKS AND FACILITIES.
13. THE UNDERSIDE OF TANK FLOOR PLATE STEEL SHALL REMAIN UNCOATED.
14. CAL WATER TO PROVIDE SITE GEOTECHNICAL REPORT AS PART OF THE CONTRACT BID PACKAGE.
15. ALL LOCK HASPS SHALL FIT A CAL WATER STANDARD LOCK, WHICH IS A MASTER PROSERIES 6727.

STATION ADDRESS

OFF OF BEL AIRE ROAD, SAN MATEO, CA
94551 ALAMEDA COUNTY
APN# 098-034802000

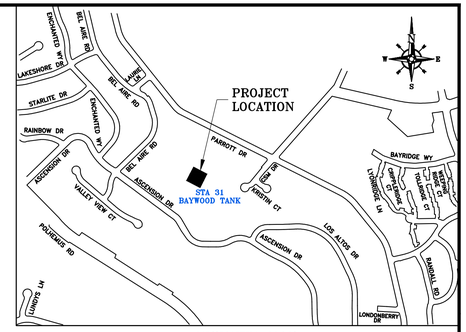
PROPOSED TANK DATA:

TANK CAPACITY:	58,929 GALLONS
TANK DIAMETER:	21'-6 ½" FEET
TANK HEIGHT:	24'-2 ⅝" FEET
HEIGHT TO OVERFLOW:	21'-3 ⅜₁₆" FEET
FOUNDATION TYPE:	CONCRETE RINGWALL
INTERIOR MATERIAL:	ASPHALT OVER BASE ROCK
EXTERIOR COLOR:	CWS "GROUSE TAN" (R1)

LIST OF ACCESSORIES

ACCESSORY	QUANTITY	SIZE	LOCATION
INLET	1	12"	SHELL
OUTLET	2	8"	SHELL
30" MANHOLE	2	30"	SHELL
EXTERIOR LADDER	1	SEE DETAILS	SHELL
INTERIOR LADDER	1	SEE DETAILS	SHELL
6" DRAIN	1	6"	SHELL
OVERFLOW	1	12"	SHELL
FLUSH-TYPE CLEANOUT	1	8"x16"	SHELL
THREADED OUTLET	3	2"	ROOF
SENSING LINE TAPS	3	1"	SHELL
SAMPLE TAP	1	1/2"	SHELL
TANK VENT (CENTER)	1	24"	ROOF
LIQUID LEVEL INDICATOR	1		EXTERIOR

SHEET INDEX:



VICINITY MAP
Not to Scale

LEGEND

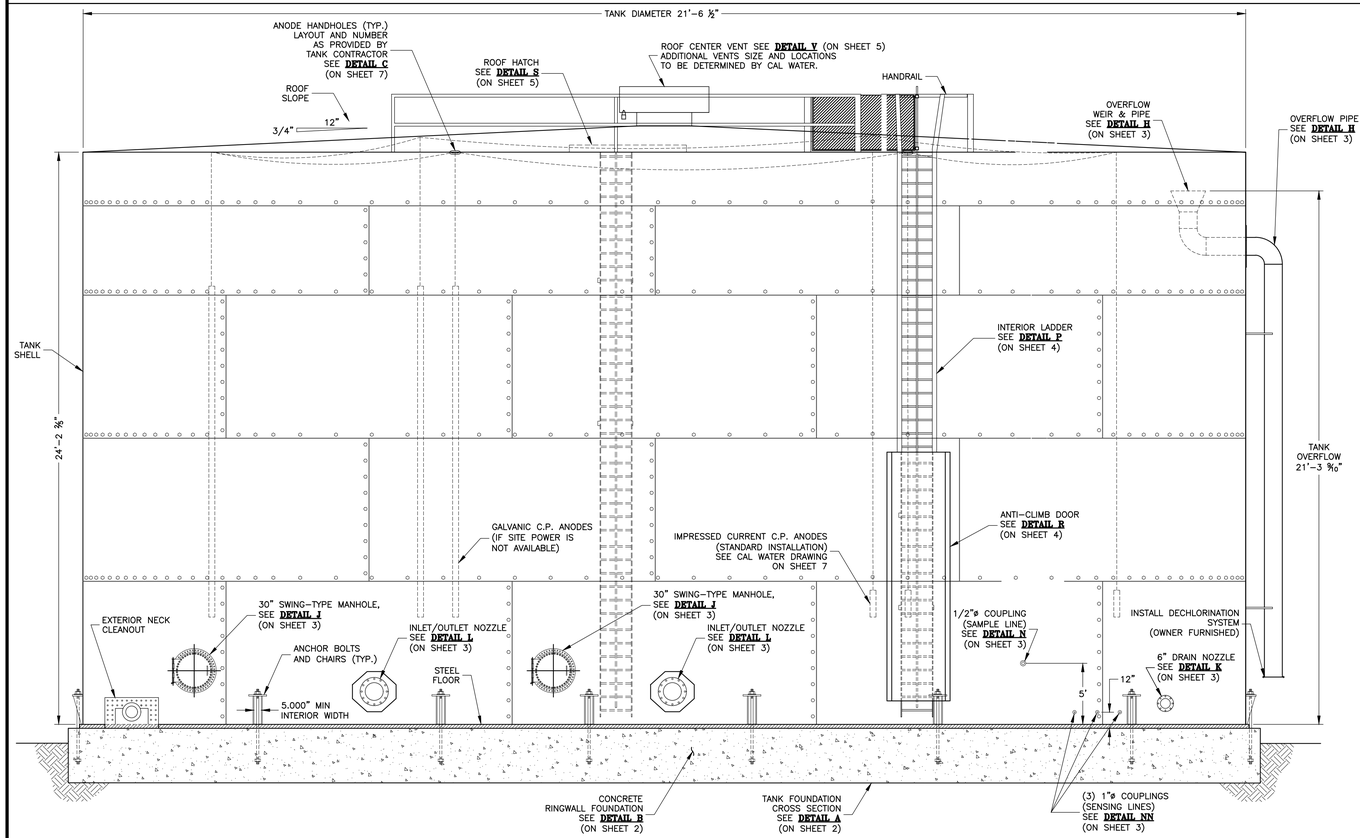
- T = TEE
- = ELBOW, 45°
- = ELBOW, 90°
- = BLOWOFF (PROPOSED)
- = BLOWOFF (EXISTING)
- = GATE VALVE (PROPOSED)
- = GATE VALVE (EXISTING)
- = REDUCER (PROPOSED)
- = REDUCER (EXISTING)
- = SOLID PLUG
- = PROPOSED WATER MAIN
- = EXISTING WATER MAIN
- = WALL
- SS = SANITARY SEWER
- SD = STORM DRAIN
- = FIRE HYDRANT (PROPOSED)
- = FIRE HYDRANT (EXISTING)
- = BUTTERFLY VALVE
- = CHECK VALVE
- = FLEX CPLG.
- = BOOSTER PUMP
- = FLEX-TEND

SEISMIC DESIGN PARAMETERS:

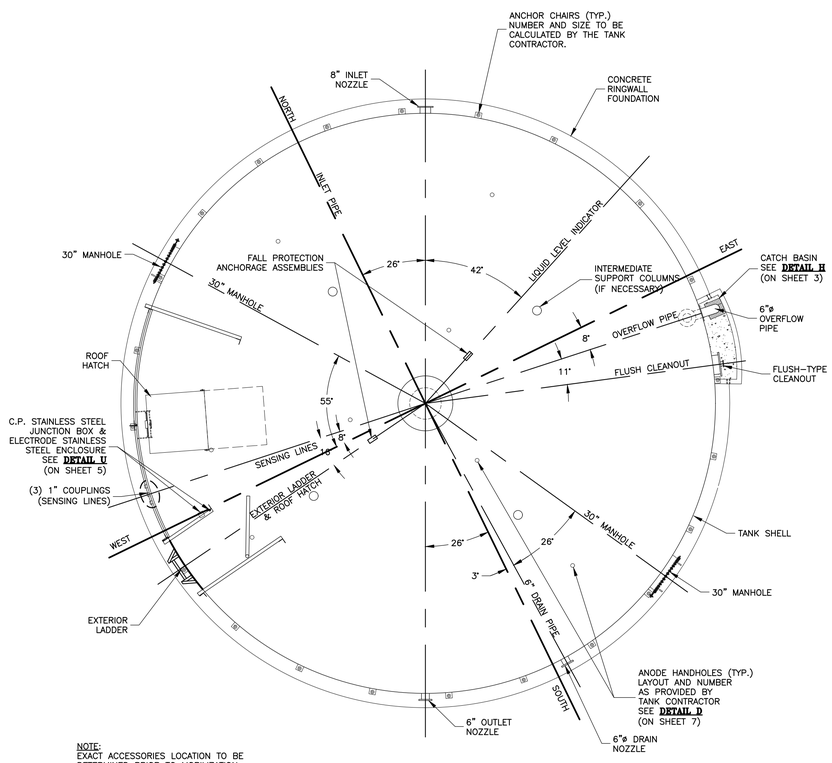
1. USE GROUP	=	I
2. IMPORTANCE FACTOR	=	1.0
3. SITE SOIL CLASS	=	B
4. 0.2-SECOND MAPPED SPECTRA ACCELERATION	=	2.313g
5. 1-SECOND MAPPED SPECTRA ACCELERATION	=	0.967g
6. SHORT PERIOD SITE COEFFICIENT	=	0.9
7. LONG PERIOD SITE COEFFICIENT	=	0.8
8. IMPULSIVE DESIGN ACCELERATION	=	1.388g
9. CONVECTIVE DESIGN ACCELERATION	=	0.516g
10. VERTICAL DESIGN ACCELERATION	=	0.300g

GEOTECHNICAL INVESTIGATION:

SEISMIC DESIGN PARAMETERS PER GEOTECHNICAL INVESTIGATION PREPARED BY MICHELUCCI & ASSOCIATES, INC., JOB NO. 01-3186 DATED DECEMBER 16, 2020 AND UPDATED SEISMIC CRITERIA LETTER DATED 9/7/2021.



ELEVATION PROFILE
N.T.S.



NOTE:
EXACT ACCESSORIES LOCATION TO BE DETERMINED PRIOR TO MOBILIZATION.

PLAN VIEW - TANK ACCESSORIES ORIENTATION
N.T.S.

ENGINEERING
CALIFORNIA WATER SERVICE
DEPARTMENT

REVISIONS:
R1-(9/9/21)-UPDATED SEISMIC CRITERIA
R2-(9/21/21) CHANGED DIAMETER OF TANK
R3-(6/24/2022) ADD NEW TRANSFORMER & MCC PADS DH

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC	X	
STATION SCHEMATIC	X	

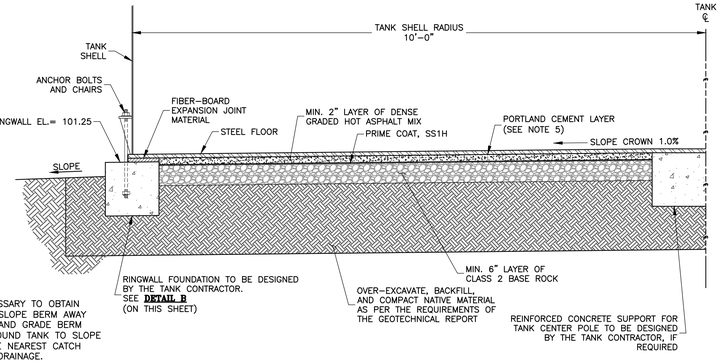
PLAT SHEET NO.: SM-31-22
SCALE: AS SHOWN
DRAWN BY: D. HEARN
DESIGNED BY: J. HUYNH
TECH REVIEW: DATE:
CHECKED BY: DATE: 8/26/2022
APPROVED BY: DATE: 9/7/2022

TITLE:
MPS - SAN MATEO STA 031
STANDARD BOLTED STEEL STORAGE TANK
PLAN LAYOUT AND ELEVATION

DISTRICT: 116-MPS
SAN MATEO
DATE: 4/20/2021
PROJECT ID.: 00118772
DRAWING NO.: MPS-5643 R3
SHT 1 OF 7

STANDARD LAYOUT DRAWINGS AND DETAILS FOR BOLTED-STEEL STORAGE TANK

USERNAME: Dhearn 8/24/2022 7:15 AM
FILENAME: G:\Capital_Projects\116_Mid_Peninsula\00118772_Sta_31_ASCENSION HEIGHTS BAYWOOD TANK\2 - DESIGN\500 - Drawings\working drawings\MPS5643_Steel Bolted Tank and Details 8-16-2022.dwg



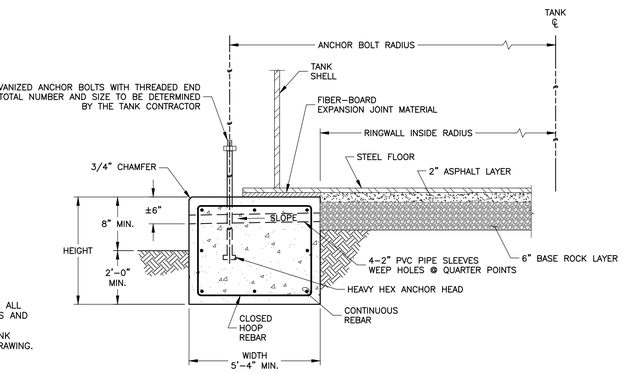
NOTES:

1.) GRADE SOIL AS NECESSARY TO OBTAIN REQUIRED DRAINAGE. SLOPE BERM AWAY FROM TANK MIN. 5% AND GRADE BERM TYPES "B" & "C" AROUND TANK TO SLOPE MINIMUM 0.5% TO THE NEAREST CATCH BASIN OR ADEQUATE DRAINAGE.

2.) START A.C. AT BASE OF TANK LIP AND KEY 1" UNDER TANK LIP. NO GAPS ALLOWED BETWEEN TANK LIP AND A.C. TO PREVENT WATER ENTRANCE UNDER TANK. CAULK GAP IF NECESSARY.

3.) A.C. TO BE CALTRANS TYPE B ASPHALTIC CONCRETE WITH 3/8" MAXIMUM AGGREGATE SIZE.

DETAIL A
TANK FOUNDATION CROSS SECTION
N.T.S.



NOTE:

TANK CONTRACTOR TO CALCULATE AND DESIGN ALL FOUNDATION DIMENSIONS AND REBAR REINFORCEMENT REQUIREMENTS. SEE TANK CONTRACTOR DESIGN DRAWING.

DETAIL B
TANK RINGWALL FOUNDATION
N.T.S.

GENERAL NOTES:

1) TANK CONTRACTOR SHALL DESIGN THE FOUNDATION, AND PROVIDE "WET STAMPED" CALCULATIONS & SHOP-DRAWINGS TO THE OWNER.

2) FOUNDATION SUB-CONTRACTOR SHALL BE A LICENSED GENERAL CONTRACTOR IN CALIFORNIA AND MUST HAVE EXPERIENCE IN TANK FOUNDATION CONSTRUCTION.

3) ALL FOUNDATION DIMENSIONS AND REBAR REINFORCEMENT REQUIREMENTS SHALL BE PROVIDED BY THE TANK CONTRACTOR. (OR THE ENGINEERING CONSULTANT)

EXCAVATION NOTES:

1) EXCAVATE EARTH MATERIAL WITHIN THE TANK FOOTPRINT LIMITS AS SPECIFIED IN THE GEOTECHNICAL REPORT. BACKFILL AS NECESSARY IN 8" LIFTS TO THE BOTTOM OF BASE ROCK ELEVATION. BACKFILL SHALL BE MOISTURE CONDITIONED AND COMPACTED TO 95% RELATIVE COMPACTION OR AS SPECIFIED IN THE GEOTECHNICAL REPORT.

2) THE BOTTOM OF THE EXCAVATION SHALL BE REVIEWED BY THE GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE PRIOR TO ANY BACKFILL OPERATIONS. NATIVE MATERIALS EXPOSED AT THE BOTTOM OF THE EXCAVATION SHALL BE SCARIFIED, MOISTURE CONDITIONED, AND COMPACTED TO A MINIMUM OF 90% OF ASTM D-1557 OR AS SPECIFIED IN THE GEOTECHNICAL REPORT.

FOUNDATION NOTES:

1) THE TOP OF THE CONCRETE RINGWALL FOUNDATION SHALL BE SMOOTH AND LEVEL WITHIN 1/8" IN 30' CIRCUMFERENTIAL LENGTH. THE REMAINDER OF THE TANK FOUNDATION PAD SURFACE SHALL BE SMOOTH AND FINISHED TO WITHIN 0.02' OF THE ESTABLISHED GRADE.

2) THE BASE ROCK FOR THE FOUNDATION PAD SHALL BE CLASS 2 AGGREGATE MINIMUM SIZE 1/2". PROPELLED ROLLERS SHALL BE PERFORMED IN A MANNER IN WHICH BUMPS AND IRREGULARITIES ARE ELIMINATED AND THE FINISHED SURFACE SHALL BE TRUE TO THE REQUIRED GRADES AND BE COMPACTED TO 95% MAXIMUM DENSITY.

3) THE PRIME COAT SHALL BE ASPHALT GRADE SS1H CONFORMING TO CAL-TRANS "STANDARD SPECIFICATIONS" AND APPLIED IN QUANTITIES BETWEEN 0.10 AND 0.25 GALLONS PER SQUARE YARD OF BASE COURSE.

4) ASPHALT CONCRETE FOR THE TANK PAD SHALL BE "TYPE A" PER CALTRANS SECTION 39.

5) JUST PRIOR TO PLACING THE FLOOR PLATES, APPLY PURE PORTLAND CEMENT TO THE ASPHALT SURFACE (6 SACKS TOTAL). WET AS NECESSARY TO PREVENT BLOWING.

6) ANCHOR BOLTS TO BE A36 BOLT WITH HEAVY HEX HEAD, GALVANIZED; 5" MIN. THREAD LENGTH AT TOP. ALL ANCHOR BOLTS SHALL BE WITHIN 1/8" OF ESTABLISHED TANK RADIUS.

7) THE OUTSIDE FACE OF THE RINGWALL SHALL BE FORMED TO PRODUCE A FINISHED SURFACE WITHIN 1/8" TOLERANCE OF THE DIMENSIONS SHOWN ON THE PLANS AND BE WITHOUT WAVES, RIDGES OR VOIDS. FORMS SHALL BE REMOVED NOT LESS THAN 5 DAYS AFTER CONCRETE HAS BEEN PLACED.

8) FORMS, REINFORCING STEEL, AND SUBGRADE SHALL BE THOROUGHLY DAMPED BEFORE PLACING CONCRETE. CONCRETE SHALL BE THOROUGHLY CONSOLIDATED IN A MANNER APPROVED BY THE OWNER.

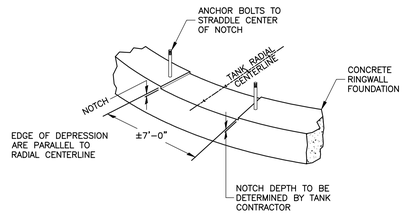
9) ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 301. THE MIXING AND PLACEMENT SHALL BE IN ACCORDANCE WITH ACI 318. THREE TEST CYLINDERS SHALL BE TAKEN FOR EACH 50 CUBIC YARDS OF CONCRETE PLACED WITH A MINIMUM OF THREE CYLINDERS FOR EACH DAY THAT THE CONCRETE IS PLACED. THE CONCRETE SHALL DEVELOP A MINIMUM (28 DAY) STRENGTH OF 3,000 PSI IN THE RINGWALL AND CENTER COLUMN FOOTING. ALL CONCRETE SHALL BE TESTED BY OWNER APPROVED TESTING AGENCY AND BE IN ACCORDANCE WITH ACI 318, SECT 4.7. ALL TEST RESULTS SHALL BE PROVIDED TO THE OWNER.

10) REINFORCING STEEL SHALL BE GRADE 60 FOR RINGWALL AS DEFINED IN ASTM SPEC. A615. ANY REQUIREMENT OF THE CONCRETE REINFORCEMENT NOT COVERED IN THESE NOTES SHALL BE IN ACCORDANCE WITH THE "MANUAL OF THE STANDARD PRACTICES" AS PUBLISHED BY THE CONCRETE REINFORCING STEEL INSTITUTE.

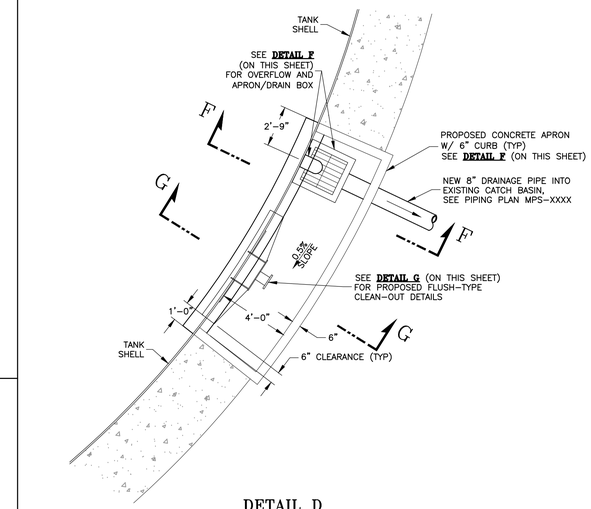
11) ALL CONCRETE SHALL BE CURED FOR A MINIMUM OF 7 DAYS AFTER PLACING.

12) ALL CONCRETE SHALL CONTAIN A MINIMUM OF 6 SACKS OF CEMENT PER CUBIC YARD AND DEVELOP COMPRESSIVE STRENGTHS OF AT LEAST 3,000 PSI AT 28 DAYS. SLUMP TO BE 4" MAXIMUM. AGGREGATE TO BE 1" MAXIMUM. CONCRETE MUST BE PLACED WITHIN ONE HOUR AFTER MIXING HAS BEEN STARTED.

13) CONTRACTOR SHALL TAKE ELEVATION READINGS OF FOUNDATION AS SOON AFTER CONCRETE PLACEMENT AS POSSIBLE. THE READINGS WILL BE TAKEN IN EVERY 10' OF SHELL CIRCUMFERENCE. THE RECORD OF READINGS AND THE MEASUREMENT OF THE MAXIMUM VARIATION IN ANY 30 FT. SHALL BE PROVIDED TO THE CAL WATER ENGINEER.



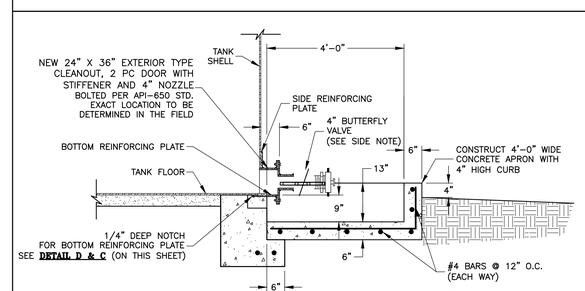
DETAIL C
FLUSH-TYPE CLEANOUT NOTCH
N.T.S.



DETAIL D
APRON/DRAIN BOX: TOP VIEW
N.T.S.

SECTION F-F

DETAIL F
APRON/DRAIN BOX
N.T.S.

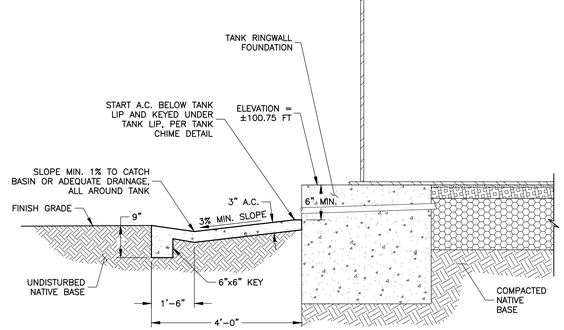


SECTION G-G

NOTES:

BUTTERFLY VALVE TO BE SUPPLIED BY TANK CONTRACTOR. VALVE TO BE DUCTILE IRON BODY AND SHALL COMPLY TO THE LATEST VERSION OF AWWA C504. VALVE SHALL BE MANUFACTURERD BY MUELLER COMPANY, M&H VALVE & FITTING COMPANY, PRATT COMPANY OR KENNEDY VALVE CO.

DETAIL G
FLUSH TYPE CLEANOUT DETAILS
N.T.S.



DETAIL E
TANK FOUNDATION & BERM
N.T.S.

ENGINEERING

CALIFORNIA WATER SERVICE™

DEPARTMENT

REVISIONS:
R1-(9/9/21)-UPDATED SEISMIC CRITERIA
R2-(9/21/21) CHANGED DIAMETER OF TANK
R3-(6/24/2022) ADD NEW TRANSFORMER & MCC PADS DH

	DATE:	INIT.
DISTRIBUTION MAP	☐	
PLAT SHEET	☐	
SYSTEM SCHEMATIC	☒	
STATION SCHEMATIC	☒	

PLAT SHEET NO.: SM-31-22

SCALE: AS SHOWN

DRAWN BY: D. HEARN

DESIGNED BY: J. HUYNH

TECH REVIEW: DATE:

CHECKED BY: DATE: 8/26/2022

APPROVED BY: DATE: 9/7/2022

TITLE:
MPS - SAN MATEO STA 031
STANDARD BOLTED STEEL STORAGE TANK
FOUNDATION DETAILS AND ACCESSORIES

DISTRICT: 116-MPS

SAN MATEO

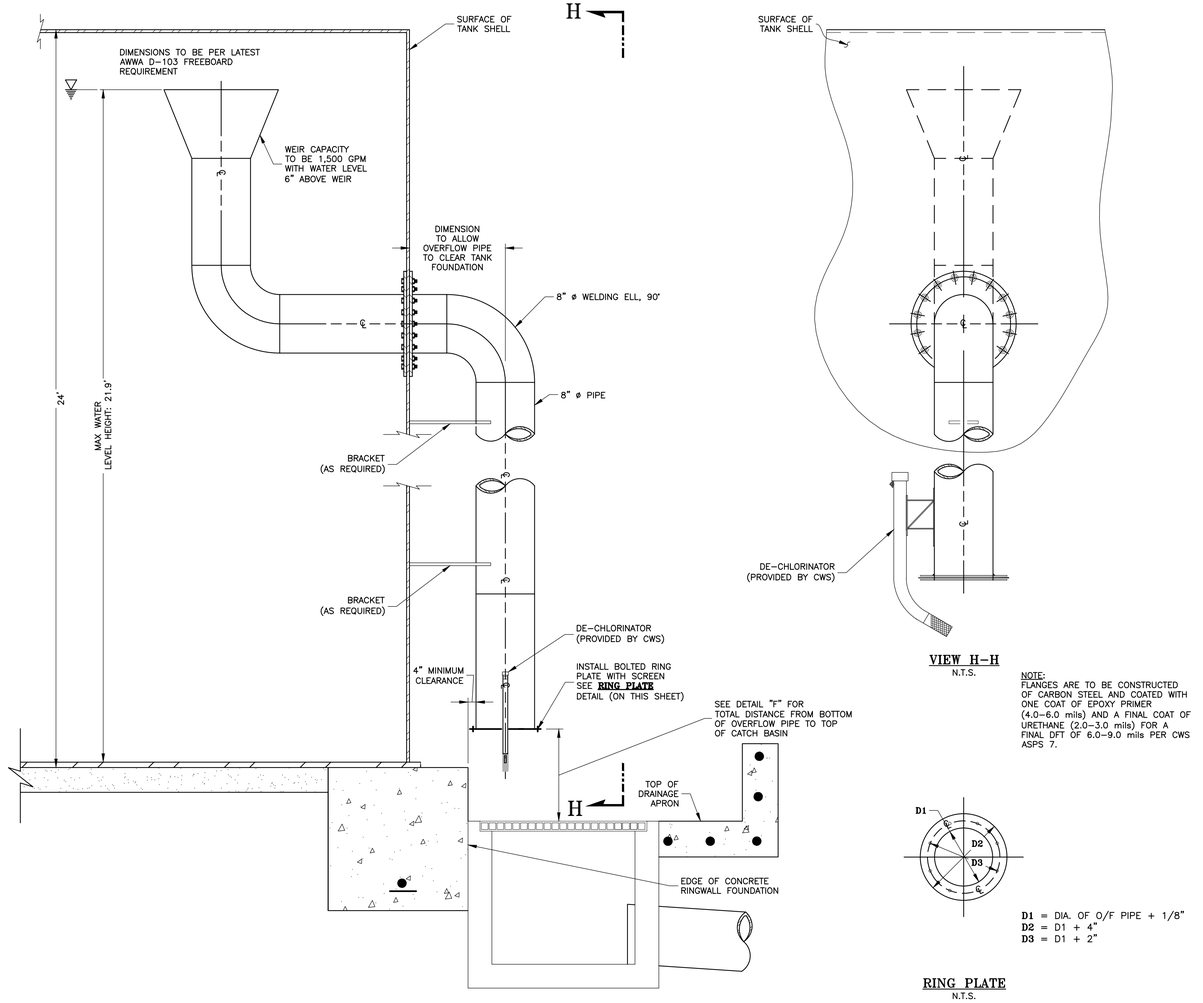
DATE: 4/20/2021

PROJECT ID.: 00118772

DRAWING NO.: MPS-5643 R3

SHT 2 OF 7

USERNAME: Dhearn 8/24/2022 7:15 AM
FILENAME: G:\Capital_Projects\116_Mid_Peninsula\00118772_Sto_31_ASCENSION HEIGHTS BAYWOOD TANK\2 - DESIGN\500 - Drawings\working drawings\MPS5643_Steel Bolted Tank and Details 8-16-2022.dwg



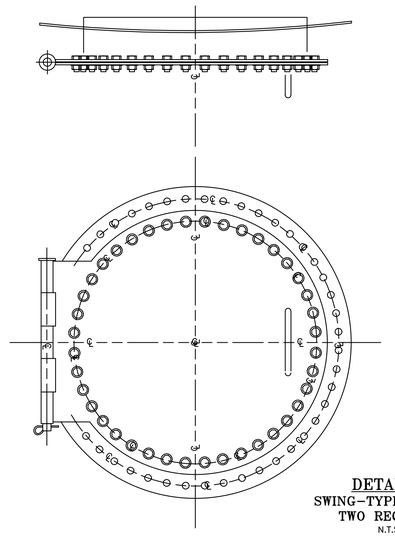
DETAIL H
WEIR TYPE OVERFLOW
N.T.S.

VIEW H-H
N.T.S.

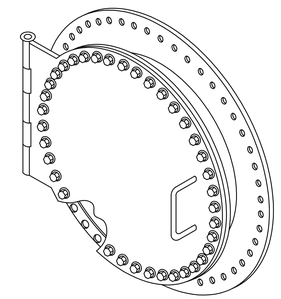
NOTE:
FLANGES ARE TO BE CONSTRUCTED OF CARBON STEEL AND COATED WITH ONE COAT OF EPOXY PRIMER (4.0-6.0 mils) AND A FINAL COAT OF URETHANE (2.0-3.0 mils) FOR A FINAL DFT OF 6.0-9.0 mils PER CWS ASPS 7.

D1 = DIA. OF O/F PIPE + 1/8"
D2 = D1 + 4"
D3 = D1 + 2"

RING PLATE
N.T.S.



DETAIL J
SWING-TYPE MANWAY
TWO REQUIRED
N.T.S.

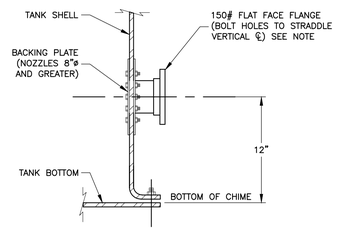


ISOMETRIC VIEW
N.T.S.

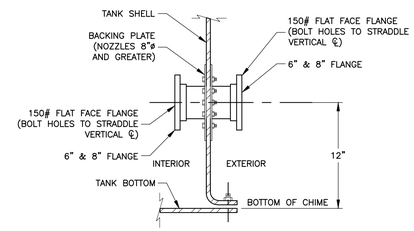
NOTE:
HINGE TO BE CONSTRUCTED TO ALLOW MINIMAL SAG WHEN OPENED. ALL BOLT HOLES ARE TO LINE-UP WHEN THE MANWAY IS CLOSED.

NOTES:

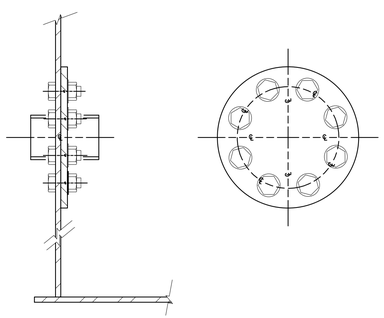
6" GATE VALVE TO BE SUPPLIED BY TANK CONTRACTOR. VALVE TO BE DUCTILE IRON BODY AND SHALL COMPLY TO THE LATEST VERSION OF AWWA C509/550. VALVE SHALL BE MANUFACTURERD BY MUELLER COMPANY, M&H VALVE & FITTING COMPANY, KENNEDY VALVE CO., CLOW VALVE CO., AMERICAN FLOW CONTROL, AMERICAN AVK CO. OR U.S. PIPE.



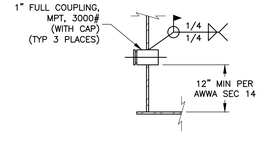
DETAIL K
6" AUXILIARY DRAIN NOZZLE
N.T.S.



DETAIL L
OUTLET/INLET NOZZLE
1-6" OUTLET
1-8" INLET
N.T.S.



DETAIL N
SAMPLE TAP COUPLING
LOCATE BESIDE LADDER BEHIND DOOR
N.T.S.



DETAIL NN
SENSING LINE COUPLING(S)
N.T.S.

ENGINEERING

CALIFORNIA WATER SERVICE™

DEPARTMENT

REVISIONS:
R1-(9/9/21)-UPDATED SEISMIC CRITERIA
R2-(9/21/21) CHANGED DIAMETER OF TANK
R3-(6/24/2022) ADD NEW TRANSFORMER & MCC PADS DH

	DATE:	INIT.
DISTRIBUTION MAP	☐	
PLAT SHEET	☐	
SYSTEM SCHEMATIC	☒	
STATION SCHEMATIC	☒	

PLAT SHEET NO.:
SM-31-22
SCALE:
AS SHOWN
DRAWN BY:
D. HEARN
DESIGNED BY:
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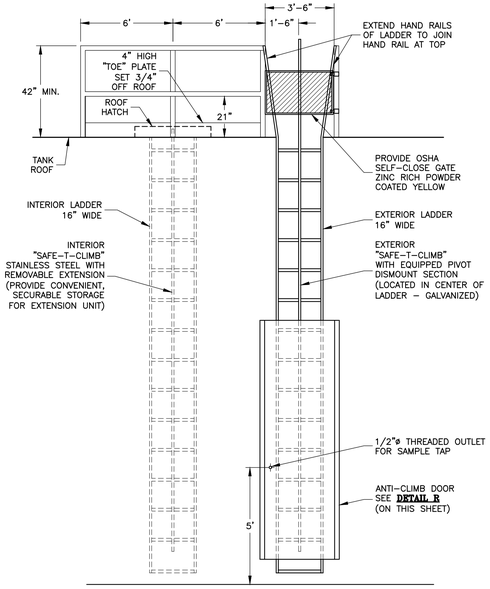
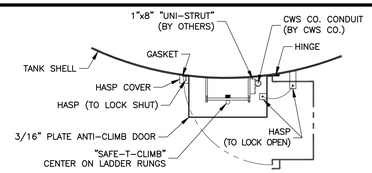
TITLE:
MPS - SAN MATEO STA 031
STANDARD BOLTED STEEL STORAGE TANK
LADDER DETAILS AND ACCESSORIES

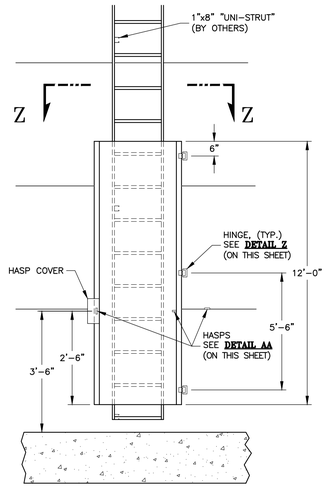
DISTRICT:
116-MPS
SAN MATEO
DATE:
4/20/2021
PROJECT ID.:
00118772
DRAWING NO.:
MPS-5643 R3
SHT 3 OF 7



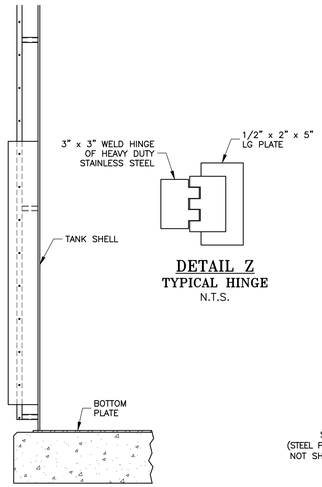
DETAIL P
LADDER PROFILE
N.T.S.



VIEW Z-Z
ANTI-CLIMB DOOR INSTALLATION
N.T.S.

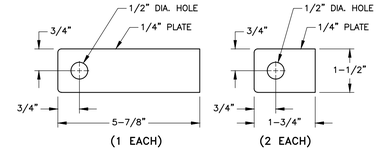


FRONT VIEW

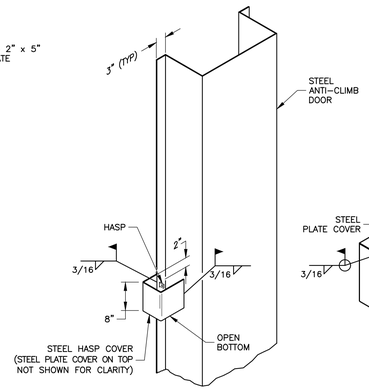


SIDE VIEW

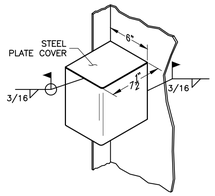
DETAIL Z
TYPICAL HINGE
N.T.S.

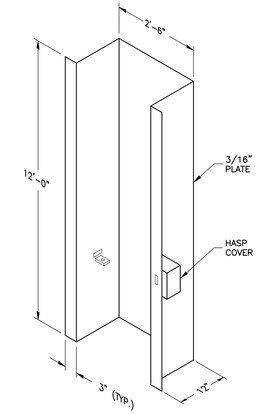


DETAIL AA
HASPS FOR ANTI-CLIMB DOOR
N.T.S.



DOOR HASP COVER WELDING DETAIL





ISOMETRIC VIEW OF ANTI-CLIMB DOOR

DETAIL R
ANTI-CLIMB DOOR
N.T.S.

ENGINEERING

DEPARTMENT

REVISIONS:
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DISTRIBUTION MAP	☐	
PLAT SHEET	☐	
SYSTEM SCHEMATIC	☒	
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PLAT SHEET NO.:
SM-31-22

SCALE:
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DRAWN BY:
D. HEARN

DESIGNED BY:
J. HUYNH

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LADDER DETAILS AND ACCESSORIES

DISTRICT:
116-MPS

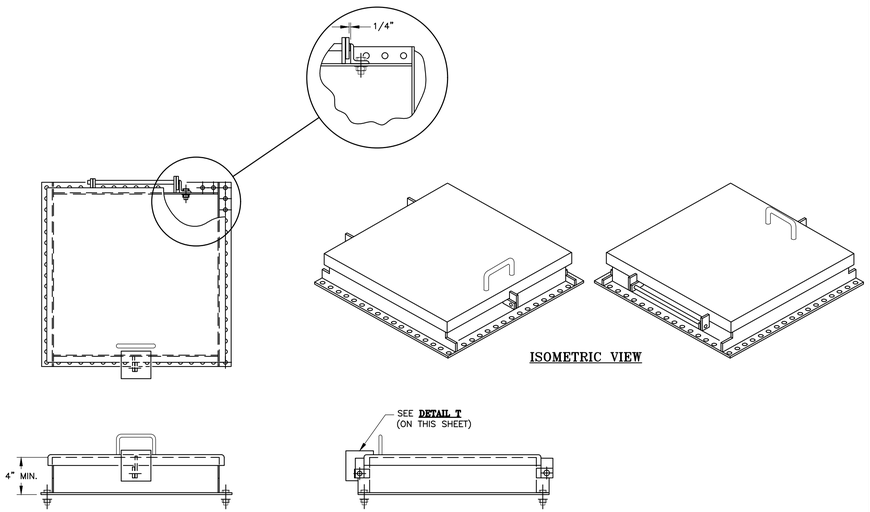
SAN MATEO

DATE:
4/20/2021

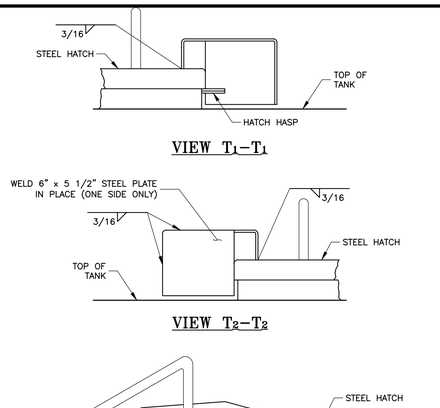
PROJECT ID.:
00118772

DRAWING NO.:
MPS-5643 R3

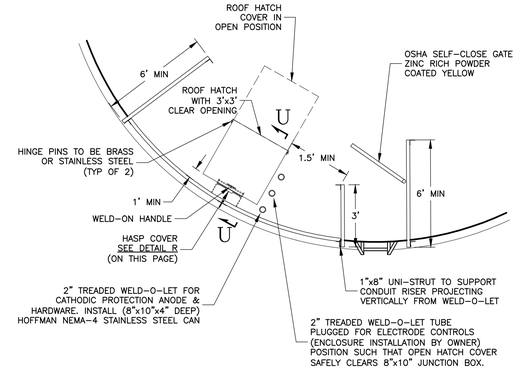
SHT 4 OF 7



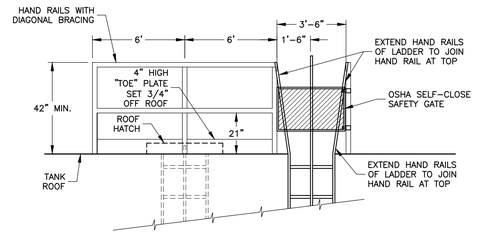
DETAIL S
ROOF HATCH
N.T.S.



DETAIL T
ROOF HATCH HASP COVER
N.T.S.



PLAN VIEW



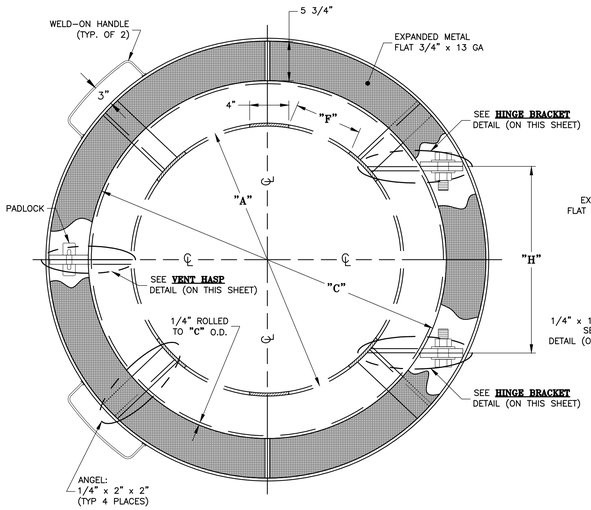
FRONT VIEW

CUPOLA VENT SIZING CHART							
A	B	C	E	F	G	H
24"	24	48	36	6	9 1/2	5 5/8	12 1/2

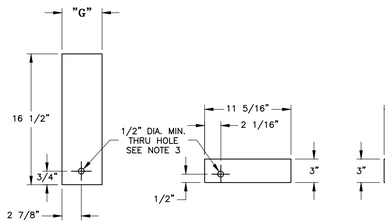
ALL NUMBERS ARE IN INCHES

NOTES:

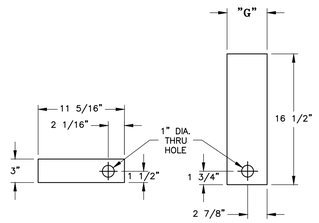
1. VENT TO BE CONSTRUCTED OF A-36 STRUCTURAL STEEL AND COATED IN ACCORDANCE WITH CAL WATER ASPS-3B FOR THE INTERIOR AND CAL WATER ASPS-6A FOR THE EXTERIOR.
2. 6x6 MESH MATERIAL SHALL BE STAINLESS STEEL.
3. THROUGH HOLE FOR PADLOCK SHALL FIT A CAL WATER STANDARD LOCK.



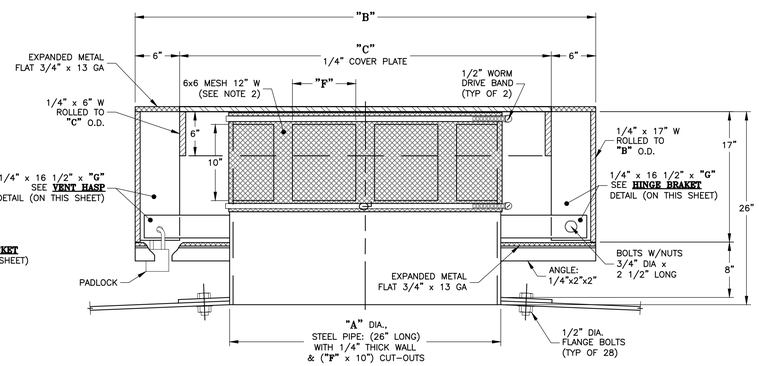
TOP VIEW



VENT HASP

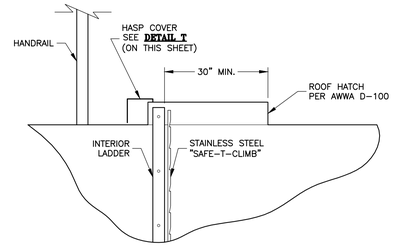


HINGE BRACKET



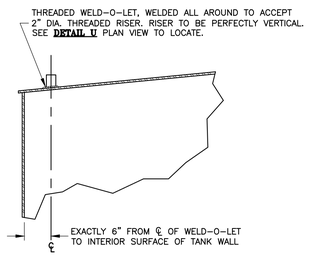
SIDE VIEW

DETAIL V
COUPLA VENT
N.T.S.



SECTION U–U
WITH HATCH COVER REMOVED
N.T.S.

DETAIL U
ROOF HATCH, INTERIOR & EXTERIOR LADDER
N.T.S.



DETAIL W
WELD-O-LET MOUNTING DETAIL
N.T.S.

ENGINEERING

CALIFORNIA WATER SERVICE™

DEPARTMENT

REVISIONS:
R1-(9/9/21)-UPDATED SEISMIC CRITERIA
R2-(9/21/21) CHANGED DIAMETER OF TANK
R3-(6/24/2022) ADD NEW TRANSFORMER & MCC PADS DH

	DATE:	INIT.
DISTRIBUTION MAP	☐	
PLAT SHEET	☐	
SYSTEM SCHEMATIC	☒	
STATION SCHEMATIC	☒	

PLAT SHEET NO.: SM-31-22

SCALE: AS SHOWN

DRAWN BY: D. HEARN

DESIGNED BY: J. HUYNH

TECH REVIEW: DATE:

CHECKED BY: DATE: 8/26/2022

APPROVED BY: DATE: 9/7/2022

TITLE:
MPS - SAN MATEO STA 031
STANDARD BOLTED STEEL STORAGE TANK
ROOF DETAILS AND ACCESSORIES

DISTRICT: 116-MPS

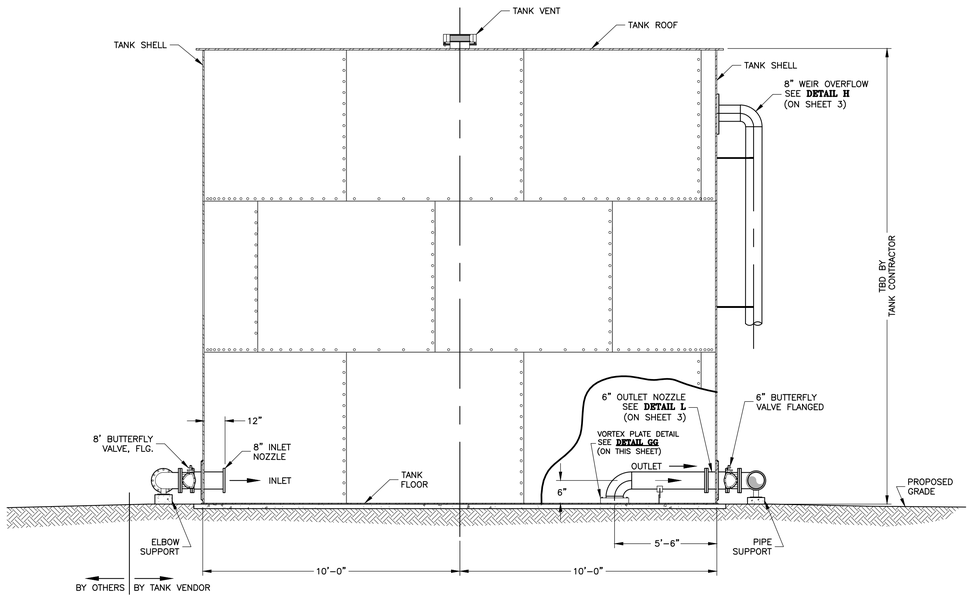
SAN MATEO

DATE: 4/20/2021

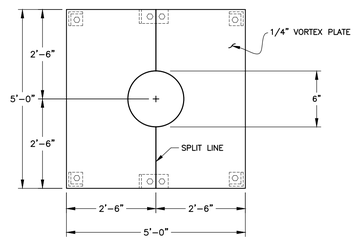
PROJECT ID.: 00118772

DRAWING NO.: MPS-5643 R3

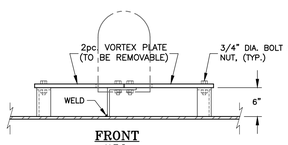
SHT 5 OF 7



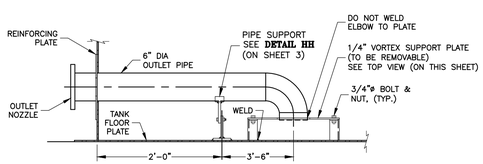
DETAIL FF
8" INLET & 6" OUTLET
N.T.S.



TOP
N.T.S.

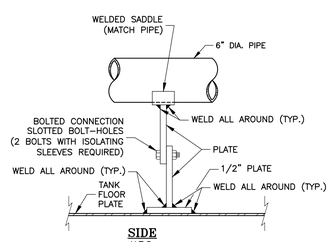


FRONT
N.T.S.



SIDE
N.T.S.

DETAIL GG
VORTEX PLATE DETAIL
N.T.S.



SIDE
N.T.S.

DETAIL HH
PIPE SUPPORT DETAIL
N.T.S.

ENGINEERING

CALIFORNIA WATER SERVICE™

DEPARTMENT

REVISIONS:
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R2-(9/21/21) CHANGED DIAMETER OF TANK
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	DATE:	INIT.
DISTRIBUTION MAP	☐	
PLAT SHEET	☐	
SYSTEM SCHEMATIC	☒	
STATION SCHEMATIC	☒	

PLAT SHEET NO.:
SM-31-22

SCALE:
AS SHOWN

DRAWN BY:
D. HEARN

DESIGNED BY:
J. HUYNH

TECH REVIEW: DATE:

CHECKED BY: DATE:
8/26/2022

APPROVED BY: DATE:
9/7/2022

TITLE:
MPS - SAN MATEO STA 031
STANDARD BOLTED STEEL STORAGE TANK
MISCELLANOUS DETAILS AND ACCESSORIES

DISTRICT:
116-MPS

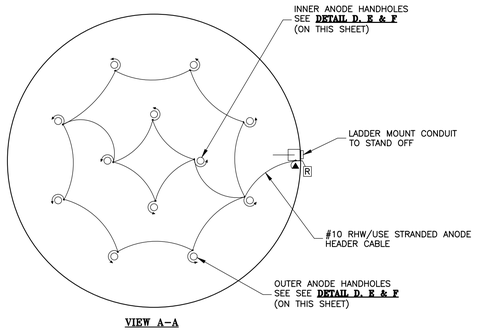
SAN MATEO

DATE:
4/20/2021

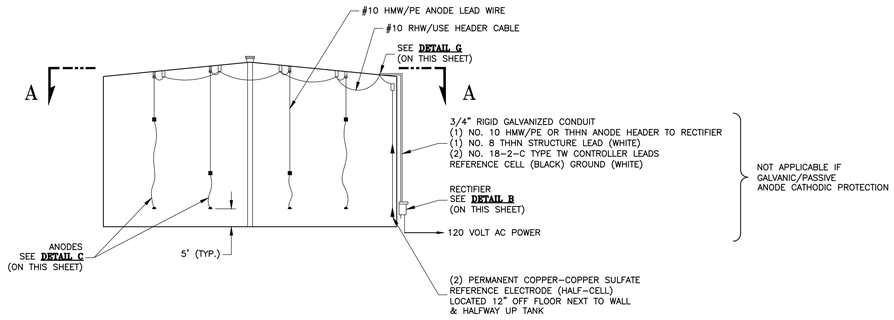
PROJECT ID.:
00118772

DRAWING NO.:
MPS-5643 R3

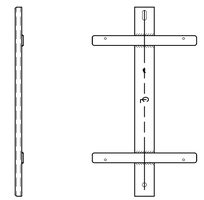
SHT 6 OF 7



VIEW A-A

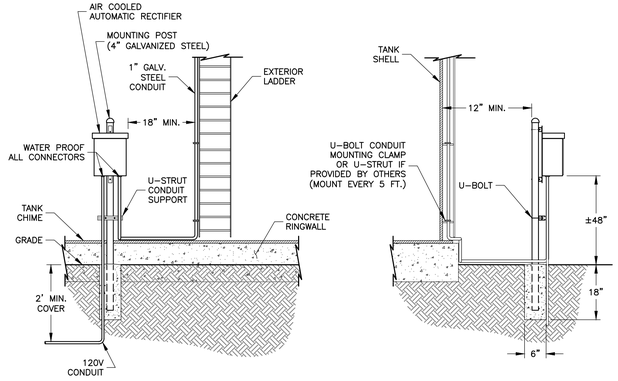


DETAIL A
CATHODIC PROTECTION SYSTEM LAYOUT
N.T.S.

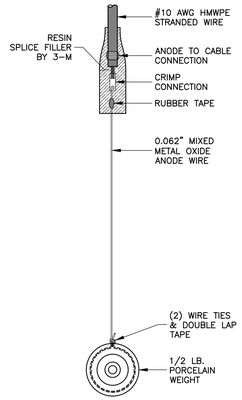


NOTES:
1. USE WATER PROOF NUTS & BOLTS.
2. BRACKETS SHALL BE OF SAME METAL AS ENCLOSURE OR STANDARD ALUMINUM MOUNTING BRACKETS THAT RESIST CORROSION.

RECTIFIER MOUNTING BRACKET DETAIL



DETAIL B
RECTIFIER MOUNTING DETAIL
N.T.S.

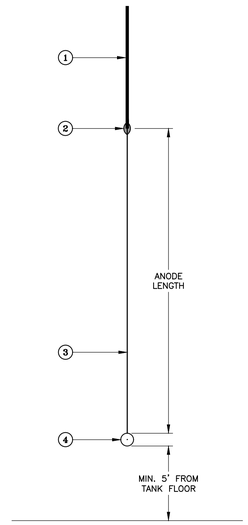


TITANIUM ANODE CONNECTION DETAIL

KEY

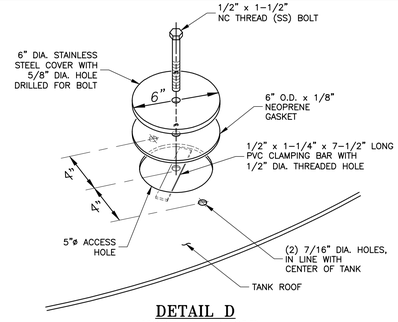
1. #10 AWG HMWPE STRANDED COPPER WIRE.
2. ANODE TO CABLE CRIMP CONNECTION AND SILVER SOLDER AND 3-M RESIN SPLICE.
3. MIXED METAL OXIDE ANODE WIRE, 0.062" DIA. ON TITANIUM WITH COPPER CORE.
4. 1/2 LB. PORCELAIN WEIGHT

NOTE:
WEIGHT SIZE AND SHAPE MUST FIT
THROUGH 5" DIA. ACCESS HOLE

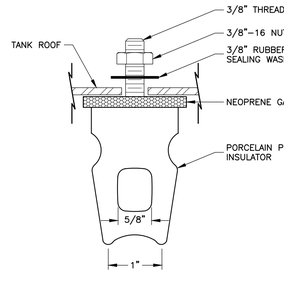


TYPICAL ANODE SUSPENSION SYSTEM DETAIL

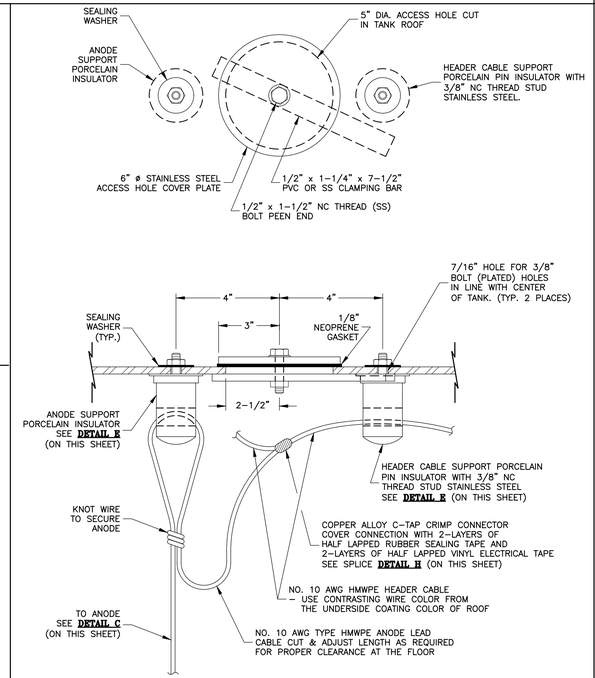
DETAIL C
CATHODIC PROTECTION ANODE ASSEMBLY
N.T.S.



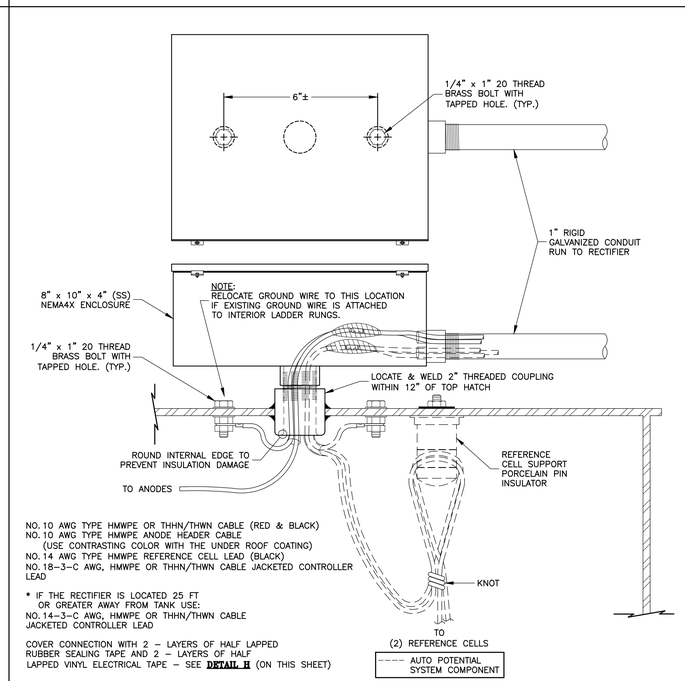
DETAIL D
ANODE HANDHOLE
N.T.S.



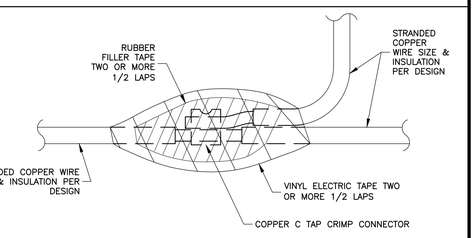
DETAIL E
UNDER ROOF CABLE SUPPORT
PORCELAIN INSULATOR DETAIL
N.T.S.



DETAIL F
ANODE SUSPENSION AND HANDHOLE DETAIL
N.T.S.



DETAIL G
WIRE AND CONDUIT TANK ENTRANCE DETAIL
N.T.S.



DETAIL H
TYPICAL SPLICE CONNECTION DETAIL

NOTES:

1. THE WIRING DIAGRAMS ON THIS DRAWING ARE GENERIC AND NOT SPECIFIC OF ANY SYSTEM. REFER TO THE INSTRUCTION BOOKLET AND SYSTEM WIRING DIAGRAMS INSIDE THE RECTIFIER CABINET DOOR FOR TESTING, ADJUSTMENTS AND TROUBLESHOOTING.
2. WHEN REPLACING ANODES ALWAYS REPLACE THE ENTIRE HEADER CABLE, SEE DETAILS BB & CC. ALSO TEST THE RESISTANCE OF THE LEAD WIRES FROM THE RECTIFIER AND REPLACE THEM IF THEY ARE IN POOR CONDITION AND/OR THE WIRES ARE OTHER THAN NO. 10 AWG TYPE THWN, THHN OR HMWPE AS SHOWN ON THIS DRAWING.
3. AFTER REPLACING ANODES (SEE DETAIL AA), INSTALLING SYSTEM COMPONENTS AND TROUBLESHOOTING THE SYSTEM, PERFORM A POLARITY TEST USING A D.C. VOLT METER. CONNECT THE COMMON TEST LEAD TO THE TANK STRUCTURE AND CONNECT THE POSITIVE LEAD TO THE ANODE WIRE SUPPLY. THE VOLTAGE READING MUST BE POSITIVE. THIS TEST MAY BE DONE AT THE RECTIFIER OUTPUT CONNECTIONS.
4. CONTACT THE TANK MAINTENANCE DEPARTMENT FOR SYSTEM POWER REQUIREMENTS AND DESIRED SETTINGS. PERFORM A "POTENTIAL PROFILE TEST" OF THE SYSTEM USING A PORTABLE COPPER TO COPPER REFERENCE CELL. FILL OUT FORM NO. 74 AND SUBMIT TO THE ENGINEERING DEPARTMENT.

ENGINEERING

CALIFORNIA WATER SERVICE™

DEPARTMENT

REVISIONS:
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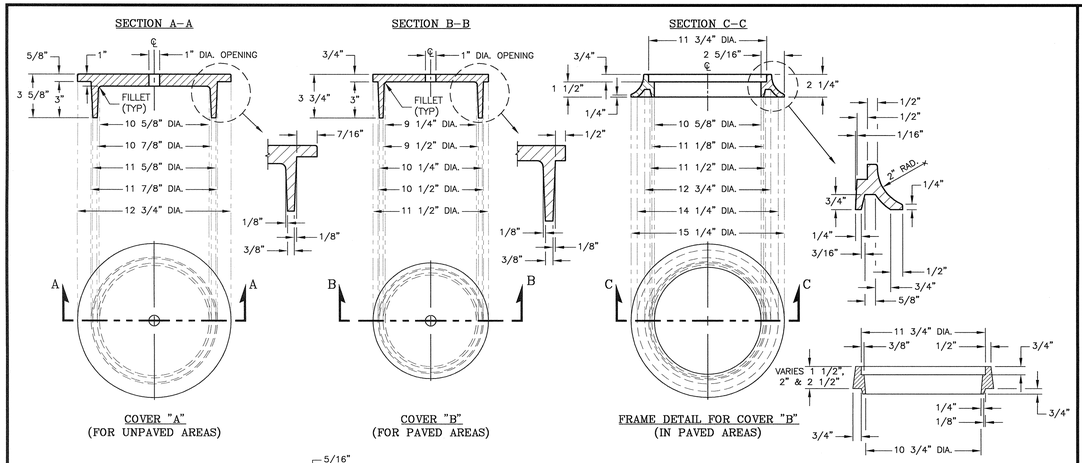
R2-(9/21/21) CHANGED DIAMETER OF TANK
R3-(6/24/2022) ADD NEW TRANSFORMER & MCC PADS DH

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC	X	
STATION SCHEMATIC	X	

PLAT SHEET NO.: SM-31-22
SCALE: AS SHOWN
DRAWN BY: D. HEARN
DESIGNED BY: J. HUYNH
TECH REVIEW: DATE:
CHECKED BY: DATE: 8/26/2022
APPROVED BY: DATE: 9/7/2022

TITLE:
MPS - SAN MATEO STA 031
STANDARD BOLTED STEEL STORAGE TANK
CATHODIC PROTECTION DETAILS & ACCESSORIES

DISTRICT: 116-MPS
SAN MATEO
DATE: 4/20/2021
PROJECT ID.: 00118772
DRAWING NO.: MPS-5643 R3
SHT 7 OF 7

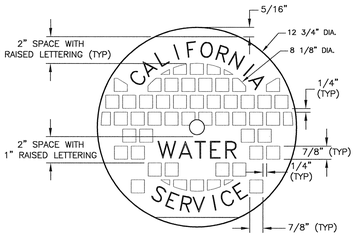


COVER "A"
(FOR UNPAVED AREAS)

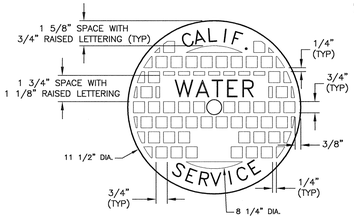
COVER "B"
(FOR PAVED AREAS)

FRAME DETAIL FOR COVER "B"
(IN PAVED AREAS)

TYPICAL CENTER SECTION OF FRAME RISER
(FOR PAVED AREAS)



TOP VIEW OF COVER "A"



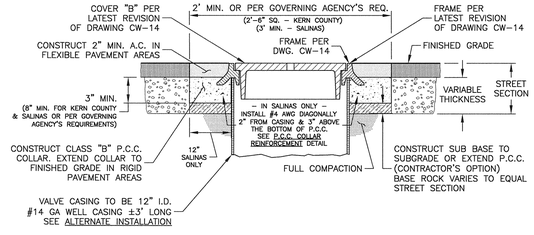
TOP VIEW OF COVER "B"

NOTE:
LETTERING AND DETAILS SHALL BE RAISED 1/8" ABOVE FACE OF COVER "A" AND "B".

NOTES:

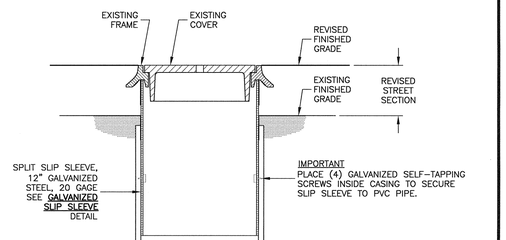
1. Frame, cover and casing extensions to be of good quality domestic cast iron, free from flaws and blow holes, and of sufficient strength to resist breakage by street traffic.
2. Castings to be true, and if necessary to be trimmed on emery wheel to prevent rocking of cover in any position in the frame.
3. See latest revision of drawing CW–439 for valve cover, casing, and frame installation details.
4. Cover "A" does not have a matching cast frame.

CW 14R6 — VALVE COVER AND FRAME FABRICATION DETAILS FOR PAVED AND UNPAVED AREAS

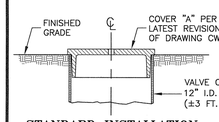


STANDARD PAVED AREA INSTALLATION
N.T.S.

NOTE:
TO EXTEND AN EXISTING STANDARD PAVED INSTALLATION: REMOVE FRAME, ADD STANDARD CAST FRAME RISER PER LATEST REVISION OF DRAWING CW–14, OR TACK WELD ADDITIONAL STEEL CASING AS REQUIRED, REPLACE FRAME.

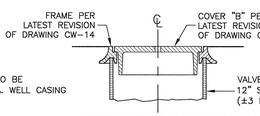


EXISTING PAVED AREA PVC CASING AND SLIP SLEEVE EXTENSION
N.T.S.



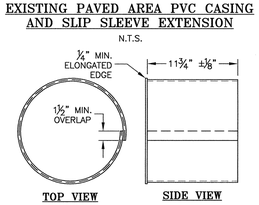
STANDARD INSTALLATION
(IN UNPAVED AREAS)

NOTE:
TO EXTEND AN EXISTING STANDARD UNPAVED INSTALLATION: REMOVE COVER, TACK WELD ADDITIONAL STEEL CASING AS REQUIRED, AND REPLACE COVER.

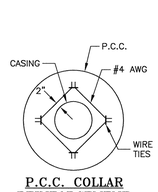


ALTERNATE INSTALLATION
(IN PAVED AREAS)

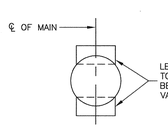
NOTE:
TO EXTEND PVC CASING IN PAVED AREA: SEE EXISTING PAVED AREA PVC CASING AND SLIP SLEEVE EXTENSION DETAIL.



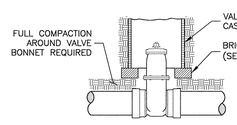
GALVANIZED SLIP SLEEVE
N.T.S.



P.C.C. COLLAR REINFORCEMENT
(SALINAS ONLY)
N.T.S.



VALVE CASING FOOTING
TOP VIEW
N.T.S.



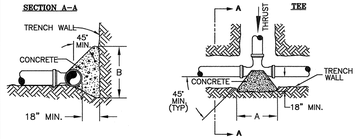
VALVE CASING FOOTING
SIDE VIEW
N.T.S.

CW 439R6 — VALVE CASING, COVER, AND FRAME INSTALLATION DETAILS

THRUST BLOCK SCHEDULE

PIPE SIZE	FITTING	TYPE OF SOIL: SOFT CLAY (1000 P.S.F.) MIN. BEARING AREA (SQ. FT.)	SOFT CLAY DIMENSION (FEET) A	SOFT CLAY DIMENSION (FEET) B	SAND (2000 P.S.F.) MIN. BEARING AREA (SQ. FT.)	SAND DIMENSION (FEET) A	SAND DIMENSION (FEET) B	ROCK (3000 P.S.F.) MIN. BEARING AREA (SQ. FT.)	ROCK DIMENSION (FEET) A	ROCK DIMENSION (FEET) B
6"	PLUG, CAP	6	3	2	3	2	1.5	2	2	1
	90° ELL	8	3.2	2.5	4.1	2.7	1.5	3	2	1.5
	45° ELL	4.4	2.2	2	2.3	1.5	1.5	1.5	1.5	1
	22 1/2° ELL	2.3	1.5	1.5	1	1	1	1	1	1
	TEE W/ 6"OUTLET	6	3	2	3	2	1.5	2	2	1
8"	PLUG, CAP	10	4	2.5	5	2.5	2	3.3	2.2	1.5
	90° ELL	14	4	3.5	7	2.8	2.5	5	2.5	2
	45° ELL	7.5	3	2.5	3.8	2	1.9	2.6	1.7	1.5
	22 1/2° ELL	4	2	2	2	2	1	1.5	1.5	1
	TEE W/8"OUTLET	10	4	2.5	5	2.5	2	3.3	2.2	1.5
12"	PLUG, CAP	24	6	4	12	4	3	7.5	3	2.5
	90° ELL	32.5	6.5	5	16.1	4.6	3.5	10.8	3.6	3
	45° ELL	17.5	5	3.5	8.8	3.5	2.5	6	3	2
	22 1/2° ELL	9	3.6	2.5	4.6	2.3	2	3	2	1.5
	TEE W/12"OUTLET	24	6	4	12	4	3	7.5	3	2.5
14"	PLUG, CAP	31.5	6.3	5	15.8	4.5	3.5	10.5	3.5	3
	90° ELL	44.4	7.4	6	22	5.5	4	14.7	4.2	3.5
	45° ELL	24	6	4	12	4	3	8.1	3	2.7
	22 1/2° ELL	12	4	3	6	3	2	4	2	2
	TEE W/ 14"OUTLET	31.5	6.3	5	15.8	4.5	3.5	10.5	3.5	3
16"	PLUG, CAP	40.7	7.4	5.5	20	5	4	13.5	4.5	3
	90° ELL	56	8	7	28.8	6.4	4.5	20	5	4
	45° ELL	31	6.2	5	15.8	4.5	3.5	10.5	3.5	3
	22 1/2° ELL	15.8	4.5	3.5	7.8	3	2.6	5.2	2.6	2
	TEE W/ 16"OUTLET	40.7	7.4	5.5	20	5	4	13.5	4.5	3
18"	PLUG, CAP	52	8	6.5	26.4	6.6	4	17.5	5	3.5
	90° ELL	75	10	7.5	37	7.4	5	24.8	6.2	4
	45° ELL	40.7	7.4	5.5	20	5	4	14	4	3.5
	22 1/2 ELL	20	5	4	10.5	3.5	3	6.9	3	2.3
	TEE W/ 18"OUTLET	52	8	6.5	26.4	6.6	4	17.5	5	3.5

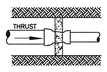
NOTE:
1. THRUST BLOCKS DESIGNED FOR A MAXIMUM OF 150 PSI WATER PRESSURE
2. ALL CONCRETE SHALL CONTAIN 6 SACKS OF CEMENT PER CUBIC YARD.
3. THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED SOIL.
4. KEEP ALL CONCRETE CLEAR OF THE JOINTS ON ALL FITTINGS.
5. FORMS ARE REQUIRED ON ALL THRUST BLOCKS AND TO BE SUPPLIED BY CONTRACTOR. ALL FITTINGS TO BE WRAPPED WITH POLYETHELENE PRIOR TO POURING THRUST BLOCKS.



CW 435R4 — TYPICAL THRUST BLOCK INSTALLATION

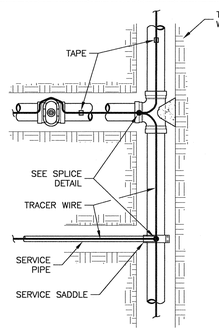
TEE & SOLID PLUG

NOTE:
SEE PLANS FOR SIZE & DETAIL OF CONCRETE BLOCK WHEN REQUIRED FOR REDUCER.



REDUCER

90° ELL



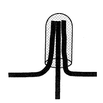
PLAN VIEW

STEPS:

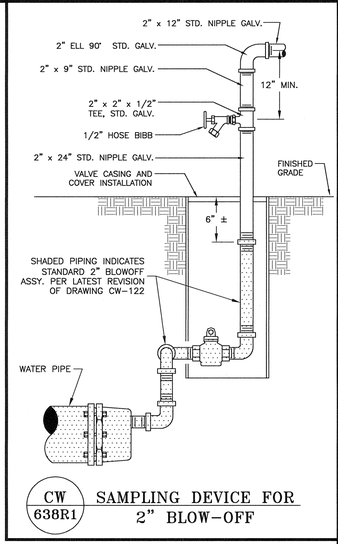
1. STRIP 1" OF INSULATION FROM END OF EACH WIRE.
2. TWIST WIRES TOGETHER WITH PLIERS.
3. PLACE SPLICE CAP OVER TWISTED WIRES AND CRIMP WITH CRIMPING TOOL.
4. BEND CRIMP FLAT WITH WIRE.
5. WRAP SPLICED CONNECTION WITH RUBBER MOLDING TAPE, COMPLETELY COVERING BARE WIRE.

–OR–

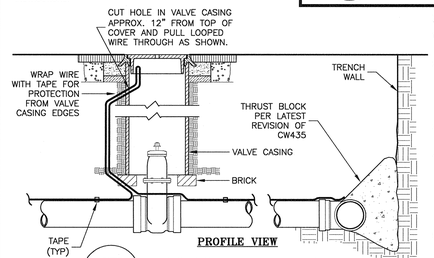
USE WATERTIGHT DIRECT BURY TWIST–ON ENCLOSURES OR APPROVED EQUAL AND INSTALL PER MANUFACTURER'S INSTRUCTIONS.



SPLICE DETAIL FOR CUT WIRES



CW 638R1 — SAMPLING DEVICE FOR 2" BLOW–OFF



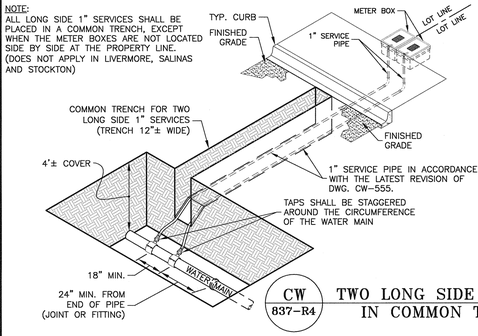
PROFILE VIEW

CW 850R4 — STANDARD INSTALLATION DETAILS FOR TRACER WIRES

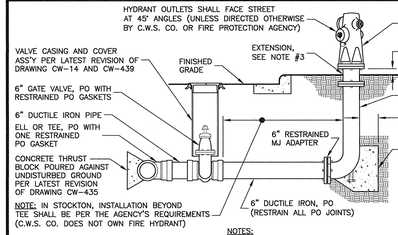
NOTES:

1. CONTRACTOR SHALL USE CARE TO PREVENT DAMAGE TO TRACER WIRE DURING INSTALLATION.
2. ALL WIRE SHALL BE SOLID COPPER WITH 45 MILS OF HIGH MOLECULAR WEIGHT POLYETHYLENE (HMWPE) INSULATION, UL LISTED, RATED FOR DIRECT BURIAL. MINIMUM SIZE AWG 12. COLOR BLUE FOR POTABLE WATER AND PURPLE FOR RECLAIMED WATER.
3. TRACER WIRES SHALL BE INTER–CONNECTED AT TEES, CROSSES, PE SERVICES, AND CUT WIRES WITH SPLICE CONNECTORS.
4. ENOUGH SLACK OF TRACER WIRE SHALL BE EXTENDED INTO VALVE CASING AND METER BOX FOR FUTURE ACCESS. LOOPED WIRE SHALL BE PULLED INTO VALVE CASING AS SHOWN ON "PROFILE VIEW" ABOVE. TRACER WIRE SHALL BE TAPED TO BLOW OFF ASSEMBLY AT DEAD ENDS AND TO ANGLE METER STOP AT END OF SERVICE CONNECTIONS.
5. CONTINUITY TESTS SHALL BE CONDUCTED WHEN REQUIRED BY A CAL WATER REPRESENTATIVE.
6. TRACER WIRE SHALL BE REQUIRED ON ALL MAINS.

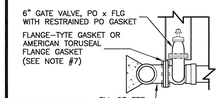
NOTE:
ALL LONG SIDE 1" SERVICES SHALL BE PLACED IN A COMMON TRENCH, EXCEPT WHEN THE METER BOXES ARE NOT LOCATED SIDE BY SIDE AT THE PROPERTY LINE. (DOES NOT APPLY IN LIVERMORE, SALINAS AND STOCKTON)



CW 837–R4 — TWO LONG SIDE SERVICES IN COMMON TRENCH



STANDARD INSTALLATION
N.T.S.

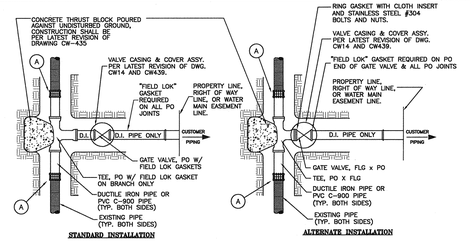


ALTERNATE INSTALLATION
N.T.S.

NOTES:

1. For district specific fire hydrant models and requirements, see District fire hydrant form, note 18 on main extension drawing, or verify with C.W.S. Co. representative.
2. All fire hydrant materials shall comply with latest C.W.S. Co. material specifications.
3. A hydrant extension may be required to adjust for finished grade.
4. For wet barrel hydrants this dimension is from finished grade to bury's flange or extension's flange when an extension is required.
5. Push–on, flanged fitting joints, and/or threaded–flanged risers may be required in certain fire protection districts. Verify with C.W.S. Co. representative all fire hydrant material prior to the installation. (In Stockton verify with the fire protection agency that has jurisdiction.)
6. Fire hydrant barricades shall be required when a vertical or rolled curb does not exist, or when the fire hydrant needs to be protected from moving vehicles, per latest revision of drawing CW–822.
7. All machine bolts and nuts shall be 304 stainless steel, except for break–off bolts.
8. A 90° elbow with restrained push on joints may be required for the fire hydrant installation when space is limited and the hydrant lead must run parallel to the main or the location of the fire hydrant requires the bend.
9. Protect all underground bolts and nuts per C.W.S. Co. standard coating specification.
10. A break–off check valve may be required in sloped terrain as specified by district personnel. Use Clow Model LB400 or approved equal.

CW 380R16 — TYPICAL FIRE HYDRANT INSTALLATION



STANDARD INSTALLATION

ALTERNATE INSTALLATION

TYPICAL MATERIALS FOR ____ INCH FIRE SERVICE:

1 – ____" x ____" TEE PO CL DI
1 – ____" GATE VALVE PO NRS NO RS
1 – VALVE CASING AND COVER ASSEMBLY
____ – FEET OF ____" DUCTILE IRON PIPE (FOR FIRE SERVICE RUN)
____ – 20" POLYWRAP TUBING 8 MIL W/PVC TAPE
____ – ____" "FIELD LOK" GASKET F/PO
____ – FEET OF ____" DUCTILE IRON PIPE OR PVC C–900 PIPE (FOR TEE RUN)

TYPICAL MATERIALS FOR ____ INCH FIRE SERVICE:

1 – ____" x ____" TEE PO X FLG CL DI
1 – ____" GATE VALVE FLG X PO NRS NO RS
1 – VALVE CASING AND COVER ASSEMBLY
____ – FEET OF ____" DUCTILE IRON PIPE (FOR FIRE SERVICE RUN)
1 – GAL. METAL GUARD #301
1 – ROLL BIT OR RES WRAP
____ – 20" POLYWRAP TUBING 8 MIL W/PVC TAPE
____ – ____" "FIELD LOK" GASKET F/PO
____ – FEET OF PVC C–900 PIPE OR DUCTILE IRON PIPE (FOR TEE RUN)

NOTES:

1. A DOUBLE CHECK VALVE OR REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY IS REQUIRED.
2. POLYETHYLENE ENCASEMENT WITH PVC TAPE IS REQUIRED FOR ALL DUCTILE IRON PIPE AND ALL FITTINGS.
3. PROTECT ALL UNDERGROUND BOLTS, NUTS, FLEX. COUPLINGS, AND BARE STEEL PER C.W.S. CO. PROTECTION COATING SPECIFICATIONS.
4. BLOCK AND POUR CONCRETE THRUST BLOCKS ON ALL ELLS, TEES, AND CAPS, PER LATEST REVISION OF DRAWING CW–435.
5. THE USE OF "FIELD LOK" GASKETS DOES NOT ELIMINATE THE NEED FOR CONCRETE THRUST BLOCKS.

FLANGE MATERIAL – CHECK ONE BOX

☐ 1 – 4" FLANGE TYTE GASKET 8 – 5/8" # x 3" #304 SS MACHINE BOLTS W/ HN
☐ 1 – 6" FLANGE TYTE GASKET 8 – 3/4" # x 3–1/2" #304 SS MACHINE BOLTS W/ HN
☐ 1 – 8" FLANGE TYTE GASKET 8 – 3/4" # x 3–1/2" #304 SS MACHINE BOLTS W/ HN
☐ 1 – 10" FLANGE TYTE GASKET 12 – 7/8" # x 4" #304 SS MACHINE BOLTS W/ HN

MATERIAL FOR ITEM (A) (EITHER INSTALLATION)	
TIE–INS FROM D.I. TO D.I. OR PVC C–900 OR ACME(C–10"DIA.) USE SOLID SLEEVE MJ	TIE–INS FROM D.I. TO CO STEEL USE CO STEEL X DI FLEX. COUPLING (10" SLV IF STL OR STD SLV IF D.I.)
TIE–INS FROM D.I. TO CI USE SOLID SLEEVE MJ DUAL PURPOSE	
TIE–INS FROM D.I. TO ACRB (ASBESTOS CEMENT ROUGH BARREL) USE ACRB X DI FLEX. COUPLING (10" SLEEVE IF STEEL OR STANDARD SLEEVE IF DUCTILE IRON).	TIE–INS FROM D.I. TO STD STEEL USE STD X DI FLEX. COUPLING (10" SLV IF STL OR STD SLV IF D.I.)
	TIE–INS FROM PVC C–900 TO PVC C–900 USE "CERTAINTEED" PVC CLOSURE COUPLING

CW 840R4 — STANDARD PRIVATE FIRE SERVICE CONNECTION

ENGINEERING

CALIFORNIA WATER SERVICE

DEPARTMENT

REVISIONS:

DISTRIBUTION MAP	DATE:	INIT.
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC		

PLAT SHEET NO.:

SCALE: N.T.S.

DRAWN BY: M. FONG

DESIGNED BY:

CHECKED BY: DATE:

APPROVED BY: DATE: 5/12/2016

TITLE: CALIFORNIA WATER SERVICE COMPANY STANDARD DRAWINGS

DISTRICT: ALL

DATE: 5/12/2016

PROJECT ID.:

DRAWING NO.: CWDWGS

SHT 1 OF 2

NOTES:
1. ALL PE PLASTIC PIPE REQUIRES TRACER WIRE TAPED TO PE PIPE AND EXTENDED INTO METER BOX PER LATEST REVISION OF DWG. CW-850 AND AS SPECIFIED IN CWS CO. MATERIAL SPECIFICATIONS DWG. CW-832.

2. SADDLES ARE REQUIRED ON ALL PVC C-900, AC, STEEL, OR WROUGHT IRON PIPE.

3. INSERT STIFFNERS SHALL BE USED ON ALL PE PIPE WITH COMPRESSION CONNECTIONS.

4. WHEN USING MUELLER INSTA-TITE, BEVEL THE PE PIPE WITH MUELLER'S BEVELING TOOL PER MANUFACTURER'S SPECIFICATIONS.

5. RESPONSIBILITY FOR SERVICE MAINTENANCE BY CWS CO. ENDS AT DOWNSTREAM METER COUPLING (OR LEFT TO DISTRICT'S DISCRETION).

6. ALL PIPE FITTINGS IN CONTACT WITH WATER SHALL BE LEAD FREE (< 0.25% LEAD) AND COMPLIANT TO NSF-61/SECTION 8.

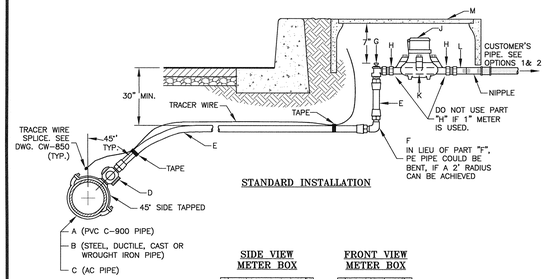
OPTIONS: THESE OPTIONS MAY BE REQUIRED BY CWS CO.

1. EXTEND CUSTOMER'S PIPING ±12" BEYOND METER BOX WITH TWO 12" NIPPLES & TWO 90° ELLS, BRASS (OR GALVANIZED IF PREFERRED BY CWS). SEE NOTE 5.

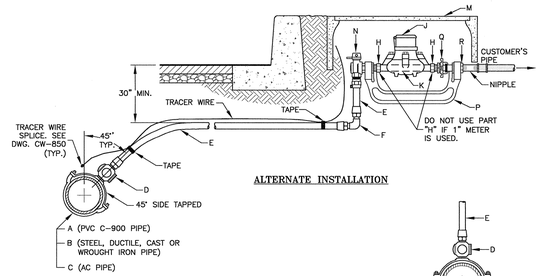
2. INSTALL BALL VALVE DOWNSTREAM FROM METER WHEN CUSTOMER'S PIPING IS UPHILL FROM METER OR CUSTOMER'S VALVE IS A GREAT DISTANCE FROM METER.

3. INSTALL 1" COPPER TUBING, TYPE K SOFT, INSTEAD OF PE WHEN CWS REPRESENTATIVE DETERMINES THAT CONDITIONS ARE UNFAVORABLE TO PE.

PART LETTER	PART NAME	PART SIZE	MUELLER INSTA-TITE/ MUELLER PACK-JOINT	FORD ULTRA-TITE/ FORD PACK JOINT	A.Y. McDONALD	CAMBRIDGE BRASS	SMITH-BLAIR	APAC
A	SERVICE SADDLE ALL BRONZE	NOMINAL MAIN SIZE x 1" CC	H-13400 SERIES	S90 SERIES	3805 SERIES	800 SERIES	393 SERIES	------
B	SERVICE SADDLE DUCTILE IRON	NOMINAL MAIN SIZE x 1" CC	DR 2A SERIES	F202 SERIES	------	------	313 SERIES	102 SERIES
C	SERVICE SADDLE ALL BRONZE	NOMINAL MAIN SIZE x 1" CC	BR 2B SERIES	202B SERIES	3825 SERIES	810 SERIES	323 SERIES	------
D	CORPORATION STOP (BALL)	1" CC x 1" MFG. F/PE IPS	B-2996N + H15456N	FB1001-4-U-ANWT-NL /FB1001-4-NL	747018-33 1"	301NL-A4PE4	------	------
E	1" PE PLASTIC PIPE	1" PE PLASTIC PIPE IPS	HIGH DENSITY POLYETHYLENE PIPE, IRON PIPE SIZE, AWWA STANDARD C901, PE 4710, PC 200, SIDR7					------
F	1" 90° ELBOW	1" MFG F/PE IPS	H-15464N	L66-44-U-NL/ L66-44-NL	74761-30 1"	105NL-PE4PE4	------	------
G	ANGLE METER STOP (BALL)	1" F/PE IPS x 1" METER SWIVEL NUT	B-24266N/E-24259N	BA63-444W-U-AWT-NL /BA63-444W-NL	746028-33 1"	210NL-PE4T4	------	------
H	METER ADAPTER	1" METER TO 5/8" x 3/4" METER	H-10879N	A24-NL	710J24	440NL-N4R2	------	------
J	METER	BY CWS COMPANY: 5/8" x 3/4" METER (USE FOR LOT SIZE < 10,000 SQ. FT.) LENGTH 7 1/2". 1" METER (USE FOR LOT SIZE 10,000 SQ. FT. OR LARGER OF IF REQ'D TO MEET CITY'S FIRE SPRINKLER ORDINANCE) LENGTH 10"						
K	METER SPACER	DEVELOPER'S CONTRACTOR SHALL INSTALL SCH. 80 PVC NIPPLE IN PLACE OF METER: 1-1/4" DIAMETER, 11" LONG WITH PIT					------	------
L	METER COUPLING	1" METER SWIVEL NUT x M.I.P.	H-10899N	C38-44-2-625-NL	74624	417NL-T4M4	------	------
M	METER BOX - BROOKS #37 BOX W/ CAST IRON COVER OR CHRISTY #812 BOX W/ CAST IRON COVER. IF OUTSIDE FULL TRAFFIC AREAS, USE CHRISTY FL12 BOX W/ SW12S LID. CWS OPTION: 1-PIECE COVER FL12D OR ARMORCAST P6000485-ROTOCAST BOX W/ A6000484DQ COVER & DROP-IN LID A6000487. CWS OPTION: 1-PIECE COVER A6000484	12" x 20" x 12"	------	------	------	------	------	------
N	ANGLE BALL VALVE	1" PEP x 1" LOCKNUT	H-15426N+B-24378N/ E-15429N+B-24278N	BA96-444W-U-AWT-NL /BA96-444W-NL	------	------	------	------
P	IRON YOKE PIECE	------	H-5040	Y504P	------	------	------	------
Q	EXPANSION CONNECTION	------	H-14234N	EC-4-NL	------	------	------	------
R	YOKE COUPLING	LOCKNUT x FIP	H-14219N	C91-44-NL	------	------	------	------



STANDARD INSTALLATION



ALTERNATE INSTALLATION

WHEN REQUIRED BY CWS COMPANY, PLACE BRICKS ON TWO SIDES OF METER BOX FOR SUPPORT (OR 2" x 4" PRESSURE TREATED LUMBER)

TAPPED AT TOP OF MAIN
USE THIS INSTALLATION ONLY WHEN METER BOX IS LOCATED DIRECTLY ABOVE THE MAIN

CW 555R15 — STANDARD 1" SERVICE CONNECTION FOR 5/8" X 3/4" METER AND 1" METER

NOTES:
1. 2" SERVICE SHALL BE INSTALLED FOR ALL 1-1/2" METERS.

2. A SADDLE SHALL BE USED FOR ALL 2" SERVICES.

3. ALL PE PLASTIC PIPE REQUIRES TRACER WIRE TAPED TO PE PIPE AND EXTENDED INTO METER BOX PER LATEST REVISION OF DWG. CW-850 AND AS SPECIFIED IN CWS CO. MATERIAL SPECIFICATIONS DWG. CW-832.

4. INSERT STIFFNERS SHALL BE USED ON ALL PE PIPE WITH COMPRESSION CONNECTIONS.

5. RESPONSIBILITY FOR SERVICE MAINTENANCE BY CWS CO. ENDS AT DOWNSTREAM METER COUPLING (OR LEFT TO DISTRICT'S DISCRETION).

6. ALL PIPE FITTINGS IN CONTACT WITH DRINKING WATER SHALL BE LEAD FREE (< 0.25% LEAD) AND COMPLIANT TO NSF-61/SECTION 8.

OPTIONS: THESE OPTIONS MAY BE REQUIRED BY CWS CO.

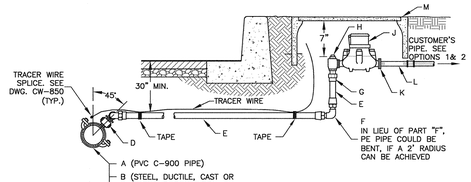
1. EXTEND CUSTOMER'S PIPING ±12" BEYOND METER BOX WITH TWO 12" NIPPLES & TWO 90° ELLS, BRASS (OR GALVANIZED IF PREFERRED BY CWS). SEE NOTE 5.

2. INSTALL BALL VALVE DOWNSTREAM FROM METER WHEN CUSTOMER'S PIPING IS UPHILL FROM METER OR CUSTOMER'S VALVE IS A GREAT DISTANCE FROM METER.

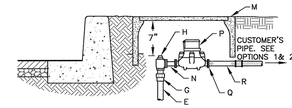
3. INSTALL 2" COPPER TUBING, TYPE K SOFT, INSTEAD OF PE WHEN CWS REPRESENTATIVE DETERMINES THAT CONDITIONS ARE UNFAVORABLE TO PE. REFER TO LATEST REVISION OF DWG# CW1020.

4. WHEN REQUIRED BY CWS COMPANY, PLACE BRICKS ON TWO SIDES OF METER BOX FOR SUPPORT (OR 2" x 4" PRESSURE TREATED LUMBER).

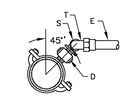
PART LETTER	PART NAME	MUELLER	FORD	A.Y. McDONALD	CAMBRIDGE BRASS	SMITH-BLAIR	APAC
A	SERVICE SADDLE, ALL BRASS WITH 2" AWWA CC THREAD	H-13400	S90 SERIES	3805 SERIES	800 SERIES	393 SERIES	------
B	SERVICE SADDLE, DUCTILE IRON BODY, DOUBLE STEEL STRAP WITH 2" AWWA CC THREAD	DR2A	F202 SERIES	4825A	------	313 SERIES	102 SERIES
C	SERVICE SADDLE, BRASS BODY, DOUBLE BRONZE STRAP WITH 2" AWWA CC THREAD	BR2B	202B SERIES	3825 SERIES	810 SERIES	323 SERIES	------
D	2" CORPORATION STOP - AWWA CC THREAD X MIP	B-2996N	FB400-7-NL	73128B	301NL-A7M7	------	------
E	2" HDPE PIPE	HIGH DENSITY POLYETHYLENE PIPE, IRON PIPE SIZE, AWWA STANDARD C901, PE 4710, PC 200, SIDR7					
F	2" 90° ELL COUPLING - PEP X PEP	------	L66-77-IDR7-NL	74761-33	105NL-PE7PE7	------	------
G	2" STRAIGHT COUPLING - PEP X MIP	E-15429N	C86-77-IDR7-NL	74753-33	117NL-PE7M7	------	------
H	2" BALL ANGLE METER VALVE - F.I.P. X METER FLANGE	B-24286N-3	BFA13-777WR-NL	74604B	210NL-F7MF7	------	------
J	2" METER, (BY CWS COMPANY) LENGTH 17" NOTE: DEVELOPER'S CONTRACTOR SHALL INSTALL SPACER IN PLACE OF METER PER CWS CO'S DIRECTION	------	------	------	------	------	------
K	2" METER FLANGE - FLG. X F.I.P; BRONZE WITH FULL FACE GASKET AND #304 STAINLESS STEEL BOLTS & NUTS	------	CF31-77-NL	7610F	421NL-7S/S	------	------
L	2" NIPPLE - LEAD FREE BRASS	------	------	------	------	------	------
M	17" X 28" METER BOX-BROOKS CONCRETE #65 BOX W/ #65S CONCRETE COVER & LID OR CHRISTY CONCRETE B65 BOX W/ B65E CONCRETE COVER & LID NOTE: CAST IRON COVERS REQUIRED IN TRAFFIC AREAS	------	------	------	------	------	------
N	ADAPTER - 2" METER FLG. X 1-1/2" MET FLG.	------	A67-NL	710J67	------	------	------
P	1-1/2" METER, (BY CWS COMPANY) LENGTH 13" NOTE: DEVELOPER'S CONTRACTOR SHALL INSTALL SPACER IN PLACE OF METER PER CWS CO'S DIRECTION	------	------	------	------	------	------
Q	1-1/2" METER FLANGE - FLG. X F.I.P.; BRONZE WITH FULL FACE GASKET AND #304 STAINLESS STEEL BOLTS & NUTS	------	CF31-66-NL	7610F	421NL-6S/S	------	------
R	1-1/2" NIPPLE - LEAD FREE BRASS	------	------	------	------	------	------
S	2" 90° ELL, LEAD FREE BRASS - FIP X FIP	------	------	------	------	------	------
T	2" 90° ELL COUPLING - MIP X PEP	------	L86-77-IDR7-NL	74779M-33	105NL-B7M7	------	------



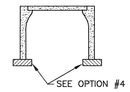
2" SERVICE WITH 2" METER



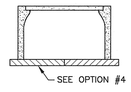
2" SERVICE WITH 1-1/2" METER



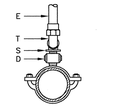
45° SIDE TAPPED CONNECTION



FRONT VIEW METER BOX



SIDE VIEW METER BOX



TAPPED AT TOP OF MAIN
USE THIS INSTALLATION ONLY FOR SERVICES LOCATED DIRECTLY ABOVE THE MAIN

CW 436R9 — STANDARD 2" SERVICE CONNECTION FOR 2" METER OR 1-1/2" METER [POLYETHYLENE INSTALLATION]

PART LETTER	PART NAME	MUELLER	FORD	A.Y. McDONALD	CAMBRIDGE BRASS	SMITH-BLAIR	APAC
A	SERVICE SADDLE	H-13400	S90 SERIES	3805 SERIES	800 SERIES	393 SERIES	------
B	SERVICE SADDLE	DR2A	F202 SERIES	4825A	------	313 SERIES	102 SERIES
C	SERVICE SADDLE	BR2B	202B SERIES	3825 SERIES	810 SERIES	323 SERIES	------
D	2" CORPORATION STOP - AWWA TAPER THREAD INLET X MIP	B-2996N	FB800-7-NL	3011NL-A7M7	------	------	------
E	2" COPPER	TYPE K SOFT PER LATEST REVISION OF ASTM SPECIFICATION B88					
F	2" 90° ELL COUPLING - CTS X CTS	P15526-N(P)/H15526-N(Q)	L44-77-NL(P)/L44-77-Q-NL(Q)	74761-22(P)/74761Q-2(Q)	105NL-B7B7(P)/105NL-H7H7(Q)	------	------
G	2" STRAIGHT COUPLING - CTS X CTS (SEE OPTION 5)	P15403-N(P)/H15403-N(Q)	C44-77-NL(P)/C44-77-Q-NL(Q)	74758-22(P)/74758Q-2(Q)	118NL-B7B7(P)/118NL-H7H7(Q)	------	------
H	2" BALL ANGLE METER VALVE - CTS X METER FLANGE - FULL PORT	P24276-N(P)/B24276-N(Q)	BFA13-777W-NL(P)/BFA43-777W-Q-NL(Q)	74602B-22(P)/74602BQ-2(Q)	210NL-B7MF7(P)/210NL-H7MF7(Q)	------	------
J	2" METER	------	------	------	------	------	
K	2" METER FLANGE - FLG. X F.I.P; BRONZE WITH FULL FACE GASKET AND #304 STAINLESS STEEL BOLTS & NUTS	------	CF31-77-NL	7610F	421NL-7S/S	------	------
L	2" NIPPLE	------	------	------	------	------	------
M	METER BOX - BROOKS CONCRETE #65 BOX W/ #65S CONCRETE COVER & LID OR CHRISTY CONCRETE B65 BOX W/ B65E CONCRETE COVER & LID NOTE: CAST IRON COVERS REQUIRED IN TRAFFIC AREAS	------	------	------	------	------	------
N	ADAPTER - 2" METER FLG. X 1-1/2" MET FLG.	------	A67-NL	710J67	------	------	------
P	1-1/2" METER	------	------	------	------	------	------
Q	1-1/2" METER FLANGE - FLG. X F.I.P.; BRONZE WITH FULL FACE GASKET AND #304 STAINLESS STEEL BOLTS & NUTS	------	CF31-66-NL	7610F	421NL-6S/S	------	------
R	1-1/2" NIPPLE STD. LEAD-FREE BRASS	------	------	------	------	------	------
S	2" 90° ELL, FIP X FIP	------	------	------	------	------	------
T	2" 90° ELL - MIP X CTS	P15531-N(P)/H15531-N(Q)	L84-77-NL(P)/L84-77-Q-NL(Q)	74779M-22 2(P)/74779MQ-2(Q)	105NL-B7M7(P)/105NL-H7M7(Q)	------	------

NOTE: P- PACK JOINT; Q- QUICK JOINT

NOTES:
1. 2" SERVICE SHALL BE INSTALLED FOR ALL 1-1/2" METERS.

2. A SADDLE SHALL BE USED FOR ALL 2" SERVICES.

3. RESPONSIBILITY FOR SERVICE MAINTENANCE BY CWS CO. ENDS AT DOWNSTREAM METER COUPLING (OR LEFT TO DISTRICT'S DISCRETION).

4. ALL PIPE FITTINGS IN CONTACT WITH DRINKING WATER SHALL BE LEAD FREE (< 0.25% LEAD) AND COMPLIANT TO NSF-61/SECTION 8.

OPTIONS:
THESE OPTIONS MAY BE REQUIRED BY CWS CO.

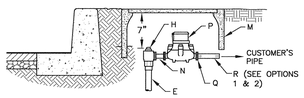
1. EXTEND CUSTOMER'S PIPING ±12" BEYOND METER BOX WITH TWO 12" NIPPLES & TWO 90° ELLS, BRASS (OR GALVANIZED IF PREFERRED BY CWS). SEE NOTE 3.

2. INSTALL BALL VALVE DOWNSTREAM FROM METER WHEN CUSTOMER'S PIPING IS UPHILL FROM METER OR CUSTOMER'S VALVE IS A GREAT DISTANCE FROM METER.

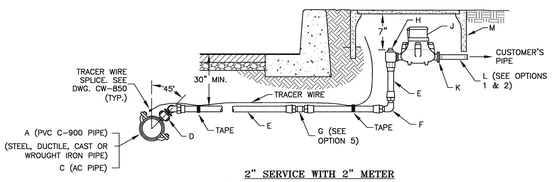
3. INSTALL 2" HDPE, INSTEAD OF COPPER WHEN CWS REPRESENTATIVE DETERMINES THAT CONDITIONS ARE UNFAVORABLE TO COPPER. REFER TO THE LATEST REVISION OF DWG# CW-436.

4. WHEN REQUIRED BY CWS COMPANY, PLACE BRICKS ON TWO SIDES OF METER BOX FOR SUPPORT (OR 2" x 4" PRESSURE TREATED LUMBER)

5. AT THE DIRECTIVE OF CWS REPRESENTATIVE, LEAD-FREE SOLDER JOINT COPPER FITTINGS MAY BE USED IN LIEU OF COMPRESSION FITTINGS FOR PART 'D'. INSTALLATION OF A SOLDERED FITTINGS SHALL CONFORM TO THE LATEST REVISION OF ASTM B828. ALL MATERIAL USED FOR SOLDERING SHALL BE LEAD-FREE.

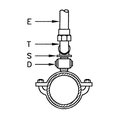


2" SERVICE WITH 1-1/2" METER



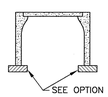
2" SERVICE WITH 2" METER

CW 1020 — STANDARD 2" SERVICE CONNECTION FOR 2" OR 1- 1/2" METER [COPPER INSTALLATION]

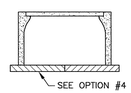


TAPPED AT TOP OF MAIN
USE THIS INSTALLATION ONLY FOR SERVICES LOCATED DIRECTLY ABOVE THE MAIN

45° SIDE TAPPED CONNECTION



FRONT VIEW METER BOX



SIDE VIEW METER BOX

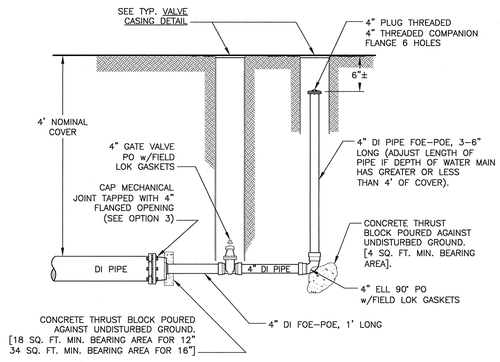
NOTE:
1. ALL PIPE FITTINGS IN CONTACT WITH WATER SHALL BE LEAD FREE (<0.25% LEAD) AND COMPLIANT TO NSF-61/SECTION 8.

OPTIONS: THESE OPTIONS MAY BE REQUIRED BY CWS CO. AT THEIR DISCRETION.

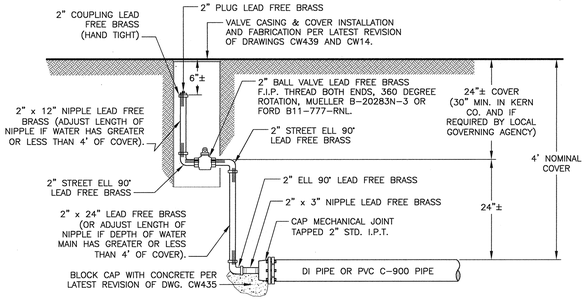
1. FOR 2" BLOW OFFS LOCATED OUTSIDE TRAVELED WAYS OR WHERE STREET RECONSTRUCTION IS NOT A CONCERN, THE BALL VALVE MAY BE PLACED CLOSER TO FINISHED GRADE (+/-12") WITH SHORTER OR NO PERMANENT RISER. SWING JOINT (ONE STREET ELL) MAY BE ADDED AS AN OFFSET TO PROPERLY LOCATE THE BALL VALVE.

2. IN LIEU OF NOTCHING VALVE CASING FOR 2" PIPE, CASING MAY BE SET ON BRICKS OR PRESSURE TREATED LUMBER SO CASING IS JUST ABOVE 2" PIPE.

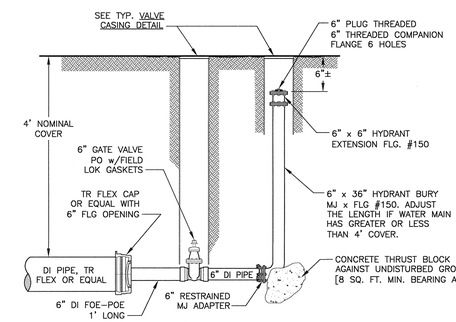
3. IN LIEU OF CAP WITH FLANGED OPENING FOR 12" PIPE, 12" x 4" REDUCER PO WITH FIELD LOK GASKETS MAY BE USED.



4" BLOW-OFF ASSEMBLY FOR 12" TO 16" PIPE
N.T.S.



2" BLOW-OFF ASSEMBLY FOR 8" AND SMALLER PIPE
N.T.S.



6" BLOW-OFF ASSEMBLY FOR 18" AND LARGER PIPE
N.T.S.

CW 122R5 — STANDARD BLOW OFF ASSEMBLY

ENGINEERING

CALIFORNIA WATER SERVICE

DEPARTMENT

REVISIONS:

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC		

PLAT SHEET NO.:

SCALE: N.T.S.

DRAWN BY: M. FONG

DESIGNED BY:

CHECKED BY: DATE:

APPROVED BY: DATE: 5/12/16

TITLE: CALIFORNIA WATER SERVICE COMPANY STANDARD DRAWINGS

DISTRICT: ALL

DATE: 5/12/2016

PROJECT ID.:

DRAWING NO.: CWDWGS

SHT 2 OF 2

SPECIFICATIONS FOR MATERIAL

All materials in contact with drinking water shall conform to NSF 61 standards unless specified otherwise. All chemicals used in new main installations shall conform to NSF 60 standards.

Ductile Iron (DI) Pipe: All DI pipe shall comply with the latest revision of AWWA Standard C151 and shall be cement mortar lined in conformance with the latest revision of AWWA Standard C104. All DI Pipe shall be Pressure Class 350 for all sizes from 6" to 12" unless specified otherwise and shall be furnished with polyethylene encasement complying with the latest revision of AWWA Standard C105. All DI pipe shall be manufactured by McWane Ductile, U.S. Pipe, Griffin Pipe, or American Ductile Iron Pipe.

DI Pipe with Push–on Joints: All DI pipe shall have Push–on Joint ends complete with gasket unless specified otherwise on the drawings.

DI Pipe with Restrained Push–on Joints: If specified on the drawings, DI pipe shall be restrained with Field lok 350 gaskets or Sure Stop 350 gaskets for all sizes from 6" to 12". All DI pipe sizes from 16" and larger shall be TR Flex DI pipe by U.S. pipe, Thrust–Lock DI pipe by McWane Ductile or Flex–Ring DI Pipe by American Ductile Iron Pipe unless specified otherwise on the drawings.

DI Pipe with Flanged Joints: All DI Flanged pipe shall have Class 125 Flanges unless specified otherwise on the drawings. Gaskets for Flanged Joints shall be Flange–Tyte Gaskets by U.S. pipe, or American Toruseal Flange Gasket by American Ductile Iron Pipe.,

Polyvinyl Chloride (PVC) Pipe: All PVC pipe shall be Class 235, DR 18, unless otherwise specified and shall comply with the latest revision of AWWA Standard C–900 for all sizes from 4" to 12". PVC pipe shall have ductile–iron pipe equivalent outside diameter dimensions. All PVC pipe shall be manufactured by J M Eagle, CertainTeed, Diamond Plastic Corp., Vinyl Tech, Uponor, Royal Pipe or North American Pipe.

PVC Pipe with Push–on Joints: All PVC pipe shall have Push–on Joint ends complete with gasket unless specified otherwise on the drawings.

PVC "Certa–Lok" VIP Restrained Joint Pipe: All PVC "Certa–Lok" VIP Restrained Joint pipe shall be manufactured by CertainTeed. Certa–lok shall comply with the latest revision of AWWA Standard C–900/C–905. Pipe is made to ductile–iron pipe equivalent outside diameter dimensions (DI OD), Class 235, DR 18 in 20' laying lengths, with twin gasket Certa–Lok couplings, nylon splines, and rubber rings.

Fusible PVC Pipe: All Fusible PVC pipe shall be manufactured by Underground Solutions. Fusible PVC Pipe shall comply with the latest revision of AWWA Standard C900/C905. Pipe shall be Class 235, DR 18 unless specified otherwise on the drawings.

Cement Mortar Lined and Cement Mortar Coated Steel Pipe (CL&C): All cement mortar lined and coated steel pipe shall be fabricated from steel cylinder ASA schedule as indicated on the drawing, with ASTM A53 test pressure and ASTM A36 physical properties. Cement mortar protective coating shall be 3/4" for all pipe sizes. The lining shall be 1/2" for 12" and larger pipe and 3/8" for 6" and 8" pipe, and conform to the latest revision of AWWA C205 and NSF/ANSI 61 Standard. Cement Mortar Coating shall be reinforced with 14 gauge wire mesh or spirally wound wire in center of coating. All CL&C steel pipe required for the water main installation shall be as specified on the drawings.

Steel (Stl) Pipe: All Steel pipe shall comply with the latest revision of AWWA Standard C200. The size and pressure class for all steel pipe shall be as specified on the drawings.

Polyethylene (PE) Pipe: This section is for PE pipe for sizes 4" and larger and shall only be used when specified on the drawings. All PE pipe shall be high density polyethylene (HDPE) complying with the latest revision of AWWA Standard C906 and PPI PE 4710. PE pipe shall conform to the outside diameter for the ductile–iron sizing system (DI OD) in Table 4 of the latest revision of AWWA C906. For water main where working pressure is less than 100 PSI, DR 14.5 shall be used. For working pressure between 100 and 160 PSI, DR 11 shall be used. All PE pipe shall conform to NSF Standard #14 and #61. All PE pipe shall either be blue or have blue printing on it to designate its use as a potable water pipeline. HDPE pipe shall be manufactured by CP Chem (Performance Pipe–Driscoplex).

Pipe Fittings: All fittings shall be as specified on the drawings and shall be Ductile Iron complying with the latest revision of AWWA Standard C153 for push–on and mechanical joints fittings and C110 for flanged fittings. All fittings shall either be cement mortar lined in conformance with the latest revision of AWWA Standard C104 or coated with fusion–bonded epoxy inside and outside in conformance with the latest revision of AWWA Standard C116. All fittings shall be manufactured by U.S. Pipe, Union/Tyler, Sigma Corp., Star Pipe, or SIP Industries.

Restrained Mechanical Joint (MJ) Adapters and Flanged Adapters: All restrained adapters shall conform to the latest revision of AWWA C111 and C110 for flanged adapters and AWWA C111 and C153 for MJ adapters. All restrained MJ and flanged adapters shall be manufactured by EBAA Iron, Sigma Corp, or Romac Industries, Inc.

Gate Valves: All gate valves shall meet or exceed the latest revision of AWWA Standard C515 for reduced wall, resilient–seated gate valves (or C509 for resilient–seated gate valves) and shall be provided with left hand to open, ductile iron (or cast iron) body with epoxy coating inside and outside complying with the latest revision of AWWA Standard C550, nut operated non–rising stem with 2" square operating nut, two O–ring stem seals above the thrust collar and one below, O–ring gaskets and 304 stainless steel bolts and nuts on bonnet and stuffing box and EPDM rubber encapsulated wedge (when available at no extra cost). All gate valves shall be manufactured by Mueller Company, M & H Valve and Fitting Company, Kennedy Valve Co., Clow Valve Co., American Flow Control, American AVK Co. or U.S. Pipe. Two inch and smaller gate valves shall be Class 125 with standard thread, bronze with wheel, and be manufactured by Milwaukee (No. 105) or Nibco.

Butterfly Valves: Butterfly valves may be used for valves greater than 12" nominal size. All butterfly valves shall comply with the latest revision of AWWA Standard C504, and shall be provided with "V–type" packing, left hand to open, nut operated with 2" square operating nuts, ductile iron body, stainless steel shaft, resilient seat and heavy duty actuator. All butterfly valves shall be manufactured by Mueller Company, M & H Valve & Fitting Company, Pratt Company or Kennedy Valve Co.

Control Valves: All control valves shall be manufactured by Cla–Val Company. Model number, body construction, and flange drilling shall be as specified on the drawings. The drawing may indicate that the control valve will be supplied by California Water Service Company. All valves shall have factory set controls or pilots as specified on the drawings. All control or pilot piping shall be copper with bronze fittings. Vaults for control valves shall be as specified on the drawings.

Check Valves: Unless specified otherwise, all check valves shall be swing type with spring and lever and shall comply with the latest revision of AWWA Standard C508. The Valves shall have Class 125 flanged ends unless shown otherwise on the drawings. Check valves shall be manufactured by Mueller Company, Clow Valve Co., M&H Valve & Fitting Company, or Kennedy Valve Co.

Valves for Tapping: All gate valves for tapping purposes shall be Resilient Seat Type valves. The valve for tapping shall be manufactured by Mueller Co., Kennedy Valve Co. or Clow Valve Co.

Tapping Sleeves: All tapping sleeves shall be all stainless steel including flange and shall only be used when specified on the drawings. Tapping sleeves shall be JCM Model 432, Mueller Model H304, Smith Blair 662–663 or Ford style FTSS.

Valve Casings and Covers: All valve casings and covers shall be fabricated as shown on the latest revision of drawing CW–14 as applicable.

2" Ball Valves: Two inch ball valves shall be as shown on the drawing and shall be manufactured by Mueller Co., Ford Meter Box Company, A.Y. McDonald Mfg Co., or Cambridge Brass.

Blow Off Assemblies: All materials for blow off assemblies shall be as shown on the latest revision of drawing CW–122.

Service Materials: All 1" and 2" service material specifications except copper tubing and plastic PE pipe shall be as shown on the latest revision of drawings CW–555, CW–436 or CW–1020 which includes alternate manufacturers. All service material specifications for services larger than 2" shall be as specified on the plan and/or as specified on the latest revision of the CW drawing for that size service.

Saddles: All saddles shall be as specified on the latest revision of the applicable size service standard drawing: 1" = CW–555 and 2" = CW–436 or CW–1020. Saddles are excluded from the low lead requirement by the Assembly Bill 1953, and thus need not conform to NSF 61 standards.

Solder: All solder shall be lead free.

Copper Tubing: All copper tubing shall conform to the latest revision of ASTM Specification B88 and be Type K soft.

Polyethylene (PE) Service Pipe: All PE plastic pipe for services shall comply with the latest revision of ASTM D2239 with a Standard Code Designation of PE 4710. Dimensions and tolerance of pipe shall be as specified in Table 3 of the latest revision of AWWA Standard C901 for PC 250 SIDR7. This is a high density polyethylene plastic pipe conforming to the inside–diameter dimensions of iron pipe sizes and having a 250 p.s.i. pressure rating.

Meter Boxes: All meter boxes for 1" services and 2" services shall be as specified on the latest revision of drawings CW–555, CW–436, or CW–1020. All meter boxes for services larger than 2" shall be as specified on the plans and/or as specified on the latest revision of the CW drawing for that size service. All meter boxes for 1" services and 2" services shall be supported by placing bricks or 2"X 4" pressure treated lumber under two sides of the base of the meter box.

Vaults: Vaults for appurtenances other than meters (such as Check Valves or Control Valves) shall be as specified on the drawings.

Machine Bolts: All steel bolts and nuts used for flanged fittings, flexible couplings, or other bolted appurtenances shall be 304 stainless steel. Ductile iron bolts are acceptable when the appurtenance is made of ductile iron and comes with option of ductile iron bolts, such as mechanical joint fittings. Anti–gaul lubricant shall be used with stainless steel bolts & nuts.

PVC High Deflection Couplings: All PVC high deflection couplings shall conform to the latest revision of AWWA C–900 and shall be manufactured by CertainTeed.

PVC Closure Couplings: All PVC closure couplings shall conform to the latest revision of AWWA C–900 and shall be manufactured by CertainTeed.

Transition/Flexible Couplings: All Transition/Flexible Coupling shall comply with the latest revision of AWWA Standard C219 and shall be furnished with gaskets. California Water Service Company may require flexible couplings to be epoxy coated if soil conditions are determined to be corrosive. If the flexible coupling is steel, sleeve must be a minimum of 10 inches long. If the flexible coupling is ductile iron then a standard sleeve length may be used unless the drawing specifies otherwise. Flexible Couplings shall be manufactured by Smith–Blair, Inc., Ford Meter Box Company, Krausz, or Romac Industries, Inc. Extended Range Coupling by Romac Industries, Inc. or Quantum Wide Range Coupling by Smith Blair can be used to accommodate a wider range of outer diameter for the same nominal size pipes. Alpha Joint Restraint Coupling by Romac Industries, Inc. can be used when restraint is specified on the plans.

Solid Sleeves: All solid sleeves shall be made of ductile iron and shall be manufactured by Tyler Pipe or Tyler Union Foundry.

Tracer Wire: Tracer wire shall be minimum #12 AWG solid copper wire with 45 mils of high molecular weight polyethylene (HMWPE) insulation, UL Listed, rated for direct burial, color blue and installed with all pipe including PVC, polyethylene and ductile iron pipe. For installation details see the latest revision of drawing CW–850.

Fire Hydrants: All fire hydrants shall be as specified on the district specific drawing or as approved by CWS Co. district personnel. For typical Fire Hydrant details see the latest revision of drawing CW–380.

Fire Hydrant Burys: All fire hydrant burys shall be manufactured from Ductile Iron to ASTM A536 Standards and have a minimum working pressure rating of 200 PSI. Burys shall be manufactured by Clow Valve Co., SBF, Inc., Sigma, or Star Pipe.

SPECIFICATIONS FOR INSTALLATION OF DUCTILE IRON AND POLYVINYL CHLORIDE (PVC) PRESSURE PIPE AND APPURTENANCES

Permits: All specification sheets, city/county or other environmental permits necessary for the installation of facilities must be obtained by California Water Service Company and be on the job site prior to and during construction.

Compliance with all the Rules and Regulations of the California Occupational Safety and Health Act (CAL OSHA), Public Law 91–596, the "Williams' Steiger Occupational Safety and Health Act of 1970", is required on this project. The work practices for all pipe shall be in accordance with the latest revision of the American Water Works Association Publication C–206 Standard for Field Welding of Steel Water Pipe, C–600 Standard for Installation of Ductile Iron Mains and their Appurtenances, C–602 Standard for Cement–Mortar Lining of Water Pipelines in Place, C–604 Standard for Installation of Steel Water Pipe, C–605 Standard for underground installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water, M23 Manual of Water Supply Practices for PVC Pipe–Design and Installation and M55 Manual of Water Supply Practices for PE Pipe – Design and Installation. "Fusible PVC Pipe" shall be installed per manufacturer's recommendations.

Please note direct discharge of highly chlorinated water to the environment is expressly prohibited. Refer to "Specifications for Dechlorination of Flushed Water" for more information. The Contractor shall comply with environmental laws and regulations as set forth by all federal, state and local agencies.

Materials: All materials installed for the facilities to be constructed by the Contractor must comply with the drawings and "Specifications for Material". No materials are to be supplied or furnished by California Water Service Company ("Company") unless specifically indicated on the plans for special installations. All materials must be on the job site and inspected prior to start of construction. Any pipe, valve, or appurtenance whether installed or not, which in the opinion of the Company, does not meet the requirements of these specifications or otherwise found unfit, shall be rejected as being unfit, and shall be immediately removed from the job site.

Line and Grade: The horizontal and vertical alignment for installation of the pipe shall be established in the field by the Contractor in accordance with the plans and specifications. Location of water facilities including finished grades and elevations shall be staked with offsets on site by the Contractor prior to start of construction. Final elevations of installed facilities, meter boxes, valve covers, hydrants, etc. shall be signed off by the Company's representative prior to acceptance of facilities.

Cover: Under normal conditions all mains shall be covered to a depth of four feet below the finished grade over the pipeline, unless specified otherwise on the plans. Prior approval must be obtained from the Company to install mains with greater or less than four feet of cover.

Separation between Water Mains and Non–potable pipelines or other Facilities: Water mains shall be at least 10 feet horizontally from and one foot vertically above, any parallel pipeline conveying sewage (untreated, primary, or secondary), disinfected secondary recycled water, and hazardous fluids, unless specified otherwise on the plans. Water mains shall be installed at least 4 feet horizontally from, and one foot vertically above, any parallel pipeline conveying tertiary recycled water or storm drainage. At crossings, water main shall be constructed no less than 45–degrees to and at least one foot above any pipeline indicated above. No connection joints shall be made in the water main within eight horizontal feet of the fluid pipeline. Water main shall not be installed within 100 horizontal feet of any sanitary landfill, wastewater disposal pond, or hazardous waste disposal site, or within 25 horizontal feet of the nearest edge of any cesspool, septic tank, sewage leach field, seepage pit, underground hazardous material storage tank, or groundwater recharge project. The State of California Department of Public Health Title 22 Article 4 Section 64572 "Water Main Separation" shall be followed when installations cannot meet the "Basic Separation Standards". A minimum vertical clearance of twelve (12) inches shall be maintained between the water main and all foreign structures, and a minimum horizontal clearance of five (5) feet shall be maintained between water mains and other utilities not mentioned above unless otherwise indicated on the plans or approved by the Company. Refer to "Pipeline Crossing Information" shown on the plans for information of water main installations crossing other proposed or existing facilities. The Company's approval must be obtained prior to making any changes from the plans. This includes changing grade or alignment to avoid structures, other pipes, manholes, or any other fixed objects which may be encountered during installation. Per the Company's standards, changes in cover over the pipeline may require the installation of a fabricated cement mortar lined and coated steel offset.

Workmanship: The pipe shall be installed to a true line and grade except on curves where ductile iron pipe may be installed with joint deflections between adjacent lengths of pipe not to exceed 3 degrees for ductile iron pipe sizes 6", 8", and 12". PVC pipe shall not be deflected at joints for horizontal or vertical deflection. No joint deflection shall be allowed in joints between fittings and pipe. "Certainteed" PVC Deflection Couplings shall be used with PVC C–900 between adjacent lengths of pipe to attain up to 5 degrees deflection at the joint when required.

When assembling a PVC pipe to an iron fitting, valve, or appurtenance (push–on), remove all but 1/4 inch of the factory made bevel from the spigot end of the pipe. Bottom the pipe in the bell of the iron fitting.

Field–cut lengths of PVC and DI pipe may be used for making connections to valves, fittings, appurtenances, and closures where necessary. The cutting and beveling of the pipe for inserting into the bell shall be done by the use of a square cutting tool approved by the Company and manufactured for this purpose, without damage to the pipe. The bevel of the pipe shall be the same as required for the fitting.

Trench Bottom: The bottom of the trench shall be smooth and free from pieces of rock or other material that would tend to scratch, puncture or break the pipe or damage the polyethylene encasement used on ductile iron pipe. If rocks or stones are encountered, they shall be removed to a depth of six inches below bottom of trench and the void filled with material tamped to grade. A six inch layer of sand shall be placed in the trench bottom to provide a firm, stable, and uniform support for the full length of the pipe, except at the joints where bell holes shall be dug two inches below the surface so that the pipe will not be supported by the joint. Under no circumstances shall the bell hole undermine the support for the fittings or valves.

Valves and other various fittings may be required to be supported by a concrete cradle if it is determined by the Company that the bedding in the trench bottom cannot be properly compacted to provide adequate support.

When an unstable subgrade condition is encountered that could provide inadequate pipe support, the Company shall require additional trench depth to be excavated, refilled and compacted with suitable foundation material.

No water main or appurtenance shall be laid in water, or when, in the opinion of the Company, the trench conditions or the weather are unsuitable for construction. Any water main which has been submerged shall be removed from the trench and be relaid. The trench shall be dewatered whenever running or standing water occurs in the trench bottom and the removal shall continue until the pipe has been installed and the backfill has been placed to a sufficient height to prevent the pipe from being submerged in water.

IMPORTANT: All trench excavations shall be in accordance with the Rules and Regulations of the California Occupational Safety and Health Act (CAL OSHA). This includes all necessary shoring determined by either the depth of trench and/or soil conditions.

Pipe and Appurtenances Handling: All water main and appurtenances shall be carefully lowered into the trench by means of padded slings, hooks, pipe tongs, or other suitable equipment consistent with safety, in such a manner to prevent damage to the exterior and interior pipe or appurtenance surfaces. Under no circumstances shall any material be dropped or dumped into the trench. Any foreign material inside the pipe shall be removed and the interior of the pipe kept clean during installation. All water main and appurtenance with damaged exterior or interior surfaces shall not be installed.

During installation, the open ends of the pipe shall be plugged or completely wrapped at night or when no work is in progress at that point to prevent entrance of trench water, animals, or other foreign matter.

On all pipe, a continuous strip of tracer wire (per material specification) shall be taped to the top exterior surface of the pipe per the latest revision of drawing CW–850. Tracer wire splices using appropriate connectors are required at all locations where the wire is cut.

A polyethylene encasement shall be installed over ductile iron pipe, fittings, and appurtenances per latest revision of AWWA Standard C105 Polyethylene Encasement for Ductile Iron Piping and per the plans and specifications, or as requested and directed by the authorized Company's representatives.

Note: Ductile iron fittings and appurtenances installed on PVC C–900 main shall require polyethylene encasement with a 2 feet overlap onto the PVC main. This overlap shall be secured to main per the latest revision of AWWA Standard C105.

Rubber Ring Joints for PVC C–900 and Ductile Iron Pipe: Push–on type rubber ring joints with rubber rings for integral bell ends shall be joined as follows: The ring groove, bell socket and plain end should be wiped clean. Insert the gasket making sure that it faces the proper direction and that it is correctly seated. The plain end shall be beveled and free of any sharp or ragged edges which may damage or dislodge the gasket. Lubricate the entire outside end of the pipe including the pipe bevel, also lubricate the exposed portion of the rubber ring gasket in the bell (See "pipe joint lubricant" below). Push the plain end into the bell by hand or with the use of a bar and block until it is appropriately seated per pipe manufacturer's recommendations, keeping the joint straight while pushing. Construction machinery shall not be used to push the pipe into a pipe bell end or a fitting bell end. After assembly, the resulting position of the rubber ring shall be checked with a feeler gauge.

If "Field Lok" or "Sure–Stop" gaskets are specified on the plans, the gaskets shall be installed in accordance with the manufacturer's recommendations.

If "TR FLEX", "Thrust–Lok", or "Flex–Ring" restrained joint system is specified on the plans, the joint assembly shall be installed in accordance with the manufacturer's recommendations.

If PVC "Certa–Lok" VIP Restrained Joint Pipe is specified on the plans, the joint assembly shall be installed in accordance with the manufacturer's recommendations.

Pipe Joint Lubricant: Pipe joint lubricant shall be as specified by the pipe manufacturer and shall be NSF approved for use in potable water systems.

Mechanical Joints: Mechanical joints shall be joined as follows: The socket and plain end should be wiped clean and any excess coating in the bell should be removed. The plain end, bell socket, and gasket should be washed with a soap solution or lubricant furnished with the gaskets to improve the seating of the gasket in the socket and to help the various parts slide together along the pipe. Place the gland on the plain end with the lip extension toward the plain end of the pipe, followed by the gasket with the narrow edge of the gasket toward the end of the pipe. Insert the pipe into the socket and press the gasket firmly and evenly into the gasket recess. Keep the joint straight during the assembly. Push the gland toward the socket and center it around the pipe with the gland lip against the gasket. Insert bolts and hand tighten nuts. Partially tighten the bottom bolt first; then the top bolt; next the bolts at either side, and finally the remaining bolts. Repeat this process until all bolts are torqued to a value between 75 and 90 ft–lbs.

If restrained mechanical joint adapters are specified on the plans, the adapter assembly shall be installed in accordance with the manufacturer's recommendations.

Underground Protection: All flexible couplings, bare steel, MJ x MJ sleeves, and all bolts (including stainless steel) shall be protected as follows.

The entire area of the fitting should be dry and free of dust, dirt or other foreign matter. Rust or other foreign material should be removed by scraping or wire brushing. Wiping with dry clean cloth may be necessary to remove particles from brush cleaning. Any oil or grease must be removed using a low residue volatile petroleum solvent before application of grease and wrapping.

The exposed area should be coated with a heavy coating of Metal Guard #301 or Corrosion Guard CG15 grease by the glove method to a thickness of at least ¼".

The entire grease area should be firmly wrapped with at least two layers, half lapped, of a woven glass filament mesh (Res or Bit Wrap, 4" wide). Metal Guard #301 or Corrosion Guard CG15 grease with a minimum of ¼" thickness should be applied between each layer during wrapping, working the grease into mesh openings.

The entire mesh wrapped area of the fitting should be covered with a third and final coating of at least ¼" thick of Metal Guard #301 or Corrosion Guard CG15 grease by the glove method.

Two layers of polywrap, half lapped, should be firmly applied over all areas of the coated and wrapped fittings. Backfilling may follow immediately after this wrapping.

Thrust Blocks: Concrete thrust blocks shall be provided for all fittings to prevent movement when the main is under pressure. This includes tees, ells, reducers, caps and plugs. Forms are required and are to be provided by the Contractor. These forms shall be smooth, mortar tight and of sufficient strength to maintain shape during the placing of the concrete. All concrete thrust blocks shall be constructed per the latest revision of drawing CW–435 or as specified in the drawings.

Embedment Backfill: The embedment backfill is 6 inches of sand bedding below the pipe and 12 inches of sand backfill above the pipe (see sand definition below). Care must be taken to compact the sand backfill material solidly around and under the pipe. Small tampers and vibrators are allowed for compacting near the pipe and over the pipe after a minimum of 6 inches of sand backfill has been placed over the pipe. Flooding, jetting or puddling may be employed for compaction in the first lift although great care must be taken to prevent drainage or flotation of the pipeline. Apply only enough water to give complete saturation. Erosion of support at the pipe sides and bottom by water jetting must be prevented. Rocks or hard lumps are not permitted in the embedment backfill or final backfill.

Sand is defined as material free from organic matter and clay with a sieve gradation by weight as follows:

Sieve Size	% Passing Sieve
3/8"	100
No. 4	95–100
No. 200	0–5

Final Backfill: In areas where required, the permanent pavement and temporary pavement replacement must comply with specifications of the local governing authorities. All backfill above the sand embedment backfill must meet compaction requirements of the local governing agency. All pavement broken shall be replaced in strict accordance with the requirements of the local authorities, or lacking local requirements, in accordance with the latest revision of drawing CW–236.

Other Facilities: All existing facilities, such as but not limited to sewers, storm, gas mains, water mains, telephone conduits, and power or telephone poles which may be located close to trench operations must be protected by the Contractor. If any of these facilities are damaged by the Contractor, repairs shall be made to the satisfaction of the interested parties at the Contractor's expense.

Valve Casings and Covers: A valve casing with cover shall be installed for each gate valve, butterfly valve, blow off assembly or when specified on the plans per the latest revision of drawing CW–439. The valve cover and frame for valves in paved and unpaved areas shall be per the latest revision of drawing CW–14. The valve cover frame shall be set in a ring of concrete a minimum of 24" in diameter and three inches thick or per local governing agency's standards whichever is greater. All valve casing covers must be placed flush with the finished grade of the surrounding area.

Blow Off Assemblies: A blow off assembly as shown on the latest revision of drawing CW–122 shall be installed for each dead end capped main. The assembly is to include a valve casing and cover.

Services and Meter Boxes: Services and meter boxes shall be installed as shown on the latest revision of drawings CW–555 for 1" services, CW–436 or CW–1020 for 2" services, and for larger than 2" services as designated on the plans and/or the latest revision of the CW drawing for that size service. The 1" and 2" service pipe shall be installed at a depth of 30" or more from finished grade over the service pipe and in no event shall the depth be less than 18". The Contractor must get prior approval from the Company to install service pipe with less than 30" of cover.

All meter box locations must be approved by the Company and the boxes must be installed flush with finished grade of the surrounding area at the meter box cover. The meter boxes for 1" and 2" services shall be supported by placing 2"x4" treated lumber or bricks on two sides of the meter box's base. Avoid postal and street pedestals, driveways, trees/bushes, fencing, sewer lines, and other utilities.

Saddles and saddle tapping are required for all service connections made on PVC pipe. When making this type of connection, proper equipment must be used which attaches to the corporation stop permitting the cutting tool to be fed through the corporation stop to cut a hole in the pipe. It is important that the cutting tool be a sharp shell type (hole) cutter which will retain the coupon and be designed to accommodate walls as heavy as DR 14. The shell cutter shall be lubricated on the outside only and not on the inside of the cutter with a recommended lubricant. Do not drill a hole in the PVC pipe with a twist drill or auger bit.

Direct tapping machines for service connections on ductile iron pipe must be approved by the Company prior to direct tapping ductile iron mains. Plastic PE pipe is to be cold flared to match recessed fittings or is to have outside end bevels for Instatite fittings. Forming tool for bevels shall be Mueller's beveling tool number H10817 or approved equal. Stiffeners shall be used on all PE pipe with compression connections.

Connection to Existing System:
The Contractor shall furnish to the Company the necessary fittings, valves, pipe, and joint material required to connect the new mains to the existing system.

The Contractor must adjust from the nominal line and grade to match the existing facilities.

The Contractor is to complete the piping and maintain the specified clearance from existing main as shown on the drawings. The Contractor shall make the excavation for the tie–in. The trench shall be left in a safe condition for the Contractor to complete the connections. If the trench is considered unsafe for workers, the Company may require the Contractor to return and adequately excavate for the tie–ins at the Contractor's expense. After the Company has inspected the connection, the Contractor shall install concrete thrust blocks, install valve casings and covers, and backfill the excavation. The Contractor shall then replace any pavement that was cut for the excavation.

The Company reserves the right to perform the tie–ins to the existing system if they desire. In this situation, the Contractor will not be paid for the tie–ins as bid.

Pressure Test: Prior to any testing, at least seven days should elapse after the last concrete thrust block was poured if Type I portland cement was used and three days if high–early–strength Type III portland cement was used. A preliminary pressure test shall be made by filling the mains with water and allowing them to stand under regular system pressure for a period of at least twenty–four hours. After completion of the preliminary test, the Contractor shall make a hydrostatic test by raising the pressure in the main to 50 pounds per square inch above the normal static pressure at the point of observation with a minimum test pressure of 150 pounds per square inch. A calibrated pressure chart recorder and a water meter shall be provided by the Company. The hydrostatic test shall not be conducted without a Company's representative present. The pressure that the test is started at shall be maintained for a minimum of four hours. The test shall start and finish at the same pressure. If there is a pressure drop, the Contractor shall pump more water into the main through the water meter to bring the main back to its starting pressure. The leakage is the calculated volume of water pumped into the main through the meter. The leakage shall be measured accurately during the test period to determine that the leakage rate does not exceed the values shown in Table IA for ductile iron pipe and Table IB for PVC C–900 pipe. There shall be no leakage, zero gallons per four hours test period at test pressure for the portion of pipeline that is steel pipe CL&C with welded joints, HDPE pipe with fused joints, and fusible PVC pipe. An air test may be used as an alternate method on the steel pipe CL&C welded sections. Test pressure to be held for a four–hour duration, with no volumetric loss during test period. A calibrated pressure chart recorder will be provided by the Company. The necessary taps, connecting pipe, and valve fittings shall be provided by the Contractor. Any leaks or failures that develop during the test shall be repaired by the Contractor immediately.

If the mains fail to meet requirements of the hydrostatic test, the Contractor shall, at his expense, make repairs to reduce the leakage. The repair work shall be continued until a satisfactory test is made.

Disinfection of Mains: All mains that are installed by the Contractor shall be disinfected by the Contractor in accordance with the "Specifications for Disinfection of New Mains."

Inspection: The Company reserves the right of access to the work at all times for the purpose of inspecting and the Contractor shall permit the Company's representative to make an inspection at any time. The Contractor shall notify the Company's local manager at least 48 hours prior to any work being started at the project site. The Company will normally provide no more than 2 inspections per day during normal working hours. The trench must be left open until the Company has inspected the new installation and approved that portion of trench to be covered. If the trench is covered prior to the Company's inspection, the Contractor will be required to uncover the trench at the Contractor's expense.

Protection: The Contractor shall at all times provide suitable and adequate danger signals and barricades. If necessary, the Contractor shall also provide temporary bridges across the trench to permit free ingress and egress to and from private driveways or traveled roads or streets. No street shall be closed unless a permit has been obtained from the appropriate authority.

Specifications and Drawings: Specifications and drawings shall be taken together and anything shown on the drawings and not covered by the specifications or covered by the specifications and not shown on the drawings shall be considered as though it were covered by both specifications and drawings. Any points of disagreement should be referred to the Company's representative as soon as possible to resolve any possible misunderstandings.

Clean Up: Upon completion of the work, the Contractor shall remove all rubbish and waste materials resulting from the Contractor's operations and leave the ground along the route of the pipeline in a neat and clean condition. The Contractor shall be responsible for removal of all excess spoil from the trench excavations, the Company shall not accept any responsibility.

Guarantee of Workmanship: Notwithstanding Owner's acceptance of the new facilities, the Contractor shall guarantee all of his workmanship for a period of one calendar year from and after acceptance of the work by the Owner. The Contractor shall repair and make good any defects or imperfections in the work at his sole cost and expense. If deficiencies develop during the Guarantee calendar year, such as but not limited to: leaks in the pipeline or appurtenances, settlement of trenches, or deteriorating pavement due to faulty or imperfect workmanship, the owner retains the right of making repairs and the Contractor is responsible for the cost of said repairs.

TABLE IA

ALLOWABLE LEAKAGE PER 1000 FT. OF DUCTILE IRON PIPELINE								
Average Test Pressure	Nominal Pipe Diameter –Inches							
	6	8	10	12	14	16	18	24
(PSI)	GALLONS		PER		HOUR		(GPH) *	
200	0.57	0.76	0.96	1.15	1.34	1.53	1.72	2.29
175	0.54	0.72	0.89	1.07	1.25	1.43	1.61	2.15
150	0.5	0.66	0.83	.99	1.16	1.32	1.49	1.99

* If the pipeline under test contains sections for various diameters, the allowable leakage will be the sum of the computed leakage for each size.

TABLE 1B

ALLOWABLE LEAKAGE PER 1000 FT. OF PVC C–900 PIPELINE			
Average Test Pressure	Nominal Pipe Diameter – Inches		
	6	8	12
(PSI)	GALLONS PER	HOUR	(GPH) *
200	.57	0.76	1.15
150	.50	0.66	.99

* If the pipeline under test contains sections for various diameters, the allowable leakage will be the sum of the computed leakage for each size. For example, Allowable Leak for 500' of 8" PVC under test pressure = 500'/1000' x 0.66 GPH x 4 Hour = 1.32 Gallons

SPECIFICATIONS FOR DISINFECTION OF NEW MAINS BASED ON THE PROCEDURES OUTLINED IN THE LATEST REVISION OF ANSI/AWWA C651

GENERAL INSTRUCTIONS:

1. Precautions shall be taken to prevent soiling of pipe, fittings, valves and other materials. Pipe and fittings shall be stored so as not to accumulate mud or water, and all other materials shall be stored in a clean, dry location. Particular care shall be taken to keep rubber gaskets and pipe ends clean, dry, and out of the sun to avoid degradation of materials.

2. All pipe shall be free of foreign materials and debris before lowering the pipe into the trench. If dirt or debris enters the pipe, the interior surface of the pipe shall be cleaned and swabbed with a minimum of 12.5% sodium hypochlorite prior to lowering the pipe into the trench.

3. If at any time chemical contamination occurs (e.g. hydraulic oil, gasoline, diesel, etc), the pipe sections exposed to the contamination shall be replaced and not used for potable water applications.

4. When the main is left unattended for any length of time, the ends shall be plugged or completely wrapped to prevent the entrance of water, foreign material or small animals.

5. Loading of new mains: A reduced pressure principle (RP) backflow prevention assembly (USC approved and lead–free compliant) is required to be installed in line with the domestic supply on all new main installations to prevent any heavily chlorinated and/or potentially contaminated water from entering the distribution system. The RP must be sized appropriately to factor pressure loss through the assembly while still meeting adequate flushing velocity greater than or equal to 3.0 ft/sec. If it is anticipated that scouring velocity of 3.0 ft/sec cannot be achieved, flushing at the maximum flow rate possible for a minimum 3 total pipeline installation volumes is required.

The installing contractor is responsible to provide and test the backflow prevention assembly upon initial installation and each time it is relocated per Title 17 Article 2, Section 7605 (d). Prior to loading a new main with potable water and/or liquid sodium hypochlorite, a passing test report must be provided to California Water Service Company's ("Company") Inspector who will maintain a record and document the make and model number, serial number, and most recent test date of the backflow prevention assembly on the New Main Disinfection Report in non–erasable ink or pen writing.

6. Apply the NSF–60 approved hypochlorite solution or tablets, using one of the methods described under "Chlorination Methods."

7. The Company's Inspector is to measure the chlorine concentration to ensure that a minimum 25 ppm concentration has been applied (not to exceed 200 ppm). The initial reading must be documented on the New Main Disinfection Report in non–erasable ink or pen writing. Samples with a high chlorine concentration must be analyzed with a high range total chlorine test kit. Hach Model Number CN–21P or equivalent may be used for the initial dosage test. The chlorine test kit must use non–expired reagents and shall be verified on a periodic basis prior to field use.

8. The Company's inspector is to obtain the temperature reading at the time of loading, and document on the New Main Disinfection Report in non–erasable ink or pen writing. Allow heavily chlorinated water to stand therein for a contact period of at least twenty–four (24) hours. If the water temperature is less than 41°F (5°C), the water shall remain in the pipe for at least forty–eight (48) hours. The Company's Inspector is to measure the chlorine residual after the appropriate contact period.

When using the chlorine tablet method, there must be a detectable (≥0.2 ppm) free chlorine residual at the end of the required hold time.

When using hypochlorite solution method, the free chlorine residual must be at least 10 ppm at the end of the required hold time. If the chlorine concentration has dropped to less than 10 ppm, then the mains must be thoroughly flushed and re–loaded, superchlorinated by the continuous feed method, and the required contact period shall be repeated due to the high chlorine demand. Equipment used to superchlorinate by the continuous feed method will be provided by the installing contractor.

9. The Company's Inspector must measure or obtain upstream distribution system chlorine residual, which will be used for comparison after flushing. The main must be flushed thoroughly at all available blow offs and hydrants. (See Specifications for Dechlorination of Flushed Water). After flushing, the chlorine residual coming out of the new main must match the chlorine residual entering the new main, indicating that adequate flushing has been performed. The contractor should re–install the caps/plugs back on the blow off assembly to prevent debris from entering the blow off after flushing. The Company's Inspector must document the final chlorine residual on the New Main Disinfection Report in non–erasable ink or pen writing.

10. After chlorine contact time has been met and satisfactory chlorine residual is observed, the Company's representative will collect two consecutive bacteriological sample sets at a minimum of 16 to 30 hours apart and have them analyzed for Total coliform, E.coli, and heterotrophic plate count (HPC).

The samples should be taken from a combination of a blow off illustrated in the latest revision of drawing CW–638, a sampling station illustrated in the latest revision of drawing CW–914 or a service located near the end of the chlorinated section. All sample taps must be evaluated for the potential for contamination, cross–connections, or other factors that may result in non–representative sampling. The hose bib sampling device is recommended for any sample collected from a service hose bib.

In accordance with the latest revision of AWWA standard C651, samples shall be collected at least every 1,200 ft., at the end of the installed pipeline, and at each branch or dead–end.

All Total coliform, E.coli, and HPC results must be documented on the New Main Disinfection Report in non–erasable ink or pen writing. A copy of the laboratory results must also be attached to the New Main Disinfection Report.

11. If the bacteriological tests are positive, or if the HPC results are greater than 500 CFU/ml, further flushing and confirmation samples will be necessary. Any positive follow–up sample tests or HPC>500 CFU/ml requires the Contractor to thoroughly flush, re–load, and superchlorinate the new main by the continuous feed method. Repeat Steps 9–10. All sample results (original and confirmation) must be documented in the appropriate location on the New Main Disinfection Report in non–erasable ink or pen writing. The Water Quality department must be notified if the bacteriological and HPC results continue to show positive results.

12. The Company's Inspector and Supervisor will complete, sign, and submit the New Main Disinfection Report to the Water Quality Program Manager (WQPM) for review and approval. Approval will be based on two consecutive sets of sample results that are absent of total coliform, E.coli, HPC less than 500 CFU/ml, and a final chlorine residual that is representative of background residual in the distribution system. The WQPM will sign and approve the Report if the main is determined acceptable to be placed into service based on the above criteria.

13. Before a tie–in is performed, the inside surface of all materials such as the tee, pipe nipples, couplings, and tapping sleeve must be swabbed with NSF 60 approved12.5% sodium hypochlorite solution, in accordance with the latest revision of AWWA Standard C651 .

14. After the final tie–in has been completed, a bacteriological sample must be collected downstream of the tie–in point to ensure no contamination is introduced during the tie–in work. All sample taps must be evaluated for the potential for cross–contamination, cross connections, or other factors that may result in non–representative sampling. The hose bib sampling device is recommended for any sample collected from a service hose bib. Where possible, the downstream isolation valve shall be left in the closed position until sample results indicate the tie–in did not introduce contamination.

15. Documentation including the New Main Disinfection Report, laboratory results, and backflow prevention assembly test report details shall be placed in the project folder for record keeping purposes.

Chlorination Methods:

Safety Notes: Chlorine tablets and solutions should be handled with care, as they are dangerous to the eyes, irritating to the skin, and will damage shoes and clothing. Minimize your exposure by reading and having the M.S.D.S. available should an emergency occur. Follow the guidelines for protecting yourself, asking your supervisor when in doubt and by erring on the safe side by using respirators, protective clothing and other protective equipment.

Method No. 1 – Calcium hypochlorite Tablet Method
This method works well for short jobs and for small diameter pipe of any kind. This method cannot be used where trench water has entered the main. The main cannot be flushed prior to disinfection, so the method requires that the pipe be kept clean during laying.

Use Dow Corning 732 Sealant or equivalent (NSF 61 approved) to fasten the required number of 5–gram calcium hypochlorite tablets (See Tables II) to the top and at the upstream end of each length of pipe, including branch lines and Cement lined and Coated Steel (CL&C) offsets. At least one tablet shall be placed in each hydrant branch as well as any other plumbed appurtenances. Tablets must be NSF 60 approved and have 65% free chlorine. The tablets may be fastened to the pipe before it is placed in the trench provided the top of pipe is marked to avoid the possibility that the pipe may be rotated.

Tablets should be removed at the end of the day, when pipe is not installed in the ground the same day tablets are applied. Reuse those tablets in the following days if still intact. This is to prevent moisture from reducing the amount of chlorine available for disinfection.

When using flexible couplings, apply NSF 60 approved sodium hypochlorite with a spray bottle method in the annular space between the coupling and the pipe.

Fill the pipe very slowly with potable water at a velocity of no more than 1ft/sec to eliminate air pockets and ensure calcium hypochlorite tablets do not become detached from the interior pipe surface and proceed as outlined under Step 7 in the "General Instructions".

TABLE II

Number of 5–gram Calcium Hypochlorite tablets Specified for Disinfection of at least 25 ppm

Length of Section	DIAMETERS 4"	6"	8"	10"	12"	14"	16"	18"
	# of tabs	# of tabs	# of tabs	# of tabs	# of tabs	# of tabs	# of tabs	# of tabs
≤13'	1	1	1	2	3	4	4	6
18'	1	1	2	3	4	5	6	7
20'	1	1	2	3	4	5	7	8
30'	1	2	3	4	6	8	10	12
40'	1	2	4	5	7	10	13	16

Method No. 2 – Continuous Feed Method with 12.5% Liquid Chlorine (Sodium hypochlorite)
This method is general in scope and must be used when it is necessary to re–chlorinate an existing main, and it may also be used on new mains.

This method consists of introducing a 12.5% chlorine solution into water which is being used to fill water main. The 12.5% chlorine solution must be NSF 60 approved and can be purchased through several vendors.

Procedure:

1. Calculate the total volume (ounces or gallons) of 12.5% hypochlorite solution needed, based on the pipe diameter and section length (See Table III and the example below Table III.)

2. Choose a suitable filling rate and determine the time required to fill the water main from Table IV.

3. Calculate the 12.5% hypochlorite dose rate using the results from 1 and 2 above. Using the examples below Table III & Table IV, the dose rate would be: 0.8 gal/52.0 min.=0.015 gal/min. or 100 ounces/52.0 min.=2 ounces/min for a 1000ft section of 8 inch diameter pipe being filled at flow rate of 50 gpm .

4. It is recommended to use chemical feed pump designed to introduce the 12.5% hypochlorite solution into the main at a constant rate. The feed pump and method must be approved by the Company prior to loading the main. Adjust the feed pump to the dose rate. Introduce the solution through a corporation cock, blow off, or service connection at or ahead of the inlet end of the water main to be disinfected.

5. After flushing the main thoroughly, adjust the filling rate by measuring the time required to fill a five–gallon or other suitable container.

6. Begin introducing the 12.5% hypochlorite solution into the main, and continue until a chlorine residual test on a sample taken from the discharge end of the main shows at least 25 ppm chlorine.

7. Close the filling valve or blow off, and stop introducing hypochlorite solution. Disconnect and flush the feed pump and equipment thoroughly with fresh water.

8. Proceed as outlined under Step 7 in the "General Instructions."

TABLE III

12.5% Liquid Hypochlorite Method of Main Chlorination
Amount of 12.5% Liquid Hypochlorite (ounces)
Specified for Disinfection of at least 25 ppm

Length of Section	DIAMETERS 4"		6"		8"		10"		12"		14"		16"		18"	
	Amount in oz	ppm	Amount in oz	ppm	Amount in oz	ppm	Amount in oz	ppm	Amount in oz	ppm	Amount in oz	ppm	Amount in oz	ppm	Amount in oz	ppm
18'	1	83	1	37	2	42	2	27	6	28	8	27	10	26	13	29
20'	1	75	1	33	2	37	3	36	6	25	9	31	11	28	14	26
30'	1	50	2	44	2	25	4	32	9	28	13	28	16	25	21	27
40'	1	37	2	33	3	28	5	30	12	25	17	27	22	26	27	26

Table III is used to calculate the total ounces of 12.5% hypochlorite required to produce water with a free chlorine concentration of at least 25 ppm in the main.
For example: A 20 ft. section of 8–inch pipe needs 2 ounces; so for 1000 ft. (50–20 ft. sections), 50 x 2 = 100 ounces.
100/128 ounces/gal. = 0.8 gal.

TABLE IV

	DIAMETER OF PIPE BEING DISINFECTED (INCHES) 4	6	8	10	12	14	16	18	20
(GPM)	TIME REQUIRED TO FILL 100 FEET OF PIPE (MINUTES)								
10	6.5	14.7	26.1	40.8	58.8	---	---	---	---
20	3.3	7.3	13.0	20.4	29.4	---	---	---	---
35	1.9	4.2	7.5	11.7	16.8	---	---	---	---
50	---	2.9	5.2	8.2	11.8	15.0	20.9	---	---
75	---	2.0	3.5	5.5	7.9	10.7	14.0	---	---
100	---	---	2.6	4.1	5.9	8.0	10.4	13.2	16.3

Table IV is used to estimate the time required to fill the pipe with chlorinated water. For example: A flow rate of 50 gpm will fill 1000 feet of 8–inch pipe in 10 x 5.2 = 52.0 minutes.

SPECIFICATIONS FOR DECHLORINATION OF FLUSHED WATER

Safety Notes: While it is unlikely that these procedures will produce a hazardous reaction, employees should proceed with caution when working with calcium thiosulfate or Vita–D–Chlor (Ascorbic Acid). Minimize your exposure by reading and having the M.S.D.S. available should an emergency occur. Follow the guidelines for protecting yourself, asking your supervisor when in doubt and by erring on the safe side by using respirators, protective clothing and other personal protective equipment.

1. The discharge/disposal of all chlorinated water generated from the procedures in the "Specifications for Disinfection of New Mains" shall be the Contractor's responsibility. The Contractor shall comply with all federal, state and local discharge/disposal requirements for chlorinated water including but not limited to the list below:
A. At a minimum, the Contractor must meet a total chlorine residual of the 0.01mg/l in the discharge water.
B. The Contractor shall use Best Management Practices to control erosion and sediment from entering receiving water body.
C. At a minimum, the Contractor must document the discharge using Cal Water BMP Discharge form.
D. If Cal Water has obtained a NPDES permit for this activity, the Contractor will be notified about the permit requirements. The Contractor will then be responsible to meet the discharge requirements.

2. If dechlorination of the water is required, then the chlorinated water that is discharged to a storm drain shall be dechlorinated by water industry accepted methods. The dechlorinated water will be tested for chlorine residual to verify that no detectable amount of free chlorine is present. This testing will take place from the onset of discharging the water and at frequent intervals throughout the dewatering of the pipe. The Contractor shall notify the local agency to inform them of planned discharge events.

3. Determine the chlorine concentration of the water to be flushed. If the water to be flushed contains a detectable level of chlorine, then that water must be dechlorinated as follows:

Please note: The use of the dechlorinating agent Captor (30% calcium thiosulfate) or Vita–D–Chlor (Ascorbic Acid Tablets) is recommended by the Company. Calcium thiosulfate and Vita–D–Chlor tablets are less hazardous than other chemicals, and will not deoxygenate the water when marginally over–applied. Gross over–application of any dechlorinating agent is unacceptable because of its potential to deoxygenate a receiving water body. THE USE OF ANOTHER DECHLORINATING AGENT MUST BE APPROVED BY THE COMPANY.

A. Captor Solution Manufacturing Recommendation:

a) Prepare a Captor solution for water containing the following chlorine residuals:

i. Less than 1 mg/L: add 2 cups of Captor to 25 gallons of water. This will dechlorinate 25,000 gallons of water with a chlorine residual of 1mg/L or less.
ii. 2.1 to 50+ mg/L: Use straight 30% Captor solution.

b) Calculate the volume of the new main in gallons as follows:

(Length of pipe)(Diameter of pipe)(Diameter of pipe)(0.785)(7.48 gal./ft.3)
ft. ft. ft.

c) Calculate the volume of the 30% Captor needed to dechlorinate 1 to 50 mg/L chlorine residuals for the volume calculated in b:

(Vol. of pipe)(Chlorine concentration)(1.45)
gal mg/L
(300,000 mg/L Captor)

B. Vita–D–Chlor Manufacturing Recommendation:

a) Calculate the pounds of Vita–D–Chlor to be placed in dechlorinating device as follows:

(Diameter of pipe) (Diameter of pipe) (Chlorine Concentration) (Length of pipe)
inches inches mg/L ft
1,112,300

C. Application of dechlorinating solution: Refer to Cal Water's Best Management Practices (BMP) Guidance on examples to apply dechlorinating agent. Cal Water's BMP Guidance Manual is available to the Contractor for reference upon request.

4. Using Cal Water's BMP Discharge Form, check all discharged water quality parameters indicated on the discharge form at the storm drain inlet after the discharged water has passed through all implemented BMPs for pollution control (i.e. Dechlorination, sediment controls, erosion controls). Cal Water's BMP Discharge form is available upon request.

5. Best Management Practices must be used when discharging water into a storm drain. This includes use of sediment control BMPs (i.e. gravel bags around storm drains inlets) and erosion control BMPs (i.e. straw wattles, etc).

6. The installing contractor shall follow the water quality objectives stated below.

pH = 6.5 to 8.5
Total Chlorine Residual = < 0.01mg/L (Per EH&S BMP manual)

Turbidity – Turbidity limitations are dependent on the natural turbidities of the receiving water bodies.

Receiving Water Background	Incremental Increase
Dry Creek	50 NTU
< 50 NTU	5 NTU
50–100 NTU	10 NTU
> 100 NTU	10% of background

Temperature – Temperature limitations are dependent on the natural temperature of the receiving water bodies. The receiving water body temperature cannot be increased by more than 5° F.

ENGINEERING

CALIFORNIA WATER SERVICE CO.

DEPARTMENT

REVISIONS:
R6. Update Specs.
R7. Specs update.

DATE: INIT.
DISTRIBUTION MAP
PLAT SHEET
SYSTEM SCHEMATIC
STATION SCHEMATIC

PLAT SHEET NO.:

SCALE: N.T.S.

DRAWN BY: L. Peralta

DESIGNED BY:

CHECKED BY: DATE:

APPROVED BY: DATE:
10/30/2020

TITLE:
CALIFORNIA WATER SERVICE COMPANY
SPECIFICATIONS FOR INSTALLATION OF DUCTILE IRON AND POLYVINYL CHLORIDE (PVC) PRESSURE PIPE AND APPURTENANCES
SPECIFICATIONS FOR MATERIALS,
DISINFECTION AND DECHLORINATION OF NEW MAINS

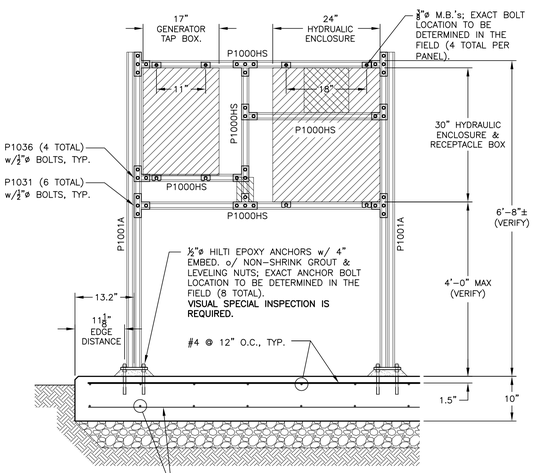
DISTRICT: ALL

DATE: 10/30/20

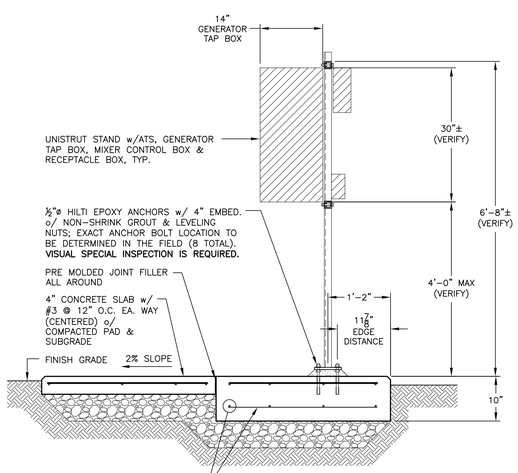
PROJECT ID.:

DRAWING NO.: CW–863–R7

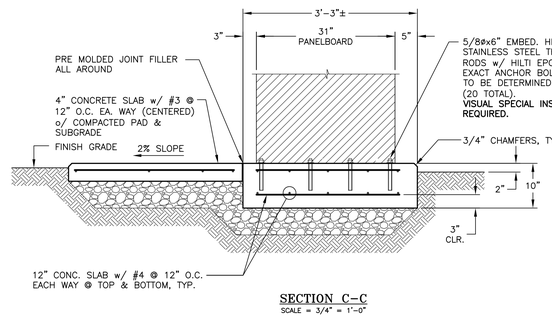
SHT 1 OF 1



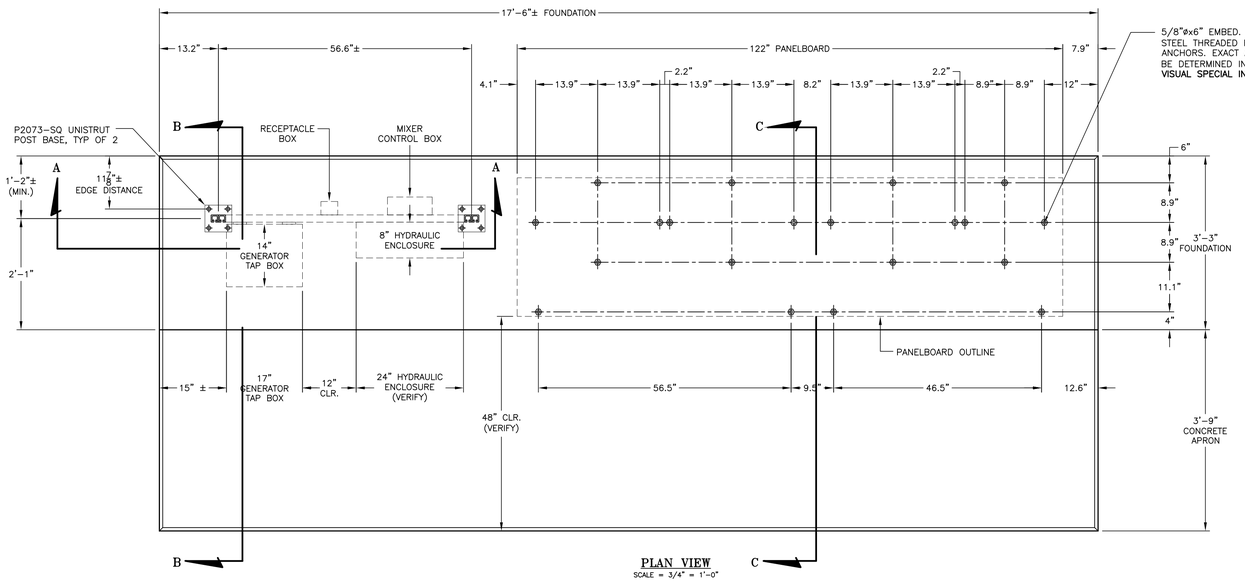
SECTION A–A
SCALE = 3/4" = 1'-0"



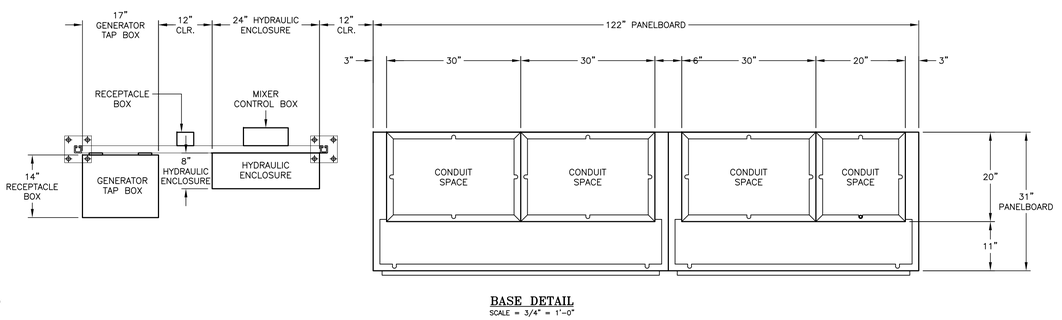
SECTION B–B
SCALE = 3/4" = 1'-0"



SECTION C–C
SCALE = 3/4" = 1'-0"



PLAN VIEW
SCALE = 3/4" = 1'-0"



BASE DETAIL
SCALE = 3/4" = 1'-0"

NOTE
CONTRACTOR SHALL ANCHOR PANELBOARD TO FOUNDATION AFTER CONTRACTOR HAS PLACED PANELBOARD ON FOUNDATION.

PANELBOARD, HYDRAULIC ENCLOSURE & RECEPTACLE BOX FOUNDATION PLAN & DETAIL

SPECIAL TESTS & INSPECTION SCHEDULE

THE FOLLOWING ITEMS SHALL BE INSPECTED. "SPECIAL INSPECTION" SHALL CONFORM TO 2019 CBC 1705. SPECIAL INSPECTION AGENCIES AND/OR INDIVIDUALS SHALL BE RETAINED BY THE OWNER AND APPROVED BY THE BUILDING OFFICIAL PRIOR TO ANY WORK. FOR MATERIAL TESTING REQUIREMENTS, SEE SPECIFICATIONS AND/OR GENERAL NOTES. TESTING AGENCY SHALL SEND COPIES OF ALL STRUCTURAL TESTING AND INSPECTION REPORTS DIRECTLY TO THE BUILDING OFFICIAL AND ENGINEER.

ITEM	REQUIRED	REMARKS
POST INSTALLED ANCHORS	YES	VISUAL-INSTALLATION PROCEDURES ONLY (PER SECTION 1705.1.1)

NOTES FOR FOUNDATION

1. GENERAL
ALL CONSTRUCTION NOT SPECIFICALLY DETAILED SHALL CONFORM TO THE REQUIREMENTS OF THE 2019 CALIFORNIA BUILDING CODE (CBC) AND ANY LOCAL CODE REQUIREMENTS. ALL DETAILS, SECTIONS AND NOTES SHOWN ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATIONS ELSEWHERE UNLESS OTHERWISE NOTED.

THE CONTRACTOR SHALL COMPARE THIS DRAWING WITH EXISTING CONDITIONS AT THE SITE, AND WITH ALL OTHER APPLICABLE DRAWINGS. CONTRACTOR SHALL VERIFY MEASUREMENTS OF ALL EXISTING FEATURES AFFECTING HIS WORK, AND SHALL REPORT ANY DISCREPANCIES TO THE CALIFORNIA WATER SERVICE COMPANY ENGINEER FOR CLARIFICATION AND ADJUSTMENT BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS SHOWN ON THIS DRAWING WITH THE REQUIREMENTS OF EXISTING CONDITIONS AND ALL RELATED NEW EQUIPMENT.

FOUNDATION PREPARATION: AREAS TO RECEIVE FILL SHALL BE SCARIFIED TO A DEPTH OF SIX INCHES AND MOISTURE-CONDITIONED TO A MINIMUM OF 2% ABOVE OPTIMUM MOISTURE CONTENT, AND RECOMPACTED TO A MINIMUM 90% OF THE MAXIMUM DRY DENSITY PER ASTM D1557. THERE SHALL BE A MINIMUM OF 6" CLASS 2 AGGREGATE BASE (AB) UNDER ANY PROPOSED FOUNDATION COMPACTED TO 95% MDD.

FOOTINGS SHALL BE AS DETAILED ON THE DRAWINGS. THE FOUNDATION DESIGN IS BASED UPON THE VALUES FOR CLASS 5 MATERIALS LISTED IN TABLE 1806.2 OF THE CBC. THE FOOTINGS HAVE BEEN DESIGNED FOR AN ALLOWABLE SOIL BEARING PRESSURE OF 1,500 PSF (DL+LL) PLUS ONE THIRD INCREASE FOR WIND AND SEISMIC LOADS.

THE AGGREGATE BASE, FORMS AND SUBGRADE SHALL BE THOROUGHLY WETTED BEFORE PLACEMENT OF CONCRETE.

2. CONCRETE
ALL CONCRETE SHALL DEVELOP A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS OF AGE (DESIGN BASED ON 2500 PSI-NO SPECIAL INSPECTION IS REQUIRED PER EXCEPTION 2.3 IN SECTION 1705.3 OF 2019 CBC). THE SLUMP SHALL BE THE MINIMUM CONSISTENT WITH PLACING CONDITIONS BUT SHALL NOT EXCEED 4 1/2".

PLACE CONCRETE IN ACCORDANCE WITH ACI-301. ENSURE THAT REINFORCEMENT AND EMBEDDED ITEMS ARE NOT DISTURBING PLACEMENT OF CONCRETE. TOP OF THE FLOOR SHALL BE TRUE TO INDICATED ELEVATIONS, VARIATIONS SHALL NOT EXCEED 1/8" IN 10 FEET. THE LEVEL BEARING AREA AT THE TOP OF THE FOUNDATION SHALL RECEIVE A HARD STEEL TROWEL FINISH, SMOOTH AND LEVEL. CONTRACTOR SHALL PATCH IMPERFECTIONS AS REQUIRED BY CLIENT. PROTECT CONCRETE FROM PREMATURE DRYING, MAINTAIN CONCRETE WITH MINIMAL MOISTURE LOSS AT A RELATIVELY CONSTANT TEMPERATURE FOR PERIOD NECESSARY FOR HYDRATION OF CEMENT AND HARDENING OF CONCRETE.
ALL EXPOSED HORIZONTAL AND VERTICAL EDGES AND CORNERS SHALL HAVE 3/4" x 3/4" CHAMFERS

NO ALUMINUM CONDUIT OR PRODUCTS CONTAINING ALUMINUM OR ANY OTHER MATERIAL INJURIOUS TO THE CONCRETE SHALL BE EMBEDDED IN THE CONCRETE.

3. REINFORCING STEEL
ALL BARS SHALL BE GRADE 60 DEFORMED BARS CONFORMING TO ASTM A615. REINFORCING BAR BENDS AND STANDARD HOOKS SHALL CONFORM TO ACI 318, LATEST EDITION. ALL BENDS SHALL BE STANDARD HOOKS UNLESS OTHERWISE SHOWN. BARS 20 FEET AND SHORTER IN LENGTH SHALL BE IN SINGLE LENGTH RUNS WITHOUT SPLICES. BARS LONGER THAN 20 FEET IN LENGTH SHALL BE SPLICED WITH 48 BAR DIAMETER LAPS (2'-0" FOR #4 BARS). SPLICES IN ADJACENT BAR RUNS SHALL BE WELL STAGGERED.

4. SPECIAL INSPECTION
PERIODIC SPECIAL INSPECTION MUST BE PERFORMED WHERE REQUIRED FOR CONCRETE EPOXY ANCHORS IN ACCORDANCE WITH SECTION 1705.1.1 OF THE 2019 CBC, WHEREBY SPECIAL INSPECTION IS DEFINED IN SECTION 202 OF THE 2019 CBC.

5. EPOXY ANCHORS
EPOXY ANCHORS SHALL BE ASTM F593 HAS-R 316 STAINLESS STEEL THREADED ROD WITH HILTI HIT-RE 500 V3. ALL EPOXY ANCHORS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS & ICC REPORT #3814. VISUAL SPECIAL INSPECTION IS REQUIRED.

SPECIAL NOTE

THE FOUNDATION MUST BE SQUARE, AND THE ANCHOR BOLTS MUST BE ACCURATELY PLACED PLUMB. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE FOUNDATION.

DESIGN LOADS

SCOPE: PROVIDE STRUCTURAL FOUNDATION & ANCHORAGE CALCULATIONS & DRAWINGS FOR NEW PANELBOARD, HYDRAULIC ENCLOSURE, GENERATOR TAP BOX.

SECTION 1604.5 & TABLE 1604.5: RISK CATEGORY III

SECTION 1606 – DEAD LOADS
- PANELBOARD ..... 4.0 K
- ATS & GENERATOR TAP BOX ..... 0.24 K

SECTION 1607 – LIVE LOADS ..... N/A

SECTION 1608 – SNOW LOAD ..... N/A

SECTION 1609 – WIND DESIGN DATA
- BASIC DESIGN SPEED, V (3s GUST) ..... 98 MPH
- NOMINAL DESIGN SPEED, $V_{ASD}=V\sqrt{0.6}$ (3s GUST) ..... 76 MPH
- WIND EXPOSURE C
- INTERNAL PRESSURE COEFFICIENT ..... N/A
- DESIGN WIND PRESSURE (ASCE7-16 SECTION 26.10.2), q_z ..... 19.67 PSF
- DESIGN WIND LOAD (ASCE7-16 SECTION 29.4 & 29.7), F ..... 1.50 K

SECTION 1613 – EARTHQUAKE DESIGN DATA
- LATITUDE ..... 37.5296°
- LONGITUDE ..... -122.3411°
- SITE CLASS ..... D-default
- SPECTRAL RESPONSE @ 0.2 SEC PERIOD, S_s 2.303
- SPECTRAL RESPONSE @ 1.0 SEC PERIOD, S_1 ..... 0.963
- SHORT PERIOD SITE COEFFICIENT @ 0.2 SEC PERIOD, F_a 1.200
- LONG PERIOD SITE COEFFICIENT @ 1.0 SEC PERIOD, F_v 1.700
- MODIFIED SPECTRAL RESPONSE @ 0.2 SEC PERIOD, S_{MS} 2.764
- MODIFIED SPECTRAL RESPONSE @ 1.0 SEC PERIOD, S_{M1} 1.637
- DESIGN SPECTRAL RESPONSE COEFFICIENTS, S_{DS} 1.843
  S_{D1} 1.091

CHAPTER 13: ELEMENTAL DESIGN (ASCE 7-16 SECTION 13.3.1):
- SEISMIC DESIGN CATEGORY ..... E
- BASIC SEISMIC FORCE RESISTING SYSTEM ..... PANELBOARD
- SEISMIC IMPORTANCE FACTOR, I_p 1.5
- AMPLIFICATION FACTOR, a_p (TABLE 13.6-1) 2.5
- RESPONSE MODIFICATION FACTOR, R_p (TABLE 13.6-1) 6.0
- HEIGHT FACTOR, z/h (ANCHORS TO SLAB; z=0) 0.0
- SEISMIC DESIGN FORCE, F_p ..... $F_p=\frac{0.4a_pS_{DS}W_p}{\left(\frac{R_p}{I_p}\right)}\left[1+2\frac{z}{h}\right]=0.461\,W_p$
- MINIMUM SEISMIC DESIGN FORCE, $F_{p(min.)}$ ..... $F_{p(min.)}=.3(Sds)(I)W_p=0.829W_p$ (CONTROLS)

CHAPTER 15: NON-BUILDING STRUCTURES (ASCE 7-16; SECTION 15.4.2):
- SEISMIC DESIGN CATEGORY ..... E
- BASIC SEISMIC FORCE RESISTING SYSTEM ..... OTHER SELF SUPPORT EQ.
- SEISMIC IMPORTANCE FACTOR, I 1.25
- RESPONSE MODIFICATION FACTOR, R 1.25
- EQUATION 15.4-5 ..... $QE=.3(Sds)(I)(W)=0.691\,W$
- EQUATION 15.4-2 (IF S1>0.6g) ..... $QE=\frac{(0.8)(S1)(W)}{\left[\frac{R}{I}\right]}=0.770\,W$

Know what's below. Call before you dig.

PEG JOB #: 21-000

Pacific Engineering Group, Inc.
9699 Blue Larkspur Lane, Suite 104 Monterey, CA 93940
ph: (831) 333-0644 fax: (831) 333-0645

DRAWN BY: E. IBARRA
DESIGNED BY: E. IBARRA
CHECKED BY: E.I DATE: 05/26/2021
APPROVED BY: (SIGNATURE) DATE: 05/26/2021

REGISTERED PROFESSIONAL ENGINEER ELVIN IBARRA C 88045 Exp. 03-31-22 DIGITALLY SIGNED 05/26/2021 CIVIL STATE OF CALIFORNIA
NOT VALID WITHOUT WET SIGNATURE

ENGINEERING
CALIFORNIA WATER SERVICE
DEPARTMENT

REVISIONS:

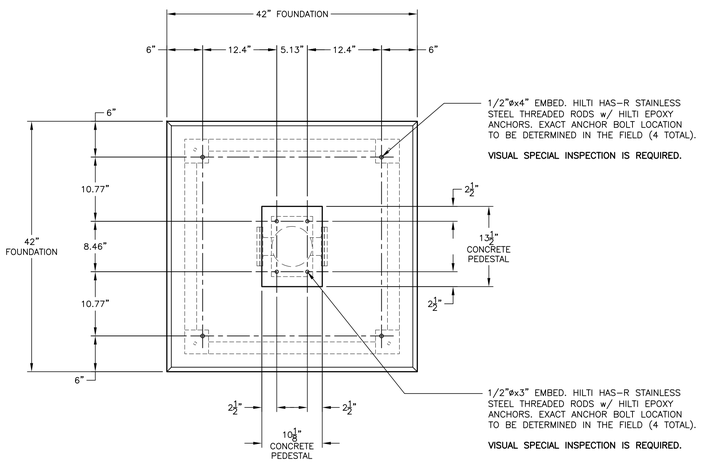
	DATE:	INT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC		

PLAT SHEET NO.:

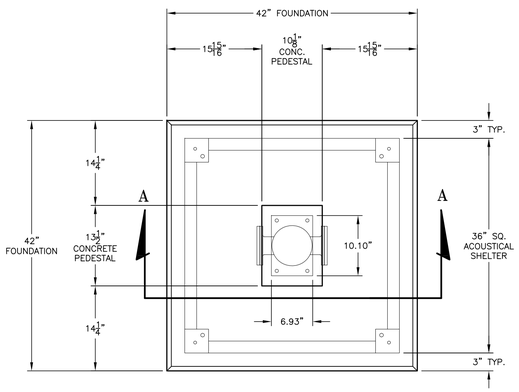
SCALE: AS NOTED
DRAWN BY:
DESIGNED BY:
TECH REVIEW: DATE:
CHECKED BY: DATE: 5/27/2021
APPROVED BY: DATE: 5/27/2021

TITLE: MPS - SAN MATEO STA. 031 PANELBOARD, HYDRAULIC ENCLOSURE & GENERATOR TAP BOX FOUNDATION PLAN & DETAILS

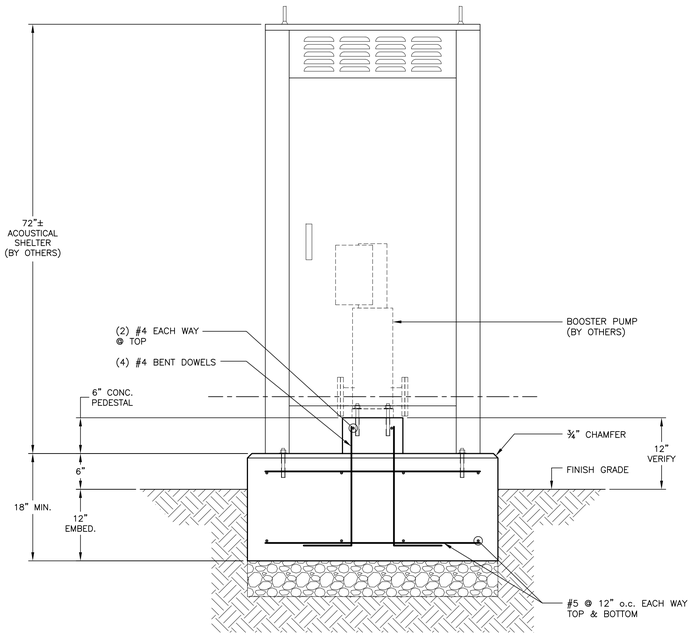
DISTRICT: 116-MPS
DATE: 05/26/2021
PROJECT ID.: 118772
DRAWING NO.: MPS-5657
SHT 1 OF 1



FOUNDATION DETAIL (PLAN)
SCALE = 1" = 1'-0"



BASE PLAN
SCALE = 1" = 1'-0"



SECTION A-A
SCALE = 1" = 1'-0"

SPECIAL TESTS & INSPECTION SCHEDULE

THE FOLLOWING ITEMS SHALL BE INSPECTED. "SPECIAL INSPECTION" SHALL CONFORM TO 2019 CBC 1705. SPECIAL INSPECTION AGENCIES AND/OR INDIVIDUALS SHALL BE RETAINED BY THE OWNER AND APPROVED BY THE BUILDING OFFICIAL PRIOR TO ANY WORK. FOR MATERIAL TESTING REQUIREMENTS, SEE SPECIFICATIONS AND/OR GENERAL NOTES. TESTING AGENCY SHALL SEND COPIES OF ALL STRUCTURAL TESTING AND INSPECTION REPORTS DIRECTLY TO THE BUILDING OFFICIAL AND ENGINEER.

ITEM	REQUIRED	REMARKS
POST INSTALLED ANCHORS	YES	VISUAL-INSTALLATION PROCEDURES ONLY (PER SECTION 1705.1.1)

NOTES FOR FOUNDATION

1. GENERAL
ALL CONSTRUCTION NOT SPECIFICALLY DETAILED SHALL CONFORM TO THE REQUIREMENTS OF THE 2019 CALIFORNIA BUILDING CODE (CBC) AND ANY LOCAL CODE REQUIREMENTS. ALL DETAILS, SECTIONS AND NOTES SHOWN ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATIONS ELSEWHERE UNLESS OTHERWISE NOTED.

THE CONTRACTOR SHALL COMPARE THIS DRAWING WITH EXISTING CONDITIONS AT THE SITE, AND WITH ALL OTHER APPLICABLE DRAWINGS. CONTRACTOR SHALL VERIFY MEASUREMENTS OF ALL EXISTING FEATURES AFFECTING HIS WORK, AND SHALL REPORT ANY DISCREPANCIES TO THE CALIFORNIA WATER SERVICE COMPANY ENGINEER FOR CLARIFICATION AND ADJUSTMENT BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS SHOWN ON THIS DRAWING WITH THE REQUIREMENTS OF EXISTING CONDITIONS AND ALL RELATED NEW EQUIPMENT.

FOUNDATION PREPARATION: AREAS TO RECEIVE FILL SHALL BE SCARIFIED TO A DEPTH OF SIX INCHES AND MOISTURE-CONDITIONED TO A MINIMUM OF 2% ABOVE OPTIMUM MOISTURE CONTENT, AND RECOMPACTED TO A MINIMUM 90% OF THE MAXIMUM DRY DENSITY PER ASTM D1557. THERE SHALL BE A MINIMUM OF 6" CLASS 2 AGGREGATE BASE (AB) UNDER ANY PROPOSED FOUNDATION COMPACTED TO 95% MDD.

FOOTINGS SHALL BE AS DETAILED ON THE DRAWINGS. THE FOUNDATION DESIGN IS BASED UPON THE VALUES FOR CLASS 5 MATERIALS LISTED IN TABLE 1806.2 OF THE CBC. THE FOOTINGS HAVE BEEN DESIGNED FOR AN ALLOWABLE SOIL BEARING PRESSURE OF 1,500 PSF (DL+LL) PLUS ONE THIRD INCREASE FOR WIND AND SEISMIC LOADS.

THE AGGREGATE BASE, FORMS AND SUBGRADE SHALL BE THOROUGHLY WETTED BEFORE PLACEMENT OF CONCRETE.

2. CONCRETE
ALL CONCRETE SHALL DEVELOP A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS OF AGE (DESIGN BASED ON 2500 PSI-NO SPECIAL INSPECTION IS REQUIRED PER EXCEPTION 2.3 IN SECTION 1705.3 OF 2019 CBC). THE SLUMP SHALL BE THE MINIMUM CONSISTENT WITH PLACING CONDITIONS BUT SHALL NOT EXCEED 4 1/2".

PLACE CONCRETE IN ACCORDANCE WITH ACI-301. ENSURE THAT REINFORCEMENT AND EMBEDDED ITEMS ARE NOT DISTURBING PLACEMENT OF CONCRETE. TOP OF THE FLOOR SHALL BE TRUE TO INDICATED ELEVATIONS, VARIATIONS SHALL NOT EXCEED 1/8" IN 10 FEET. THE LEVEL BEARING AREA AT THE TOP OF THE FOUNDATION SHALL RECEIVE A HARD STEEL TROWEL FINISH, SMOOTH AND LEVEL. CONTRACTOR SHALL PATCH IMPERFECTIONS AS REQUIRED BY CLIENT. PROTECT CONCRETE FROM PREMATURE DRYING, MAINTAIN CONCRETE WITH MINIMAL MOISTURE LOSS AT A RELATIVELY CONSTANT TEMPERATURE FOR PERIOD NECESSARY FOR HYDRATION OF CEMENT AND HARDENING OF CONCRETE.
ALL EXPOSED HORIZONTAL AND VERTICAL EDGES AND CORNERS SHALL HAVE 3/4" x 3/4" CHAMFERS

NO ALUMINUM CONDUIT OR PRODUCTS CONTAINING ALUMINUM OR ANY OTHER MATERIAL INJURIOUS TO THE CONCRETE SHALL BE EMBEDDED IN THE CONCRETE.

3. REINFORCING STEEL
ALL BARS SHALL BE GRADE 60 DEFORMED BARS CONFORMING TO ASTM A615. REINFORCING BAR BENDS AND STANDARD HOOKS SHALL CONFORM TO ACI 318, LATEST EDITION. ALL BENDS SHALL BE STANDARD HOOKS UNLESS OTHERWISE SHOWN. BARS 20 FEET AND SHORTER IN LENGTH SHALL BE IN SINGLE LENGTH RUNS WITHOUT SPLICES. BARS LONGER THAN 20 FEET IN LENGTH SHALL BE SPLICED WITH 48 BAR DIAMETER LAPS (2'-0" FOR #4 BARS). SPLICES IN ADJACENT BAR RUNS SHALL BE WELL STAGGERED.

4. SPECIAL INSPECTION
PERIODIC SPECIAL INSPECTION MUST BE PERFORMED WHERE REQUIRED FOR CONCRETE EPOXY ANCHORS IN ACCORDANCE WITH SECTION 1705.1.1 OF THE 2019 CBC, WHEREBY SPECIAL INSPECTION IS DEFINED IN SECTION 202 OF THE 2019 CBC.

5. EPOXY ANCHORS
EPOXY ANCHORS SHALL BE ASTM F593 HAS-R 316 STAINLESS STEEL THREADED ROD WITH HILTI HIT-RE 500 V3. ALL EPOXY ANCHORS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS & ICC REPORT #3814. VISUAL SPECIAL INSPECTION IS REQUIRED.

SPECIAL NOTE

THE FOUNDATION MUST BE SQUARE, AND THE ANCHOR BOLTS MUST BE ACCURATELY PLACED PLUMB. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE FOUNDATION.

DESIGN LOADS

SCOPE: PROVIDE STRUCTURAL FOUNDATION & ANCHORAGE CALCULATIONS & DRAWINGS FOR NEW BOOSTER PUMP w/ACOUSTICAL SHELTER.

SECTION 1604.5 & TABLE 1604.5: RISK CATEGORY III

SECTION 1606 – DEAD LOADS
- BOOSTER PUMP ..... 146 lbs
- ACOUSTICAL SHELTER ..... 300 lbs

SECTION 1607 – LIVE LOADS ..... N/A

SECTION 1608 – SNOW LOAD ..... N/A

SECTION 1609 – WIND DESIGN DATA
- BASIC DESIGN SPEED, V (3s GUST) ..... 98 MPH
- NOMINAL DESIGN SPEED, $V_{ASD}=V\sqrt{0.6}$ (3s GUST) ..... 76 MPH
- WIND EXPOSURE C
- INTERNAL PRESSURE COEFFICIENT ..... N/A
- DESIGN WIND PRESSURE (ASCE7-16 SECTION 26.10.2), q_z ..... 19.4 PSF
- DESIGN WIND LOAD (ASCE7-16 SECTION 29.4 & 29.7), F ..... 0.35 K (SHELTER)

SECTION 1613 – EARTHQUAKE DESIGN DATA
- LATITUDE ..... 37.5296°
- LONGITUDE ..... -122.3411°
- SITE CLASS ..... D-default
- SPECTRAL RESPONSE @ 0.2 SEC PERIOD, S_s 2.303
- SPECTRAL RESPONSE @ 1.0 SEC PERIOD, S_1 ..... 0.963
- SHORT PERIOD SITE COEFFICIENT @ 0.2 SEC PERIOD, F_a 1.200
- LONG PERIOD SITE COEFFICIENT @ 1.0 SEC PERIOD, F_v 1.700
- MODIFIED SPECTRAL RESPONSE @ 0.2 SEC PERIOD, S_{MS} 2.764
- MODIFIED SPECTRAL RESPONSE @ 1.0 SEC PERIOD, S_{M1} 1.637
- DESIGN SPECTRAL RESPONSE COEFFICIENTS, S_{DS} 1.843
  S_{D1} 1.091

CHAPTER 13: ELEMENTAL DESIGN (ASCE 7-16 SECTION 13.3.1):
- SEISMIC DESIGN CATEGORY ..... E
- BASIC SEISMIC FORCE RESISTING SYSTEM ..... INSTRUMENT CABINET/ SHEET METAL FRAMING; PUMP
- SEISMIC IMPORTANCE FACTOR, I_e 1.5
- AMPLIFICATION FACTOR, a_s (TABLE 13.6-1) ..... 2.5 ; 1.0
- RESPONSE MODIFICATION FACTOR, R_p (TABLE 13.6-1) ..... 6.0 ; 2.5
- HEIGHT FACTOR, z/h (ANCHORS TO SLAB; z=0) 0
- SEISMIC DESIGN FORCE, F_p ..... $F_p=\frac{0.4a_s S_{DS} W_p}{\left(\frac{R_p}{I_e}\right)}\left[1+2\frac{z}{h}\right]=0.461W_p$ / $0.442W_p$
- MINIMUM SEISMIC DESIGN FORCE, $F_{p(min.)}$ ..... $F_{p(min.)}=.3(Sds)(I)W_p=0.829W_p$ (CONTROLS)

CHAPTER 15: NON-BUILDING STRUCTURES (ASCE 7-16; SECTION 15.4.2):
- SEISMIC DESIGN CATEGORY ..... E
- BASIC SEISMIC FORCE RESISTING SYSTEM ..... OTHER SELF SUPPORT EQ.
- SEISMIC IMPORTANCE FACTOR, I 1.25
- RESPONSE MODIFICATION FACTOR, R 1.25
- EQUATION 15.4-5 ..... $QE=.3(Sds)(I)(W)=0.691\ W$
- EQUATION 15.4-2 (IF S1>0.6g) ..... $QE=\frac{(0.8)(S1)(W)}{\left[\frac{R}{I}\right]}=0.770\ W$

811 Know what's below. Call before you dig.

PEG JOB #: 21-030

Pacific Engineering Group, Inc.
9699 Blue Larkspur Lane, Suite 104 Monterey, CA 93940
ph: (831) 333-0644 fax: (831) 333-0645

DRAWN BY: E. IBARRA
DESIGNED BY: E. IBARRA
CHECKED BY: E.I 05/26/2021
APPROVED BY: 05/26/2021
DATE:

REGISTERED PROFESSIONAL ENGINEER ELVIN IBARRA C 89045 Exp. 03-31-22 DIGITALLY SIGNED 05/26/2021 CIVIL STATE OF CALIFORNIA
NOT VALID WITHOUT WET SIGNATURE

ENGINEERING
CALIFORNIA WATER SERVICE
DEPARTMENT

REVISIONS:

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC		

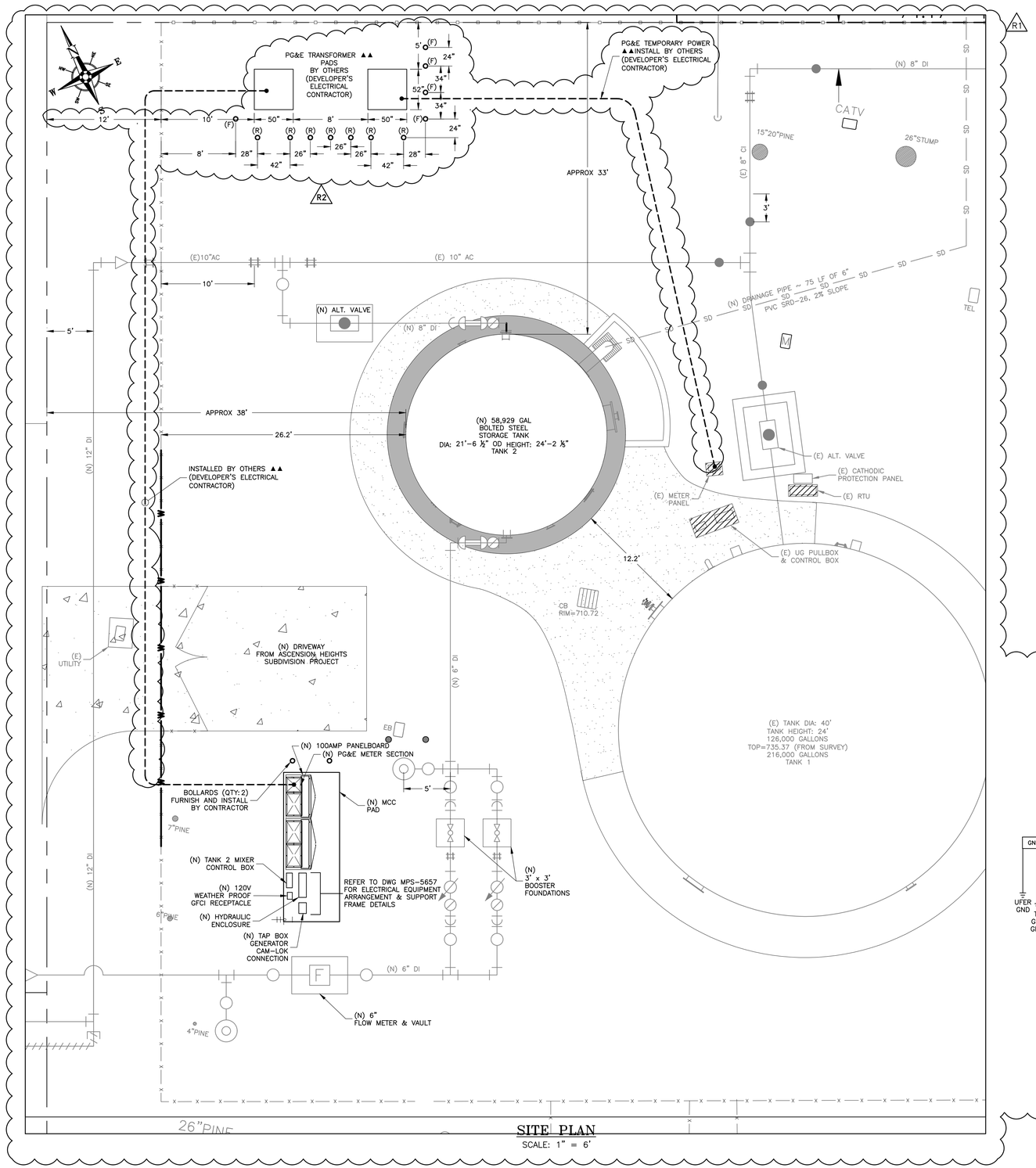
PLAT SHEET NO.:

SCALE: AS NOTED
DRAWN BY:
DESIGNED BY:
TECH REVIEW: DATE:
CHECKED BY: DATE: 5/27/2021
APPROVED BY: DATE: 5/27/2021

TITLE: MPS - SAN MATEO STA. 031 BOOSTER PUMP FOUNDATION PLAN & DETAILS

DISTRICT: 116-MPS
DATE: 05/26/2021
PROJECT ID.: 118772
DRAWING NO.: MPS-5644
SHT 1 OF 1

BOOSTER PUMP & ACOUSTICAL SHELTER FOUNDATION PLAN & DETAIL



SITE PLAN
SCALE: 1" = 6'

STATION ADDRESS

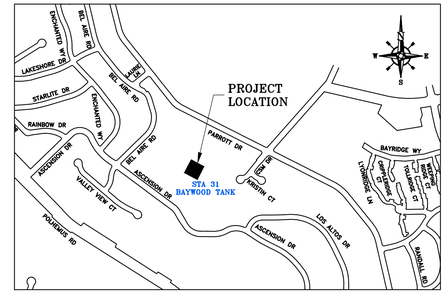
OFF OF BEL AIRE ROAD, SAN MATEO, CA
94551 ALAMEDA COUNTY
APN# 098-03402000

LEGEND AND ABBREVIATION

----------	UNDERGROUND CONDUIT RUN
— · — · —	WIRING TO BE SUPPLIED AND INSTALLED IN FIELD
————	WIRING TO BE SUPPLIED AND INSTALLED BY PANELBOARD MANUFACTURER
▲▲	PER UTILITY SPECIFICATIONS
(E)	EXISTING
PROP.	PROPOSED
o	BOLLARDS
	RADIO ANTENNA
	DEMO
(F)	FIXED BOLLARD
(R)	REMOVABLE BOLLARD

ELECTRICAL LOAD SUMMARY

CIRCUIT/DESCRIPTION	HP	FLA	KVA
PUMP A	3	9.6	3.8
PUMP B	3	9.6	3.8
LOAD CENTER		30	12.47
SUBTOTAL		49.2	20.07
25% OF LARGEST MOTOR		2.4	0.96
TOTAL AMPS @ 120/240, 3 PHASE		51.6	21.03
SERVICE SIZE (AMPS)		100	



VICINITY MAP
Not to Scale

GENERAL NOTES

A. ALL WORK TO BE DONE USING LATEST EDITION OF NEC, CEC AND OTHER APPLICABLE CODES.

B. MARK ALL WIRE TERMINATION WITH CIRCUIT NUMBERS USING BRADY MARKERS OR EQUAL AS SHOWN.

ELECTRICAL SEQUENCING NOTES:

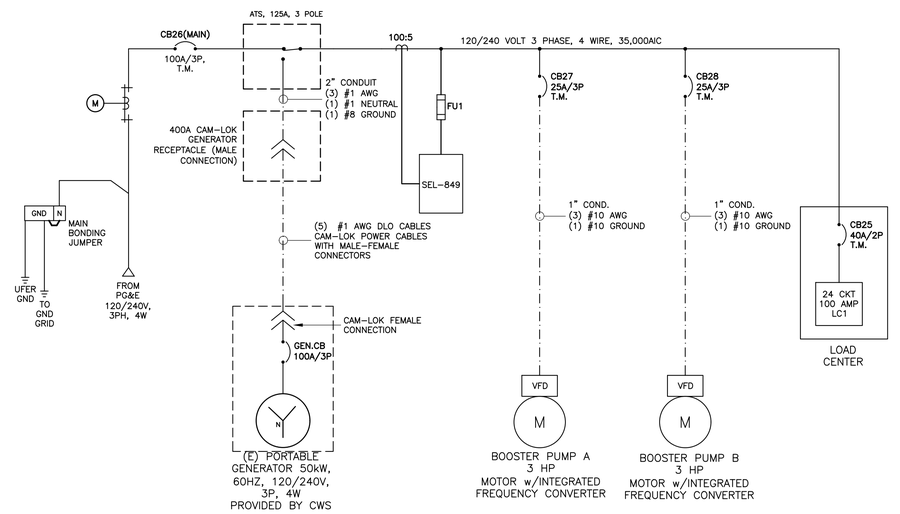
1. TANK STATION SHALL STAY IN OPERATION DURING CONSTRUCTION AND SHALL BE TAKEN OFFLINE ONLY LONG ENOUGH FOR PG&E TO CONNECT NEW CONDUCTORS TO THE TRANSFORMER, CONNECT MOTORS, RTU, ELEC. EQUIPMENT AND INSTRUMENTS.

2. SEQUENCE OF OPERATIONS SHALL BE AS FOLLOWS:

   a. ROUTE CONDUITS AS SHOWN.
   b. POUR CONCRETE FOR PANELBOARD FOUNDATION.
   c. INSTALL PANELBOARD
   d. INSTALL AND WIRE UP INTERFACES TO PANELBOARD.
   e. COORDINATE WITH PG&E FOR INSTALLATION OF NEW SERVICE LATERALS.
   f. DISCONNECT INCOMING SERVICE TO EXISTING PANELBOARD.
   g. CONNECT NEW SERVICE LATERALS TO NEW TRANSFORMER BY PG&E.
   h. CONNECT PUMP MOTORS, RTU, MISCELLANEOUS ELEC EQUIPMENT AND INSTRUMENTS.
   i. BRING NEW SERVICE ON LINE.
   j. DEMOLISH EXISTING METER PANEL, RTU CABINET, INSTRUMENT BOX & PULLBOX.

SHEET NOTES:

1. COORDINATE WITH PG&E FOR REMOVAL OF EXISTING 120/240, 1PH VOLT SERVICE LATERAL CONDUCTORS AND METERING CABINET.
2. DEMO EXISTING PANELBOARD AND ALL ATTACHED CONDUIT AND CONDUCTORS.
3. SALVAGE RTU PANEL AND PROVIDE TO CAL WATER AT TIME OF REMOVAL.
4. DEMO ANTENNA WEATHERHEAD, POST, UNISTRUT, GROUND WIRE AND ABOVE GRADE CONDUIT.



SINGLE LINE POWER DISTRIBUTION DIAGRAM

ENGINEERING

DEPARTMENT

REVISIONS:
R1: REVISED LAYOUT AND SINGLE LINE DIAGRAM DH 5/11/2021

R-2 REVISED PG&E TRANSFORMER PAD LOCATION & SECONDARY SERVICE CONDUIT ROUTE, ADDED TRANSFORMER PAD FOR THE SINGLE PHASE EXISTING METERS. DH 8-23-2022

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC	[X]	

PLAT SHEET NO.:
SM-31-22
SCALE:
AS SHOWN
DRAWN BY:
D. HEARN
DESIGNED BY:
M. MACATIAG
TECH REVIEW: DATE:
CHECKED BY: DATE: 9/13/2022
APPROVED BY: DATE: 9/13/2022

REGISTERED PROFESSIONAL ENGINEER
MANDY MACATIAG
No. E22351
ELECTRICAL
STATE OF CALIFORNIA

TITLE:
MPS - SAN MATEO STA 031
INSTALL TANK AND BOOSTER PUMP
EQUIPMENT LAYOUT AND SINGLE LINE DIAGRAM

DISTRICT:
116-MPS
SAN MATEO
DATE:
5/5/2021
PROJECT ID.:
00118772
DRAWING NO.:
MPS-5476 R2
SHT 1 OF 1

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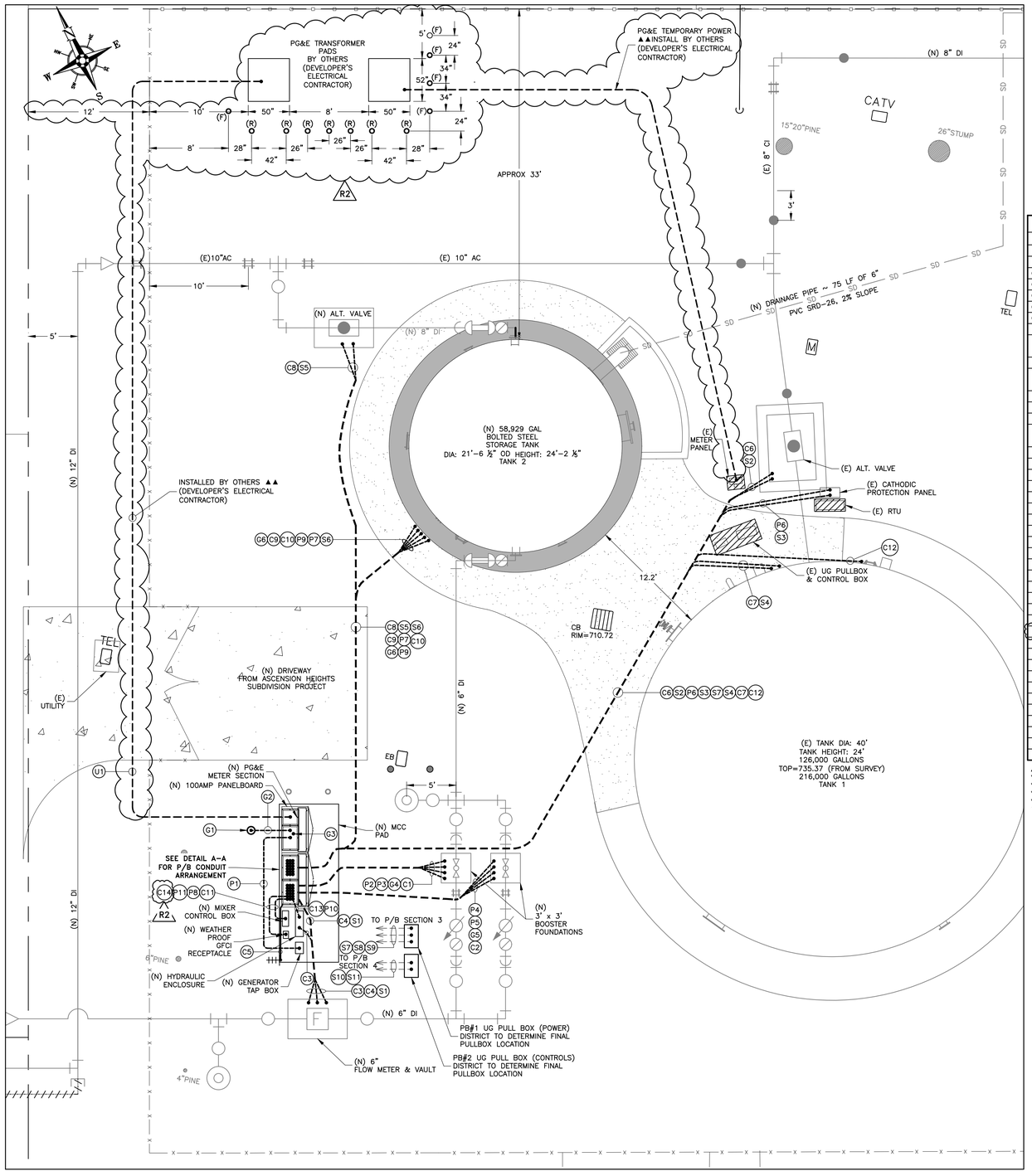


CONDUIT PLAN

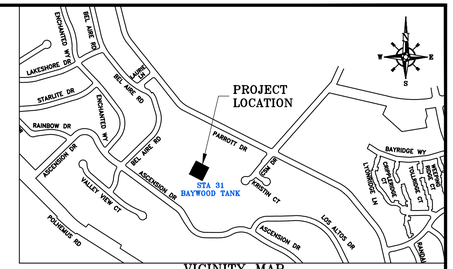
SCALE: 1" = 6'

LEGEND AND ABBREVIATIONS

ABOVE GROUND	
UNDERGROUND	
GROUND ROD	
RADIO ANTENNA	
EXISTING	(E)
CONDUIT TRENCH	
BOLLARDS	
DEMO	
FIXED BOLLARD	(F)
REMOVABLE BOLLARD	(R)

STATION ADDRESS

OFF OF BEL AIRE ROAD, SAN MATEO, CA 94551 ALAMEDA COUNTY
APN# 098-034802000



VICINITY MAP

Not to Scale

LIST OF CONDUITS

ITEM	SIZE	FILL	DESCRIPTION	FROM	TO
U1	▲▲	▲▲	UTILITY 120/240V, 3PH, 4W SECONDARY FEED TO METER PANEL	PG&E TRANSFORMER (PAD)	METER PANEL (P/B SEC 1)
G1	N/A	N/A	MIN. 3/4"x10' CU GND ROD (PER LOCAL & NEC CODES)	PANELBOARD	GROUND WELL
G2*****	1"	(1) #6 AWG BARE CU	GROUNDING ELECTRODE CONDUCTOR	GROUNDING BUS - P/B SECTION 2	GND ROD - GROUND WELL
G3*****	1"	(1) #4 AWG BARE CU***	UFER GROUND	PANELBOARD FOUNDATION	P/B SECTION 2
G4*****	1"	(1) #8 AWG BARE CU	BOOSTER A SHELTER BONDING	PANELBOARD GROUND BUS	BOOSTER A SHELTER
G5*****	1"	(1) #8 AWG BARE CU	BOOSTER B SHELTER BONDING	PANELBOARD GROUND BUS SHELTER A	BOOSTER B SHELTER
G6*****	1"	(1) #8 AWG BARE CU	TANK 2 BONDING	PANELBOARD GROUND BUS	TANK 2 GROUND TAB****
P1	2"	(3) #1 AWG CU, (1) #1 NEUT, (1) #8 GND	EMERGENCY POWER FOR PORTABLE GENERATOR	CAMLOCK RECEPTACLE	ATS - P/B SECTION 2
P2	1"	(3) #10 AWG CU, #10 GND (2) #12 AWG CU, (1) #12 GND	BOOSTER A FEEDER BOOSTER A SPACE HEATER	P/B SECTION 4	BOOSTER A SHELTER
P3	1"	(2) #12 AWG CU, (1) #12 GND, (3) #12 SPARES	BOOSTER A SHELTER FANS	P/B SECTION 4	BOOSTER A SHELTER
P4	1"	(3) #10 AWG CU, (1) #10 GND (2) #12 AWG CU, (1) #12 GND	BOOSTER B FEEDER BOOSTER B SPACE HEATER	P/B SECTION 4	BOOSTER B SHELTER
P5	1"	(2) #12 AWG CU, (1) #12 GND, (3) #12 SPARES	BOOSTER B SHELTER FANS	P/B SECTION 4	BOOSTER B SHELTER
P6	1"	(2) #12 AWG CU, (1) #12 GND	(E) CATHODIC PROTECTION PANEL (TANK 1)	P/B SECTION 3	(E) CATHODIC PROTECTION PANEL
P7	1"	(2) #12 AWG CU, (1) #12 GND	CATHODIC PROTECTION PANEL (TANK 2)	P/B SECTION 3	CATHODIC PROTECTION PANEL****
P8	1"	(2) #12 AWG CU, (1) #12 GND (2) #10 AWG CU, (1) #10 GND	TANK 2 MIXER	P/B SECTION 4 TANK 2 MIXER CONTROL BOX	TANK 2 MIXER CONTROL BOX TANK 2 MIXER JUNCTION BOX (VIA P/B, P9)
P9	1"	(2) #10 AWG CU, (1) #10 GND	TAK 2 MIXER	TANK 2 MIXER CONTROL BOX (VIA, P8, P/B)	TANK 2 MIXER JUNCTION BOX****
P10	1"	(2) #12 AWG CU, (1) #12 GND	HYDENC HEATER AND RECEPTACLE	P/B SECTION 4	HYDRAULIC ENCLOSURE
P11	1"	(2) #12 AWG CU, (1) #12 GND	RECEPTACLE FOR PORTABLE GENSET HEATER AND BATTERY CHARGER	P/B SECTION 4	WEATHER PROOF GFCI RECEPTACLE
C1	1"	(8) #16 AWG CU	BOOSTER A CONTROLS	P/B SECTION 4	BOOSTER A SHELTER
C2	1"	(8) #16 AWG CU	BOOSTER B CONTROLS	P/B SECTION 4	BOOSTER B SHELTER
C3	1"	3/8" NYLON TUBE*	DISHARGE PRESSURE	HYDRAULIC ENCLOSURE	DISHARGE PRESSURE TAP (UNDERGROUND VAULT
C4	1"	COMBO CABLE (PROVIDED BY CWS)	FLOWMETER	P/B SECTION 4	FLOWMETER (UNDERGROUND VAULT)
C5	1 1/2"	LMR-400 (PROVIDED BY CWS)	ANTENNA (SEE CW-989 FOR SPECIFIC DETAIL)	RTU - P/B SECTION 4	RADIO ANTENNA
C6	1"	(4) #14 AWG CU, (1) #14 GND, (2) #14 SPARE	(E) ALTITUDE VALVE, POWER & STATUS	P/B SECTION 3	(E) ALTITUDE VALVE (UNDERGROUND VAULT)
C7	1"	BELDEN CABLE**	(E) TANK 1 LEVEL	P/B SECTION 3	(E) TANK 1 LEVEL TRANSDUCER
C8	1"	(2) #14 AWG CU, (3) #14 SPARE	ALTITUDE VALVE STATUS	P/B SECTION 3	ALTITUDE VALVE (UNDERGROUND VAULT)
C9	1"	BELDEN CABLE**	TANK 2 LEVEL	RTU - P/B SECTION 4	TANK 2 LEVEL TRANSDUCER (ENCLOSURE BOX)****
C10	1"	(4) #14 AWG CU	TANK 2 INTRUSION	P/B SECTION 4	TANK 2 (LADDER)
C11	1"	(2) #14 AWG CU, (2) #14 AWG	START/STOP COMMAND R2	P/B SECTION 4	TANK 2 MIXER CONTROL BOX
C12	1"	(4) #14 AWG CU	(E) TANK 1 INTRUSION	P/B SECTION 4	(E) TANK 1 (LADDER)
C13	1"	BELDEN CABLE** R2	DICHARGE PRESSURE TRANSMITTER	P/B SECTION 4	XDCR1 (HYPENC)
C14	1"	BELDEN CABLE**	TANK 2 MIXER STATUS	P/B SECTION 4	TANK 2 MIXER CONTROL BOX
S1	1"	PULL ROPE	SPARE	P/B SECTION 4	FLOWMETER (UNDERGROUND VAULT)
S2	1"	PULL ROPE	SPARE	P/B SECTION 3	(E) ALTITUDE VALVE (UNDERGROUND VAULT)
S3	1"	PULL ROPE	SPARE	P/B SECTION 3	(E) CATHODIC PROTECTION PANEL
S4	1"	PULL ROPE	SPARE	P/B SECTION 3	(E) TANK 1
S5	1"	PULL ROPE	SPARE	P/B SECTION 3	ALTITUDE VALVE (UNDERGROUND VAULT)
S6	1"	PULL ROPE	SPARE	P/B SECTION 4	TANK 2
S7	1"	PULL ROPE	SPARE	P/B SECTION 3	PULLBOX PB1 (POWER)
S8	1"	PULL ROPE	SPARE	P/B SECTION 3	PULLBOX PB1 (POWER)
S9	1"	PULL ROPE	SPARE	P/B SECTION 3	PULLBOX PB1 (POWER)
S10	1"	PULL ROPE	SPARE	P/B SECTION 4	PULLBOX PB2 (CONTROL)
S11	1"	PULL ROPE	SPARE	P/B SECTION 4	PULLBOX PB2 (CONTROL)

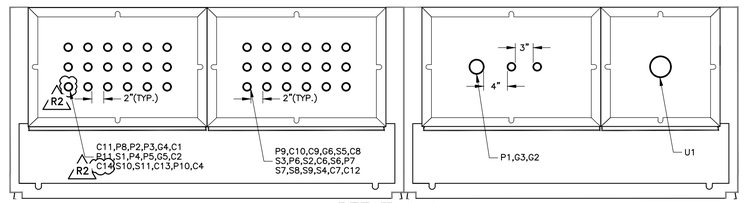
▲▲ PACIFIC GAS AND ELECTRIC SPECIFICATION
* NYLON TUBING SHALL BE HUDSON EXTRUSION, INC. 3/8" O.D. MODEL NSF 51/61 (OR NSF CERTIFIED EQUAL)
** BELDEN CABLE SHALL BE 18 AWG SHIELDED WIRE, BELDEN #9341
*** UFER GROUND, #4 AWG BARE STRANDED COPPER, MIN. 20'LONG, SEE DETAIL N
**** TANK VENDOR TO DETERMINE FINAL LOCATION
***** CONDUIT SLEEVE, CONNECT GROUNDING BARE COPPER TO THE NEAREST POINT OF PANELBOARD GROUND BUS

LIST OF EQUIPMENT TO BE SUPPLIED & INSTALLED BY ELECTRICAL CONTRACTOR

ITEM	DESCRIPTION
GEN TAP BOX	400A GENERATOR TAP BOX ASSEMBLY, CAMLOCK RECEPTACLE MALE CONNECTION (PSI CONTROL SOLUTION INC)
CAMLOCK CABLE	CAMLOCK POWER CABLE ASSEMBLED, (5) #1 DLO FLEX CABLE, 50 FEET, 16 SERIES COLOR CONNECTORS (B/Y/O/W/G), MALE & FEMALE, TESTED BY PSI
DR3	RECEPTACLE FOR PORTABLE GENERATOR (HEATER AND CHARGER), HUBBEL OR LEVITON MAKE, 20A, 120VAC, ENCLOSED IN RAIN PROOF & WEATHER PROOF BOX AND COVER
GROUNDING WELL	GROUNDING ACCESS WELL, WITH GROUND ROD AND CONNECTION SEE GROUNDING WELL DETAIL
R1 PB1,PB2	PULLBOXES SHALL BE TRAFFIC RATED, CHRISTY #R1730 OR EQUAL
R1 LS	INSTRUSION LIMIT SWITCH, SCHNEIDER XCKJ10541 (QTY:2)

LIST OF EQUIPMENT TO BE SUPPLIED BY CALWATER & INSTALLED BY ELECTRICAL CONTRACTOR

ITEM	DESCRIPTION
PANELBOARD	TESCO 100A PANELBOARD
HYDENC	HYDRAULIC ENCLOSURE EQUIPPED WITH PRESSURE TRANSMITTER, HEATER AND GFCI OUTLET
ANTENNA	RADIO ANTENNA
R1 LT	LEVEL TANK ENCLOSURE EQUIPPED WITH ROSEMOUNT PRESSURE TRANSMITTER
FM1	ROSEMOUNT 8705, 6" FLOW METER



DETAIL A-A

PANELBOARD BASE DETAIL CONDUIT ARRANGEMENT

(MAINTAIN 2" CONDUIT SEPARATION, U.N.O.)

ENGINEERING

DEPARTMENT

REVISIONS:

R-1 REVISED WIRE SPEC. REMOVED DR2 IN EQUIPMENT LIST, APPEND FLOWMETER IN EQUIPMENT LIST. DH 7/8/2021

R-2 REVISED PG&E TRANSFORMER PAD LOCATION & SECONDARY SERVICE CONDUIT ROUTE, ADDED TRANSFORMER PAD FOR THE SINGLE PHASE EXISTING METERS, ADDED CABLE FOR THE TANK MIXER. DH 6-23-2022

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC	X	

PLAT SHEET NO.: SM-31-22

SCALE: AS SHOWN

DRAWN BY: D. HEARN

DESIGNED BY: M. MACATIAG

TECH REVIEW: DATE:

CHECKED BY: DATE: 9/13/2022

APPROVED BY: DATE: 9/13/2022

REGISTERED PROFESSIONAL ENGINEER MANDY MACATIAG No. E22351 ELECTRICAL STATE OF CALIFORNIA

TITLE: MPS - SAN MATEO STA 031 TANK AND BOOSTER PUMP CONDUIT LAYOUT & DETAILS

DISTRICT: 116-MPS

SAN MATEO

DATE: 5/5/2021

PROJECT ID.: 00118772

DRAWING NO.: MPS-5597 R2

SHT 1 OF 3

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NOTES TO ELECTRICAL INSTALLATION CONTRACTOR

GENERAL

1. ELECTRICAL INSTALLATION CONTRACTOR (CONTRACTOR) SHALL COMPLY WITH ALL PERMIT REQUIREMENTS AND NOTIFY THE GOVERNING AGENCY AND CALIFORNIA WATER SERVICE COMPANY (CWSC) FOR REQUIRED INSPECTIONS. CONTRACTOR SHALL PROVIDE A MINIMUM OF 24 HOURS OF NOTICE TO CWSC FOR ANY INSPECTIONS.
2. WORK SHALL BE PERFORMED ACCORDING TO THESE NOTES AND TO THE DRAWINGS LISTED BELOW.
3. CONDUIT LAYOUTS PROVIDED ARE DIAGRAMMATIC. CONTRACTOR SHALL BASE THEIR PRICING ON THE BEST ROUTING, TAKING INTO ACCOUNT EXISTING CONDITIONS AND KNOWN EXISTING UNDERGROUND ELECTRICAL AND PIPING THAT WILL ACHIEVE COMPLIANCE WITH THE REQUIREMENTS STATED HEREIN AND ON THE DRAWINGS.
4. CONTRACTOR SHALL CONTACT "UNDERGROUND SERVICES ALERT" WITHIN 48 HOURS PRIOR TO ANY EXCAVATION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES WITHOUT ADDITIONAL LOSS TO CWSC.
5. CONTRACTOR SHALL BECOME FAMILIAR WITH PROJECT SURROUNDINGS, WORKING CONDITIONS, AND SITE LIMITATIONS AND WILL INCLUDE ALLOWANCES IN THEIR BID TO COVER ANY PROJECT CONSTRAINTS.

SCOPE

1. THE CONTRACTOR SHALL PROVIDE SERVICES FOR ELECTRICAL INSTALLATION AT CWSC MPS STATION 31 (SEE LOCATION SKETCH).
2. THE CONTRACTOR SHALL MEET THE REQUIREMENTS OF THE FOLLOWING DRAWINGS:

D/N	DRAWING TITLE
MPS-5476 R2	EQUIPMENT LAYOUT & SINGLE LINE DIAGRAM
MPS-5595	ELECTRICAL SCHEMATIC
MPS-5596 R1	RTU TERMINAL DRAWING
MPS-5597 R2	CONDUIT LAYOUT & DETAILS
MPS-5598	PANELBOARD LAYOUT
MPS-5599	HYDRAULIC ENCLOSURE
RTU CW-988	ANTENNA MOUNTING/GROUNDING DETAILS
CWS-1011	ACCESSORIES AND DETAILS FOR STEEL RESERVOIR INTRUSION SECURITY

3. THE CONTRACTOR SHALL PERFORM THE FOLLOWING TASKS:
   a. INSTALL PANELBOARD, HYDENC, CAM-LOK RECEPTACLE AND MISCELLANEOUS ELECTRICAL EQUIPMENT DESCRIBED IN PLANS.
   b. PROVIDE AND INSTALL CONDUITS, WIRES AND GROUNDING DESCRIBED IN PLANS.
   c. REMOVE EXISTING PANELBOARD, RTU PANEL, INSTRUMENT ENCLOSURES, ANTENNA AND EXISTING PULL BOXES.
4. THE CONTRACTOR SHALL PROVIDE TO CWSC AS-BUILT DRAWINGS WITH RED-LINES OF ALL CONDUIT LOCATIONS, EQUIPMENT & DEVICE LOCATIONS, INSTALLATION DETAILS AND WIRING CHANGES MADE DURING THE COURSE OF INSTALLATION.
5. THE CONTRACTOR SHALL BE AVAILABLE DURING WITNESSED SYSTEM TESTING, INSPECTIONS, AND STARTUP.
6. ALL CONDITIONS FOUND DURING TESTING AND INSPECTIONS NOT TO BE IN COMPLIANCE WITH THE CWSC DRAWINGS AND PRACTICES SHOWN HEREIN AND/OR CODES AND REGULATIONS AND ARE DEEMED BY CWSC TO BE THE RESULT OF THE CONTRACTOR'S ACTIONS SHALL BE BROUGHT INTO COMPLIANCE AT THE CONTRACTOR'S EXPENSE.

CHANGE ORDERS

1. ONCE THE CONTRACT FOR ELECTRICAL INSTALLATION WORK HAS BEEN LET, ANY CHANGE ORDERS – WHETHER AT THE REQUEST OF EITHER CWSC OR BY THE CONTRACTOR – THAT ARE EQUAL TO OR EXCEED $1,000 SHALL BE ESTIMATED BY THE CONTRACTOR AND SUBMITTED TO THE CWSC PROJECT MANAGER IN WRITING. CWSC MUST APPROVE THIS ESTIMATE BEFORE THE WORK DESCRIBED THEREIN SHALL PROCEED. THE CHANGE ORDER SHALL THEN BE AN ADDENDUM TO THE CONTRACT OR PURCHASE ORDER. FOR CHANGES COSTING LESS THAN $1,000, APPROVAL TO PROCEED MAY BE GIVEN BY THE CWSC PROJECT MANAGER IN CHARGE AFTER DISCUSSION IN THE FIELD. SUCH CHANGES SUCH AS SLIGHT CONDUIT ALIGNMENTS, SLIGHT CONDUIT RE-ROUTINGS, ETC. SHALL BE CONSIDERED AS COVERED IN THE CONTRACTOR'S ORIGINAL JOB QUOTE CONTINGENCY.

GROUNDING

GROUNDING SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE NATIONAL AND LOCAL ELECTRICAL CODES AND THE CWSC GROUNDING DETAILS CONTAINED HEREIN.

CONDUITS

1. ALL NEW CONDUITS SHOWN HEREIN AND IN THE "LIST OF CONDUITS" SHALL BE INSTALLED BY THE CONTRACTOR.
2. CONTRACTOR SHALL USE NEW MATERIALS IN INSTALLING CONDUITS, CONDUIT FITTINGS, AND BOXES.
3. UNLESS OTHERWISE SPECIFIED IN THE DRAWINGS, ALL CONDUITS SHALL BE LEVEL AND PLUMB.
4. UNLESS OTHERWISE SPECIFIED ALL CONDUITS INSTALLED ON BUILDING SURFACES (INTERIOR AND EXTERIOR) SHALL BE PLUMB AND PARALLEL OR AT RIGHT ANGLES TO THAT SURFACE.
5. INSTALL CONDUITS AS FOLLOWS (GENERAL NOTES):
   a. MAIN SERVICE – SCHEDULE 40 PVC OR AS REQUIRED BY ELECTRIC UTILITY.
   b. ALL UNDERGROUND CONDUITS – SCHEDULE 40 PVC AND DETAILS SHOWN HEREIN UNLESS OTHERWISE INDICATED.
   c. ALL EXTERIOR ABOVE-GROUND CONDUITS –RIGID GALVANIZED STEEL (RGS).
   d. ALL INTERIOR ABOVE-FLOOR CONDUITS (EXCEPT IN CHEMICAL ROOMS) – ELECTRIC METALLIC TUBING (EMT) WITH STEEL COMPRESSION TYPE FITTINGS UNLESS OTHERWISE SPECIFIED.
   e. ALL INTERIOR ABOVE-FLOOR CONDUITS IN CHEMICAL ROOM(S) – SCHEDULE 80 PVC SECURED WITH PVC STRAP BACKS TO ALLOW FOR WASHDOWN.
   f. ALL FLEXIBLE ABOVE-GROUND AND ABOVE-FLOOR CONDUITS – LIQUIDTITE COMPLETE WITH APPROPRIATE HARDWARE AND INSTALLED IN ACCORDANCE WITH APPLICABLE CODES AND CWSC DETAILS.
   g. ALL FLEXIBLE BELOW-GROUND AND BELOW-FLOOR CONDUITS IN VAULTS – LIQUIDTITE COMPLETE WITH APPROPRIATE HARDWARE AND INSTALLED IN ACCORDANCE WITH APPLICABLE CODES AND CWSC DETAILS.
6. CONDUIT STUB-UPS SHALL BE ACCORDING TO DETAILS SHOWN HEREIN.
7. CONDUITS STUBBING UP IN THE PANELBOARD SHALL BE SCHEDULE 40 PVC.
8. CONDUITS STUBBING UP IN THE CHEMICAL ROOM SHALL BE SCHEDULE 80 PVC.
9. CONDUIT SUPPORT STRAPS, FASTENERS AND CLAMPS USED IN THE CHEMICAL ROOM SHALL BE STAINLESS STEEL AND SUITABLE FOR CORROSIVE ENVIRONMENT APPLICATIONS. ALL MATERIAL SHALL BE CORROSION RESISTANT.
10. CONDUITS STUBBING UP IN AREAS OTHER THAN IN THE PANELBOARD OR IN CHEMICAL ROOM SHALL BE RGS IN THE FINAL BEND AND STUB-UP. THEY SHALL EXTEND ABOVE THE GRADE OR THE FLOOR IN ACCORDANCE WITH THE DETAILS SHOWN HEREIN, AND THEY SHALL BE WRAPPED WITH 10-MIL TAPE (1/2 LAPPED) TO 6-INCHES ABOVE THE GRADE OR THE FLOOR.
11. PRIOR TO STUBBING UP CONDUITS INTO ELECTRICAL EQUIPMENT (PANELBOARD, GENERATOR, ETC.), FIELD CHECK THE DIMENSIONS OF THE EQUIPMENT OR MANUFACTURER SUBMITTALS TO ENSURE NO CONFLICTS EXIST WITH THE EQUIPMENT LAYOUT.
12. ALL UNDERGROUND CONDUIT AND HYDRAULIC LINES SHALL HAVE A MINIMUM OF 2-FEET OF COVER.
13. ALL UNDERGROUND FEEDER CONDUIT RUNS SHALL BE SEPARATED FROM PARALLEL SIGNAL CONDUITS BY AT LEAST 9-INCHES.
14. ALL CONDUITS SHALL HAVE STANDARD 90-DEGREE FACTORY BENDS UNLESS OTHERWISE NOTED.
15. TRENCHES FOR ALL UNDERGROUND CONDUITS SHALL BE BACK FILLED ACCORDING TO THE DETAILS SHOWN HEREIN. BACKFILLING MAY NOT COMMENCE UNTIL CWSC HAS INSPECTED AND APPROVED THE CONDUIT INSTALLATION.
16. ALL UNDERGROUND RGS CONDUITS AND BENDS SHALL BE WRAPPED WITH 1-LAYER, 1/2-LAPPED, 10-MIL TAPE TO 6-INCES ABOVE THE GRADE OR THE FLOOR.
17. CONDUIT PATHS SHOWN ON THE DRAWINGS ARE SHOWN FOR CLARITY AND NOT FOR THE FINAL ROUTING AT THE SITE. RUN THE CONDUITS AS CLOSE TO THE PATHS SHOWN WHILE USING THE LEAST AMOUNT OF BENDS. ALL FINAL CONDUIT PATHS SHALL BE SHOWN ON THE AS-BUILT DRAWINGS.
   a. INDIVIDUAL UNDERGROUND CONDUIT RUNS SHALL NOT EXCEED THE EQUIVALENT OF 3 – 90 DEGREE BENDS BETWEEN PULL POINTS. IF THE FINAL ROUTING OF CONDUITS RESULTS IN EXCEEDING THIS LIMITATION, THE CONTRACTOR SHALL NOTIFY CWSC FOR RESOLUTION.
18. ALL CONDUITS SHALL BE INSPECTED BY CWSC AND BY THE CITY INSPECTOR (AS APPLICABLE) PRIOR TO BACKFILLING OR BEING COVERED BY WALL MATERIAL. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 24-HOUR NOTICE PRIOR TO THIS INSPECTION.
19. ALL CONDUITS AND HYDRAULIC LINES (WITH THE EXCEPTION OF CONDUITS SLOPED TO DRAIN) LEAVING UNDERGROUND FROM A BUILDING AREA SHALL BE INSTALLED 6-INCHES BELOW THE BUILDING FOOTING. CONDUITS SLOPED TO DRAIN MAY RUN THROUGH THE FOOTING, HOWEVER THEY MUST BE ROUTED A MINIMUM OF 3-INCHES FROM REBAR AND OTHER CONDUITS.
20. ALL CONDULETS (LB'S, TEE'S, C'S, ETC.) EXCEPT THOSE USED IN CHEMICAL AREAS SHALL BE MALLEABLE IRON.
21. UNLESS OTHERWISE SPECIFIED, CONDUITS FOR FUTURE USE AND SPARE CONDUITS SHALL BE TERMINATED AND CAPPED INSIDE AN OLDCASTLE PULLBOX (SIZE AS INDICATED IN THE DRAWINGS) SUPPLIED BY THE CONTRACTOR AND LABELED AT THEIR TERMINATION POINT BY THE CONDUIT IDENTIFICATION INDICATED IN THE "LIST OF CONDUITS".
22. CONTRACTOR SHALL USE SPACERS OR CHAIRS, DESIGNED FOR UNDERGROUND CONDUIT INSTALLATIONS TO MAINTAIN REQUIRED SEPARATION AND SYMMETRY FOR ALL UNDERGROUND CONDUIT RUNS. WHEN CONDUITS ROUTE THROUGH AN UNDERGROUND PULLBOX, THE CONDUITS SHALL MAINTAIN THE SAME ARRANGEMENT EXITING THE PULLBOX AS ENTERING THE PULLBOX.
23. ALL FUTURE USE AND SPARE CONDUITS INDICATED IN THE "LIST OF CONDUITS" SHALL HAVE A 1/4-INCH (MINIMUM) NYLON OR POLYPROPYLENE PULL ROPE INSTALLED.
24. ALL FUTURE USE AND SPARE CONDUIT ENDS SHALL BE CAPPED WITH PULL ROPE ACCESSIBLE THROUGH THE CAP. ALL CONDUIT ENDS SHALL BE LABELED AT BOTH ENDS AS SHOWN HEREIN IN THE "LIST OF CONDUITS".
25. PROVIDE 1-INCH MINIMUM DIAMETER STAINLESS STEEL TAGS ATTACHED TO CONDUITS WITH STAINLESS STEEL MECHANICAL WIRE AND ENGRAVED WITH CONDUIT DESIGNATION. CONDUIT TAGS IN UNDERGROUND INSTALLATIONS SHALL BE APPLIED IN SIMILAR MANNER TO CONDUITS, OR WITH EPOXY TO THE WALL OF THE MANHOLE ABOVE THE CONDUIT ENTRANCE IF THE CONDUIT IS INSTALLED FLUSH WITH THE WALL.
26. CONDUIT SUPPORT SYSTEMS INSTALLED SHALL FOLLOW NEC REQUIREMENTS.

WIRING

1. UNLESS OTHERWISE SPECIFIED, ALL WIRING SPECIFIED IN THE ELECTRICAL DRAWINGS TO BE INSTALLED IN THE FIELD BY THE CONTACTOR SHALL BE PROVIDED BY THE CONTRACTOR UNLESS NOTED OTHERWISE ON THE DRAWINGS.
2. UNLESS OTHERWISE SPECIFIED, ALL WIRING INSTALLED IN THE FIELD SHALL BE TERMINATED BY THE CONTRACTOR.
3. ALL WIRING SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL AND LOCAL ELECTRICAL CODES AND ALL OTHER APPLICABLE CODES.
4. ALL CONDUCTORS SO IDENTIFIED ON THE ELECTRICAL DRAWINGS SHALL BE LABELED WITH THEIR RESPECTIVE WIRE NUMBERS. LABELS SHALL BE MADE USING BRADY PERMASLEEVE WIRE LABELING SYSTEM (OR CWSC APPROVED EQUAL) WITH HEAT SHRINKABLE LABELS SO AFFIXED AS TO HAVE THE NUMBER CLEARLY VISIBLE AND CAPABLE OF BEING READ FROM LEFT-TO-RIGHT OR FROM BOTTOM-TO-TOP. ALL LABELS SHALL BE HEAT SHRUNK.
5. THE CONTRACTOR SHALL FOLLOW THE SPECIFIC WIRE TYPE AND COLOR CODE REQUIREMENTS PROVIDED IN THE DRAWINGS. IF THE DRAWINGS DO NOT CONTAIN WIRE TYPE AND COLOR CODING REQUIREMENTS, CONTRACTOR SHALL ASK CWSC TO PROVIDE THEM.
6. ALL TERMINAL BLOCKS AND TERMINALS SHALL BE IDENTIFIED WITH LABELS AND NUMBERED ACCORDING TO THE ELECTRICAL DRAWINGS.
7. UNLESS OTHERWISE SPECIFIED HEREIN, ALL POWER CONDUCTORS SHALL BE A MINIMUM OF #12 AWG, STRANDED COPPER WITH XHHW-2 INSULATION. UNLESS OTHERWISE SPECIFIED HEREIN, ALL CONTROL CONDUCTORS SHALL BE A MAXIMUM SIZE OF #14AWG, STRANDED COPPER WITH THHN OR THWN INSULATION. ADDITIONAL APPLICATION SPECIFIC WIRE TYPE REQUIREMENTS SHALL BE PROVIDED IN THE DRAWINGS.
8. UNLESS OTHERWISE SPECIFIED (CABLES),
   a. ALL T.S.P. SHIELDED CABLE SHALL BE BELDEN #9341 OR CWSC APPROVED EQUIVALENT
   b. ALL 4-CONDUCTOR, INDIVIDUALLY TWISTED PAIR CABLE SHALL BE BELDEN #8723 OR #9854 OR CWSC APPROVED EQUIVALENT
   c. ALL CAT 5E CABLE SHALL BE BELDEN #7924A OR CWSC APPROVED EQUIVALENT
   d. MANUFACTURER SPECIFIC AND SPECIALIZED CABLES AND WIRING SHALL BE INSTALLED IN ACCORDANCE WITH THAT MANUFACTURER'S INSTRUCTIONS.
9. BEFORE ENERGIZING, ALL TERMINALS IN GENSET, PANELBOARDS AND OTHER TERMINAL WIRED EQUIPMENT PANELS SHALL BE CHECKED AND TIGHTENED IN THE FIELD BY THE ELECTRICAL INSTALLATION CONTRACTOR. TIGHTENING OF TERMINATIONS SHALL BE ACCORDING TO THE TERMINAL MANUFACTURER'S RECOMMENDED TORQUE RANGE AND SHALL NOT EXCEED THE MAXIMUM TORQUE SO SPECIFIED.
10. BEFORE ENERGIZING, ALL POWER CONDUCTORS SHALL BE MEGGER TESTED WITH A 500VDC MEGGER FOR A MINIMUM OF 10 SECONDS. ALL CONTROL WIRING SHALL BE RING-OUT TESTED TO ASSURE PROPER CONNECTIONS.
    a. FOR MOTOR FEEDER SIZES EXCEEDING #10 AWG, MOTOR CONNECTIONS SHALL BE MADE WITH MOTOR LEAD SPLICING KITS MADE BY 3M, CO., 5300 SERIES OR CWSC APPROVED EQUAL.
11. CORRECT ROTATION OF PUMP MOTORS SHALL BE VERIFIED WITH CWSC BEFORE ENERGIZING THE MOTOR UNDER LOAD.

EQUIPMENT

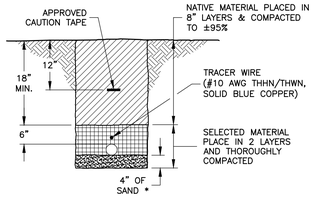
1. CWSC SHALL SUPPLY THE PANELBOARD AND ALL THE EQUIPMENT SO SPECIFICALLY DESIGNATED AS SUCH IN THE "LIST OF EQUIPMENT". THE ELECTRICAL INSTALLATION CONTRACTOR SHALL PROVIDE ALL OTHER FIELD INSTALLED EQUIPMENT SO SPECIFICALLY DESIGNATED AS SUCH IN THE "LIST OF EQUIPMENT".
2. THE ELECTRICAL INSTALLATION CONTRACTOR SHALL TRANSPORT THE PANELBOARD AND ALL THE OTHER EQUIPMENT LISTED IN "LIST OF EQUIPMENT" FROM BAYSHORE DISTRICT.
3. THE PANELBOARD AND OTHER EQUIPMENT AND ENCLOSURES SHALL BE INSTALLED BY THE ELECTRICAL INSTALLATION CONTRACTOR ACCORDING TO THE DETAILS SHOWN HEREIN AND/OR BY CWSC APPROVED METHODS.
4. THE ELECTRICAL INSTALLATION CONTRACTOR SHALL BOLT THE PANELBOARD TO THE FOUNDATION USING HILTI EXPANSION ANCHORS AS SPECIFIED IN THE DRAWINGS.
5. AFTER THE PANELBOARD HAS BEEN MOVED INTO POSITION, THE PROPER DIAMETER HOLES SHALL BE DRILLED INTO THE FOUNDATION TO A DEPTH SPECIFIED BY HILTI FOR THE ANCHORS USED. CONTRACTOR SHALL REFER TO THE STRUCTURAL DRAWINGS FOR THE NUMBER OF EXPANSION ANCHORS REQUIRED FOR THE PANELBOARD.
6. THE ELECTRICAL INSTALLATION CONTRACTOR SHALL PROVIDE AND INSTALL ALL HYDRAULIC SENSING LINES.
7. WITHIN 3 DAYS OF RECEIVING THE PANELBOARD, THE CONTRACTOR SHALL PERFORM A VISUAL CHECK OF THE PANELBOARD FOR ANY DAMAGED EQUIPMENT AND/OR COMPONENTS THAT MAY HAVE OCCURRED DURING SHIPPING. ADDITIONALLY, THE CONTRACTOR SHALL CHECK ALL NUT/BOLT AND DEVICE CONNECTIONS INSIDE THE PANELBOARD FOR PROPER TIGHTNESS AS WELL AS VERIFY BREAKER HANDLE FUNCTION AND PROPER CLOSING AND LATCH FUNCTION OF ALL PANELBOARD DOORS. ANY ISSUES FOUND SHALL BE REPORTED TO CWSC. AFTER 3 DAYS, ANY NON-REPORTED DAMAGE WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.

FOUNDATIONS

1. PRIOR TO POURING THE PANELBOARD HOUSEKEEPING PAD OR PLACING THE PANELBOARD, THE CONTRACTOR SHALL CONFIRM THE PANELBOARD HOUSEKEEPING PAD DIMENSIONS WITH THE BUILDING DIMENSIONS, PANELBOARD LAYOUT OR MANUFACTURER SUBMITTALS BEFORE STUBBING UP PANELBOARD CONDUITS.
2. THE EDGES OF THE PANELBOARD HOUSEKEEPING PAD SHALL HAVE A 3/4-INCH, 45-DEGREE CHAMFER.
3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND LOCATIONS PRIOR TO PLACING THE PANELBOARD ON THE PANELBOARD HOUSEKEEPING PAD. HOLES FOR SECURING THE PANELBOARD TO THE PAD BY EXPANSION ANCHORS SHALL BE DRILLED AFTER THE PANELBOARD IS SET IN PLACE.

FIELD YARD ADDRESS

CALIFORNIA WATER SERVICE COMPANY
BAYSHORE DISTRICT OFFICE
341 NORTH DELAWARE STREET
SAN MATEO, CA 94401-1727



OVERALL COVERING, PER CONDUIT NOTES

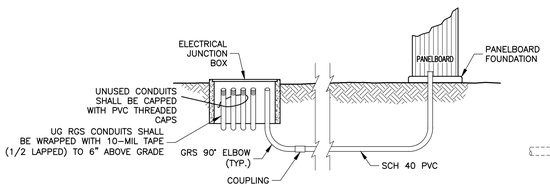
* SAND IS DEFINED AS MATERIAL FREE FROM ORGANIC MATTER AND CLAY WITH A SIEVE GRADATION BY WEIGHT AS FOLLOWS:

SIEVE SIZE	% PASSING SIEVE
NO. 4	100
NO. 200	10

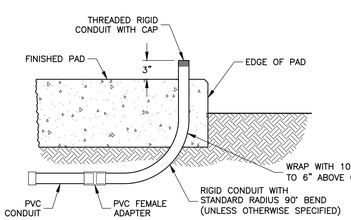
DETAIL "B"
TRENCH DETAIL FOR ROCKY SOIL
N.T.S.

NOTES:

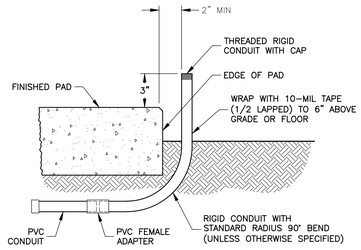
1. SAND SPECIFICATION AND TRENCH MUST BE INSPECTED PRIOR TO BACKFILL.
2. WHERE JOINT TRENCH CROSSES OTHER FACILITIES MAINTAIN A MINIMUM VERTICAL SEPARATION OF 6" FROM ALL DUCTS.
3. MAINTAIN 6" MINIMUM CLEARANCE WHEN ELECTRICAL CONDUIT CROSSES ANY WATER, SEWER OR STORM LINES.
4. MAINTAIN AT LEAST 5' OF SEPARATION BETWEEN ELECTRICAL CONDUIT TRENCH AND ANY PARALLEL WATER, SEWER OR STORM DRAIN TRENCH.



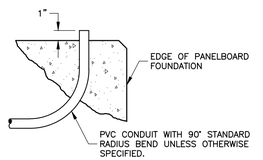
DETAIL "G"
CONDUITS RUNNING BETWEEN JUNCTION BOX & PANELBOARD
N.T.S.



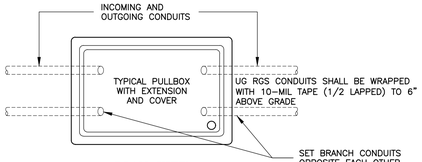
DETAIL "H"
CONDUITS STUBBING UP IN ANY OUTDOOR PAD
(N.T.S.)



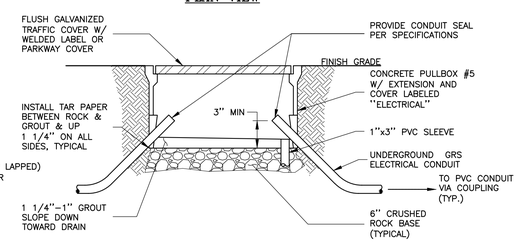
DETAIL "C"
CONDUITS STUBBING UP ALONG SIDE ANY OUTDOOR PAD
(N.T.S.)



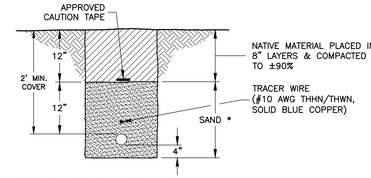
DETAIL "D"
CONDUITS STUBBING UP IN PANELBOARD FOUNDATION
N.T.S.



PLAN VIEW



DETAIL "I"
PULLBOX (CHRISTY) DETAIL
(N.T.S.)



OVERALL COVERING, PER CONDUIT NOTES

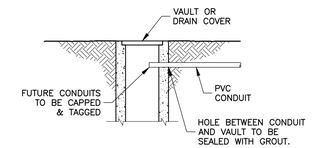
* SAND IS DEFINED AS MATERIAL FREE FROM ORGANIC MATTER AND CLAY WITH A SIEVE GRADATION BY WEIGHT AS FOLLOWS:

SIEVE SIZE	% PASSING SIEVE
NO. 4	100
NO. 200	10

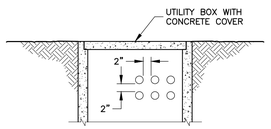
DETAIL "A"
TRENCH DETAIL
N.T.S.

NOTES:

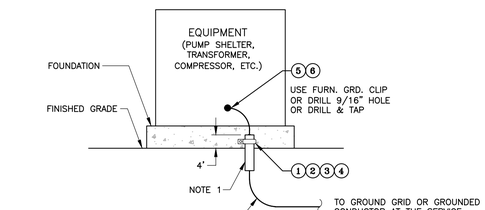
1. SAND SPECIFICATION AND TRENCH MUST BE INSPECTED PRIOR TO BACKFILL.
2. WHERE JOINT TRENCH CROSSES OTHER FACILITIES MAINTAIN A MINIMUM VERTICAL SEPARATION OF 6" FROM ALL DUCTS.
3. MAINTAIN 6" MINIMUM CLEARANCE WHEN ELECTRICAL CONDUIT CROSSES ANY WATER, SEWER OR STORM LINES.
4. MAINTAIN AT LEAST 5' OF SEPARATION BETWEEN ELECTRICAL CONDUIT TRENCH AND ANY PARALLEL WATER, SEWER OR STORM DRAIN TRENCH.



DETAIL "E"
CONDUITS STUBBING IN VAULTS OR DRAINS
N.T.S.



DETAIL "F"
MINIMUM SPACING OF CONDUITS IN VAULTS
N.T.S.



BILL OF MATERIALS

ITEM	QTY.	DESCRIPTION
1	1	CONCRETE ANCHOR
2	1	BOLT & LOCKWASHER
3	1	ONE-HOLE CONDUIT CLAMP, GALV.
4	1 FT	CONDUIT, 1" PVC, SCH. 40 (NOTE 1)
5	1	SERVIT CONNECTOR. 1/2" LONG STUD
6	1	1/2" HEX NUT & LOCKWASHER, SILICONE BRONZE

NOTES:

1. IF INSTALLED OUTDOOR USE 1" RGS CONDUIT WITH BUSHING. IT SHALL BE WRAPPED WITH 10-MIL TAPE ABOVE THE GRADE OR FLOOR.
2. THIS INSTALLATION IS ONLY APPLICABLE IF THE MOTOR FRAME IS ISOLATED FROM EQUIPMENT GROUND.

DETAIL "J"
EQUIPMENT BONDING DETAIL
(N.T.S.)

ENGINEERING

CALIFORNIA WATER SERVICE™

DEPARTMENT

REVISIONS:
R-1 REVISED WIRE SPEC. REMOVED DR2 IN EQUIPMENT LIST, APPEND FLOWMETER IN EQUIPMENT LIST. DH 7/8/2021
R-2 REVISED PG&E TRANSFORMER PAD LOCATION & SECONDARY SERVICE CONDUIT ROUTE, ADDED TRANSFORMER PAD FOR THE SINGLE PHASE EXISTING METERS, ADDED CABLE FOR THE TANK MIXER. DH 6-23-2022

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC	X	

PLAT SHEET NO.:
SM-31-22
SCALE:
AS SHOWN
DRAWN BY:
D. HEARN
DESIGNED BY:
M. MACATIAG
TECH REVIEW: DATE:
CHECKED BY: DATE: 9/13/2022
APPROVED BY: DATE: 9/13/2022

REGISTERED PROFESSIONAL ENGINEER — MANDY MACATIAG — No. E22351 — ELECTRICAL — STATE OF CALIFORNIA

TITLE:
MPS - SAN MATEO STA 031
TANK AND BOOSTER PUMP
CONDUIT LAYOUT & DETAILS

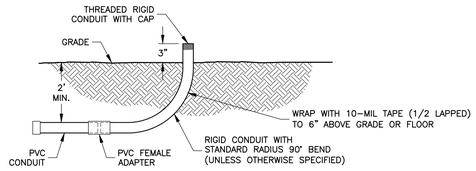
DISTRICT:
116-MPS
SAN MATEO
DATE:
5/5/2021
PROJECT ID.:
00118772
DRAWING NO.:
MPS-5597 R2
SHT 2 OF 3

USERNAME: Dhearn 8/30/2022 1:22 PM
FILENAME: G:\Capital_Projects\116_Mid_Peninsula\00118772_Sta_31_ASCENSION HEIGHTS BAYWOOD TANK\2 - DESIGN\500 - Drawings\working drawings\Electrical Dan 8-22-2022\MPS5597 - Conduit Layout and Details 8-17-2022.dwg

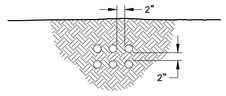
WIRE APPLICATION AND COLOR CODE REQUIREMENTS				
APPLICATION	SUB APPLICATION	WIRE TYPE	SIZE	COLOR CODING
CONTROL PANELS (DOES NOT INCLUDE RTU PANELS)	INTERNAL 120/240VAC POWER	MTW	#12 FOR 20A CKTS #14 FOR 15A CKTS #16 FOR <15A CKTS	BK – L1 HOT, RD – L2 HOT, WH – NEUTRAL, GN – GROUND
	INTERNAL DEVICE WIRING CIRCUITS	MTW	#12 FOR 20A CKTS #14 FOR 15A CKTS #16 FOR <15A CKTS	BK –L1 HOT LEG, RD – L2 HOT LEG, BL – BETWEEN DEVICES, WH – NEUTRAL
	INTERNAL 24VDC DIGITAL DEVICE WIRING CIRCUITS	MTW	#16 MAX	RD – (+), BwR – (–)
	INTERNAL ANALOG SIGNAL WIRING	TSP/TST	#18 MAX	RD OR WH (+), BK (–)
	INSTRUMENT SHLD/GROUND	MTW	#18 MAX	GwY
FIELD WIRING	480V POWER WIRING	XHHW–2	AS REQD BY CIRCUIT SIZE	<=4/0: BN–OR–YL (A–B–C PHASES) >4/0: BK WITH BN–OR–YL PHASE TAPING AT TERMINATION POINTS
	120/240V, 3PH POWER WIRING	XHH2–2	AS REQD BY CIRCUIT SIZE	<=4/0: BK, RD FOR TWO 120V PHASES, OR FOR WILD LEG >4/0: BK WITH BK, RD & OR PHASE TAPING AT TERMINATION POINTS
	120/240VAC DIST. CKTS	XHHW–2	AS REQD BY CIRCUIT SIZE	BK – L1, RD – L2, WH – NEUTRAL, GN – GROUND
	120VAC CONTROL WIRING	THHN/THWN	#12 FOR 20A CKTS #14 FOR 15A CKTS #16 FOR <15A CKTS	BK – HOT LEG, PU – BETWEEN DEVICES & 120VDC DI CIRCUIT WIRING, WH – NEUTRAL
	24VDC DIGITAL WIRING	THHN/THWN	#16 MAX	RD (+), BwR (–)
	ANALOG SIGNAL WIRING	TSP/TST	#16 MAX	RD OR WH (+), BK (–), GwY – SHLD/GND

COLOR CODE ABBREVIATIONS

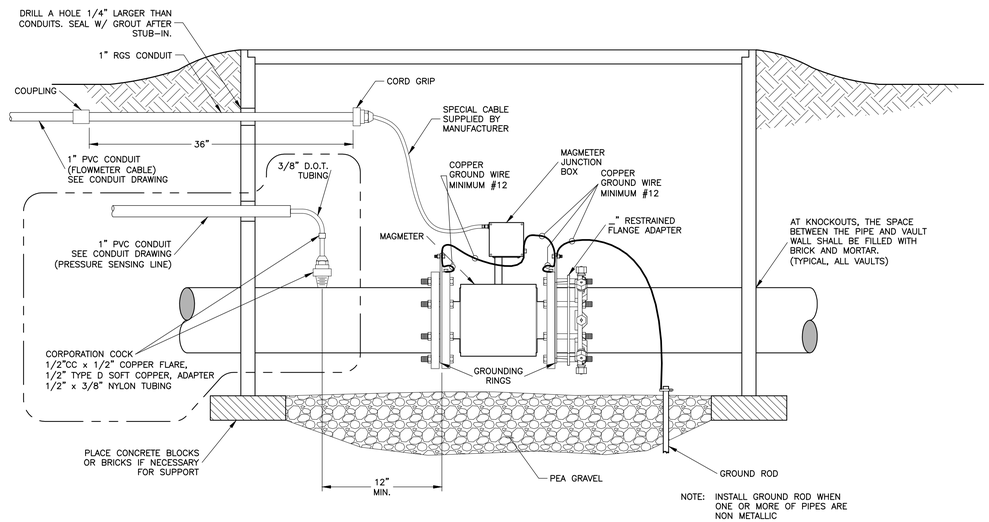
BK	– BLACK	BL	– BLUE
BN	– BROWN	BwR	– BLACK W/RED STRIPE
GN	– GREEN	GwY	– GREEN W/YELLOW STRIPE
GY	– GRAY	OR	– ORANGE
PU	– PURPLE	RD	– RED
WH	– WHITE	YL	– YELLOW



DETAIL "K"
CONDUITS STUBBING UP IN OUTDOOR ENVIRONMENT
(N.T.S.)



DETAIL "L"
MINIMUM SPACING OF BURIED CONDUITS
N.T.S.

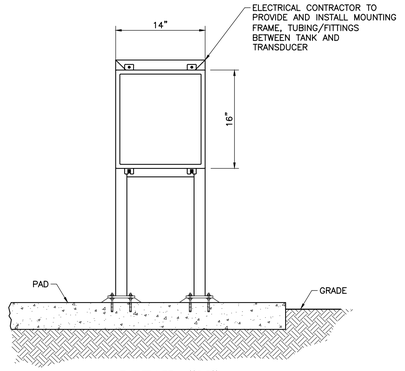


DETAIL "O"
MAG METER WITH HYDRO CONDUIT
(N.T.S.)

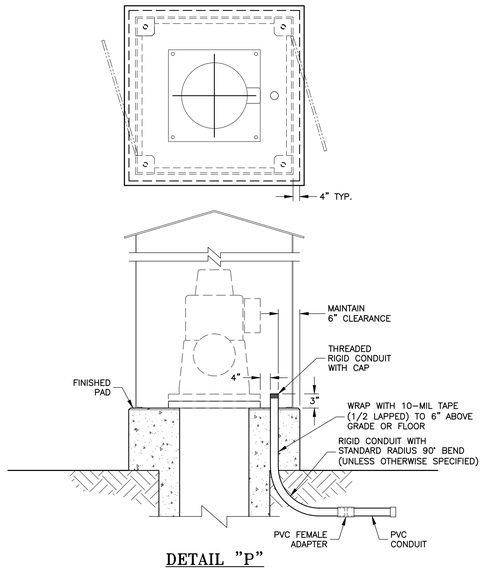
FIELD WIRING WIRE APPLICATION AND COLOR CODE REQUIREMENTS			
APPLICATION	WIRE TYPE	SIZE	COLOR CODING
480V POWER WIRING	XHHW–2	AS REQD BY CIRCUIT SIZE	<=4/0: BN–OR–YL (A–B–C PHASES) >4/0: BK WITH BN–OR–YL PHASE TAPING AT TERMINATION POINTS
120/240V, 3PH POWER WIRING	XHH2–2	AS REQD BY CIRCUIT SIZE	<=4/0: BK, RD FOR TWO 120V PHASES, OR FOR WILD LEG >4/0: BK WITH BK, RD & OR PHASE TAPING AT TERMINATION POINTS
120/240VAC DIST. CKTS	XHHW–2	AS REQD BY CIRCUIT SIZE	BK – L1, RD – L2, WH – NEUTRAL, GN – GROUND
120VAC CONTROL WIRING	THHN/THWN	#12 FOR 20A CKTS #14 FOR 15A CKTS #16 FOR <15A CKTS	BK – HOT LEG, PU – BETWEEN DEVICES & 120VDC DI CIRCUIT WIRING, WH – NEUTRAL
24VDC DIGITAL WIRING	THHN/THWN	#16 MAX	RD (+), BwR (–)
ANALOG SIGNAL WIRING	TSP/TST	#16 MAX	RD OR WH (+), BK (–), GwY – SHLD/GND

COLOR CODE ABBREVIATIONS

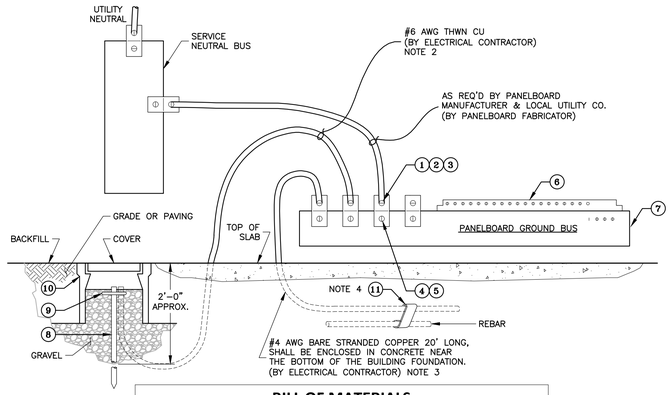
BK	– BLACK	BL	– BLUE
BN	– BROWN	BwR	– BLACK W/RED STRIPE
GN	– GREEN	GwY	– GREEN W/YELLOW STRIPE
GY	– GRAY	OR	– ORANGE
PU	– PURPLE	RD	– RED
WH	– WHITE	YL	– YELLOW



DETAIL "M"
TANK LEVEL TRANSMITTER ENCLOSURE FRAME SUPPORT
(N.T.S.)



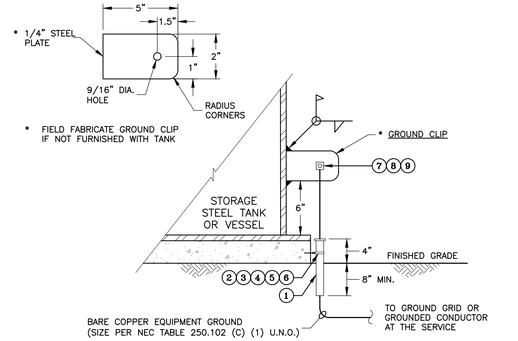
DETAIL "P"
CONDUITS STUBBING UP IN ANY OUTDOOR BOOSTER PUMP
(N.T.S.)



BILL OF MATERIALS		
ITEM	QTY.	DESCRIPTION
1	AS REQ.	GROUND CONNECTOR, GROUND POST, BURNDY #KC26B1
2	AS REQ.	LOCKWASHER, 1/2", SILICON BRONZE
3	AS REQ.	NUT, HEX, 1/2"-13, SILICON BRONZE
4	AS REQ.	BOLT, MACHINE, 1/2" -20x1", W/NUT
5	AS REQ.	LOCKWASHER, 1/2"
6	1	SQUARE D #PK27GTA GROUND BAR MTD ON GND BUS EACH SECTION
7	2	BAR, FLAT COPPER, 1/4" x 2"
8	1	GROUND ROD, COPPER, 3/4"x10'
9	AS REQ.	GROUND ROD CLAMP (HARGER 305)
10	1	CHRISTY BOX, WITH COVER MARKED GROUND
11	AS REQ.	REBAR GROUNDING CLAMP (JONES REBAR CLAMP J30-DB)

NOTE:
1. GROUND ELECTRODE CONDUCTOR THAT CONNECT DIRECT TO GROUND RING ELECTRODE TO BE SIZED ACCORDING TO NEC, TABLE 250.66
2. GROUND ELECTRODE CONDUCTOR THAT CONNECT DIRECT TO GROUND ROD OR PIPE NOT REQUIRED TO BE LARGER THAN #6. NEC 250.66 (A)
3. GROUND ELECTRODE CONDUCTOR THAT CONNECT DIRECT TO CONCRETE ENCASED ELECTRODE IS NOT REQUIRED TO BE LARGER THAN #4. NEC 250.66 (B)
4. GROUND CLAMP NUMBER ARE AS NEEDED, SHOULD BE INSTALLED PER NEC 250.52 (A)(3)

DETAIL "N"
OUTDOOR SERVICE GROUNDING DETAIL
(N.T.S.)



BILL OF MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1 FT	CONDUIT, 1", PVC, SCH. 40 (NOTE 1)
2	1	ANCHOR, CONCRETE, 1/4"-20
3	1	BOLT, MACHINE, 1/4"-20x1", GALVANIZED
4	1	LOCKWASHER, 1/4", GALVANIZED
5	1	ONE HOLE CLAMP, 1", CROUSE-HINDS #MW512
6	1	CLAMP, 1", CROUSE-HINDS #CB3
7	1	GROUND CONNECTOR, GROUND POST, BURNDY #KC26B1
8	1	LOCKWASHER, 1/2", SILICON BRONZE
9	1	NUT, HEX, 1/2"-13, SILICON BRONZE

NOTE:
1. IF INSTALLED OUTDOOR USE 1" RGS CONDUIT WITH BUSHING. IT SHALL BE WRAPPED WITH 10–MIL TAPE ABOVE THE GRADE OR FLOOR.

DETAIL "Q"
STORAGE TANK BONDING DETAIL
(N.T.S.)

ENGINEERING

CALIFORNIA WATER SERVICE™

DEPARTMENT

REVISIONS:
R–1 REVISED WIRE SPEC. REMOVED DR2 IN EQUIPMENT LIST. APPEND FLOWMETER IN EQUIPMENT LIST. DH 7/8/2021
R–2 REVISED PG&E TRANSFORMER PAD LOCATION & SECONDARY SERVICE CONDUIT ROUTE. ADDED TRANSFORMER PAD FOR THE SINGLE PHASE EXISTING METERS. ADDED CABLE FOR THE TANK MIXER. DH 6–23–2022

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC	X	

PLAT SHEET NO.:
SM–31–22

SCALE:
AS SHOWN

DRAWN BY:
D. HEARN

DESIGNED BY:
M. MACATIAG

TECH REVIEW: DATE:

CHECKED BY: DATE:
9/13/2022

APPROVED BY: DATE:
9/13/2022

REGISTERED PROFESSIONAL ENGINEER
MANDY MACATIAG
No. E22351
ELECTRICAL
STATE OF CALIFORNIA

MPS – SAN MATEO STA 031
TANK AND BOOSTER PUMP
CONDUIT LAYOUT & DETAILS

TITLE:

DISTRICT:
116–MPS

SAN MATEO

DATE:
5/5/2021

PROJECT ID.:
00118772

DRAWING NO.:
MPS–5597 R2

SHT 3 OF 3

USERNAME: Dhearn 8/30/2022 1:23 PM
FILENAME: G:\Capital_Projects\116_Mid_Peninsula\00118772_Sta_31_ASCENSION HEIGHTS BAYWOOD TANK\2 – DESIGN\500 – Drawings\working drawings\Electrical Dan 8–22–2022\MPS5597 – Conduit Layout and Details 8–17–2022.dwg

RTU WIRING

DIGITAL OUT		
K-1	NO	
	NC	
DO-0	COM	TB1-12, TB1-13 — BOOSTER A "START"
K-2	NO	
	NC	
DO-1	COM	TB1-14, TB1-15 — BOOSTER A "STOP"
K-3	NO	
	NC	
DO-2	COM	TB1-18, TB1-19 — BOOSTER B "START"
K-4	NO	
	NC	
DO-3	COM	TB1-20, TB1-21 — BOOSTER B "STOP"
K-5	NO	
	NC	
DO-4	COM	TB1-66, TB1-67 — ALTITUDE VALVE SOLENOID ENERGIZE TO OPEN VALVE WHEN OUTPUT IS ON
K-6	NO	
	NC	TANK MIXER START/STOP — R1
DO-5	COM	
K-7	NO	
	NC	
DO-6	COM	
K-8	NO	
	NC	
DO-7	COM	
K-9	NO	
	NC	
DO-8	COM	
K-10	NO	
	NC	
DO-9	COM	
K-11	NO	
	NC	
DOUT	COM	

DIGITAL IN			
DI-0	IN	W100	TO POWER FAIL ALARM ON UPS
	+	W19	
DI-1	IN	W101	BOOSTER A IN AUTO
	+	W19	
DI-2	IN	W102	BOOSTER A "RUN" STATUS
	+	W19	
DI-3	IN	W103	BOOSTER A "WARNING" STATUS
	+	W19	
DI-4	IN	W104	BOOSTER A "ALARM" STATUS
	+	W19	
DI-5	IN	W105	BOOSTER B IN AUTO
	+	W19	
DI-6	IN	W106	BOOSTER B "RUN" STATUS
	+	W19	
DI-7	IN	W107	BOOSTER B IN AUTO
	+	W19	
DI-8	IN	W108	BOOSTER B "ALARM" STATUS
	+	W19	
DI-9	IN	W109	ALTITUDE VALVE (OPEN/CLOSE STATUS)
	+	W19	
DI-10	IN	W110	ATS STATUS
	+	W19	
DI-11	IN	W111	
	+	W19	
DI-12	IN	W112	
	+	W19	
DI-13	IN	W113	
	+	W19	
DI-14	IN	W114	
	+	W19	
DI-15	IN	W115	
	+	W19	

BOOSTER PUMP A VFD CONTROLLER

BOOSTER PUMP B VFD CONTROLLER

(CONTINUED ABOVE RIGHT)

(CONTINUED FROM BELOW LEFT)

RTU WIRING

ANALOG IN		
AI-0	S	W300
	+	W12
	-	W11
AI-1	S	W301
	+	W12
	-	W11
AI-2	S	W302
	+	W12
	-	W11
AI-3	S	W303
	+	W12
	-	W11
AI-4	S	W304
	+	W12
	-	W11
AI-5	S	W305
	+	W12
	-	W11
AI-6	S	W306
	+	W12
	-	W11
AI-7	S	W307
	+	W12
	-	W11

ANALOG OUT	
AO-0	S
	+
	-
AO-1	S
	+
	-
Din1	S
	+
	-
Din2	S
	+
	-
SHLD/GND	
SHLD/GND	
SHLD/GND	
SHLD/GND	

A/C PWR IN	
GROUND	1
LINE	2
NEUTRAL	3
NEUTRAL	4

UPS	
BATTERY	+
BATTERY	-
RTD	

DC PWR DIST.	
BATT	1
RAD	2
PLC	3
AIN	4
DI	5
DO	6
24VDC+	7
24VDC+	8
24VDC+	9
24VDC-	11
24VDC-	12
24VDC-	13

RS 485 BUS	
TX	+
RX	+
TX	-
RX	-

(E) TANK 1 LEVEL (0-10 PSI) — PT 1

TANK 2 LEVEL (0-10 PSI) — PT 2

P3 LOOP 1 — P2 SIGNAL INPUT — SIGNAL SPLITTER QLS QUAD

DISCHARGE PRESSURE (0-100 PSI) — PT 3 — HYDRAULIC ENCLOSURE

MOTOR A SPEED — BOOSTER PUMP A VFD CONTROLLER

MOTOR B SPEED — BOOSTER PUMP B VFD CONTROLLER

120 VAC (NOTE 1) L N GND

MIXER OPERATING CURRENT (STATUS) — R1

REMOTE MOUNT TRANSMITTER ROSEMOUNT 8712

COMBO CABLE

FM1 — MAGNETIC FLOW METER SENSOR ROSEMOUNT 8705 (LOC. VAULT)

BATT. WRG. PROVIDED BY PANEL BUILDER

BATTERY + - (~)

COM2 — COM — RADIO

ETHERNET PORT — OIT

COM4 — POWER MONITOR

ETHERNET CABLE (RATED 600V)

LEGEND AND ABBREVIATIONS

- WIRING TO BE SUPPLIED AND INSTALLED IN FIELD
- WIRING TO BE SUPPLIED AND INSTALLED BY PANELBOARD MANUFACTURER
- BELDEN SHIELDED CABLE #9341, 18 GA. STRANDED, FOIL SHIELD & DRAIN SUPPLIED & INSTALLED IN FIELD
- BELDEN SHIELDED CABLE #9341, 18 GA. STRANDED, FOIL SHIELD & DRAIN SUPPLIED & INSTALLED BY PANELBOARD MANUFACTURER
- DATA – WIRING TO BE SUPPLIED AND INSTALLED BY PANELBOARD MANUFACTURER
- ▲ TERMINAL BLOCK IN RTU
- ■ OR ⊘ OTHER TERMINAL BLOCKS/CONNECTIONS

NOTES:
1. REFER TO DWG MPS-5595 SHT1, CB6.

ENGINEERING

DEPARTMENT

REVISIONS:
R-1 ADDED MIXER TANK START/STOP COMMAND AND STATUS WIRING TERMINATION. DH 6/27/2022

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC		

PLAT SHEET NO.: SM-31-22

SCALE: AS SHOWN

DRAWN BY: D.HEARN

DESIGNED BY: M. MACATIAG

TECH REVIEW: DATE:

CHECKED BY: DATE: 9/13/2022

APPROVED BY: DATE: 9/13/2022

REGISTERED PROFESSIONAL ENGINEER — MANDY MACATIAG — No. E22351 — ELECTRICAL — STATE OF CALIFORNIA

TITLE:
MPS - SAN MATEO STA 031
TANK AND BOOSTER PUMP
RTU TERMINAL WIRING DIAGRAM

DISTRICT: 116-MPS

SAN MATEO

DATE: 6/22/2021

PROJECT ID.: 00118772

DRAWING NO.: MPS-5596 R1

SHT 1 OF 1

LEGEND AND ABBREVIATION

- WIRING TO BE SUPPLIED AND INSTALLED BY PANELBOARD MANUFACTURER
- WIRING TO BE SUPPLIED AND INSTALLED IN FIELD
- ▲ TERMINAL BLOCK IN RTU (SEE DWG# CW-1030-R3)
- (F) FEMALE CONNECTION
- LS DOOR LIMIT SWITCH
- GROUND CONNECTION THROUGH GROUND ROD
- 20 AMP GFCI TYPE RECEPTACLE
- (E) EXISTING

NEW PG&E METER
UTILITY PG&E 100 AMP 3Ø 4 WIRE 120/240 VAC
CB26 100A/3P
P/B NEUT BUSS
P/B GND BUSS
PANELBOARD GROUND ROD

125A, 240V, 3P AUTOMATIC TRANSFER SWITCH
XFR1
NA LA
NB LB
NC LC
NEUTRAL BUS
GROUND BUS
EA EB EC

(120 VAC FROM CB7) TB1-24 TB1-25
SEL-849
1A 1B 1C
F1 F4 F7 F10
E1 E2
TB1-24 R1
ETHERNET CABLE (600V RATED)
SEL-3421 HMI
ETHERNET SWITCH
TO RTU PANEL
ETHERNET CABLE (600V RATED)

FP FU1-3 1A
CT 100/5

1-2"C
(3) #1 AWG
(1) #1 NEUTRAL
(1) #8 GROUND
1N AG L1 L2 L3
GENERATOR TAP BOX CAMLOCK RECEPTACLE (MALE RECEPTACLES)
(5) #1 AWG DLO CABLE CAM-LOK POWER CABLES WITH MALE-FEMALE CONNECTORS

GND. BUS (F) — EN
GND. BUS (F) — EG
LA (F) — EA
LB (F) — EB
GEN. CB 100/3P
LC (F) — EC

(E) POTABLE GENERATOR 50kW
60HZ, 120/240V, 3P, 4W
PROVIDED BY CWS

SHEET NOTES

1. THE B PHASE SHALL BE THAT PHASE HAVING THE HIGHER VOLTAGE TO GROUND ON A 3-PHASE, 4 WIRE DELTA CONNECTED SYSTEMS.

1" CONDUIT
(3) #10 AWG
(1) #10 GROUND

CB27 25A/3P
CB28 25A/3P

VFD
M
BOOSTER PUMP A
3 HP MOTOR w/INTEGRATED FREQUENCY CONVERTER

VFD
M
BOOSTER PUMP B
3 HP MOTOR w/INTEGRATED FREQUENCY CONVERTER

TO P/B NEUTRAL BUS

(LC1) LOAD CENTER
CB25 40A/2P
CONTINUED BELOW

CB1 20A
CB2 20A
CB3 20A
TB1-1 TB1-4 TB1-7
TB1-3 TB1-6 TB1-9
1N

TANK 2 MIXER CONTROL BOX
(E) TANK 1 CATHODIC PROTECTION PANEL
TANK 2 CATHODIC PROTECTION PANEL

LOAD CENTER NEUTRAL BUSS
CONTINUED BELOW

(LC1) LOAD CENTER
CONTINUED FROM ABOVE
CONTINUED TO SHT. 2

CB4 15A
CB5 15A
CB6 15A
CB7 15A
CB8 15A

SS1
HAND OFF AUTO
BOOSTER A "IN AUTO" DI1
R1A
CB27A
R2A PB1 START K1 DO0
R2B
VFD A START/STOP COMMAND
STOP K2 DO1
R2
BOOSTER A

SS2
HAND OFF AUTO
BOOSTER B "IN AUTO" DI5
R1B
CB28A
R3A PB2 START K3 DO2
R3B
VFD B START/STOP COMMAND
STOP K4 DO3
R3
BOOSTER B

ROSEMOUNT FLOW TRANSMITTER DISPLAY FM1

SEL-849
SEL - 849 CONTROL POWER
R1

TH1 TH2 TH3
P/B FAN #1 P/B FAN #2 P/B FAN #3

LOAD CENTER NEUTRAL BUSS
CONTINUED FROM ABOVE
CONTINUED TO SHT. 2

ENGINEERING

DEPARTMENT

REVISIONS:

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC		X

PLAT SHEET NO.:

SCALE: AS SHOWN

DRAWN BY: D. HEARN

DESIGNED BY: M. MACATIAG

TECH REVIEW: DATE:

CHECKED BY: DATE: 7/16/2021

APPROVED BY: DATE: 7/16/2021

REGISTERED PROFESSIONAL ENGINEER — MANDY MACATIAG — No. E22351 — ELECTRICAL — STATE OF CALIFORNIA

MPS - SAN MATEO STA 031
TANK AND BOOSTER PUMP
ELECTRICAL SCHEMATIC

TITLE:

DISTRICT: 116-MPS

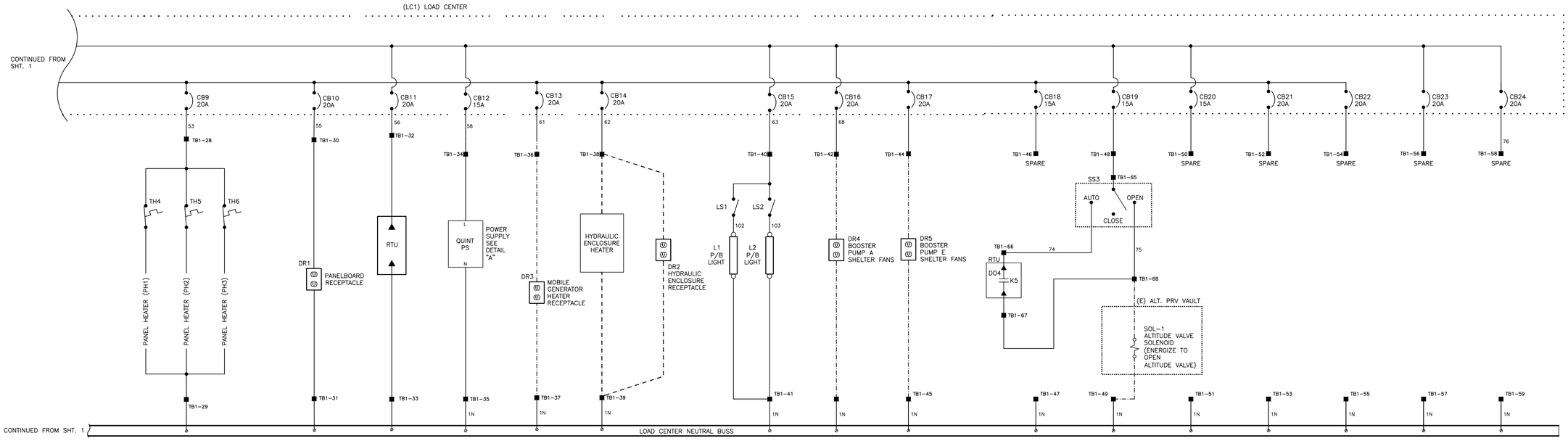
SAN MATEO

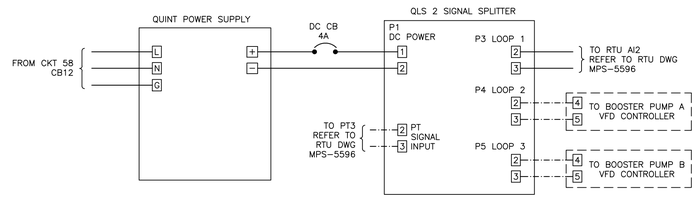
DATE: 6/22/2021

PROJECT ID.: 00118772

DRAWING NO.: MPS-5595

SHT 1 OF 2





DETAIL "A"

CONNECTION DIAGRAM FOR VFD PID CONTROL

ENGINEERING

DEPARTMENT

REVISIONS:

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC	X	

PLAT SHEET NO.:

SCALE: AS SHOWN

DRAWN BY: D. HEARN

DESIGNED BY: M. MACATIAG

TECH REVIEW: DATE:

CHECKED BY: DATE: 7/16/2021

APPROVED BY: DATE: 7/16/2021

REGISTERED PROFESSIONAL ENGINEER
MANDY MACATIAG
No. E22351
ELECTRICAL
STATE OF CALIFORNIA

TITLE:
MPS - SAN MATEO STA 031
TANK AND BOOSTER PUMP
ELECTRICAL SCHEMATIC

DISTRICT: 116-MPS

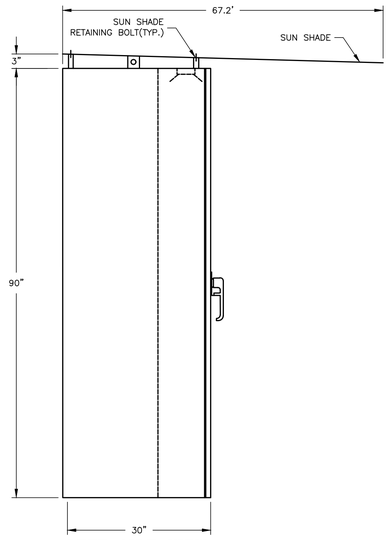
SAN MATEO

DATE: 6/22/2021

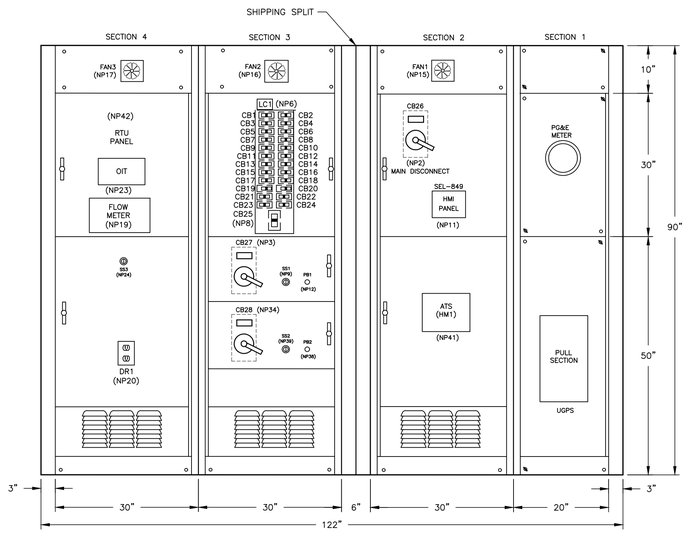
PROJECT ID.: 00118772

DRAWING NO.: MPS-5595

SHT 2 OF 2

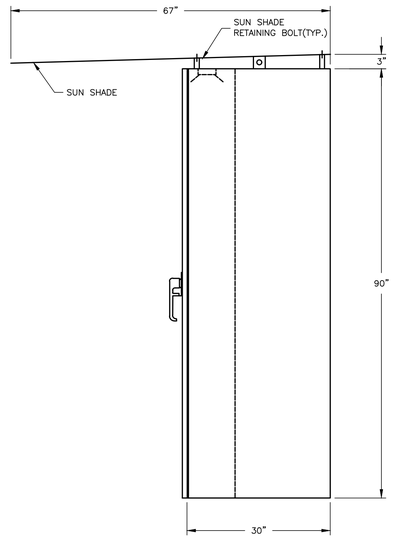


LEFT SIDE VIEW

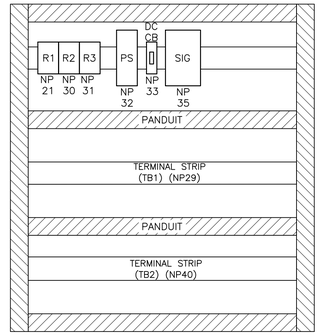


FRONT EXTERIOR VIEW

(EXTERIOR DOORS AND SUN SHADE REMOVED FOR CLARITY)

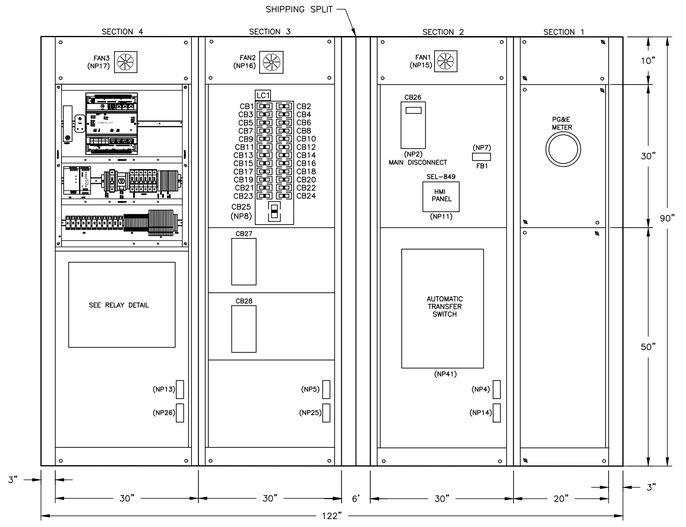


RIGHT SIDE VIEW



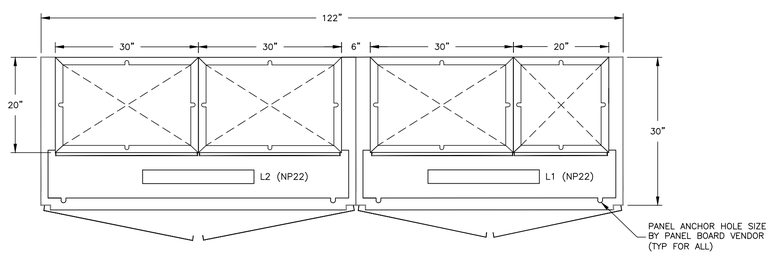
RELAY DETAIL

N.T.S.

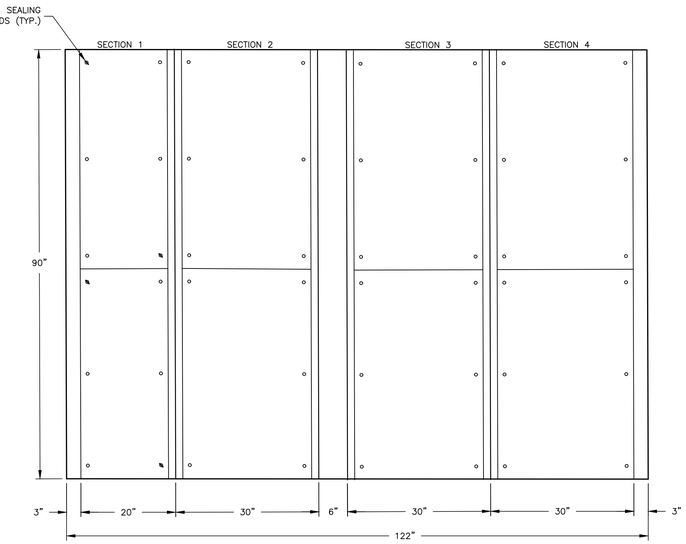


FRONT INTERIOR VIEW

(EXTERIOR/INTERIOR DOORS AND SUN SHADE REMOVED FOR CLARITY)



BASE DETAIL



REAR VIEW

DETAIL "A"
(NP10)

NOTES:

1. ONE NP10 REQUIRED PER EACH PANELBOARD SECTION.
2. BOLT NAME PLATE TO PANELBOARD.

ENGINEERING

CALIFORNIA WATER SERVICE

DEPARTMENT

REVISIONS:

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC		X

PLAT SHEET NO.:

SCALE: AS SHOWN

DRAWN BY: D. HEARN

DESIGNED BY: M. MACATIAG

TECH REVIEW: DATE:

CHECKED BY: DATE:

M.Macatiag

APPROVED BY: DATE:

7/16/2021

REGISTERED PROFESSIONAL ENGINEER
MANDY MACATIAG
No. E22351
ELECTRICAL
STATE OF CALIFORNIA

TITLE:

MPS - SAN MATEO STA 031
TANK AND BOOSTER PUMP
PANELBOARD LAYOUT

DISTRICT: 116-MPS

SAN MATEO

DATE: 6/22/2021

PROJECT ID.: 00118772

DRAWING NO.: MPS-5598

SHT 1 OF 2

LIST OF EQUIPMENT TO BE SUPPLIED BY CWSC AND INSTALLED & WIRED BY PANELBOARD MANUFACTURER

ITEM	QUANTITY	MFR	PART NUMBER	DESCRIPTION
ATS	1	CUMMINS	OTPC-125	125A, 120/240V, 3PH, 4W, AUTOMATIC TRANSFER SWITCH
FT1	1	ROSEMOUNT	8712EM	REMOTE MOUNT TRANSMITTER DISPLAY

OUTDOOR PANELBOARD MANUFACTURING NOTES:

1. PANELBOARD SHALL BE NEMA 3R RATED FOR OUTDOOR, MADE OF 12GA. STEEL, 20" DEEP.
2. PANELBOARD SHALL BE RATED FOR A MINIMUM OF 35,000 AMPS A.I.C. CURRENT RATING. VOLTAGE, CURRENT AND SHORT CIRCUIT RATINGS SHALL BE LABELED ON THE FRONT OF THE PANELBOARD.
3. ALL EQUIPMENT INSTALLED IS REQUIRED TO BE LISTED AND LABELED BY UNDERWRITER LABORATORIES.
4. THE PULL BOX & METER PANEL SHALL BE UL APPROVED AND COMPLY WITH PACIFIC GAS & ELECTRIC SPECIFICATIONS.
5. ALL CONSTRUCTION AND WIRING SHALL COMPLY WITH NEC, LOCAL AND STATE REGULATIONS.
6. MOUNTING PANELS SHALL BE AT LEAST 3" FROM BOTTOM OF PANELBOARD.
7. BACK PANEL SHALL BE AS CLOSE AS POSSIBLE TO THE REAR OF THE PANELBOARD.
8. HINGED DOORS SHALL HAVE FULL LENGTH PIANO HINGES.
9. INSTALL 3-POINT LATCH(ES) ON DOOR IN FULL LENGTH PANEL SECTION(S). INSTALL 1-POINT LATCH(ES) ON ALL DOORS IN HALF LENGTH PANEL SECTION(S).
10. INSTALL POSITIVE DOOR STOPS TO HOLD ALL DOORS IN FULLY OPEN POSITION.
11. PARTITIONS BETWEEN SECTIONS SHALL HAVE OPENINGS AT THE TOP AND BOTTOM OF EACH SECTION TO RUN WIRES. THE OPENINGS SHALL BE 6" HIGH AND AS WIDE AS THE PANEL PERMITS. THE OPENINGS SHALL HAVE MOLDINGS AROUND THE EDGES OF THE SHEET METAL TO PREVENT DAMAGE OF INSULATION ON WIRES.
12. INSTALL REMOVABLE LIFTING EYES ON EACH END OF THE PANELBOARD AND SHIPPING SPLIT(S).
13. LOCATE ALL STARTER OVERLOAD RESETS ON FRONT OF PANEL MADE FROM METAL RODS.
14. INSTALL 18" x 12" VENT MADE OF 18GA. CROSS AIRLINE PERFORATED STEEL ON PANEL DOOR(S) AS SHOWN ON DRAWINGS.
15. ALL FANS SHALL BE MOUNTED ON THE TOP FRONT.
16. MOUNT FANS ON SCREW MOUNTED PANELS FOR EASY REMOVAL. AIR SHALL BE DRAWN FROM INSIDE OF THE PANELBOARD.
17. MOUNT EQUIPMENT AT A MINIMUM OF 10" FROM BOTTOM OF PANELBOARD.
18. INSTALL NAMEPLATES AS SHOWN. ALL NAMEPLATES SHALL HAVE 1/8" MOUNTING HOLES.
19. NEED METAL PANEL DIRECTORY FOR ALL BREAKERS OF THE LOAD CENTER (LC1). DIRECTORY SHALL BE LABELED (TYPED) AS INDICATED ON TABLE "LABELING FOR LOAD CENTER".
20. BREAKER HANDLES SHALL BE MOUNTED AT NO HIGHER THAN 74" FROM THE BOTTOM OF THE PANELBOARD.
21. ALL 240/600 VAC RATED CIRCUIT BREAKERS TO HAVE LOCKOUT WITH PADLOCK PROVISION. ALL BREAKER LOCKOUTS SHALL HAVE PROVISION TO BE MANUALLY OVERRIDDEN.
22. NUMBER ALL WIRE TERMINATIONS AS SHOWN, WITH BRADY MARKERS OR EQUAL.
23. INSTALL LANDING LUGS RATED AT AMPERAGE OF MAIN BREAKER AS SHOWN ON DRAWING.
24. INSTALL NEUTRAL BLOCK AND TERMINAL BLOCKS AS SHOWN.
25. THE NEUTRALS FROM ALL CONTROL BRANCHES SHOULD BE HOME RUN TO THE NEUTRAL BLOCK.
26. TWO STRIPS OF WIREWAY/PANDUIT SHALL BE INSTALLED ABOVE AND BELOW TB1. THE WIREWAY/PANDUIT SHALL RUN THE WHOLE WIDTH OF THE SECTION.
27. ALL 120 VAC CONTROL WIRING, EXCEPT ON DOORS, SHALL BE RUN IN WIREWAY/PANDUIT LOCATED AS NEEDED.
28. ALL CONTROL COMPONENTS, WIRES AND TERMINATIONS SHALL BE EASILY ACCESSIBLE WITHOUT REMOVING ANY OTHER CONTROL COMPONENT OR THE BACK PANEL. NO WIRING OR TERMINATIONS SHALL BE BEHIND THE BACK PANEL.
29. THE FINISH SHALL BE U/L LISTED FOR OUTDOOR EQUIPMENT AND SHALL BE THE COLOR, "GROUSE TAN" PER THE COLOR CHIP SUPPLIED BY CWSC. ALL SURFACES SHALL BE THOROUGHLY CLEANED AND BONDERIZED. MINIMUM FINISH COAT TO BE 1.5 MILS THICK. THIOKOL PULVALURE POWDER PAINT ELECTROSTATICLY APPLIED AND BAKED ON IS PREFERRED.
30. LOCATION OF COMPONENTS SHALL NOT BE CHANGED WITHOUT APPROVAL FROM CWSC.
31. NO SUBSTITUTE PARTS WILL BE ACCEPTED WITHOUT APPROVAL FROM CWSC.
32. SUBMIT DRAWINGS TO CWSC FOR APPROVAL AT LEAST 2 WEEKS BEFORE FABRICATION. ALLOW AT LEAST ONE WEEK FOR DRAWING APPROVAL.
33. MANUFACTURER TO OBTAIN WRITTEN APPROVAL FROM LOCAL ELECTRIC UTILITY COMPANY BEFORE DELIVERY. FAX THE APPROVAL NOTICE TO CWSC.
34. BOTTOM SURFACE OF PANEL SHALL BE HOT GALVANIZED AND TREATED WITH BASE UNDERCOATING COMPOUND TO PROTECT AGAINST RUST.
35. PROVIDE 15% ADDITIONAL TERMINALS OF EACH TYPE ON TB1, TB2, AND TB3 .
36. THE OWNER WILL INSPECT THE PANELBOARD ON THE SHOP FLOOR BEFORE SHIPMENT.
37. NO MORE THAN TWO EXTERNAL WIRES SHALL LAND ON ANY TERMINAL.
38. ALL DEVICES MOUNTED ON THE DOORS SHALL BE CONNECTED FROM GROUND STUD ON RESPECTIVE DEVICE TO GROUND SCREW LOCATED ON THE RESPECTIVE DOORS WITH #14AWG WIRE AND NO MORE THAN 6" LONG. THE DOOR OF THE PANELBOARD SHALL BE BONDED TO THE CABINET USING A SHORT SECTION OF BRAID.
39. INSTALL AND WIRE RTU PANEL WHICH WILL BE PROVIDED BY CALIFORNIA WATER SERVICE CO.
40. ALL GROUNDED CONDUCTOR #10 AND SMALLER SHALL BE SOLID WHITE.
41. ALL GROUNDING CONDUCTOR #10 AND SMALLER SHALL BE SOLID GREEN.
42. EXISTING FLOWMETER TRANSMITTER DISPLAY TO BE INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.

LABELING FOR LOAD CENTER (LC1)

ITEM	DESCRIPTION
CB1	TANK 2 MIXER CONTROL BOX
CB2	TANK 1 CATHODIC PROTECTION PANEL
CB3	TANK 2 CATHODIC PROTECTION PANEL
CB4	BOOSTER A CONTROL
CB5	BOOSTER B CONTROL
CB6	FLOW METER FT1 OIP
CB7	SEL-849 CONTROL POWER
CB8	P/B FANS
CB9	P/B HEATERS
CB10	P/B RECEPTACLE (DR1)
CB11	RTU POWER
CB12	QUINT POWER SUPPLY
CB13	MOBILE GENERATOR HEATER RECEPTACLE (DR3)
CB14	HYDRAULIC ENCLOSURE HEATER AND RECEPTACLE (DR2)
CB15	P/B LIGHTS
CB16	BOOSTER PUMP A SHELTER FANS RECEPTACLE (DR4)
CB17	BOOSTER PUMP B SHELTER FANS RECEPTACLE (DR5)
CB18	SPARE
CB19	ALTITUDE SOLENOID VALVE
CB20	SPARE
CB21	SPARE
CB22	SPARE
CB23	SPARE
CB24	SPARE

INSTALL NAMEPLATES AS SHOWN NAMEPLATE SCHEDULE (1" X 3") UNLESS OTHERWISE SPECIFIED

ITEM	DESCRIPTION
NP1	MPS STATION 31 (2" x 8")
NP2	CB26
NP3	BOOSTER A CB27
NP4	TH1 THERMOSTAT
NP5	TH2 THERMOSTAT
NP6	LOAD CENTER (LC1)
NP7	FUSE BLOCK FB1
NP8	CB25 (FOR LC1)
NP9	SS1 BOOSTER A HAND-OFF-AUTO
NP10	SEE DETAIL "A" SHEET 1 OF 2
NP11	SEL-849 POWER MONITOR RELAY
NP12	BOOSTER A START
NP13	TH3 THERMOSTAT
NP14	TH4 THERMOSTAT
NP15	FAN 1
NP16	FAN 2
NP17	FAN 3
NP18	NOT USED
NP19	FT1-OIP
NP20	DR1
NP21	R1
NP22	LED LIGHTS (L1, L2)
NP23	OIT
NP24	SS3 ALTITUDE VALVE HAND-OFF-AUTO
NP25	TH5 THERMOSTAT
NP26	TH6 THERMOSTAT
NP27	LS1
NP28	LS2
NP29	TB1
NP30	R2
NP31	R3
NP32	POWER SUPPLY
NP33	DC CB
NP34	BOOSTER B CB28
NP35	SIGNAL SPLITTER
NP36	NOT USED
NP37	NOT USED
NP38	BOOSTER B START
NP39	SS2 BOOSTER B HAND-OFF-AUTO
NP40	TB2
NP41	ATS
NP42	RTU

LIST OF EQUIPMENT TO BE SUPPLIED, INSTALLED AND WIRED BY PANELBOARD MANUFACTURER

ITEM	QUANTITY	MFR	PART NUMBER	DESCRIPTION
CB25	1	EATON	BAB2040	CIRCUIT BREAKER, 2 POLE, 40AMP, MAIN BREAKER FOR LOAD CENTER
CB26	1	EATON	FD3100	CIRCUIT BREAKER, 3 POLE, 100AMP, MAIN BREAKER FOR PANELBOARD
CB27	1	EATON	FD3025	CIRCUIT BREAKER, 3 POLE, 25AMP, FEEDER BREAKER FOR BOOSTER PUMP A
CB28	1	EATON	FD3025	CIRCUIT BREAKER, 3 POLE, 25AMP, FEEDER BREAKER FOR BOOSTER PUMP B
CB4 -CB8, CB11, CB12, CB18 - CB20	9	EATON	BAB1015	CIRCUIT BREAKER, 1 POLE, 15AMP, IN LOAD CENTER
CB1- CB3, CB9 - CB11, CB13 - CB17, CB21 - CB24	15	EATON	BAB1020	CIRCUIT BREAKER, 1 POLE, 20AMP, IN LOAD CENTER
DR1	1	HUBBEL	GFRST20W	RECEPTACLE, DUPLEX, GFCI, LED INDICATOR, 20AMP, 120VAC, 10K AIC, WITH SELF TEST, WHITE
FAN 1 - FAN 3	3	ORION FANS	OA172SAP-11-1TB	FAN, COOLING, 6", 235CFM, 115VAC, W/ WIRE GUARD
PH1 - PH3	3	CHROMALOX	OT-815/129330	HEATER, STRIP, 120V, 150 WATT, 8" L
LC1	1	EATON	PRL1INT30CKT-R19-HCT02	PANELBOARD 100A BUS, 240/120VAC, 1PH-3W, 10KAIC, 30 CKT
SS1 - SS3	3	ALLEN BRADLEY	800H-JR2B	SWITCH, SELECTOR, 3 POSITION, 2 NO - 2 NC NEMA A600/P600 CONTACTS, NEMA 4/4X, 30.5MM, MAINTAINED, NON-ILLUMINATED, BLACK
TH1 -TH3	3	HOFFMAN	ATEMNO	THERMOSTAT, RANGE 30-140°F, 15 AMP 120V, NO CONTACT (FANS)
TH4 - TH6	3	HOFFMAN	ATEMNC	THERMOSTAT, RANGE 30-140°F, 15 AMP 120V, NC CONTACT (HEATERS)
R1 - R3	3	IDEC	RH4B-UL-AC120V	RELAY, 4PDT, 10 AMP, INDICATOR, 14 BLADE MOUNT, 120VAC COIL
	3		SH4B-05	SOCKET, RELAY, 14 BLADE, SCREW/SNAP MOUNT (FOR "RH" SERIES RELAYS), 70mm L x 50mm W x 28mm H)
PM1	1	SCHWEITZER EN	084900101000000	POWER MONITOR, 480V VOLTAGE INPUT, 3-PH, 120VAC CONTROL PWR, DIN RAIL MOUNT, 6 INTERNAL WETTED DI, 4 DO, ETHERNET PORT
	1		3421XXX1	REMOTE DISPLAY, LCD, (FOR SEL 849 POWER MONITOR), W/3 METERCABLE
FB	3	PHOENIX CONTACT	3048616	FUSEHOLDER, LEVER TYPE, W/ LED BFI, 600V RATED, (240VAC), 30A, 1 POLE, #18-4 AWG, 10.3x38mm CLASS CC FUSE, COLOR: BLK (UK 10,3-CC HESILED)
FU1-3	3	BUSSMANN	FNQ-R-1	FUSE, 1 AMP, 600V, TIME DELAY, 13/32"D x 1-1/2"L, REJECTION TYPE
CT	3	FLEX-CORE	2RL-201	TRANSFORMER, CURRENT, 100:5 RATIO, BURDEN 4.0VA, ±1.0% ACCURACY, 1.05" WINDOW DIA., WITH WIRE LEADS
SB1	1	MARATHON	1506SC	SHORTING BLOCK, WITH BRASS INSERT, 6 SHORTING PINS, 600V, 10-16 AWG WIRE, 6 POLE
PB1, PB2	2	ALLEN BRADLEY	800H-AR1B	SWITCH, PUSHBUTTON, MOMENTARY, 2 NO - 2 NC NEMA A600/P600 CONTACTS, NEMA 4/4X, 30.5MM, BOOTLESS FLUSH HEAD, GREEN
TB-M	4	PHOENIX CONTACT	803122	TERMINAL STRIP MARKER, COLOR: GRAY
TB	100	PHOENIX CONTACT	3044102	TERMINAL BLOCK, FEED-THROUGH, 600V RATED (120VAC), 30A, #26-10 AWG, COLOR: GRAY (UT 4)
TB-COV	4	PHOENIX CONTACT	3047028	TERMINAL BLOCK END COVER, FITS UT 4 & UT 6 STYLE, COLOR: GRAY (D-UT 2,5/10)
TB-ANC	7	PHOENIX CONTACT	800886	TERMINAL BLOCK END CLAMP, SCREW CLAMP DOWN, COLOR: GRAY (E/NS 35 N)
PS	1	PHOENIX CONTACT	QUINT-PS/1AC/24DC/5	DIN RAIL POWER SUPPLY UNIT 24VDC, 5AMPS
SIG	1	LAUREL ELECTRONICS	QLS-1	QLS SIGNAL SPLITTER
DC CB	1	ABB	S201 K4	DC CIRCUIT BREAKER FOR SIGNAL SPLITTER, 4A, 4 POLE
L1, L2	2	ELCO LIGHTING	EUB22L30W	"LIGHT, LED, 22.0""L X 3.5""D X 1""H, 120VAC, 8.0 WATT, 580 LUMENS"
LS1, LS2	2			DOOR LIMIT SWITCH FOR PANELBOARD LIGHTS
OIT	1	RED LION	G10C0000	OIT, 10" LCD TOUCHSCREEN DISPLAY, (1) ETHERNET, (1) RS232, (1) USB, (1) RS485, 24 VDC
RTU	1	CWS STANDARD	CW-1034	RTU/RADIO SCHEMATIC FOR SCADA PACK 574

PANELBOARD WIRE APPLICATION AND COLOR CODE REQUIREMENTS

SUB APPLICATION	WIRE TYPE	SIZE	COLOR CODING
480V POWER WIRING	XHHW-2	AS REQD BY CIRCUIT SIZE	<=4/0: BN-OR-YL FOR A-B-C PHASES, WH NEUTRAL, GN GROUND >4/0: BK WITH COLORED PHASE TAPE
120/240V, 3PH POWER WIRING	XHHW-2	AS REQD BY CIRCUIT SIZE	<=4/0: BK-RD FOR TWO 120V PHASES, OR-WILD LEG PHASE, WH NEUTRAL, GN GROUND >4/0: BLACK WITH COLORED PHASE TAPE
120/208V POWER WIRING	SIS	AS REQD BY CIRCUIT SIZE	<=4/0: BK-RD-BL FOR A-B-C PHASE, WH NEUTRAL, GN GROUND >4/0: BK WITH COLORED PHASE TAPE
INTERNAL 120/240VAC DIST. WIRING	SIS	#12 MIN	BK FOR L1, RD FOR L2, WH - NEUTRAL, GN - GROUND
INTERNAL CONTROL CIRCUIT/RELAY WIRING	SIS	#12 FOR 20A CKTS #14 FOR 15A CKTS	GY - NON NEUTRAL, WH - NEUTRAL

COLOR CODE ABBREVIATIONS
BK - BLACK
BL - BLUE
BN - BROWN
BwR - BLACK W/RED STRIPE
GN - GREEN
GwY - GREEN W/YELLOW STRIPE
GY - GRAY
OR - ORANGE
RD - RED
WH - WHITE
YL - YELLOW

ELECTRICAL WIRING
17-1 WIRE TABLE FOR PANELBOARDS
WIRE APPLICATION TYPE AND COLOR CODING FOR PANELBOARDS

CONTROL PANEL WIRE APPLICATION AND COLOR CODE REQUIREMENTS
(DOES NOT APPLY TO RTU PANELS)

APPLICATION	WIRE TYPE	SIZE	COLOR CODING
INTERNAL 120/240VAC POWER	MTW	#12 FOR 20A CKTS #14 FOR 15A CKTS #16 FOR <15A CKTS	BK - L1 HOT, RD - L2 HOT, WH - NEUTRAL, GN - GROUND
INTERNAL DEVICE WIRING CIRCUITS	MTW	#12 FOR 20A CKTS #14 FOR 15A CKTS #16 FOR <15A CKTS	BK -L1 HOT LEG, RD - L2 HOT LEG, BL - BETWEEN DEVICES, WH - NEUTRAL
INTERNAL 24VDC DIGITAL DEVICE WIRING CIRCUITS	MTW	#16 MAX	RD - (+), BwR - (-)
INTERNAL ANALOG SIGNAL WIRING	TSP/TST	#18 MAX	RD OR WH (+), BK (-)
INSTRUMENT SHLD/GROUND	MTW	#18 MAX	GwY

COLOR CODE ABBREVIATIONS
BK - BLACK
BL - BLUE
BN - BROWN
BwR - BLACK W/RED STRIPE
GN - GREEN
GwY - GREEN W/YELLOW STRIPE
GY - GRAY
OR - ORANGE
RD - RED
WH - WHITE
YL - YELLOW

ELECTRICAL WIRING
17-2 WIRE TABLE FOR CONTROL PANELS
WIRE APPLICATION TYPE AND COLOR CODING FOR PANELBOARDS

ENGINEERING

DEPARTMENT

REVISIONS:

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC	X	

PLAT SHEET NO.:

SCALE: AS SHOWN

DRAWN BY: D. HEARN

DESIGNED BY: M. MACATIAG

TECH REVIEW: DATE:

CHECKED BY: DATE:

APPROVED BY: DATE: 7/16/2021

REGISTERED PROFESSIONAL ENGINEER
MANDY MACATIAG
No. E22351
ELECTRICAL
STATE OF CALIFORNIA

MPS - SAN MATEO STA 031
TANK AND BOOSTER PUMP
PANELBOARD LAYOUT

TITLE:

DISTRICT: 116-MPS

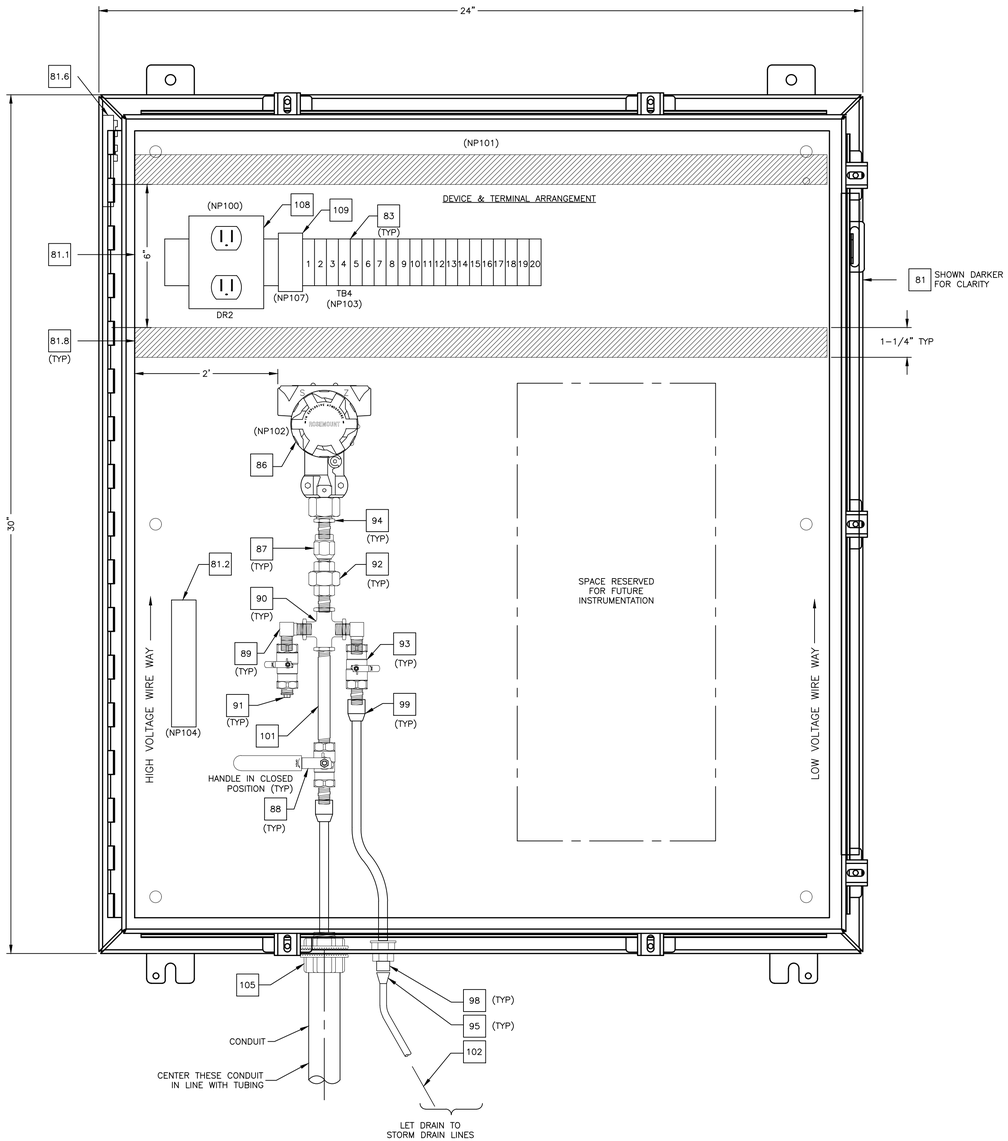
SAN MATEO

DATE: 6/22/2021

PROJECT ID.: 00118772

DRAWING NO.: MPS-5598

SHT 2 OF 2



HYDENC EQUIPMENT LIST

Itm #	ITEM ID	QUAN.	DESCRIPTION	HYDENC FABRICATOR SUPPLY	HYDENC FABRICATOR INSTALL	CWS SUPPLY	CWS INSTALL	INSTALLATION CONTRACTOR SUPPLY	INSTALLATION CONTRACTOR INSTALL	Itm #
81.00	HYDENC	1	NEMA 3R ENCLOSURE, 24" x 30" x 8" (SINGLE DOOR) – HOFFMAN MODEL #A30H24BLP WITH ATTENDANT EQUIPMENT:	X	X					81
81.1		1	-- BACKPANEL – HOFFMAN MODEL #A-30P24 27" x 21"	X	X					81.1
81.2		1	PANEL HEATER, 300 WATTS, 120 VAC, WATLOW MODEL #WTL04015OC1D001K MAINTAIN FACTORY REQUIRED CLEARANCES WHEN INSTALLING.	X	X					81.2
81.4		1	-- DOOR STOP – HOFFMAN MODEL #A-DSTOPK	X	X					81.4
81.6		1	-- GROUNDING BAR – SQUARE D MODEL #PK23GTA (OR EQUAL.)	X	X					81.6
81.8		A/REQ'D	-- PANDUIT – 1" x 3"	X	X					81.8
83	TB4 TO AS REQUIRED	10.00	TERMINAL BLOCKS, DIN RAIL MOUNTED – WEIDMULLER 600V TOUCH SAFE	X	X					83
86	PT3 (NP102)	1	PRESSURE TRANSMITTER, 0 TO 100 PSI RATING (ADJUST FROM 0 TO 150 PSI), WITH 1/2-14 NPTF PROCESS CONNECTION AND 1/2-14 NPT CONDUIT CONNECTION – ROSEMOUNT MODEL #2088G2S22A1B4DW	X		X				86
87	--	1	PRESSURE SNUBBER, POROUS SS DISC TYPE, WITH 316 SS HOUSING AND 1/4" NPT PROCESS CONNECTIONS – CHEMQUIP P/N 2556E (OR EQUAL.)	X	X					87
88	--	1	VALVE, BALL, 316 STAINLESS STEEL, 1/4" NPT – MCMASTER CARR MODEL #6469K18	X	X					88
89	--	2	MALE ELBOW, ¼" X ¼" MPT, 316 STAINLESS STEEL, MCMASTER CARR MODEL #51205K112	X	X					89
90	--	1	CROSS, 316 STAINLESS STEEL, 1/4" FPT, MCMASTER CARR MODEL #4452K482	X	X					90
91	--	1	SQUARE HEAD PLUG, 316 STAINLESS STEEL, 1/4" MPT – MCMASTER CARR MODEL #4452K142	X	X					91
92	--	1	PIPE UNION, 316 STAINLESS STEEL, 1/4" FPT, MCMASTER CARR MODEL #4452K223P	X	X					92
93	--	1	MINI BALL VALVE, ¼" FPT, 316 STAINLESS STEEL, DURACHOICE MODEL #VBSM1-025	X	X					93
94	--	1	HEX BUSHING, 316 STAINLESS STEEL 1/2" MPT x 1/4" FPT, MCMASTER CARR MODEL #4452K165	X	X					94
95	--	1	FLARE FITTING FOR 3/8" TUBING					X	X	95
97	--	1	THROUGH BULKHEAD FITTING FOR 3/8" HOSE, BRASS OR SS – PARKER (OR EQUAL.)	X	X					97
98	--	1	ANCHOR COUPLING, 1/4" FPT – PARKER MODEL #207ACBHS-4					X	X	98
99	--	1	TUBING CONNECTOR, SZ'D FOR TUBING WITH 1/4" MPT – PRESS-TO-MATIC (OR EQUAL)	X	X					99
100	--	1	NIPPLES, HEX, 316 STAINLESS STEEL, 1/4" FPT, MCMASTER CARR MODEL #51205K132	X	X					100
101	--	1	NIPPLES, 4" LONG, 316 STAINLESS STEEL, 1/4" FPT, MCMASTER CARR MODEL #4548K136	X	X					101
102	--	A/REQ'D	3/8" CLEAR VINYL TUBING					X	X	102
103	NP	--	NAMEPLATES (SEE HYDENC NAMEPLATES LIST)	X	X					103
104	--	A/REQ'D	MISC. HARDWARE FOR ASSEMBLY	X	X			X	X	104
105	--	A/REQ'D	MYERS HUBS (AS REQUIRED)					X	X	105
106	--	A/REQ'D	HUDSON EXTRUSION INC, 3/8" O.D. MODEL #PE1100 LLDPE NDSF ⊞ TUBING (OR NSF CERTIFIED EQUAL)					X	X	106
107	--	A/REQ'D	1/4" BRASS PIPE, LGT'S – A/REQ'D	X	X					107
108	DR2	1	GFCI, 120V, 20A	X	X					108
109	TH	1	HEATER THERMOSTAT	X	X					109

HYDENC NAMEPLATE LIST

(FABRICATOR TO INSTALL NAMEPLATES SHOWN)

ITEM	DESCRIPTION	SIZE	NOTES
NP 100	RECEPTACLE DUPLEX, 120V WITH GFCI	3/4" x 1"	
NP 101	MPS – STATION 031 HYDRAULIC EQUIPMENT ENCLOSURE (HYDENC 1)	4" x 6"	ENGRAVED PLASTIC LAMINATE– WHITE BACKGROUND, BLACK LETTERING, TYPICAL
NP 102	PT3 DISCHARGE PRESSURE TRANSMITTER	3/4" x 1"	
NP 103	TB4	3/4" x 1"	
NP 104	HEATER	3/4" x 1"	
NP 105	"AIR BLEED VALVE"	1" x 3"	
NP 106	"OPEN & CLOSE SLOWLY"	1" x 3"	
NP 107	THERMOSTAT	3/4" X 1"	

NOTES TO HYDRAULIC ENCLOSURE FABRICATOR

GROUNDING

THE PANEL FABRICATOR SHALL PROVIDE A GROUNDING POINT IN THE HYDRAULIC ENCLOSURE TIED TO A GROUNDING SCREW OR LUG.

HYDRAULIC AND ELECTRICAL EQUIPMENT

1. THE PANEL FABRICATOR SHALL PROVIDE ALL THE ELECTRICAL AND HYDRAULIC EQUIPMENT DESIGNATED IN THE LIST OF EQUIPMENT.
2. THE PANEL FABRICATOR SHALL PROVIDE ALL NECESSARY MOUNTING PLATES AND BRACKETS UPON WHICH TO MOUNT THE EQUIPMENT SHOWN.
3. ALL EQUIPMENT IN THE HYDRAULIC ENCLOSURE SHALL BE SECURED AS BEST AS PRACTICABLE TO PREVENT DISLODGEMENT AND/OR VIBRATION.
4. THE PANEL FABRICATOR SHALL ASSURE THAT ALL HYDRAULIC CONNECTIONS WITHIN THE HYDRAULIC ENCLOSURE WILL NOT LEAK.
5. THE PANEL FABRICATOR SHALL DEMONSTRATE TO CWS THE LEAK INTEGRITY OF THE HYDRAULIC EQUIPMENT. A NOTIFICATION OF NO LESS THAN TWO BUSINESS DAYS PRIOR TO THIS DEMONSTRATION SHALL BE GIVEN TO CWS.
6. THE EXTERIOR COLOR SHALL BE ANSI 61 GRAY.
7. THE INTERIOR COLOR SHALL BE ANSI 61 GRAY.
8. THE PANEL SHALL BE MADE FROM GALVANIZED STEEL.
9. THE PANEL FABRICATOR SHALL PROVIDE AND INSTALL LIMIT SWITCH FOR FUTURE USE.
10. PRESSURE TRANSMITTER (PT3), SHOULD BE MOUNTED WITH "WIRING TERMINATION SIDE" TOWARDS FRONT OF HYDENC PANEL. THE HYDENC PANEL FABRICATOR SHALL PROVIDE A SPACER TO SECURELY MOUNT THE TRANSMITTERS TO THE BACKPANEL AND TO FACILITATE FIELD DISMOUNTING OF THE TRANSMITTERS.
11. DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR WILL DETERMINE EXACT DIMENSIONS.
12. ANY CHANGES TO DRAWING OR OF MATERIAL WILL REQUIRE APPROVAL FROM CALWATER PRIOR TO CHANGE. CONTRACTOR SHALL SUPPLY CALWATER AN AS-BUILT DRAWING OF ALL CHANGES.

WIRING

1. UNLESS OTHERWISE SPECIFIED, ALL WIRING IN THE HYDRAULIC ENCLOSURE SPECIFIED IN THE ELECTRICAL DRAWINGS IS TO BE DONE BY THE PANEL FABRICATOR.
2. ALL WIRING SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL AND LOCAL ELECTRICAL CODES AND ALL OTHER APPLICABLE CODES.
3. ALL CONDUCTORS SO IDENTIFIED ON THE ELECTRICAL DRAWINGS SHALL BE LABELED WITH THEIR RESPECTIVE WIRE NUMBERS USING SELF-ADHESIVE LABELS. THESE LABELS SHALL BE SO AFFIXED AS TO HAVE THE NUMBER CLEARLY VISIBLE AND CAPABLE OF BEING READ FROM LEFT-TO-RIGHT OR FROM BOTTOM-TO-TOP.
4. ALL TERMINAL BLOCKS AND TERMINALS SHALL BE IDENTIFIED WITH LABELS AND NUMBERED ACCORDING TO THE ELECTRICAL DRAWINGS.
5. UNLESS OTHERWISE SPECIFIED HEREIN, ALL CONDUCTORS SHALL BE A MINIMUM OF #12 AWG, STRANDED COPPER WITH THHN OR THWN INSULATION.
6. UNLESS OTHERWISE SPECIFIED, ALL INSTRUMENT CABLES SHALL BE BELDEN #9341.
7. PROVIDE AN ADDITIONAL 15% TERMINALS AS SPARES FOR EVERY TYPE USED.
8. NO MORE THAN TWO WIRES TO LAND ON A TERMINAL.

FIELD YARD ADDRESS

UPON FINAL APPROVAL OF CWS, THE PANEL FABRICATOR SHALL DELIVER THE HYDRAULIC ENCLOSURE TO:

CALIFORNIA WATER SERVICE
BAYSHORE DISTRICT OFFICE
341 NORTH DELAWARE STREET
SAN MATEO, CA 94401-1727

NOTES TO ELECTRICAL INSTALLATION CONTRACTOR

GROUNDING

GROUNDING SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE NATIONAL AND LOCAL ELECTRICAL CODES AND THE CWS GROUNDING DETAILS CONTAINED HEREIN.

CONDUITS

1. ALL CONDUITS SHALL BE INSTALLED PER CALWATER DRAWING MPS-5597
2. ELECTRICAL CONDUITS INSTALLED INTO HYDRAULIC ENCLOSURE BY THE ELECTRICAL INSTALLATION CONTRACTOR SHALL BE DONE ONLY IN THE AREAS INDICATED.
3. ALL ELECTRICAL CONDUITS ENTERING HYDRAULIC ENCLOSURE SHALL USE MYERS HUBS.
4. THE ELECTRICAL INSTALLATION CONTRACTOR SHALL PROVIDE A CORD GRIP FITTING IN THE INTERIOR OF HYDRAULIC ENCLOSURE FOR THE PRESSURE LINE.

WIRING

1. UNLESS OTHERWISE SPECIFIED, ALL WIRING TO THE TERMINAL BLOCK TB4 IN HYDRAULIC ENCLOSURE SHALL BE DONE IN THE FIELD BY THE ELECTRICAL INSTALLATION CONTRACTOR.
2. ALL WIRING SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL AND LOCAL ELECTRICAL CODES AND ALL OTHER APPLICABLE CODES.
3. ALL CONDUCTORS SO IDENTIFIED ON THE ELECTRICAL DRAWINGS SHALL BE LABELED WITH THEIR RESPECTIVE WIRE NUMBERS USING SELF-ADHESIVE LABELS. THESE LABELS SHALL BE SO AFFIXED AS TO HAVE THE NUMBER CLEARLY VISIBLE AND CAPABLE OF BEING READ FROM LEFT- TO-RIGHT OR FROM BOTTOM-TO-TOP.
4. BEFORE ENERGIZING, ALL TERMINALS IN HYDRAULIC ENCLOSURE SHALL BE CHECKED AND TIGHTENED IN THE FIELD BY THE ELECTRICAL INSTALLATION CONTRACTOR. TIGHTENING OF TERMINATIONS SHALL BE ACCORDING TO THE TERMINAL MANUFACTURER'S RECOMMENDED TORQUE RANGE AND SHALL NOT EXCEED THE MAXIMUM TORQUE SO SPECIFIED.

FIELD YARD ADDRESS

CALIFORNIA WATER SERVICE
BAYSHORE DISTRICT OFFICE
341 NORTH DELAWARE STREET
SAN MATEO, CA 94401-1727

ENGINEERING

CALIFORNIA WATER SERVICE

DEPARTMENT

REVISIONS:

	DATE:	INIT.
DISTRIBUTION MAP		
PLAT SHEET		
SYSTEM SCHEMATIC		
STATION SCHEMATIC		

PLAT SHEET NO.:

SCALE:
N.T.S.

DRAWN BY:
T. PHAM

DESIGNED BY:
M. MACATIAG

CHECKED BY: DATE:
7/16/2021

APPROVED BY: DATE:
7/16/2021

REGISTERED PROFESSIONAL ENGINEER
MANDY MACATIAG
No. E22351
ELECTRICAL
STATE OF CALIFORNIA

TITLE:
MPS-SAN MATEO STATION 031
TANK AND BOOSTER PUMP
ELECTRICAL - HYDRAULIC ENCLOSURE

DISTRICT:
116-MPS

SAN MATEO

DATE:
5-21-2021

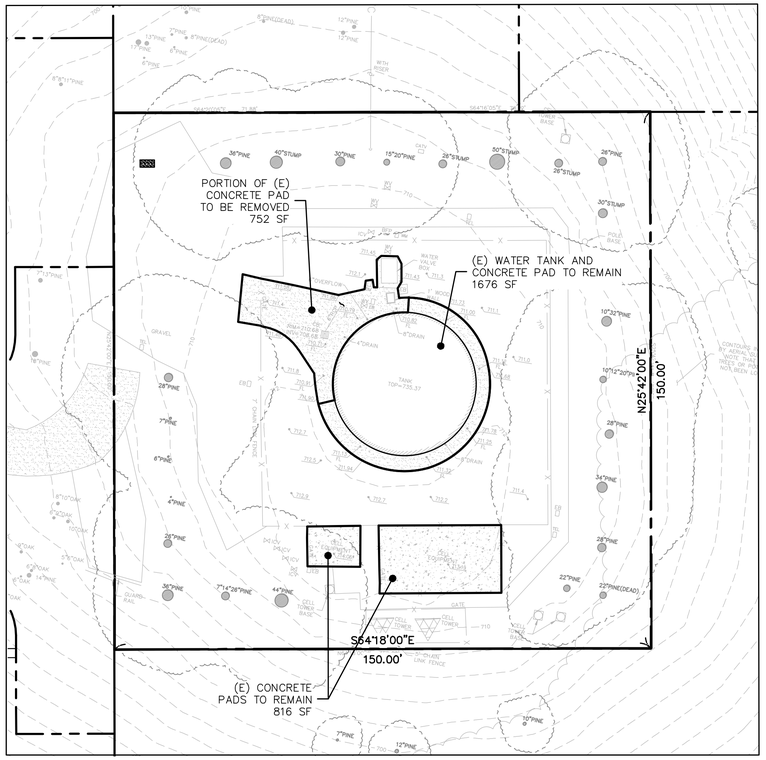
PROJECT ID.:
00118772

DRAWING NO.:
MPS-5599

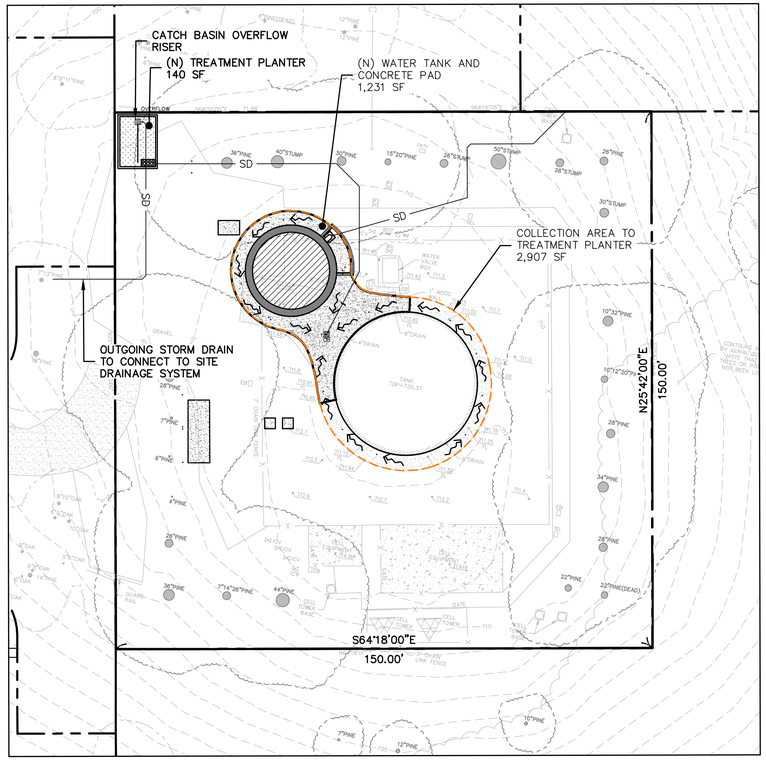
SHT 1 OF 1

APPENDIX B

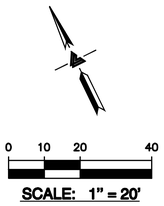
Impervious Surface and Drainage Exhibit



PRE–DEVELOPMENT



POST–DEVELOPMENT



PEAK FLOW SUMMARY			
	PRE-DEVELOPMENT	POST-DEVELOPMENT	CHANGE IN RUNOFF
Q_{10} PEAK FLOW (UNMITIGATED)	0.43 CFS	0.45 CFS	+ 0.02 CFS INCREASE
Q_{10} PEAK FLOW (MITIGATED)	0.43 CFS	0.34 CFS	– 0.09 CFS NET DECREASE

IMPERVIOUS SURFACE INFORMATION				
TOTAL SITE AREA =	22,500 SQUARE FEET = 0.517 ACRES			
IMPERVIOUS AREAS	**EXISTING (sq-ft.)**	**REMOVED (sq-ft.)**	**NEW (sq-ft.)**	**PROPOSED (sq-ft.)**
WATER TANK AND CONCRETE PADS	3,244	752	1,231	3,723
TOTAL IMPERVIOUS AREA	**3,244**	**752**	**1,231**	**3,723**
NET CHANGE IN IMPERVIOUS AREA	**+479 SQFT. NET INCREASE**			

10-Year Storm - Runoff Analysis *Rainfall Duration=10 min, Inten=2.10 in/hr*
Prepared by Lea & Braze Engineering, Inc. Printed 1/12/2023
HydroCAD® 10.10-3a s/n 02830 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 1S: Pre-Development Runoff

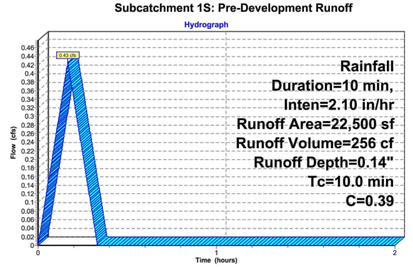
Runoff = 0.43 cfs @ 0.17 hrs, Volume= 256 cf, Depth= 0.14"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-2.00 hrs, dt= 0.00 hrs
Rainfall Duration=10 min, Inten=2.10 in/hr

Area (sf)	C	Description
3,244	0.95	Pre-development impervious area
19,256	0.30	Pre-development pervious area
22,500	0.39	Weighted Average
19,256		85.58% Pervious Area
3,244		14.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Assumed Tc

Subcatchment 1S: Pre-Development Runoff



10-Year Storm - Runoff Analysis *Rainfall Duration=10 min, Inten=2.10 in/hr*
Prepared by Lea & Braze Engineering, Inc. Printed 1/12/2023
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Summary for Subcatchment 2S: Post-Development Runoff

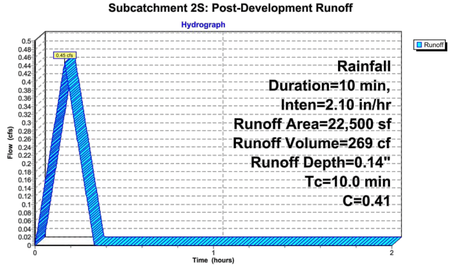
Runoff = 0.45 cfs @ 0.17 hrs, Volume= 269 cf, Depth= 0.14"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-2.00 hrs, dt= 0.00 hrs
Rainfall Duration=10 min, Inten=2.10 in/hr

Area (sf)	C	Description
3,723	0.95	Post-development impervious area
18,777	0.30	Post-development pervious area
22,500	0.41	Weighted Average
18,777		83.45% Pervious Area
3,723		16.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Assumed Tc

Subcatchment 2S: Post-Development Runoff



10-Year Storm - Runoff Analysis *Rainfall Duration=10 min, Inten=2.10 in/hr*
Prepared by Lea & Braze Engineering, Inc. Printed 1/12/2023
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Summary for Subcatchment 3S: Area of Collection

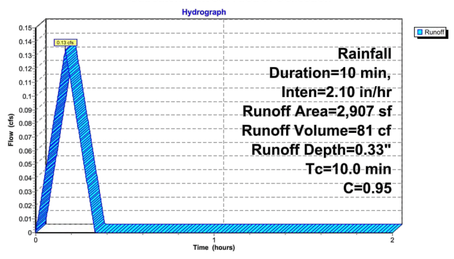
Runoff = 0.13 cfs @ 0.17 hrs, Volume= 81 cf, Depth= 0.33"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-2.00 hrs, dt= 0.00 hrs
Rainfall Duration=10 min, Inten=2.10 in/hr

Area (sf)	C	Description
2,907	0.95	Collected impervious area
0	0.30	Collected pervious area
2,907	0.95	Weighted Average
2,907		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Assumed Tc

Subcatchment 3S: Area of Collection



10-Year Storm - Runoff Analysis *Rainfall Duration=10 min, Inten=2.10 in/hr*
Prepared by Lea & Braze Engineering, Inc. Printed 1/12/2023
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Summary for Pond 4P: Treatment Planter

Inflow Area = 2,907 sf,100.00% Impervious, Inflow Depth = 0.33"
Inflow = 0.13 cfs @ 0.17 hrs, Volume= 81 cf
Outflow = 0.02 cfs @ 0.05 hrs, Volume= 81 cf, Atten= 88%, Lag= 0.0 min
Primary = 0.02 cfs @ 0.05 hrs, Volume= 81 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-2.00 hrs, dt= 0.00 hrs
Peak Elev= 100.44' @ 0.31 hrs Surf.Area= 140 sf Storage= 62 cf

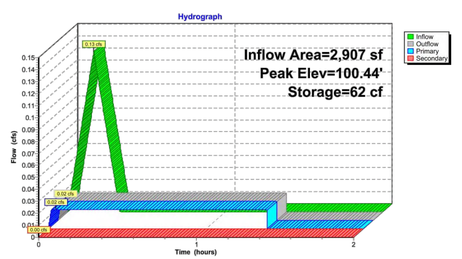
Plug-Flow detention time= 32.0 min calculated for 81 cf (100% of inflow)
Center-of-Mass det. time= 32.0 min (42.0 - 10.0)

Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	105 cf	**7.00'W x 20.00'L x 0.75'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	**5.000 in/hr Exfiltration over Surface area**
#2	Secondary	100.50'	**12.00" x 12.00" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.02 cfs @ 0.05 hrs HW=100.01' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.02 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=100.00' (Free Discharge)
2=Orifice/Grate (Controls 0.00 cfs)



REGISTERED PROFESSIONAL ENGINEER JAMES TORA No. 63127 CIVIL STATE OF CALIFORNIA ORIGINAL SIGNATURES IN BLUE INK

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BAY AREA REGION
2495 INDUSTRIAL PKWY WEST
HAYWARD, CALIFORNIA 94545
(P) (510) 887–4086
(F) (510) 887–3019

SACRAMENTO REGION
3017 DOUGLAS BLVD, # 300
ROSEVILLE, CA 95661
(P) (916)966–1338
(F) (530)797–7363
WWW.LEABRAZE.COM

ASCENSION HEIGHTS SUBDIVISION
SAN MATEO, CALIFORNIA
(UNINCORPORATED) SAN MATEO COUNTY

IMPERVIOUS SURFACE AND DRAINAGE EXHIBIT

REVISIONS	BY

JOB NO:	2161285
DATE:	02–02–23
SCALE:	1" = 20'
DESIGN BY:	RC
DRAWN BY:	ATL
SHEET NO:	HYD-1

01 OF 01 SHEETS

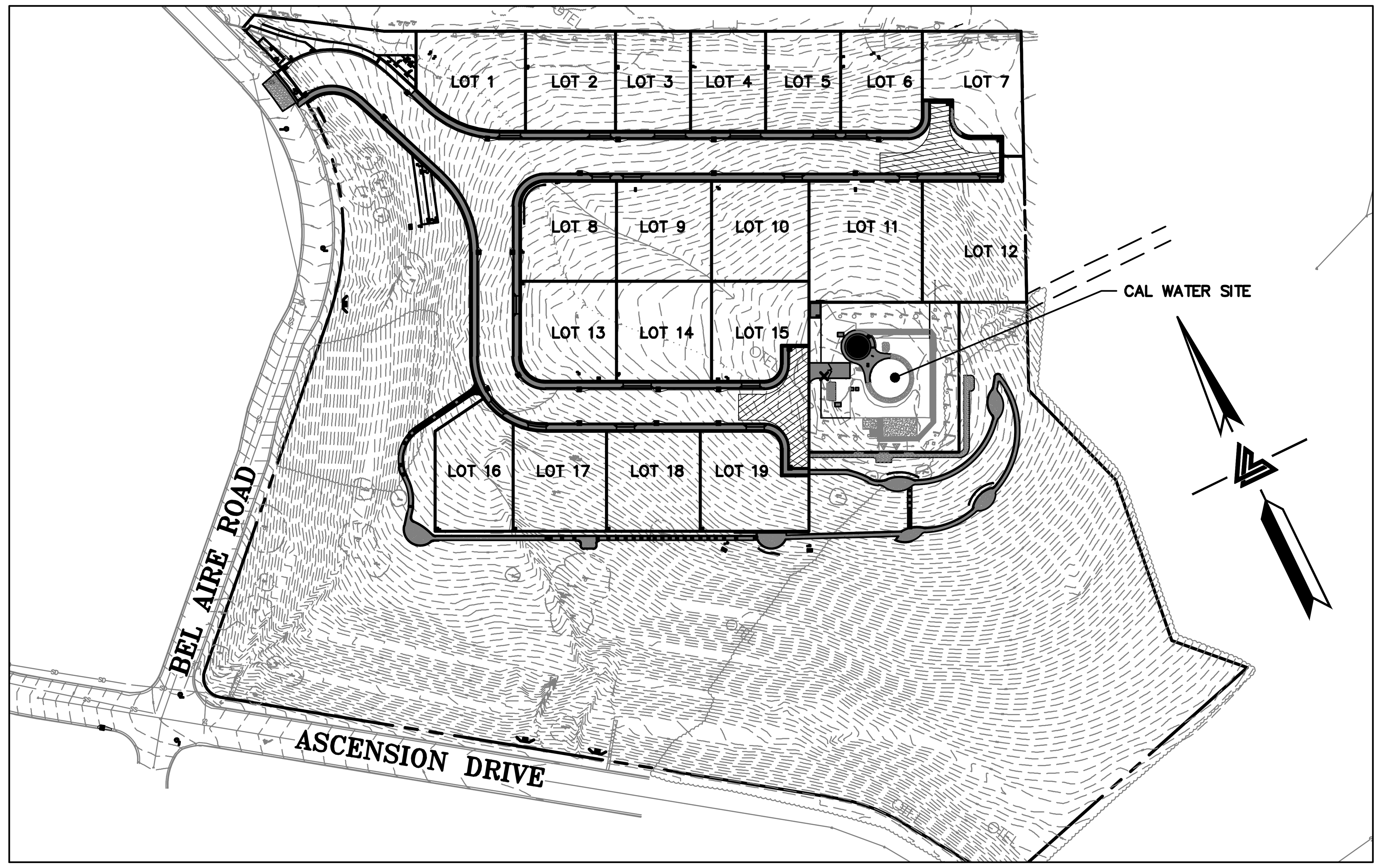
APPENDIX C

Drainage and Treatment Plan

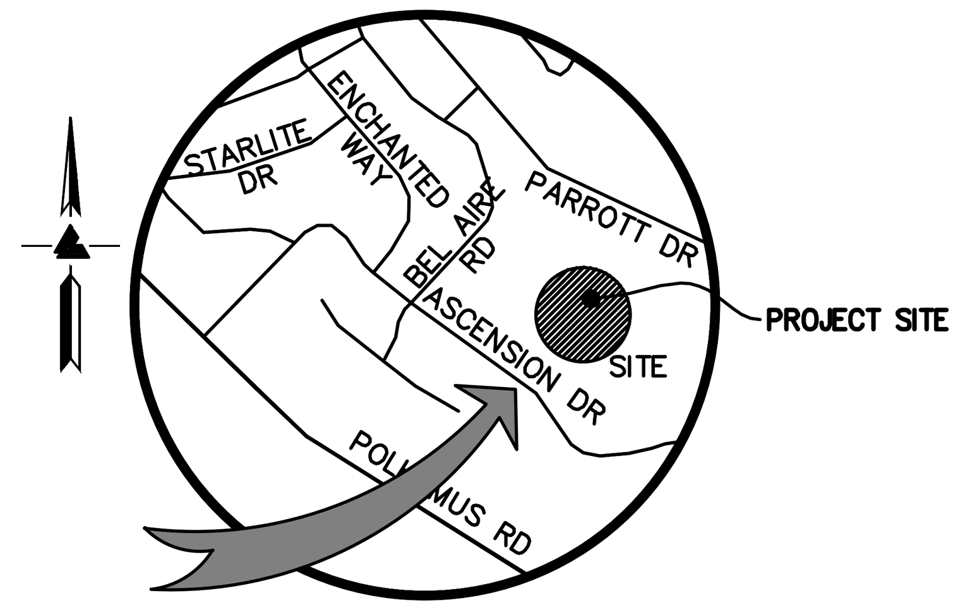
CALWATER TANK - DRAINAGE & TREATMENT PLAN BEL AIRE ROAD SAN MATEO, CALIFORNIA

LEGEND

EXISTING	PROPOSED	DESCRIPTION
		BOUNDARY
		PROPERTY LINE
		RETAINING WALL
		LANDSCAPE RETAINING WALL
RW RW	RW RW	RAINWATER TIGHTLINE
SUB	SUB	SUBDRAIN LINE
TL	TL	TIGHTLINE
SD	SD	STORM DRAIN LINE
SS	SS	SANITARY SEWER LINE
W	W	WATER LINE
G	G	GAS LINE
P	P	PRESSURE LINE
JT	JT	JOINT TRENCH
		SET BACK LINE
		CONCRETE VALLEY GUTTER
		EARTHEN SWALE
CB	CB	CATCH BASIN
JB	JB	JUNCTION BOX
AD	AD	AREA DRAIN
		CURB INLET
SDMH	SDMH	STORM DRAIN MANHOLE
		FIRE HYDRANT
SSMH	SSMH	SANITARY SEWER MANHOLE
		STREET SIGN
222.57 INV	222.57 INV	SPOT ELEVATION
←	←	FLOW DIRECTION
	D	DEMOLISH/REMOVE
		BENCHMARK
200	200	CONTOURS
	XX" TREE	TREE TO BE REMOVED



KEY MAP
1" = 100'



VICINITY MAP
NO SCALE

OWNER'S INFORMATION

OWNER:
CALIFORNIA WATER SERVICES
408-367-8394

REFERENCES

THIS GRADING AND DRAINAGE PLAN IS SUPPLEMENTAL TO:

1. TOPOGRAPHIC SURVEY BY LEA & BRAZE ENGINEERING, INC. ENTITLED;
"TOPOGRAPHIC SURVEY"
BEL AIRE DRIVE
SAN MATEO, CA
JOB#2161284
DATED: 9-20-17

2. SOIL REPORT BY MICHELUCCI & ASSOCIATES, INC. ENTITLED:
"GEOTECHNICAL & ENGINEERING GEOLOGIC INVESTIGATION"
PROPOSED ASCENSION HEIGHTS SUBDIVISION
SAN MATEO COUNTY, CA
JOB# 01-3186
DATE: DECEMBER 16, 2002
REVISED DATE: DECEMBER 5, 2013
SUPPLEMENT TO REPORT: AUGUST 24, 2018

3. SITE PLAN BY CALIFORNIA WATER SERVICE ENTITLED:
"STATION 031 – ASCENSION DR & BEL AIR RD INSTALL TANK AND BOOSTER PUMP"
BEL AIRE DRIVE
SAN MATEO, CA
DATED: 04-07-21

THE CONTRACTOR SHALL REFER TO THE ABOVE NOTED SURVEY AND PLAN, AND SHALL VERIFY BOTH EXISTING AND PROPOSED ITEMS ACCORDING TO THEM.

ABBREVIATIONS

AB	AGGREGATE BASE	MAX	MAXIMUM
AC	ASPHALT CONCRETE	MH	MANHOLE
ACC	ACCESSIBLE	MIN	MINIMUM
AD	AREA DRAIN	MON.	MONUMENT
BC	BEGINNING OF CURVE	MRO	METERED RELEASE OUTLET
B & D	BEARING & DISTANCE	(N)	NEW
BM	BENCHMARK	NO.	NUMBER
BIO	BIORETENTION AREA	NTS	NOT TO SCALE
BUB	BUBBLER BOX	O.C.	ON CENTER
BW/FG	BOTTOM OF WALL/FINISH GRADE	O/	OVER
CB	CATCH BASIN	(PA)	PLANTING AREA
C & G	CURB AND GUTTER	PED	PEDESTRIAN
℄	CENTER LINE	PIV	POST INDICATOR VALVE
CPP	CORRUGATED PLASTIC PIPE (SMOOTH INTERIOR)	PSS	PUBLIC SERVICES EASEMENT
		ℙ	PROPERTY LINE
CO	CLEANOUT	PP	POWER POLE
COTG	CLEANOUT TO GRADE	PUE	PUBLIC UTILITY EASEMENT
CONC	CONCRETE	PVC	POLYVINYL CHLORIDE
CONST	CONSTRUCT or –TION	R	RADIUS
CONC COR	CONCRETE CORNER	RCP	REINFORCED CONCRETE PIPE
CY	CUBIC YARD	RIM	RIM ELEVATION
D	DIAMETER	RW	RAINWATER
DI	DROP INLET	R/W	RIGHT OF WAY
DIP	DUCTILE IRON PIPE	S	SLOPE
EA	EACH	S.A.D.	SEE ARCHITECTURAL DRAWINGS
EC	END OF CURVE	SAN	SANITARY
EG	EXISTING GRADE	SD	STORM DRAIN
EL	ELEVATIONS	SDMH	STORM DRAIN MANHOLE
EP	EDGE OF PAVEMENT	SHT	SHEET
EQ	EQUIPMENT	SI	STREET INLET
EW	EACH WAY	S.L.D.	SEE LANDSCAPE DRAWINGS
(E)	EXISTING	SPEC	SPECIFICATION
FC	FACE OF CURB	SS	SANITARY SEWER
FF	FINISHED FLOOR	SSCO	SANITARY SEWER CLEANOUT
FG	FINISHED GRADE	SSMH	SANITARY SEWER MANHOLE
FH	FIRE HYDRANT	ST.	STREET
FL	FLOW LINE	STA	STATION
FS	FINISHED SURFACE	STD	STANDARD
G	GAS	STRUCT	STRUCTURAL
GA	GAGE OR GAUGE	T	TELEPHONE
GB	GRADE BREAK	TC	TOP OF CURB
HDPE	HIGH DENSITY CORRUGATED POLYETHYLENE PIPE	TEMP	TEMPORARY
		TOW	TOP OF WALL
HORIZ	HORIZONTAL	TP	TOP OF PAVEMENT
HI PT	HIGH POINT	TW/FG	TOP OF WALL/FINISH GRADE
H&T	HUB & TACK	TYP	TYPICAL
ID	INSIDE DIAMETER	VC	VERTICAL CURVE
INV	INVERT ELEVATION	VCP	VITRIFIED CLAY PIPE
JB	JUNCTION BOX	VERT	VERTICAL
JT	JOINT TRENCH	W/	WITH
JP	JOINT UTILITY POLE	W, WL	WATER LINE
L	LENGTH	WM	WATER METER
LNDG	LANDING	WWF	WELDED WIRE FABRIC
LF	LINEAR FEET		

NOTES

ALL DISTANCES AND DIMENSIONS ARE IN FEET AND DECIMALS.

UNDERGROUND UTILITY LOCATION IS BASED ON SURFACE EVIDENCE.

BUILDING FOOTPRINTS ARE SHOWN TO FINISHED MATERIAL (STUCCO/SIDING) AT GROUND LEVEL.

FINISH FLOOR ELEVATIONS ARE TAKEN AT DOOR THRESHOLD (EXTERIOR).

EASEMENT NOTE

A CURRENT TITLE REPORT FOR THE SUBJECT PROPERTY HAS NOT BEEN EXAMINED BY LEA & BRAZE ENGINEERING, INC. EASEMENTS OF RECORD MAY EXIST THAT ARE NOT SHOWN ON THIS MAP.
EASEMENTS SHOWN PER ADJOINING SUBDIVISIONS.

SITE BENCHMARK

SURVEY CONTROL POINT
MAG AND SHINER SET IN ASPHALT
ELEVATION = 587.30'
(ASSUMED)

PROJECT INFORMATION

AREA:	0.52±ACRES
ASSESSOR'S PARCEL NOS:	041-111-020

UTILITY SERVICES:

STORM DRAIN:	SAN MATEO COUNTY
SANITARY SEWER:	SAN MATEO COUNTY
WATER:	CALIFORNIA WATER SERVICES
FIRE:	SAN MATEO COUNTY FIRE SERVICE
CABLE:	COMCAST
GAS & ELECTRICAL:	PACIFIC GAS & ELECTRIC (PG&E)
TELEPHONE:	AT&T

1-800-227-2600 CALL BEFORE YOU DIG USA UNDERGROUND SERVICE ALERT

CONTRACTOR COURTESY NOTE:
CONTRACTOR TO PROVIDE 72-HOUR COURTESY NOTICE FOR NOISE AND DUST (INCLUDING POINT OF CONTACT) TO COMMUNITY PRIOR TO COMMENCEMENT OF OPERATIONS.

NOTE:
FOR CONSTRUCTION STAKING SCHEDULING OR QUOTATIONS PLEASE CONTACT ALEX ABAYA AT LEA & BRAZE ENGINEERING (510)887-4086 EXT 116.
aabaya@leabraze.com

SHEET INDEX

REGISTERED PROFESSIONAL ENGINEER JAMES TOBY No. 63127 CIVIL STATE OF CALIFORNIA ORIGINAL SIGNATURES IN BLUE INK

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CIVIL ENGINEERS · LAND SURVEYORS
BAY AREA REGION
2495 INDUSTRIAL PKWY WEST
HAYWARD, CALIFORNIA 94545
(P) (510) 887-4086
(F) (510) 887-3019
SACRAMENTO REGION
3017 DOUGLAS BLVD, # 300
ROSEVILLE, CA 95661
(P) (916)966-1338
(F) (916)797-7363
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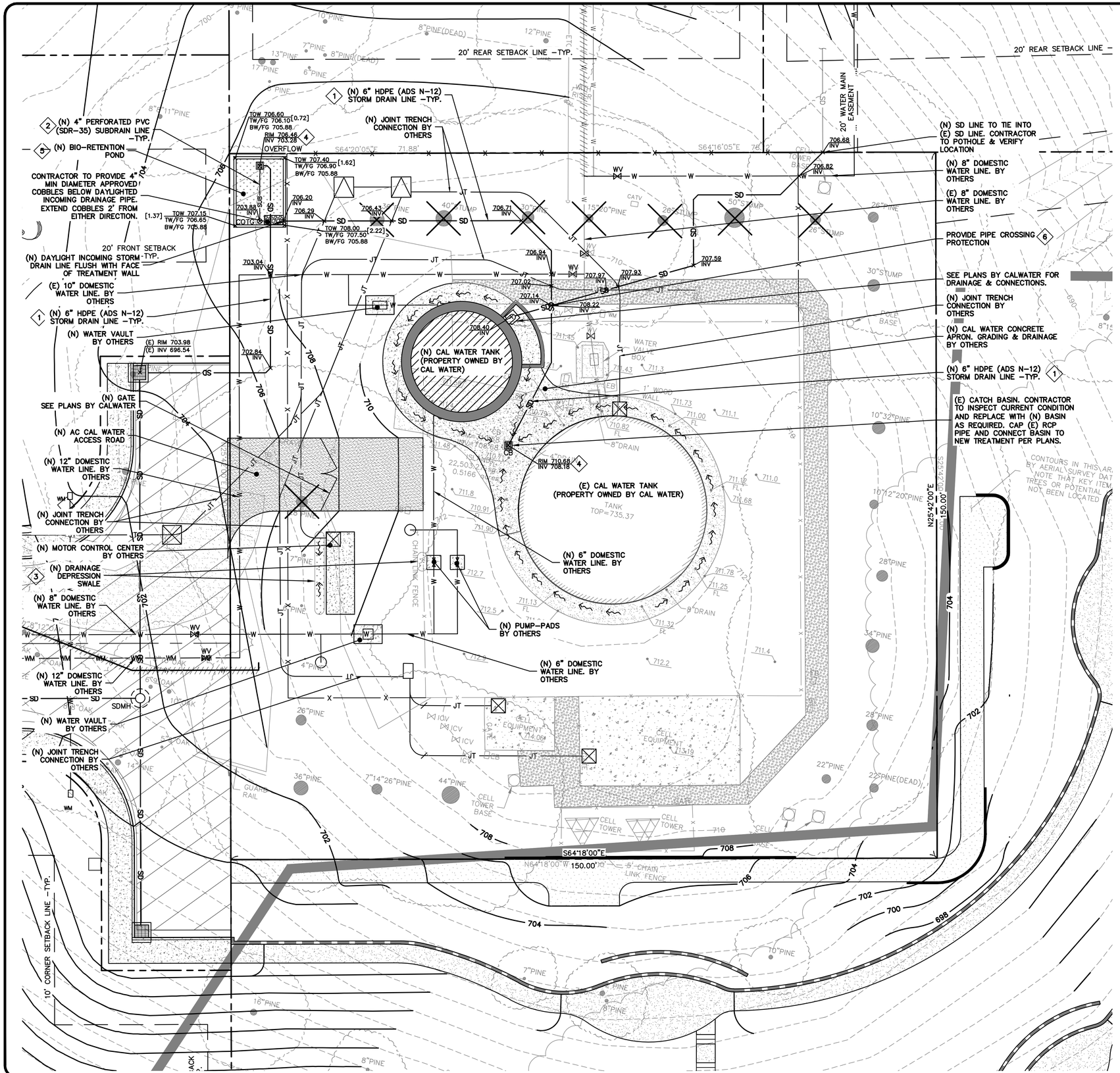
CALWATER TANK
DRAINAGE & TREATMENT PLAN
SAN MATEO, CALIFORNIA
(UNINCORPORATED) SAN MATEO COUNTY

TITLE SHEET

REVISIONS	BY

JOB NO:	2161285
DATE:	02-01-23
SCALE:	AS NOTED
DESIGN BY:	AH
DRAWN BY:	MCF
SHEET NO:	DTP-1.0

1 OF 7 SHEETS



STORM DRAIN KEYNOTES 1 TO 6

1. INSTALL (N) ON–SITE STORM DRAIN SYSTEM. USE MINIMUM 6" HDPE (ADS N–12 W/ SMOOTH INTERIOR WALLS). MAINTAIN 24" MINIMUM COVER AND SLOPED AT 1% MINIMUM AT ALL TIMES UNLESS OTHERWISE NOTED. PROVIDE CLEANOUT TO GRADE AT MAJOR CHANGES IN DIRECTION. AVOID USING 90° BENDS AND INSTEAD USE (2) 45° BENDS AND WYE CONNECTIONS.
2. INSTALL (N) SUBDRAIN. USE PERFORATED 4" PVC (SDR–35) WITH HOLES DOWN AND SLOPED AT 1% MINIMUM SURROUND WITH 3/4" DRAIN ROCK WRAPPED IN FILTER FABRIC (MIRAFI 140N). MIRADRAIN OR OTHER LEA & BRAZE PREAPPROVED DRAINAGE SYSTEM MAY ALSO BE USED. AVOID USING 90° BENDS AND INSTEAD USE (2) 45° BENDS AND WYE CONNECTIONS. PROVIDE CLEANOUT TO GRADE AT MAJOR CHANGES IN DIRECTION AND AT 100' MAXIMUM INTERVALS. SUBDRAIN SHALL REMAIN A DEDICATED SEPARATE SYSTEM UNTIL IT CONNECTS TO STORM DRAIN SYSTEM OR OUTFALL AS SHOWN.
3. CONSTRUCT (N) DRAINAGE DEPRESSION SWALE SLOPED AT 1% MINIMUM TOWARDS POSITIVE OUTFALL. SEE DETAIL 2 ON SHEET DTP–3.0.
4. INSTALL (N) "CHRISTY V–12" CATCH BASIN W/ CONCRETE BOTTOM FLUSH W/ LOWEST OUTGOING INVERT. PLACE BOX ON 6" CLASS 2 AGGREGATE BASE MATERIAL. SEE DETAIL 1 ON SHEET DTP–3.0.
5. INSTALL (N) BIO–RETENTION POND PER SAN MATEO COUNTY C–3/C–6 MANUAL. SEE DETAIL 3 ON SHEET DTP–3.0.
6. INSTALL (N) PIPE CROSSING PROTECTION PER DETAIL 4 ON SHEET DTP–3.0.

NOTE:
FOR CONSTRUCTION STAKING SCHEDULING OR QUOTATIONS PLEASE CONTACT ALEX ABAYA AT LEA & BRAZE ENGINEERING (510)887-4086 EXT 116. aabaya@leabraze.com

*** BUILDING PAD NOTE:**
ADJUST PAD LEVEL AS REQUIRED. REFER TO STRUCTURAL PLANS FOR SLAB SECTION OR CRAWL SPACE DEPTH TO ESTABLISH PAD LEVEL.

CALL BEFORE YOU DIG 1–800–642–2444 UNDERGROUND SERVICE ALERT

REGISTERED PROFESSIONAL ENGINEER JAMES TOPE No. 63127 CIVIL STATE OF CALIFORNIA ORIGINAL SIGNATURES IN BLUE INK

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BAY AREA REGION
2495 INDUSTRIAL PKWY WEST
HAYWARD, CALIFORNIA 94545
(P) (510) 887–4086
(F) (510) 887–3019
SACRAMENTO REGION
3017 DOUGLAS BLVD, # 300
ROSEVILLE, CA 95661
(P) (916)966–1338
(F) (510)797–7363
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CALWATER TANK
DRAINAGE & TREATMENT PLAN
SAN MATEO, CALIFORNIA

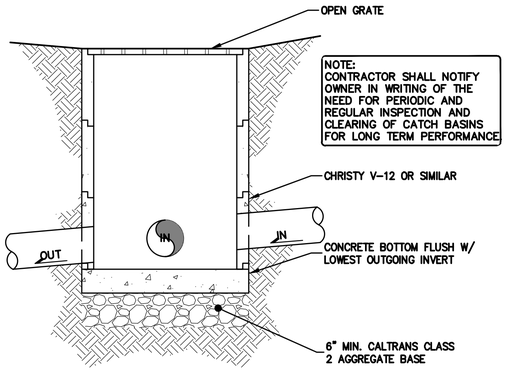
(UNINCORPORATED) SAN MATEO COUNTY

DRAINAGE & TREATMENT PLAN

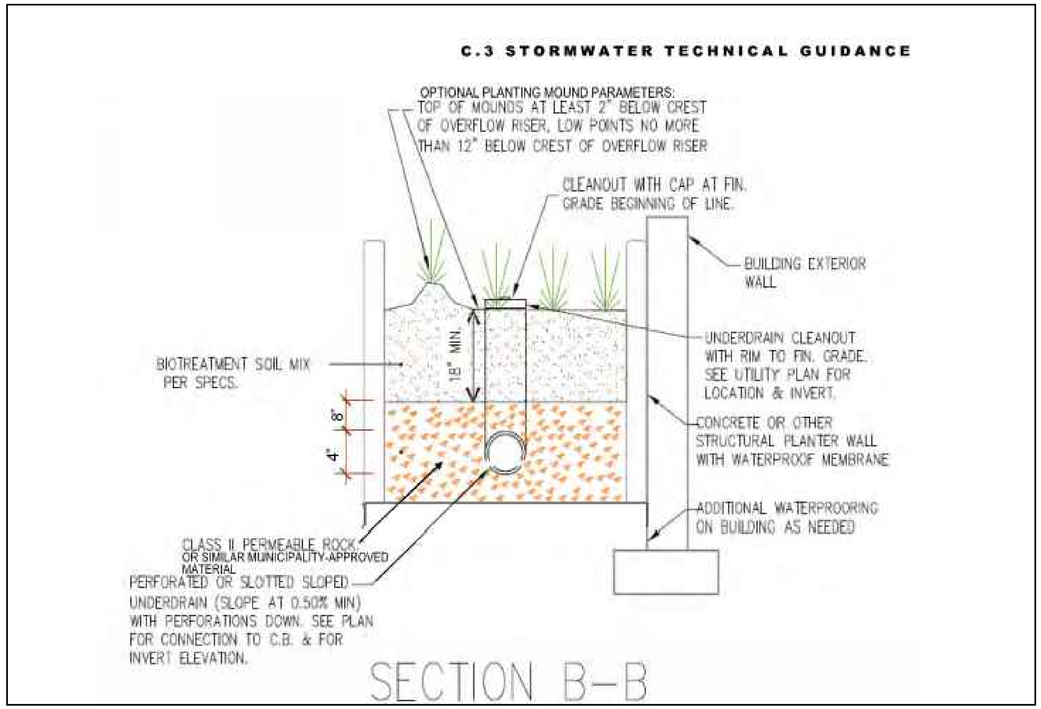
REVISIONS	BY

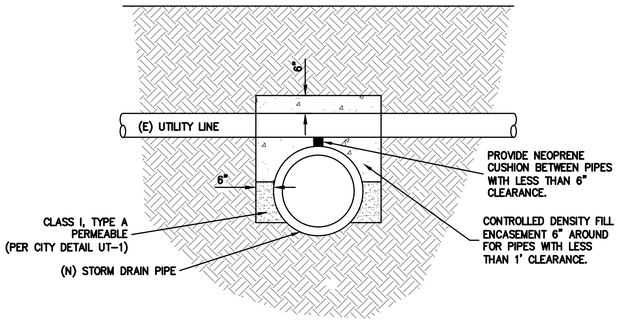
JOB NO:	2161285
DATE:	02–01–23
SCALE:	AS NOTED
DESIGN BY:	AH
DRAWN BY:	MCF
SHEET NO:	DTP–2

01 OF 7 SHEETS

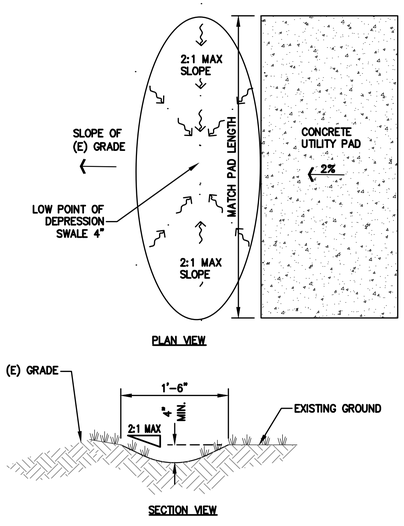


1 DTP-3.0 **CATCH BASIN**
NTS

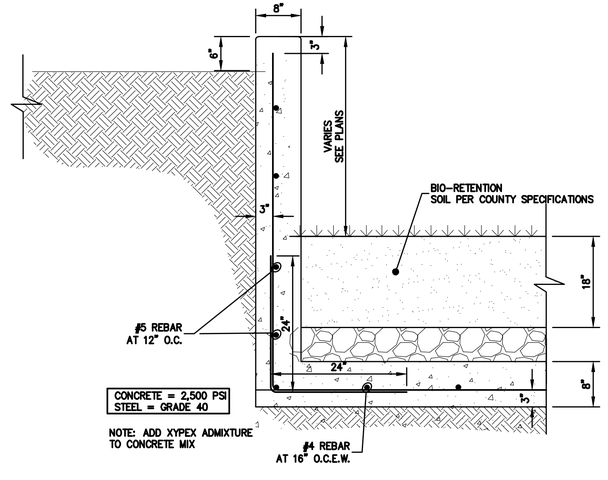




4 DTP-3.0 **PIPE CROSSING**
NTS



2 DTP-3.0 **DRAINAGE DEPRESSION SWALE DETAIL**
NTS



3 DTP-3.0 **BIO-TREATMENT AREA**
NTS

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CIVIL ENGINEERS • LAND SURVEYORS
BAY AREA REGION
2495 INDUSTRIAL PKWY WEST
HAYWARD, CALIFORNIA 94545
(P) (510) 887-4086
(F) (510) 887-3019
SACRAMENTO REGION
3017 DOUGLAS BLVD, # 300
ROSEVILLE, CA 95661
(P) (916)966-1338
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WWW.LEABRAZE.COM

CALWATER TANK
DRAINAGE & TREATMENT PLAN
SAN MATEO, CALIFORNIA
(UNINCORPORATED) SAN MATEO COUNTY

DETAILS

REVISIONS	BY

JOB NO:	2161285
DATE:	02-01-23
SCALE:	NTS
DESIGN BY:	AH
DRAWN BY:	MCF
SHEET NO:	

DTP-3.0

3 OF 7 SHEETS

GENERAL NOTES

ALL GENERAL NOTES, SHEET NOTES, AND LEGEND NOTES FOUND IN THESE DOCUMENTS SHALL APPLY TYPICALLY THROUGHOUT. IF INCONSISTENCIES ARE FOUND IN THE VARIOUS NOTATIONS, NOTIFY THE ENGINEER IMMEDIATELY IN WRITING REQUESTING CLARIFICATION.

THESE DRAWINGS AND THEIR CONTENT ARE AND SHALL REMAIN THE PROPERTY OF LEA AND BRAZE ENGINEERING, INC. WHETHER THE PROJECT FOR WHICH THEY ARE PREPARED IS EXECUTED OR NOT. THEY ARE NOT TO BE USED BY ANY PERSONS ON OTHER PROJECTS OR EXTENSIONS OF THE PROJECT EXCEPT BY AGREEMENT IN WRITING AND WITH APPROPRIATE COMPENSATION TO THE ENGINEER.

ALL WORK SHALL COMPLY WITH APPLICABLE CODES AND TRADE STANDARDS WHICH GOVERN EACH PHASE OF WORK INCLUDING, BUT NOT LIMITED TO, CALIFORNIA MECHANICAL CODE, CALIFORNIA PLUMBING CODE, CALIFORNIA ELECTRICAL CODE, CALIFORNIA FIRE CODE, CALTRANS STANDARDS AND SPECIFICATIONS, AND ALL APPLICABLE STATE AND/OR LOCAL CODES AND/OR LEGISLATION.

IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND ALL SUBCONTRACTORS TO CHECK AND VERIFY ALL CONDITIONS, DIMENSIONS, LINES AND LEVELS INDICATED. PROPER FIT AND ATTACHMENT OF ALL PARTS IS REQUIRED. SHOULD THERE BE ANY DISCREPANCIES, IMMEDIATELY NOTIFY THE ENGINEER FOR CORRECTION OR ADJUSTMENT THE EVENT OF FAILURE TO DO SO, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTION OF ANY ERROR.

ALL DIMENSIONS AND CONDITIONS SHALL BE CHECKED AND VERIFIED ON THE JOB BY EACH SUBCONTRACTOR BEFORE HE/SHE BEGINS HIS/HER WORK. ANY ERRORS, OMISSION, OR DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER/CONTRACTOR BEFORE CONSTRUCTION BEGINS.

COMMENCEMENT OF WORK BY THE CONTRACTOR AND/OR ANY SUBCONTRACTOR SHALL INDICATE KNOWLEDGE AND ACCEPTANCE OF ALL CONDITIONS DESCRIBED IN THESE CONSTRUCTION DOCUMENTS, OR EXISTING ON SITE, WHICH COULD AFFECT THEIR WORK.

WORK SEQUENCE

IN THE EVENT ANY SPECIAL SEQUENCING OF THE WORK IS REQUIRED BY THE OWNER OR THE CONTRACTOR, THE CONTRACTOR SHALL ARRANGE A CONFERENCE BEFORE ANY SUCH WORK IS BEGUN.

SITE EXAMINATION: THE CONTRACTOR AND ALL SUBCONTRACTORS SHALL THOROUGHLY EXAMINE THE SITE AND FAMILIARIZE HIM/HERSELF WITH THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. THE CONTRACTOR SHALL VERIFY AT THE SITE ALL MEASUREMENTS AFFECTING HIS/HER WORK AND SHALL BE RESPONSIBLE FOR THE CORRECTIONS OF THE SAME. NO EXTRA COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR EXPENSES DUE TO HIS/HER NEGLECT TO EXAMINE, OR FAILURE TO DISCOVER, CONDITIONS WHICH AFFECT HIS/HER WORK.

LEA AND BRAZE ENGINEERING, INC. EXPRESSLY RESERVES ITS COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE PLANS. THESE PLANS ARE NOT TO BE REPRODUCED, CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER, NOR ARE THEY TO BE ASSIGNED TO A THIRD PARTY WITHOUT FIRST OBTAINING THE WRITTEN PERMISSION AND CONSENT OF LEA AND BRAZE ENGINEERING, INC. IN THE EVENT OF UNAUTHORIZED REUSE OF THESE PLANS BY A THIRD PARTY, THE THIRD PARTY SHALL HOLD HARMLESS LEA AND BRAZE ENGINEERING, INC.

CONSTRUCTION IS ALWAYS LESS THAN PERFECT SINCE PROJECTS REQUIRE THE COORDINATION AND INSTALLATION OF MANY INDIVIDUAL COMPONENTS BY VARIOUS CONSTRUCTION INDUSTRY TRADES. THESE DOCUMENTS CANNOT PORTRAY ALL COMPONENTS OR ASSEMBLIES EXACTLY. IT IS THE INTENTION OF THESE ENGINEERING DOCUMENTS THAT THEY REPRESENT A REASONABLE STANDARD OF CARE IN THEIR CONTENT. IT IS ALSO PRESUMED BY THESE DOCUMENTS THAT CONSTRUCTION REVIEW SERVICES WILL BE PROVIDED BY THE ENGINEER. SHOULD THE OWNER NOT RETAIN THE ENGINEER TO PROVIDE SUCH SERVICES, OR SHOULD HE/SHE RETAIN THE ENGINEER TO PROVIDE ONLY PARTIAL OR LIMITED SERVICES, THEN IT SHALL BE THE OWNER'S AND CONTRACTOR'S RESPONSIBILITY TO FULLY RECOGNIZE AND PROVIDE THAT STANDARD OF CARE.

IF THE OWNER OR CONTRACTOR OBSERVES OR OTHERWISE BECOMES AWARE OF ANY FAULT OR DEFECT IN THE PROJECT OR NONCONFORMANCE WITH THE CONTRACT DOCUMENTS, PROMPT WRITTEN NOTICE THEREOF SHALL BE GIVEN BY THE OWNER AND/OR CONTRACTOR TO THE ENGINEER.

THE ENGINEER SHALL NOT HAVE CONTROL OF OR CHARGE OF AND SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES, OR FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK, FOR THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTORS, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

SITE PROTECTION

PROTECT ALL LANDSCAPING THAT IS TO REMAIN. ANY DAMAGE OR LOSS RESULTING FROM EXCAVATION, GRADING, OR CONSTRUCTION WORK SHALL BE CORRECTED OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL EXISTING SITE UTILITIES AND SHALL COORDINATE THEIR REMOVAL OR MODIFICATIONS (IF ANY) TO AVOID ANY INTERRUPTION OF SERVICE TO ADJACENT AREAS. THE GENERAL CONTRACTOR SHALL INFORM HIM/HERSELF OF MUNICIPAL REGULATIONS AND CARRY OUT HIS/HER WORK IN COMPLIANCE WITH ALL FEDERAL AND STATE REQUIREMENTS TO REDUCE FIRE HAZARDS AND INJURIES TO THE PUBLIC.

STORMWATER POLLUTION PREVENTION NOTES

1) STORE, HANDLE, AND DISPOSE OF CONSTRUCTION MATERIALS AND WASTES PROPERLY, SO AS TO PREVENT THEIR CONTACT WITH STORMWATER.

2) CONTROL AND PREVENT THE DISCHARGE OF ALL POTENTIAL POLLUTANTS, INCLUDING SOLID WASTES, PAINTS, CONCRETE, PETROLEUM PRODUCTS, CHEMICALS, WASH WATER OR SEDIMENT, AND NON-STORMWATER DISCHARGES TO STORM DRAINS AND WATER COURSES.

3) USE SEDIMENT CONTROL OR FILTRATION TO REMOVE SEDIMENT FROM DEWATERING EFFLUENT.

4) AVOID CLEANING, FUELING, OR MAINTAINING VEHICLES ON SITE, EXCEPT IN A DESIGNATED AREA IN WHICH RUNOFF IS CONTAINED AND TREATED.

5) DELINEATE CLEARING LIMITS, EASEMENTS, SETBACKS, SENSITIVE OR CRITICAL AREAS, BUFFER ZONES, TREES AND DISCHARGE COURSE WITH FIELD MARKERS.

6) PROTECT ADJACENT PROPERTIES AND UNDISTURBED AREAS FROM CONSTRUCTION IMPACTS USING VEGETATIVE BUFFER STRIPS, SEDIMENT BARRIERS OF FILTERS, DIKES, MULCHING, OR OTHER MEASURES AS APPROPRIATE.

7) PERFORM CLEARING AND EARTH MOVING ACTIVITIES DURING DRY WEATHER TO THE MAXIMUM EXTENT PRACTICAL.

8) LIMIT AND TIME APPLICATIONS OF PESTICIDES AND FERTILIZERS TO PREVENT POLLUTED RUNOFF.

9) LIMIT CONSTRUCTION ACCESS ROUTES AND STABILIZE DESIGNATED ACCESS POINTS.

10) AVOID TRACKING DIRT OR MATERIALS OFF-SITE; CLEAN OFF-SITE PAVED AREAS AND SIDEWALKS USING DRY SWEEPING METHODS TO THE MAXIMUM EXTENT PRACTICAL.

SUPPLEMENTAL MEASURES

A. THE PHRASE "NO DUMPING – DRAINS TO BAY" OR EQUALLY EFFECTIVE PHRASE MUST BE LABELED ON STORM DRAIN INLETS (BY STENCILING, BRANDING, OR PLAQUES) TO ALERT THE PUBLIC TO THE DESTINATION OF STORM WATER AND TO PREVENT DIRECT DISCHARGE OF POLLUTANTS INTO THE STORM DRAIN.

B. USING FILTRATION MATERIALS ON STORM DRAIN COVERS TO REMOVE SEDIMENT FROM DEWATERING EFFLUENT.

C. STABILIZING ALL DENUDED AREAS AND MAINTAINING EROSION CONTROL MEASURES CONTINUOUSLY FROM OCTOBER 15 AND APRIL 15.

D. REMOVING SPOILS PROMPTLY, AND AVOID STOCKPILING OF FILL MATERIALS, WHEN RAIN IS FORECAST. IF RAIN THREATENS, STOCKPILED SOILS AND OTHER MATERIALS SHALL BE COVERED WITH A TARP OR OTHER WATERPROOF MATERIAL.

E. STORING, HANDLING, AND DISPOSING OF CONSTRUCTION MATERIALS AND WASTES SO AS TO AVOID THEIR ENTRY TO THE STORM DRAIN SYSTEMS OR WATER BODY.

F. AVOIDING CLEANING, FUELING, OR MAINTAINING VEHICLES ON-SITE, EXCEPT IN AN AREA DESIGNATED TO CONTAIN AND TREAT RUNOFF.

GRADING & DRAINAGE NOTES:

1. SCOPE OF WORK

THESE SPECIFICATIONS AND APPLICABLE PLANS PERTAIN TO AND INCLUDE ALL SITE GRADING AND EARTHWORK ASSOCIATED WITH THE PROJECT INCLUDING, BUT NOT LIMITED TO THE FURNISHING OF ALL LABOR, TOOLS AND EQUIPMENT NECESSARY FOR SITE CLEARING AND GRUBBING, SITE PREPARATION, DISPOSAL OF EXCESS OR UNSUITABLE MATERIAL, STRIPPING, KEYING, EXCAVATION, OVER EXCAVATION, RECOMPACTION PREPARATION FOR SOIL RECEIVING FILL, PAVEMENT, FOUNDATION OF SLABS, EXCAVATION, IMPORTATION OF ANY REQUIRED FILL MATERIAL, PROCESSING, PLACEMENT AND COMPACTION OF FILL AND SUBSIDIARY WORK NECESSARY TO COMPLETE THE GRADING TO CONFORM TO THE LINES, GRADING AND SLOPE SHOWN ON THE PROJECT GRADING PLANS.

2. GENERAL

A. ALL SITE GRADING AND EARTHWORK SHALL CONFORM TO THE RECOMMENDATIONS OF THESE SPECIFICATIONS, THE SOILS REPORT BY MICHELUCCI & ASSOCIATES, INC; AND THE COUNTY OF SAN MATEO.

B. ALL FILL MATERIALS SHALL BE DENSIFIED SO AS TO PRODUCE A DENSITY NOT LESS THAN 90% RELATIVE COMPACTION BASED UPON ASTM TEST DESIGNATION D1557. FIELD DENSITY TEST WILL BE PERFORMED IN ACCORDANCE WITH ASTM TEST DESIGNATION 2922 AND 3017. THE LOCATION AND FREQUENCY OF THE FIELD DENSITY TEST WILL BE AS DETERMINED BY THE SOIL ENGINEER. THE RESULTS OF THESE TEST AND COMPLIANCE WITH THE SPECIFICATIONS WILL BE THE BASIS UPON WHICH SATISFACTORY COMPLETION OF THE WORK WILL BE JUDGED BY THE SOIL ENGINEER. ALL CUT AND FILL SLOPES SHALL BE CONSTRUCTED AS SHOWN ON PLANS, BUT NO STEEPER THAN TWO (2) HORIZONTAL TO ONE (1) VERTICAL.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SATISFACTORY COMPLETION OF ALL THE EARTHWORK IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS. NO DEVIATION FROM THESE SPECIFICATIONS SHALL BE MADE EXCEPT UPON WRITTEN APPROVAL BY THE SOILS ENGINEER. BOTH CUT AND FILL AREAS SHALL BE SURFACE COMPLETED TO THE SATISFACTION OF THE SOILS ENGINEER AT THE CONCLUSION OF ALL GRADING OPERATIONS AND PRIOR TO FINAL ACCEPTANCE. THE CONTRACTOR SHALL NOTIFY THE SOILS ENGINEER AT LEAST TWO (2) WORKING DAYS PRIOR TO DOING ANY SITE GRADING AND EARTHWORK INCLUDING CLEARING.

3. CLEARING AND GRUBBING

A. THE CONTRACTOR SHALL ACCEPT THE SITE IN ITS PRESENT CONDITION. ALL EXISTING PUBLIC IMPROVEMENTS SHALL BE PROTECTED. ANY IMPROVEMENTS DAMAGED SHALL BE REPLACED BY THE CONTRACTOR AS DIRECTED BY THE LOCAL JURISDICTION WITH NO EXTRA COMPENSATION.

B. ALL ABANDONED BUILDINGS AND FOUNDATIONS, TREE (EXCEPT THOSE SPECIFIED TO REMAIN FOR LANDSCAPING PURPOSES), FENCES, VEGETATION AND ANY SURFACE DEBRIS SHALL BE REMOVED AND DISPOSED OF OFF THE SITE BY THE CONTRACTOR.

C. ALL ABANDONED SEPTIC TANKS AND ANY OTHER SUBSURFACE STRUCTURES EXISTING IN PROPOSED DEVELOPMENT AREAS SHALL BE REMOVED PRIOR TO ANY GRADING OR FILL OPERATION. ALL APPURTENANT DRAIN FIELDS AND OTHER CONNECTING LINES MUST ALSO BE TOTALLY REMOVED.

D. ALL ABANDONED UNDERGROUND IRRIGATION OR UTILITY LINES SHALL BE REMOVED OR DEMOLISHED. THE APPROPRIATE FINAL DISPOSITION OF SUCH LINES DEPEND UPON THEIR DEPTH AND LOCATION AND THE METHOD OF REMOVAL OR DEMOLITION SHALL BE DETERMINED BY THE SOILS ENGINEER. ONE OF THE FOLLOWING METHODS WILL BE USED:

(1) EXCAVATE AND TOTALLY REMOVE THE UTILITY LINE FROM THE TRENCH.

(2) EXCAVATE AND CRUSH THE UTILITY LINE IN THE TRENCH.

(3) CAP THE ENDS OF THE UTILITY LINE WITH CONCRETE TO PREVENT THE ENTRANCE OF WATER. THE LOCATIONS AT WHICH THE UTILITY LINE WILL BE CAPPED WILL BE DETERMINED BY THE UTILITY DISTRICT ENGINEER. THE LENGTH OF THE CAP SHALL NOT BE LESS THAN FIVE FEET, AND THE CONCRETED MIX EMPLOYED SHALL HAVE MINIMUM SHRINKAGE.

4. SITE PREPARATION AND STRIPPING

A. ALL SURFACE ORGANICS SHALL BE STRIPPED AND REMOVED FROM BUILDING PADS, AREAS TO RECEIVE COMPACTED FILL AND PAVEMENT AREAS.

B. UPON THE COMPLETION OF THE ORGANIC STRIPPING OPERATION, THE GROUND SURFACE (NATIVE SOIL SUBGRADE) OVER THE ENTIRE AREA OF ALL BUILDING PADS, STREET AND PAVEMENT AREAS AND ALL AREAS TO RECEIVE COMPACTED FILL SHALL BE PLOWED OR SCARIFIED UNTIL THE SURFACE IS FREE OF RUTS, HUMMOCKS OR OTHER UNEVEN FEATURES WHICH MAY INHIBIT UNIFORM SOIL COMPACTION. THE GROUND SURFACE SHALL THEN BE DISCED OR BLADED TO A DEPTH OF AT LEAST 6 INCHES. UPON ENGINEER'S SATISFACTION, THE NEW SURFACE SHALL BE WATER CONDITIONED AND RECOMPACTED PER REQUIREMENTS FOR COMPACTING FILL MATERIAL.

5. EXCAVATION

A. UPON COMPLETION OF THE CLEARING AND GRUBBING, SITE PREPARATION AND STRIPPING, THE CONTRACTOR SHALL MAKE EXCAVATIONS TO LINES AND GRADES NOTED ON THE PLAN. WHERE REQUIRED BY THE SOILS ENGINEER, UNACCEPTABLE NATIVE SOILS OR UNENGINEERED FILL SHALL BE OVER EXCAVATED BELOW THE DESIGN GRADE. SEE PROJECT SOILS REPORT FOR DISCUSSION OF OVER EXCAVATION OF THE UNACCEPTABLE MATERIAL. RESULTING GROUND LINE SHALL BE SCARIFIED, MOISTURE-CONDITIONED AND RECOMPACTED AS SPECIFIED IN SECTION 4 OF THESE SPECIFICATIONS. COMPACTED FILL MATERIAL SHALL BE PLACED TO BRING GROUND LEVEL BACK TO DESIGN GRADE.

B. EXCAVATED MATERIALS SUITABLE FOR COMPACTED FILL MATERIAL SHALL BE UTILIZED IN MAKING THE REQUIRED COMPACTED FILLS. THOSE NATIVE MATERIALS CONSIDERED UNSUITABLE BY THE SOILS ENGINEER SHALL BE DISPOSED OF OFF THE SITE BY THE CONTRACTOR.

6. PLACING, SPREADING AND COMPACTING FILL MATERIAL

A. FILL MATERIALS

THE MATERIALS PROPOSED FOR USE AS COMPACTED FILL SHALL BE APPROVED BY THE SOILS ENGINEER BEFORE COMMENCEMENT OF GRADING OPERATIONS. THE NATIVE MATERIAL IS CONSIDERED SUITABLE FOR FILL; HOWEVER, ANY NATIVE MATERIAL DESIGNATED UNSUITABLE BY THE SOILS ENGINEER SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR. ANY IMPORTED MATERIAL SHALL BE APPROVED FOR USE BY THE SOILS ENGINEER, IN WRITING, BEFORE BEING IMPORTED TO THE SITE AND SHALL POSSESS SUFFICIENT FINES TO PROVIDE A COMPETENT SOIL MATRIX AND SHALL BE FREE OF VEGETATIVE AND ORGANIC MATTER AND OTHER DELETERIOUS MATERIALS. ALL FILL VOIDS SHALL BE FILLED AND PROPERLY COMPACTED. NO ROCKS LARGER THAN THREE INCHES IN DIAMETER SHALL BE PERMITTED.

B. FILL CONSTRUCTION

THE SOILS ENGINEER SHALL APPROVE THE NATIVE SOIL SUBGRADE BEFORE PLACEMENT OF ANY COMPACTED FILL MATERIAL. UNACCEPTABLE NATIVE SOIL SHALL BE REMOVED AS DIRECTED BY THE SOILS ENGINEER. THE RESULTING GROUND LINE SHALL BE SCARIFIED MOISTURE CONDITIONED AND RECOMPACTED AS SPECIFIED IN SECTION 4 OF THESE SPECIFICATIONS. COMPACTED FILL MATERIAL SHALL BE PLACED TO BRING GROUND LEVEL BACK TO DESIGN GRADE. GROUND PREPARATION SHALL BE FOLLOWED CLOSELY BY FILL PLACEMENT TO PREVENT DRYING OUT OF THE SUBSOIL BEFORE PLACEMENT OF THE FILL.

THE APPROVED FILL MATERIALS SHALL BE PLACED IN UNIFORM HORIZONTAL LAYERS NO THICKER THAN 8" IN LOOSE THICKNESS. LAYERS SHALL BE SPREAD EVENLY AND SHALL BE THOROUGHLY BLADE MIXED DURING THE SPREADING TO ENSURE UNIFORMITY OF MATERIAL IN EACH LAYER. THE SCARIFIED SUBGRADE AND FILL MATERIAL SHALL BE MOISTURE CONDITIONED TO AT LEAST OPTIMUM MOISTURE. WHEN THE MOISTURE CONTENT OF THE FILL IS BELOW THAT SPECIFIED, WATER SHALL BE ADDED UNTIL THE MOISTURE DURING THE COMPACTION PROCESS. WHEN THE MOISTURE CONTENT OF THE FILL IS ABOVE THAT SPECIFIED, THE FILL MATERIAL SHALL BE AERATED BY BLADING OR OTHER SATISFACTORY METHODS UNTIL THE MOISTURE CONTENT IS AS SPECIFIED.

AFTER EACH LAYER HAS BEEN PLACED, MIXED, SPREAD EVENLY AND MOISTURE CONDITIONED, IT SHALL BE COMPACTED TO AT LEAST THE SPECIFIED DENSITY.

THE FILL OPERATION SHALL BE CONTINUED IN COMPACTED LAYERS AS SPECIFIED ABOVE UNTIL THE FILL HAS BEEN BROUGHT TO THE FINISHED SLOPES AND GRADES AS SHOWN ON THE PLANS. NO LAYER SHALL BE ALLOWED TO DRY OUT BEFORE SUBSEQUENT LAYERS ARE PLACED.

COMPACTION EQUIPMENT SHALL BE OF SUCH DESIGN THAT IT WILL BE ABLE TO COMPACT THE FILL TO THE SPECIFIED MINIMUM COMPACTION WITHIN THE SPECIFIED MOISTURE CONTENT RANGE. COMPACTION OF EACH LAYER SHALL BE CONTINUOUS OVER ITS ENTIRE AREA UNTIL THE REQUIRED MINIMUM DENSITY HAS BEEN OBTAINED.

7. CUT OR FILL SLOPES

ALL CONSTRUCTED SLOPES, BOTH CUT AND FILL, SHALL BE NO STEEPER THAN 2 TO 1 (HORIZONTAL TO VERTICAL). DURING THE GRADING OPERATION, COMPACTED FILL SLOPES SHALL BE OVERFILLED BY AT LEAST ONE FOOT HORIZONTALLY AT THE COMPLETION OF THE GRADING OPERATIONS, THE EXCESS FILL EXISTING ON THE SLOPES SHALL BE BLADED OFF TO CREATE THE FINISHED SLOPE EMBANKMENT. ALL CUT AND FILL SLOPES SHALL BE TRACK WALKED AFTER BEING BROUGHT TO FINISH GRADE AND THEN BE PLANTED WITH EROSION CONTROL SLOPE PLANTING. THE SOILS ENGINEER SHALL REVIEW ALL CUT SLOPES TO DETERMINE IF ANY ADVERSE GEOLOGIC CONDITIONS ARE EXPOSED. IF SUCH CONDITIONS DO OCCUR, THE SOILS ENGINEER SHALL RECOMMEND THE APPROPRIATE MITIGATION MEASURES AT THE TIME OF THEIR DETECTION.

8. SEASONAL LIMITS AND DRAINAGE CONTROL

FILL MATERIALS SHALL NOT BE PLACED, SPREAD OR COMPACTED WHILE IT IS AT AN UNSUITABLY HIGH MOISTURE CONTENT OR DURING OTHERWISE UNFAVORABLE CONDITIONS. WHEN THE WORK IS INTERRUPTED FOR ANY REASON THE FILL OPERATIONS SHALL NOT BE RESUMED UNTIL FIELD TEST PERFORMED BY THE SOILS ENGINEER INDICATE THAT THE MOISTURE CONDITIONS IN AREAS TO BE FILLED ARE AS PREVIOUSLY SPECIFIED. ALL EARTH MOVING AND WORKING OPERATIONS SHALL BE CONTROLLED TO PREVENT WATER FROM RUNNING INTO EXCAVATED AREAS. ALL EXCESS WATER SHALL BE PROMPTLY REMOVED AND THE SITE KEPT DRY.

9. DUST CONTROL

THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY FOR THE ALLEVIATION OR PREVENTION OF ANY DUST NUISANCE ON OR ABOUT THE SITE CAUSED BY THE CONTRACTOR'S OPERATION EITHER DURING THE PERFORMANCE OF THE GRADING OR RESULTING FROM THE CONDITION IN WHICH THE CONTRACTOR LEAVES THE SITE. THE CONTRACTOR SHALL ASSUME ALL LIABILITY INCLUDING COURT COST OF CO-DEFENDANTS FOR ALL CLAIMS RELATED TO DUST OR WIND-BLOWN MATERIALS ATTRIBUTABLE TO HIS WORK. COST FOR THIS ITEM OF WORK IS TO BE INCLUDED IN THE EXCAVATION ITEM AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.

10. INDEMNITY

THE CONTRACTOR WILL HOLD HARMLESS, INDEMNIFY AND DEFEND THE ENGINEER, THE OWNER AND HIS CONSULTANTS AND EACH OF THEIR OFFICERS AND EMPLOYEES AND AGENTS, FROM ANY AND ALL LIABILITY CLAIMS, LOSSES OR DAMAGE ARISING OR ALLEGED TO HEREIN, BUT NOT INCLUDING THE SOLE NEGLIGENCE OF THE OWNER, THE ARCHITECT, THE ENGINEER AND HIS CONSULTANTS AND EACH OF THEIR OFFICERS AND EMPLOYEES AND AGENTS.

11. SAFETY

IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE. INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

THE DUTY OF THE ENGINEERS TO CONDUCT CONSTRUCTION REVIEW OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES, IN, ON OR NEAR THE CONSTRUCTION SITE.

12. GUARANTEE

NEITHER THE FINAL PAYMENT, NOR THE PROVISIONS IN THE CONTRACT, NOR PARTIAL, NOR ENTIRE USE OR OCCUPANCY OF THE PREMISES BY THE OWNER SHALL CONSTITUTE AN ACCEPTANCE OF THE WORK NOT DONE IN ACCORDANCE WITH THE CONTRACT OR RELIEVES THE CONTRACTOR OF LIABILITY IN RESPECT TO ANY EXPRESS WARRANTIES OR RESPONSIBILITY FOR FAULTY MATERIAL OR WORKMANSHIP.

THE CONTRACTOR SHALL REMEDY ANY DEFECTS IN WORK AND PAY FOR ANY DAMAGE TO OTHER WORK RESULTING THERE FROM WHICH SHALL APPEAR WITHIN A PERIOD OF ONE (1) CALENDAR YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK.

13. TRENCH BACKFILL

EITHER THE ON-SITE INORGANIC SOIL OR APPROVED IMPORTED SOIL MAY BE USED AS TRENCH BACKFILL. THE BACKFILL MATERIAL SHALL BE MOISTURE CONDITIONED PER THESE SPECIFICATIONS AND SHALL BE PLACED IN LIFTS OF NOT MORE THAN SIX INCHES IN HORIZONTAL UNCOMPACTED LAYERS AND BE COMPACTED BY MECHANICAL MEANS TO A MINIMUM OF 90% RELATIVE COMPACTION. IMPORTED SAND MAY BE USED FOR TRENCH BACKFILL MATERIAL PROVIDED IT IS COMPACTED TO AT LEAST 90% RELATIVE COMPACTION. WATER JETTING ASSOCIATED WITH COMPACTION USING VIBRATORY EQUIPMENT WILL BE PERMITTED ONLY WITH IMPORTED SAND BACKFILL WITH THE APPROVAL OF THE SOILS ENGINEER. ALL PIPES SHALL BE BEDDED WITH SAND EXTENDING FROM THE TRENCH BOTTOM TO TWELVE INCHES ABOVE THE PIPE. SAND BEDDING IS TO BE COMPACTED AS SPECIFIED ABOVE FOR SAND BACKFILL.

14. EROSION CONTROL

A. ALL GRADING, EROSION AND SEDIMENT CONTROL AND RELATED WORK UNDERTAKEN ON THIS SITE IS SUBJECT TO ALL TERMS AND CONDITIONS OF THE COUNTY GRADING ORDINANCE AND MADE A PART HEREOF BY REFERENCE.

B. THE CONTRACTOR WILL BE LIABLE FOR ANY AND ALL DAMAGES TO ANY PUBLICLY OWNED AND MAINTAINED ROAD CAUSED BY THE AFORESAID CONTRACTOR'S GRADING ACTIVITIES, AND SHALL BE RESPONSIBLE FOR THE CLEANUP OF ANY MATERIAL SPILLED ON ANY PUBLIC ROAD ON THE HAUL ROUTE.

C. THE EROSION CONTROL MEASURES ARE TO BE OPERABLE DURING THE RAINY SEASON, GENERALLY FROM OCTOBER FIRST TO APRIL FIFTEENTH. EROSION CONTROL PLANTING IS TO BE COMPLETED BY OCTOBER FIRST. NO GRADING OR UTILITY TRENCHING SHALL OCCUR BETWEEN OCTOBER FIRST AND APRIL FIFTEENTH UNLESS AUTHORIZED BY THE LOCAL JURISDICTION.

D. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL DISTURBED AREAS ARE STABILIZED AND CHANGES TO THIS EROSION AND SEDIMENT CONTROL PLAN SHALL BE MADE TO MEET FIELD CONDITIONS ONLY WITH THE APPROVAL OF OR AT THE DIRECTION OF THE SOILS ENGINEER.

E. DURING THE RAINY SEASON, ALL PAVED AREAS SHALL BE KEPT CLEAR OF EARTH MATERIAL AND DEBRIS. THE SITE SHALL BE MAINTAINED SO AS TO MINIMIZE SEDIMENT-LADEN RUNOFF TO ANY STORM DRAINAGE SYSTEM.

F. ALL EROSION CONTROL FACILITIES MUST BE INSPECTED AND REPAIRED AT THE END OF EACH WORKING DAY DURING THE RAINY SEASON.

G. WHEN NO LONGER NECESSARY AND PRIOR TO FINAL ACCEPTANCE OF DEVELOPMENT, SEDIMENT BASINS SHALL BE REMOVED OR OTHERWISE DEACTIVATED AS REQUIRED BY THE LOCAL JURISDICTION.

H. A CONSTRUCTION ENTRANCE SHALL BE PROVIDED AT ANY POINT OF EGRESS FROM THE SITE TO ROADWAY. A CONSTRUCTION ENTRANCE SHOULD BE COMPOSED OF COARSE DRAIN ROCK (2" TO 3") MINIMUM DIAMETER) AT LEAST EIGHT INCHES THICK BY FIFTY (50) FEET LONG BY TWENTY (20) FEET WIDE UNLESS SHOWN OTHERWISE ON PLAN AND SHALL BE MAINTAINED UNTIL THE SITE IS PAVED.

I. ALL AREAS SPECIFIED FOR HYDROSEEDING SHALL BE NOZZLE PLANTED WITH STABILIZATION MATERIAL CONSISTING OF FIBER, SEED, FERTILIZER AND WATER, MIXED AND APPLIED IN THE FOLLOWING PROPORTIONS:

FIBER, 2000 LBS/ACRE
SEED, 200 LBS/ACRE (SEE NOTE J, BELOW)
FERTILIZER (11-8-4), 500 LBS/ACRE
WATER, AS REQUIRED FOR APPLICATION

J. SEED MIX SHALL BE PER CALTRANS STANDARDS.

K. WATER UTILIZED IN THE STABILIZATION MATERIAL SHALL BE OF SUCH QUALITY THAT IT WILL PROMOTE GERMINATION AND STIMULATE GROWTH OF PLANTS. IT SHALL BE FREE OF POLLUTANT MATERIALS AND WEED SEED.

L. HYDROSEEDING SHALL CONFORM TO THE PROVISIONS OF SECTION 20, EROSION CONTROL AND HIGHWAY PLANTING", OF THE STANDARD SPECIFICATIONS OF THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION, AS LAST REVISED.

M. A DISPERSING AGENT MAY BE ADDED TO THE HYDROSEEDING MATERIAL, PROVIDED THAT THE CONTRACTOR FURNISHES SUITABLE EVIDENCE THAT THE ADDITIVE WILL NOT ADVERSELY AFFECT THE PERFORMANCE OF THE SEEDING MIXTURE.

N. STABILIZATION MATERIALS SHALL BE APPLIED AS SOON AS PRACTICABLE AFTER COMPLETION OF GRADING OPERATIONS AND PRIOR TO THE ONSET OF WINTER RAINS, OR AT SUCH OTHER TIME AS DIRECTED BY THE COUNTY ENGINEER. THE MATERIAL SHALL BE APPLIED BEFORE INSTALLATION OF OTHER LANDSCAPING MATERIALS SUCH AS TREES, SHRUBS AND GROUND COVERS.

O. THE STABILIZATION MATERIAL SHALL BE APPLIED WITHIN 4-HOURS AFTER MIXING. MIXED MATERIAL NOT USED WITHIN 4-HOURS SHALL BE REMOVED FROM THE SITE.

P. THE CONTRACTOR SHALL MAINTAIN THE SOIL STABILIZATION MATERIAL AFTER PLACEMENT. THE COUNTY ENGINEER MAY REQUIRE SPRAY APPLICATION OF WATER OR OTHER MAINTENANCE ACTIVITIES TO ASSURE THE EFFECTIVENESS OF THE STABILIZATION PROCESS. APPLICATION OF WATER SHALL BE ACCOMPLISHED USING NOZZLES THAT PRODUCE A SPRAY THAT DOES NOT CONCENTRATE OR WASH AWAY THE STABILIZATION MATERIALS.

15. CLEANUP

THE CONTRACTOR MUST MAINTAIN THE SITE CLEAN, SAFE AND IN USABLE CONDITION. ANY SPILLS OF SOIL, ROCK OR CONSTRUCTION MATERIAL MUST BE REMOVED FROM THE SITE BY THE CONTRACTOR DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. COST FOR THIS ITEM OF WORK SHALL BE INCLUDED IN THE EXCAVATION AND COMPACTION ITEM AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED.

NOTE:
THESE NOTES ARE INTENDED TO BE USED AS A GENERAL GUIDELINE. THE REFERENCED SOILS REPORT FOR THE PROJECT AND GOVERNING AGENCY GRADING ORDINANCE SHALL SUPERSEDE THESE NOTES. THE SOILS ENGINEER MAY MAKE ON-SITE RECOMMENDATIONS DURING GRADING OPERATIONS.

UTILITIES / SERVICES

WATER	CAL WATER SERVICES
SEWER	SAN MATEO COUNTY
GAS	PACIFIC GAS AND ELECTRIC (PG&E)
ELECTRICITY	PACIFIC GAS AND ELECTRIC (PG&E)
TELEPHONE	AT&T
FIRE PROTECTION	SAN MATEO COUNTY FIRE SERVICES

BIOTREATMENT SOIL REQUIREMENTS

PRIOR TO ORDERING THE BIOTREATMENT SOIL MIX OR DELIVERY TO THE PROJECT SITE, CONTRACTOR SHALL PROVIDE A BIOTREATMENT SOIL MIX SPECIFICATION CHECKLIST, COMPLETED BY THE SOIL MIX SUPPLIER AND CERTIFIED TESTING LAB.

GEOTECH INSPECTION NOTE:

ALL EARTHWORK AND SITE DRAINAGE, INCLUDING EXCAVATION FOR THE BASEMENT, EXCAVATIONS FOR DRILLED PIER FOUNDATIONS, PLACEMENT OF ENGINEER FILL, PREPARATION OF SUBGRADE BENEATH THE BASEMENT MAT AND ANY AT GRADE SLAB, BASEMENT RETAINING WALL BACKFILL, AND FINAL SURFACE DRAINAGE INSTALLATION SHOULD BE PERFORMED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT BY MICHELUCCI & ASSOCIATES, INC. DATED DECEMBER 5, 2013 AND SUPPLEMENT TO THE REPORT DATED AUGUST 24, 2018. MICHELUCCI & ASSOCIATES, INC. SHOULD BE PROVIDED AT LEAST 48 HOURS ADVANCE NOTIFICATION (650) 692-0163 OF ANY EARTHWORK OPERATIONS AND SHOULD BE PRESENT TO OBSERVE AND TEST, AS NECESSARY, THE EARTHWORK AND FOUNDATION INSTALLATION PHASES OF THE PROJECT.

REGISTERED PROFESSIONAL ENGINEER
JAMES TOBY
No. 63127
CIVIL
STATE OF CALIFORNIA
ORIGINAL SIGNATURES IN BLUE INK

LEA & BRAZE ENGINEERING, INC.
CIVIL ENGINEERS · LAND SURVEYORS
BAY AREA REGION
2495 INDUSTRIAL PKWY WEST
HAYWARD, CALIFORNIA 94545
(P) (510) 887-4086
(F) (510) 887-3019
SACRAMENTO REGION
3017 DOUGLAS BLVD, # 300
ROSEVILLE, CA 95661
(P) (916)966-1338
(F) (916)797-7363
WWW.LEABRAZE.COM

CALWATER TANK
DRAINAGE & TREATMENT PLAN
SAN MATEO, CALIFORNIA
(UNINCORPORATED) SAN MATEO COUNTY

GRADING SPECIFICATIONS

REVISIONS	BY

JOB NO:	2161285
DATE:	02-01-23
SCALE:	NO SCALE
DESIGN BY:	AH
DRAWN BY:	MCF
SHEET NO:	DTP-4.0

PURPOSE:

THE PURPOSE OF THIS PLAN IS TO STABILIZE THE SITE TO PREVENT EROSION OF GRADED AREAS AND TO PREVENT SEDIMENTATION FROM LEAVING THE CONSTRUCTION AREA AND AFFECTING NEIGHBORING SITES, NATURAL AREAS, PUBLIC FACILITIES OR ANY OTHER AREA THAT MIGHT BE AFFECTED BY SEDIMENTATION. ALL MEASURES SHOWN ON THIS PLAN SHOULD BE CONSIDERED THE MINIMUM REQUIREMENTS NECESSARY. SHOULD FIELD CONDITIONS DICTATE ADDITIONAL MEASURES, SUCH MEASURES SHALL BE PER CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD'S FIELD MANUAL FOR EROSION AND SEDIMENTATION CONTROL AND THE CALIFORNIA STORM WATER QUALITY ASSOCIATION BEST MANAGEMENT PRACTICES HANDBOOK FOR CONSTRUCTION. LEA & BRAZE ENGINEERING SHOULD BE NOTIFIED IMMEDIATELY SHOULD CONDITIONS CHANGE.

EROSION CONTROL NOTES:

1. IT SHALL BE THE OWNER'S/CONTRACTOR'S RESPONSIBILITY TO MAINTAIN CONTROL OF THE ENTIRE CONSTRUCTION OPERATION AND TO KEEP THE ENTIRE SITE IN COMPLIANCE WITH THIS EROSION CONTROL PLAN.
2. THE INTENTION OF THIS PLAN IS FOR INTERIM EROSION AND SEDIMENT CONTROL ONLY. ALL EROSION CONTROL MEASURES SHALL CONFORM TO CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD'S FIELD MANUAL FOR EROSION AND SEDIMENTATION CONTROL, THE CALIFORNIA STORM WATER QUALITY ASSOCIATION BEST MANAGEMENT PRACTICES HANDBOOK FOR CONSTRUCTION, AND THE LOCAL GOVERNING AGENCY FOR THIS PROJECT.
3. OWNER/CONTRACTOR SHALL BE RESPONSIBLE FOR MONITORING EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO, DURING, AND AFTER STORM EVENTS. PERSON IN CHARGE OF MAINTAINING EROSION CONTROL MEASURES SHOULD WATCH LOCAL WEATHER REPORTS AND ACT APPROPRIATELY TO MAKE SURE ALL NECESSARY MEASURES ARE IN PLACE.
4. SANITARY FACILITIES SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
5. DURING THE RAINY SEASON, ALL PAVED AREAS SHALL BE KEPT CLEAR OF EARTH MATERIAL AND DEBRIS. THE SITE SHALL BE MAINTAINED SO AS TO MINIMIZE SEDIMENT-LADEN RUNOFF TO ANY STORM DRAINAGE SYSTEM, INCLUDING EXISTING DRAINAGE SWALES AND WATERCOURSES.
6. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION WILL BE MINIMIZED. COMPLIANCE WITH FEDERAL, STATE AND LOCAL LAWS CONCERNING POLLUTION SHALL BE MAINTAINED AT ALL TIMES.
7. CONTRACTOR SHALL PROVIDE DUST CONTROL AS REQUIRED BY THE APPROPRIATE FEDERAL, STATE AND LOCAL AGENCY REQUIREMENTS.
8. ALL MATERIALS NECESSARY FOR THE APPROVED EROSION CONTROL MEASURES SHALL BE IN PLACE BY OCTOBER 15TH.
9. EROSION CONTROL SYSTEMS SHALL BE INSTALLED AND MAINTAINED THROUGHOUT THE RAINY SEASON, OR FROM OCTOBER 15TH THROUGH APRIL 15TH, WHICHEVER IS LONGER.
10. IN THE EVENT OF RAIN, ALL GRADING WORK IS TO CEASE IMMEDIATELY AND THE SITE IS TO BE SEALED IN ACCORDANCE WITH THE APPROVAL EROSION CONTROL MEASURES AND APPROVED EROSION CONTROL PLAN.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING AND REPAIRING EROSION CONTROL SYSTEMS AFTER EACH STORM.
12. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY LOCAL JURISDICTION'S ENGINEERING DEPARTMENT OR BUILDING OFFICIALS.
13. MEASURES SHALL BE TAKEN TO COLLECT OR CLEAN ANY ACCUMULATION OR DEPOSIT OF DIRT, MUD, SAND, ROCKS, GRAVEL OR DEBRIS ON THE SURFACE OF ANY STREET, ALLEY OR PUBLIC PLACE OR IN ANY PUBLIC STORM DRAIN SYSTEMS. THE REMOVAL OF AFORESAID SHALL BE DONE BY STREET SWEEPING OR HAND SWEEPING. WATER SHALL NOT BE USED TO WASH SEDIMENTS INTO PUBLIC OR PRIVATE DRAINAGE FACILITIES.
14. EROSION CONTROL MEASURES SHALL BE ON-SITE FROM SEPTEMBER 15TH THRU APRIL 15TH.
15. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED THROUGHOUT THE RAINY SEASON OR FROM OCTOBER 15TH THROUGH APRIL 15TH, WHICHEVER IS GREATER.
16. PLANS SHALL BE DESIGNED TO MEET C3 REQUIREMENTS OF THE MUNICIPAL STORMWATER REGIONAL PERMIT("MRP") NPDES PERMIT CAS 612008.
17. THE CONTRACTOR TO NPDES (NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM) BEST MANAGEMENT PRACTICES (BMP) FOR SEDIMENTATION PREVENTION AND EROSION CONTROL TO PREVENT DELETERIOUS MATERIALS OR POLLUTANTS FROM ENTERING THE TOWN OR COUNTY STORM DRAIN SYSTEMS.
18. THE CONTRACTOR MUST INSTALL ALL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO THE INCEPTION OF ANY WORK ONSITE AND MAINTAIN THE MEASURES UNTIL THE COMPLETION OF ALL LANDSCAPING.
19. THE CONTRACTOR SHALL MAINTAIN ADJACENT STREETS IN A NEAT, CLEAN DUST FREE AND SANITARY CONDITION AT ALL TIMES AND TO THE SATISFACTION OF THE TOWN INSPECTOR. THE ADJACENT STREET SHALL AT ALL TIMES BE KEPT CLEAN OF DEBRIS, WITH DUST AND OTHER NUISANCE BEING CONTROLLED AT ALL TIMES. THE CONTRACTOR BE RESPONSIBLE FOR ANY CLEAN UP ON ADJACENT STREETS AFFECTED BY THE BY THEIR CONSTRUCTION, METHOD OF STREET CLEANING SHALL BE BY DRY SWEEPING OF ALL PAVED AREAS. NO STOCKPILING OF BUILDING MATERIALS WITHIN THE TOWN RIGHT-OF-WAY.
20. SEDIMENTS AND OTHER MATERIALS SHALL NOT BE TRACKED FROM THE SITE BY VEHICLE TRAFFIC. THE CONTRACTOR SHALL INSTALL A STABILIZED CONSTRUCTION ENTRANCE PRIOR TO THE INSPECTION OF ANY WORK ONSITE AND MAINTAIN IT FOR THE DURATION OF THE CONSTRUCTION PROCESS SO AS TO NOT INHIBIT SEDIMENTS FROM BEING DEPOSITED INTO THE PUBLIC RIGHT-OF-WAY UNTIL THE COMPLETION OF ALL LANDSCAPING.
21. THE CONTRACTOR SHALL PROTECT DOWN SLOPE DRAINAGE COURSES, STREAMS AND STORM DRAINS WITH ROCK FILLED SAND BAGS, TEMPORARY SWALES, SILT FENCES, AND EARTH PERMS IN CONJUNCTION OF ALL LANDSCAPING.
22. STOCKPILED MATERIALS SHALL BE COVERED WITH VISQUEEN OR A TARPAULIN UNTIL THE MATERIAL IS REMOVED FROM THE SITE. ANY REMAINING BARE SOIL THAT EXISTS AFTER THE STOCKPILE HAS BEEN REMOVED SHALL BE COVERED UNTIL A NATURAL GROUND COVER IS ESTABLISHED OR IT IS SEEDED OR PLANTED TO PROVIDE GROUND COVER PRIOR TO THE FALL RAINY SEASON.
23. EXCESS OR WASTE CONCRETE MUST NOT BE WASHED INTO THE PUBLIC RIGHT-OF-WAYOR ANY OTHER DRAINAGE SYSTEM. PROVISIONS SHALL BE MADE TO RETAIN CONCRETE WASTES ON SITE UNTIL THEY CAN BE DISPOSED OF AS SOLID WASTE.
24. TRASH AND CONSTRUCTION RELATED SOLID WASTES MUST BE DEPOSITED INTO A COVERED RECEPTACLE TO PREVENT CONTAMINATION AND DISPERSAL BY WIND

EROSION CONTROL NOTES CONTINUED:

24. FUELS, OILS, SOLVENTS AND OTHER TOXIC MATERIALS MUST BE STORED IN ACCORDANCE WITH THEIR LISTING AND ARE NOT TO CONTAMINATE THE SOIL AND SURFACE WATERS. ALL APPROVED STORAGE CONTAINERS ARE TO BE PROTECTED FROM THE WEATHER. SPILLS MUST BE CLEANED UP IMMEDIATELY AND DISPOSED OF IN A PROPER MANNER. SPILLS MUST NOT BE WASHED INTO THE DRAINAGE SYSTEM,
25. DUST CONTROL SHALL BE DONE BY WATERING AND AS OFTEN AS REQUIRED BY THE TOWN INSPECTOR.
26. SILT FENCE(S) AND/OR FIBER ROLL(S) SHALL BE INSTALLED PRIOR TO SEPTEMBER 15TH AND SHALL REMAIN IN PLACE UNTIL THE LANDSCAPING GROUND COVER IS INSTALLED. CONTRACTOR SHALL CONTINUOUSLY MONITOR THESE MEASURES, FOLLOWING AND DURING ALL RAIN EVENTS,TO PUBLIC OWNED FACILITIES.

EROSION CONTROL MEASURES:

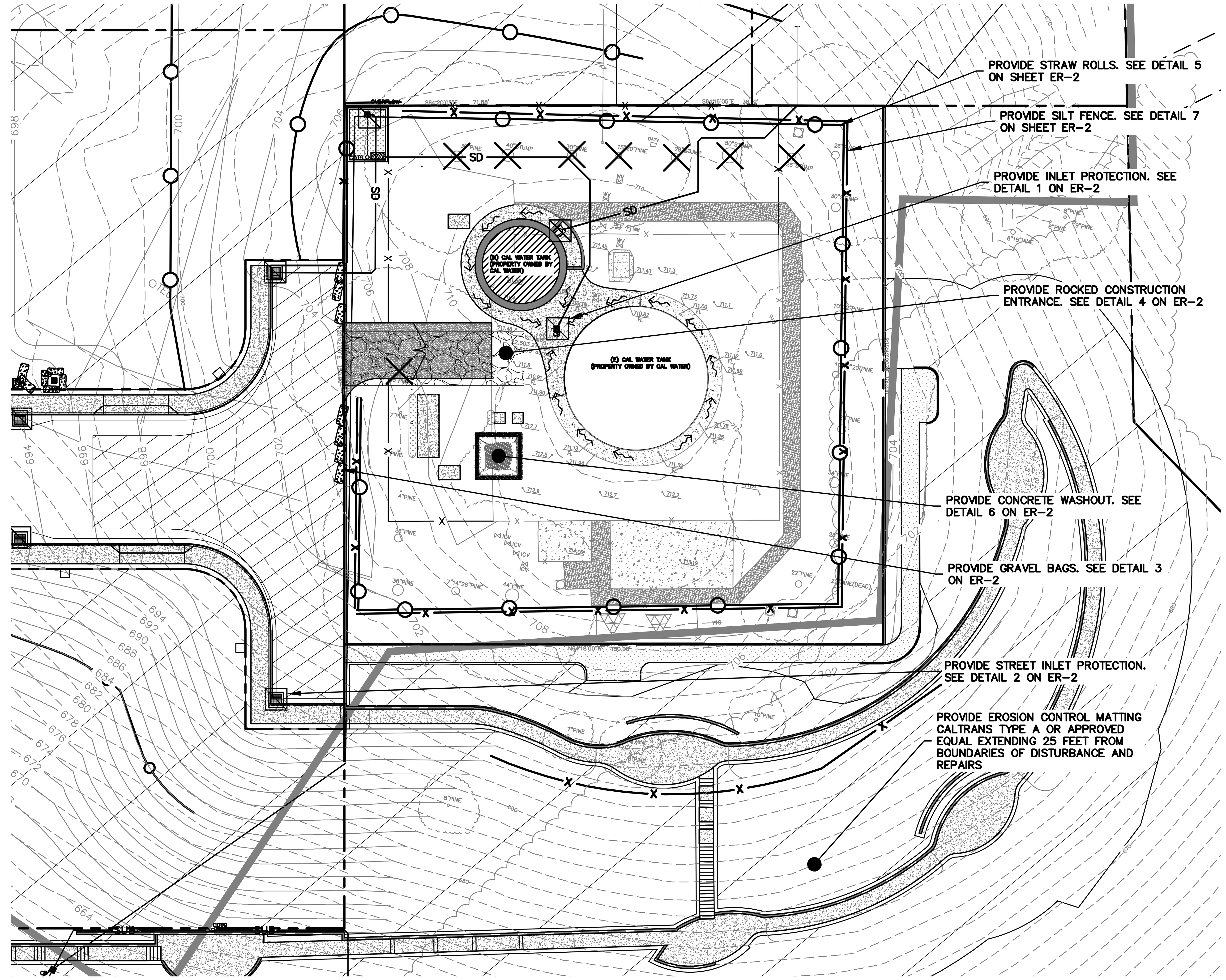
1. THE FACILITIES SHOWN ON THIS PLAN ARE DESIGNED TO CONTROL EROSION AND SEDIMENT DURING THE RAINY SEASON, OCTOBER 15TH TO APRIL 15. EROSION CONTROL FACILITIES SHALL BE IN PLACE PRIOR TO OCTOBER 15TH OF ANY YEAR. GRADING OPERATIONS DURING THE RAINY SEASON WHICH LEAVE DENUDED SLOPES SHALL BE PROTECTED WITH EROSION CONTROL MEASURES IMMEDIATELY FOLLOWING GRADING ON THE SLOPES.
2. SITE CONDITIONS AT TIME OF PLACEMENT OF EROSION CONTROL MEASURES WILL VARY. APPROPRIATE ACTION INCLUDING TEMPORARY SWALES, INLETS, HYDROSEEDING, STRAW BALES, ROCK SACKS, ETC. SHALL BE TAKEN TO PREVENT EROSION AND SEDIMENTATION FROM LEAVING SITE. EROSION CONTROL MEASURES SHALL BE ADJUSTED AS THE CONDITIONS CHANGE AND THE NEED OF CONSTRUCTION SHIFT.
3. CONSTRUCTION ENTRANCES SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF GRADING. ALL CONSTRUCTION TRAFFIC ENTERING ONTO THE PAVED ROADS MUST CROSS THE STABILIZED CONSTRUCTION ENTRANCES. CONTRACTOR SHALL MAINTAIN STABILIZED ENTRANCE AT EACH VEHICLE ACCESS POINT TO EXISTING PAVED STREETS. ANY MUD OR DEBRIS TRACKED ONTO PUBLIC STREETS SHALL BE REMOVED DAILY AND AS REQUIRED BY THE GOVERNING AGENCY.
4. ALL EXPOSED SLOPES THAT ARE NOT VEGETATED SHALL BE HYDROSEEDED. IF HYDROSEEDING IS NOT USED OR IS NOT EFFECTIVE BY OCTOBER 15, THEN OTHER IMMEDIATE METHODS SHALL BE IMPLEMENTED, SUCH AS EROSION CONTROL BLANKETS, OR A THREE-STEP APPLICATION OF 1) SEED, MULCH, FERTILIZER 2) BLOWN STRAW 3) TACKIFIER AND MULCH. HYDROSEEDING SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF SECTION 20" EROSION CONTROL AND HIGHWAY PLANTING" OF THE STANDARD SPECIFICATION OF THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION, AS LAST REVISED. REFER TO THE EROSION CONTROL SECTION OF THE GRADING SPECIFICATIONS THAT ARE A PART OF THIS PLAN SET FOR FURTHER INFORMATION.
5. INLET PROTECTION SHALL BE INSTALLED AT OPEN INLETS TO PREVENT SEDIMENT FROM ENTERING THE STORM DRAIN SYSTEM. INLETS NOT USED IN CONJUNCTION WITH EROSION CONTROL ARE TO BE BLOCKED TO PREVENT ENTRY OF SEDIMENT. MINIMUM INLET PROTECTION SHALL CONSIST OF A ROCK SACKS OR AS SHOWN ON THIS PLAN
6. THIS EROSION AND SEDIMENT CONTROL PLAN MAY NOT COVER ALL THE SITUATIONS THAT MAY ARISE DURING CONSTRUCTION DUE TO UNANTICIPATED FIELD CONDITIONS. VARIATIONS AND ADDITIONS MAY BE MADE TO THIS PLAN IN THE FIELD. A REPRESENTATIVE OF LEA & BRAZE ENGINEERING SHALL PERFORM A FIELD REVIEW AND MAKE RECOMMENDATIONS AS NEEDED. CONTRACTOR IS RESPONSIBLE TO NOTIFY LEA & BRAZE ENGINEERING AND THE GOVERNING AGENCY OF ANY CHANGES.
7. THE EROSION CONTROL MEASURES SHALL CONFORM TO THE LOCAL JURISDICTION'S STANDARDS AND THE APPROVAL OF THE LOCAL JURISDICTION'S ENGINEERING DEPARTMENT.
8. STRAW ROLLS SHALL BE PLACED AT THE TOE OF SLOPES AND ALONG THE DOWN SLOPE PERIMETER OF THE PROJECT. THEY SHALL BE PLACED AT 25 FOOT INTERVALS ON GRADED SLOPES. PLACEMENT SHALL RUN WITH THE CONTOURS AND ROLLS SHALL BE TIGHTLY END BUTTED. CONTRACTOR SHALL REFER TO MANUFACTURES SPECIFICATIONS FOR PLACEMENT AND INSTALLATION INSTRUCTIONS.

REFERENCES:

1. CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD'S FIELD MANUAL FOR EROSION AND SEDIMENTATION CONTROL
2. CALIFORNIA STORM WATER QUALITY ASSOCIATION BEST MANAGEMENT PRACTICES HANDBOOK FOR CONSTRUCTION

PERIODIC MAINTENANCE:

1. MAINTENANCE IS TO BE PERFORMED AS FOLLOWS:
   A. DAMAGES CAUSED BY SOIL EROSION OR CONSTRUCTION SHALL BE REPAIRED AT THE END OF EACH WORKING DAY.
   B. SWALES SHALL BE INSPECTED PERIODICALLY AND MAINTAINED AS NEEDED.
   C. SEDIMENT TRAPS, BERMS, AND SWALES ARE TO BE INSPECTED AFTER EACH STORM AND REPAIRS MADE AS NEEDED.
   D. SEDIMENT SHALL BE REMOVED AND SEDIMENT TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO A DEPTH OF 1' FOOT.
   E. SEDIMENT REMOVED FROM TRAP SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
   F. RILLS AND GULLIES MUST BE REPAIRED.
2. GRAVEL BAG INLET PROTECTION SHALL BE CLEANED OUT WHENEVER SEDIMENT DEPTH IS ONE HALF THE HEIGHT OF ONE GRAVEL BAG.
3. STRAW ROLLS SHALL BE PERIODICALLY CHECKED TO ASSURE PROPER FUNCTION AND CLEANED OUT WHENEVER THE SEDIMENT DEPTH REACHED HALF THE HEIGHT OF THE ROLL.
4. SILT FENCE SHALL BE PERIODICALLY CHECKED TO ASSURE PROPER FUNCTION AND CLEANED OUT WHENEVER THE SEDIMENT DEPTH REACHES ONE FOOT IN HEIGHT.
5. CONSTRUCTION ENTRANCE SHALL BE REGRAVELED AS NECESSARY FOLLOWING SILT/SOIL BUILDUP.
6. ANY OTHER EROSION CONTROL MEASURES SHOULD BE CHECKED AT REGULAR INTERVALS TO ASSURE PROPER FUNCTION



EROSION CONTROL LEGEND

GRAVEL BAG

INLET PROTECTION

STRAW ROLL

SILT FENCE

CONCRETE WASHOUT

CONSTRUCTION ENTRANCE

TREE PROTECTION

EROSION CONTROL BLANKET / MATTING

0 10 20 40

SCALE: 1" = 20'

SWPPP NOTE:
REFER TO PROJECT SWPPP FOR ADDITIONAL INFORMATION.

NOTE:
SEAL ALL OTHER INLETS NOT INTENDED TO ACCEPT STORM WATER AND DIRECT FLOWS TEMPORARILY TO FUNCTIONAL SEDIMENTATION BASIN INLETS. —TYP

REGISTERED PROFESSIONAL ENGINEER
JAMES TOBY
No. 63127
CIVIL
STATE OF CALIFORNIA
ORIGINAL SIGNATURES IN BLUE INK

LEA & BRAZE ENGINEERING, INC.
CIVIL ENGINEERS · LAND SURVEYORS
BAY AREA REGION
2495 INDUSTRIAL PKWY WEST
HAYWARD, CALIFORNIA 94545
(P) (510) 887-4086
(F) (510) 887-3019
SACRAMENTO REGION
3017 DOUGLAS BLVD, # 300
ROSEVILLE, CA 95661
(P) (916)966-1338
(F) (916)797-7363
WWW.LEABRAZE.COM

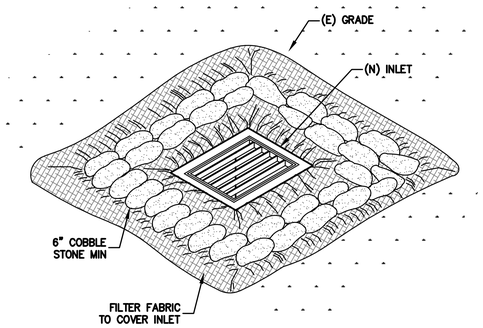
CALWATER TANK DRAINAGE & TREATMENT PLAN SAN MATEO, CALIFORNIA

(UNINCORPORATED) SAN MATEO COUNTY

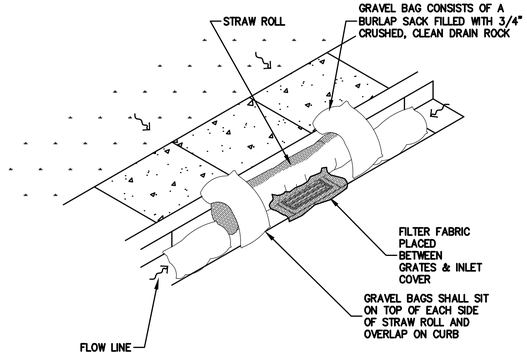
EROSION CONTROL PLAN

REVISIONS	BY

JOB NO:	2161285
DATE:	02-01-23
SCALE:	1"=20'
DESIGN BY:	AH
DRAWN BY:	MCF
SHEET NO:	ER-1



1 ER-2 **INLET PROTECTION**
NTS



2 ER-2 **STREET INLET PROTECTION**
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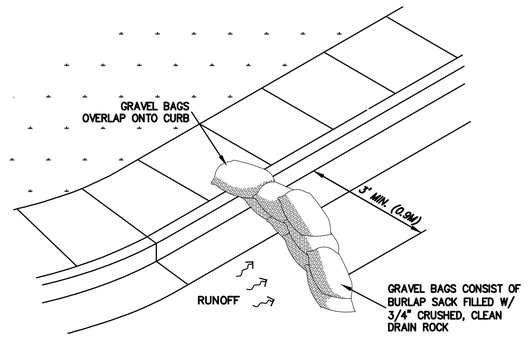
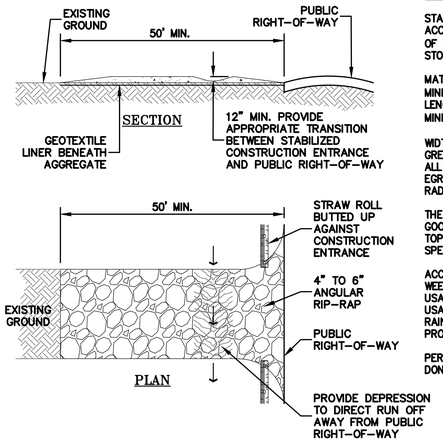


NOTE:
THREE LAYERS OF GRAVEL BAGS WITH ENDS OVERLAPPED

3 ER-2 **GRAVEL BAG AT STREET FLOW LINE**
NTS



4 ER-2 **CONSTRUCTION ENTRANCE**
NTS

NOTES:

STABILIZED CONSTRUCTION SITE ACCESS SHALL BE CONSTRUCTED OF 3" TO 4" WASHED, FRACTURED STONE AGGREGATE.

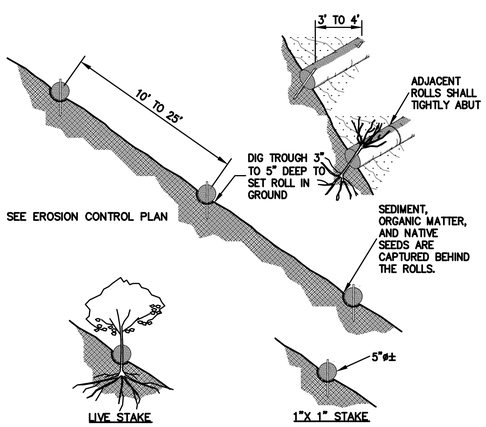
MATERIAL SHALL BE PLACED TO A MINIMUM THICKNESS OF 12". LENGTH OF ENTRANCE SHALL BE A MINIMUM OF 50'.

WIDTH SHALL BE A MIN. OF 15' OR GREATER IF NECESSARY TO COVER ALL VEHICULAR INGRESS AND EGRESS. PROVIDE AMPLE TURNING RADII.

THE ENTRANCE SHALL BE KEPT IN GOOD CONDITION BY OCCASIONAL TOP DRESSING WITH MATERIAL AS SPECIFIED IN ABOVE NOTE.

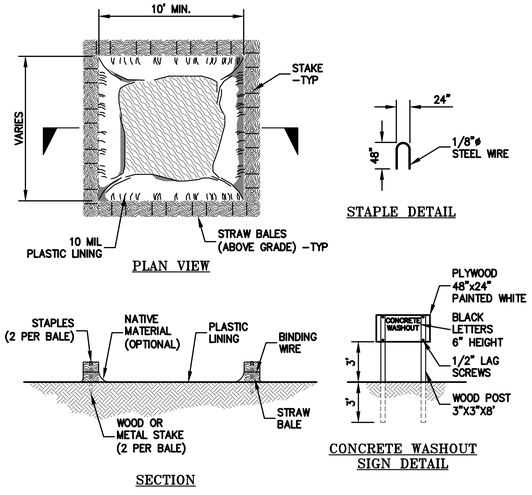
ACCESSES SHALL BE INSPECTED WEEKLY DURING PERIODS OF HEAVY USAGE, MONTHLY DURING NORMAL USAGE, AND AFTER EACH RAINFALL, WITH MAINTENANCE PROVIDED AS NECESSARY.

PERIODIC TOP DRESSING SHALL BE DONE AS NEEDED.



NOTE:
1. STRAW ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3" TO 5" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.
2. CONTRACTOR IS RESPONSIBLE FOR REGULAR MAINTENANCE AND INSPECTION. THE SILT SHALL BE CLEANED OUT WHEN IT REACHES HALF THE HEIGHT OF THE ROLL.

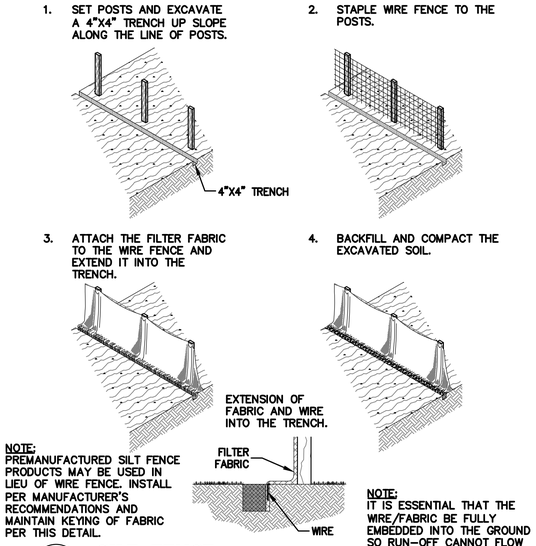
5 ER-2 **STRAW ROLLS**
NTS



NOTES:
ACTUAL LAYOUT DETERMINED IN FIELD.

THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 10' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

6 ER-2 **CONCRETE WASHOUT**
NTS



NOTE:
PREMANUFACTURED SILT FENCE PRODUCTS MAY BE USED IN LIEU OF WIRE FENCE. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND MAINTAIN KEYING OF FABRIC PER THIS DETAIL.

NOTE:
IT IS ESSENTIAL THAT THE WIRE/FABRIC BE FULLY EMBEDDED INTO THE GROUND SO RUN-OFF CANNOT FLOW FREELY UNDER FENCE.

7 ER-2 **SILT FENCE**
NTS

REGISTERED PROFESSIONAL ENGINEER
JAMES TORRES
No. 83127
CIVIL
STATE OF CALIFORNIA
ORIGINAL SIGNATURES IN BLUE INK

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CIVIL ENGINEERS • LAND SURVEYORS
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DRAINAGE & TREATMENT PLAN
SAN MATEO, CALIFORNIA
(UNINCORPORATED) SAN MATEO COUNTY

EROSION CONTROL DETAILS

REVISIONS	BY

JOB NO:	2161285
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SCALE:	AS NOTED
DESIGN BY:	AH
DRAWN BY:	MCF
SHEET NO:	ER-2

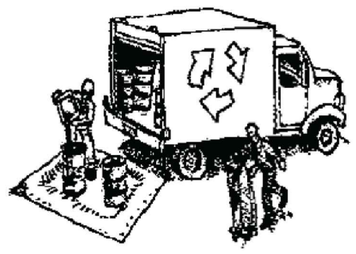
6 OF 7 SHEETS

SAN MATEO COUNTYWIDE
Water Pollution Prevention Program
Clean Water. Healthy Community.

Construction Best Management Practices (BMPs)

Construction projects are required to implement the stormwater best management practices (BMP) on this page, as they apply to your project, all year long.

Materials & Waste Management



Non-Hazardous Materials

- ❑ Berm and cover stockpiles of sand, dirt or other construction material with tarps when rain is forecast or if not actively being used within 14 days.
- ❑ Use (but don't overuse) reclaimed water for dust control.

Hazardous Materials

- ❑ Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with city, county, state and federal regulations.
- ❑ Store hazardous materials and wastes in water tight containers, store in appropriate secondary containment, and cover them at the end of every work day or during wet weather or when rain is forecast.
- ❑ Follow manufacturer's application instructions for hazardous materials and be careful not to use more than necessary. Do not apply chemicals outdoors when rain is forecast within 24 hours.
- ❑ Arrange for appropriate disposal of all hazardous wastes.

Waste Management

- ❑ Cover waste disposal containers securely with tarps at the end of every work day and during wet weather.
- ❑ Check waste disposal containers frequently for leaks and to make sure they are not overfilled. Never hose down a dumpster on the construction site.
- ❑ Clean or replace portable toilets, and inspect them frequently for leaks and spills.
- ❑ Dispose of all wastes and debris properly. Recycle materials and wastes that can be recycled (such as asphalt, concrete, aggregate base materials, wood, gyp board, pipe, etc.)
- ❑ Dispose of liquid residues from paints, thinners, solvents, glues, and cleaning fluids as hazardous waste.

Construction Entrances and Perimeter

- ❑ Establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from site and tracking off site.
- ❑ Sweep or vacuum any street tracking immediately and secure sediment source to prevent further tracking. Never hose down streets to clean up tracking.

Equipment Management & Spill Control

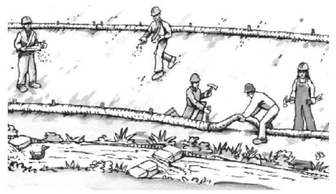
Maintenance and Parking

- ❑ Designate an area, fitted with appropriate BMPs, for vehicle and equipment parking and storage.
- ❑ Perform major maintenance, repair jobs, and vehicle and equipment washing off site.
- ❑ If refueling or vehicle maintenance must be done onsite, work in a bermed area away from storm drains and over a drip pan or drop cloths big enough to collect fluids. Recycle or dispose of fluids as hazardous waste.
- ❑ If vehicle or equipment cleaning must be done onsite, clean with water only in a bermed area that will not allow rinse water to run into gutters, streets, storm drains, or surface waters.
- ❑ Do not clean vehicle or equipment onsite using soaps, solvents, degreasers, or steam cleaning equipment.

Spill Prevention and Control

- ❑ Keep spill cleanup materials (e.g., rags, absorbents and cat litter) available at the construction site at all times.
- ❑ Inspect vehicles and equipment frequently for and repair leaks promptly. Use drip pans to catch leaks until repairs are made.
- ❑ Clean up spills or leaks immediately and dispose of cleanup materials properly.
- ❑ Do not hose down surfaces where fluids have spilled. Use dry cleanup methods (absorbent materials, cat litter, and/or rags).
- ❑ Sweep up spilled dry materials immediately. Do not try to wash them away with water, or bury them.
- ❑ Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
- ❑ Report significant spills immediately. You are required by law to report all significant releases of hazardous materials, including oil. To report a spill: 1) Dial 911 or your local emergency response number, 2) Call the Governor's Office of Emergency Services Warning Center, (800) 852-7550 (24 hours).

Earthmoving



- ❑ Schedule grading and excavation work during dry weather.
- ❑ Stabilize all denuded areas, install and maintain temporary erosion controls (such as erosion control fabric or bonded fiber matrix) until vegetation is established.
- ❑ Remove existing vegetation only when absolutely necessary, and seed or plant vegetation for erosion control on slopes or where construction is not immediately planned.
- ❑ Prevent sediment from migrating offsite and protect storm drain inlets, gutters, ditches, and drainage courses by installing and maintaining appropriate BMPs, such as fiber rolls, silt fences, sediment basins, gravel bags, berms, etc.
- ❑ Keep excavated soil on site and transfer it to dump trucks on site, not in the streets.

Contaminated Soils

- ❑ If any of the following conditions are observed, test for contamination and contact the Regional Water Quality Control Board:
  - Unusual soil conditions, discoloration, or odor.
  - Abandoned underground tanks.
  - Abandoned wells
  - Buried barrels, debris, or trash.

Paving/Asphalt Work

- ❑ Avoid paving and seal coating in wet weather or when rain is forecast, to prevent materials that have not cured from contacting stormwater runoff.
- ❑ Cover storm drain inlets and manholes when applying seal coat, tack coat, slurry seal, fog seal, etc.
- ❑ Collect and recycle or appropriately dispose of excess abrasive gravel or sand. Do NOT sweep or wash it into gutters.
- ❑ Do not use water to wash down fresh asphalt concrete pavement.

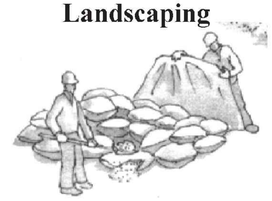
Sawcutting & Asphalt/Concrete Removal

- ❑ Protect nearby storm drain inlets when saw cutting. Use filter fabric, catch basin inlet filters, or gravel bags to keep slurry out of the storm drain system.
- ❑ Shovel, absorb, or vacuum saw-cut slurry and dispose of all waste as soon as you are finished in one location or at the end of each work day (whichever is sooner!).
- ❑ If sawcut slurry enters a catch basin, clean it up immediately.

Concrete, Grout & Mortar Application

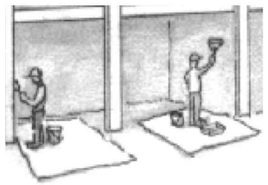
- ❑ Store concrete, grout, and mortar away from storm drains or waterways, and on pallets under cover to protect them from rain, runoff, and wind.
- ❑ Wash out concrete equipment/trucks offsite or in a designated washout area, where the water will flow into a temporary waste pit, and in a manner that will prevent leaching into the underlying soil or onto surrounding areas. Let concrete harden and dispose of as garbage.
- ❑ When washing exposed aggregate, prevent washwater from entering storm drains. Block any inlets and vacuum gutters, hose washwater onto dirt areas, or drain onto a bermed surface to be pumped and disposed of properly.

Landscaping



- ❑ Protect stockpiled landscaping materials from wind and rain by storing them under tarps all year-round.
- ❑ Stack bagged material on pallets and under cover.
- ❑ Discontinue application of any erodible landscape material within 2 days before a forecast rain event or during wet weather.

Painting & Paint Removal



Painting Cleanup and Removal

- ❑ Never clean brushes or rinse paint containers into a street, gutter, storm drain, or stream.
- ❑ For water-based paints, paint out brushes to the extent possible, and rinse into a drain that goes to the sanitary sewer. Never pour paint down a storm drain.
- ❑ For oil-based paints, paint out brushes to the extent possible and clean with thinner or solvent in a proper container. Filter and reuse thinners and solvents. Dispose of excess liquids as hazardous waste.
- ❑ Paint chips and dust from non-hazardous dry stripping and sand blasting may be swept up or collected in plastic drop cloths and disposed of as trash.
- ❑ Chemical paint stripping residue and chips and dust from marine paints or paints containing lead, mercury, or tributyltin must be disposed of as hazardous waste. Lead based paint removal requires a state-certified contractor.

Dewatering

- ❑ Discharges of groundwater or captured runoff from dewatering operations must be properly managed and disposed. When possible send dewatering discharge to landscaped area or sanitary sewer. If discharging to the sanitary sewer call your local wastewater treatment plant.
- ❑ Divert run-on water from offsite away from all disturbed areas.
- ❑ When dewatering, notify and obtain approval from the local municipality before discharging water to a street gutter or storm drain. Filtration or diversion through a basin, tank, or sediment trap may be required.
- ❑ In areas of known or suspected contamination, call your local agency to determine whether the ground water must be tested. Pumped groundwater may need to be collected and hauled off-site for treatment and proper disposal.

Storm drain polluters may be liable for fines of up to $10,000 per day!

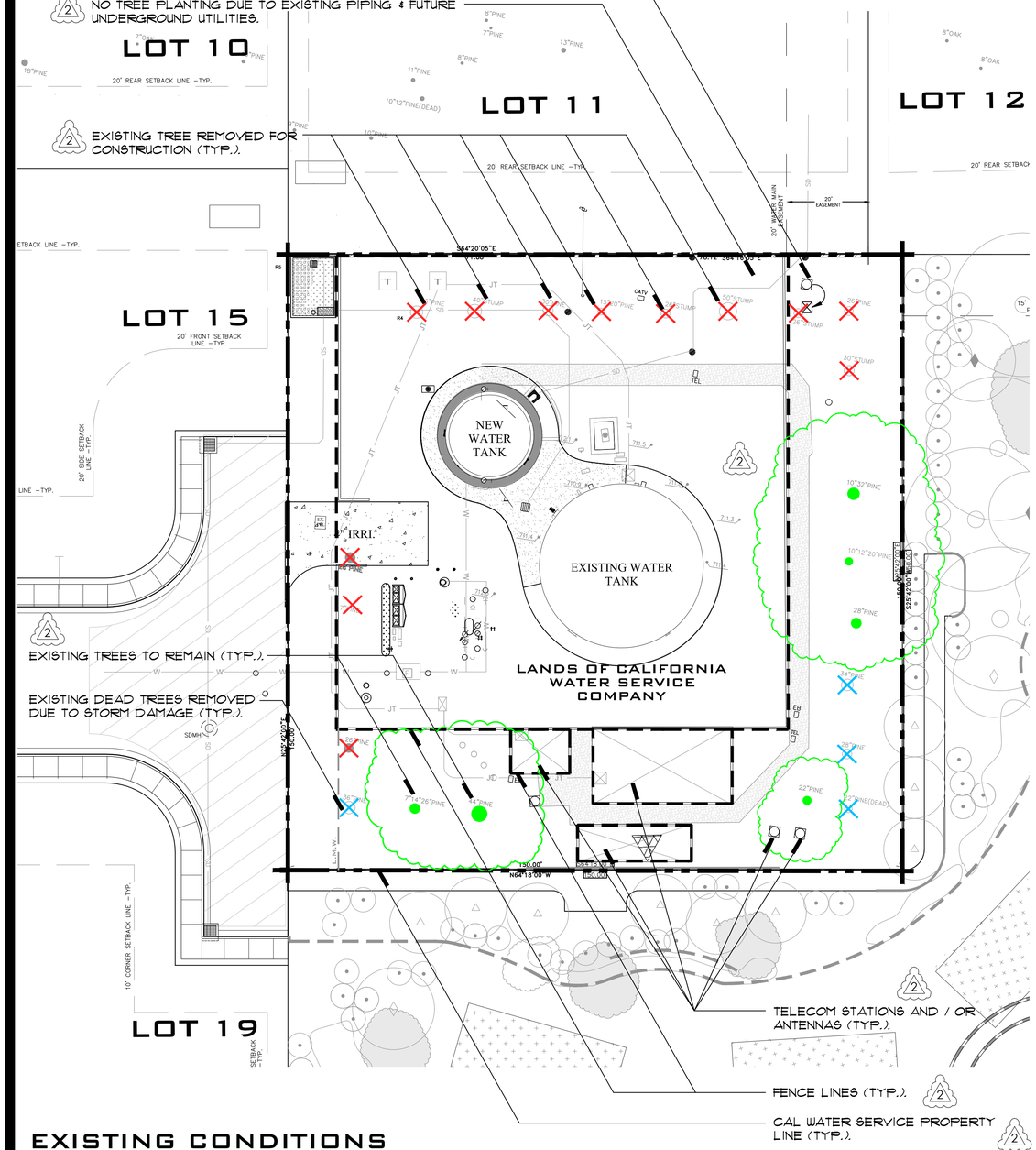
APPENDIX D

Tree Removal and Replacement Plans

2 EXISTING ANTENNA WILL BE REPLACE & MOVED TO NEW LOCATION

2 NO TREE PLANTING DUE TO EXISTING PIPING & FUTURE UNDERGROUND UTILITIES.

2 EXISTING TREE REMOVED FOR CONSTRUCTION (TYP.).



EXISTING CONDITIONS

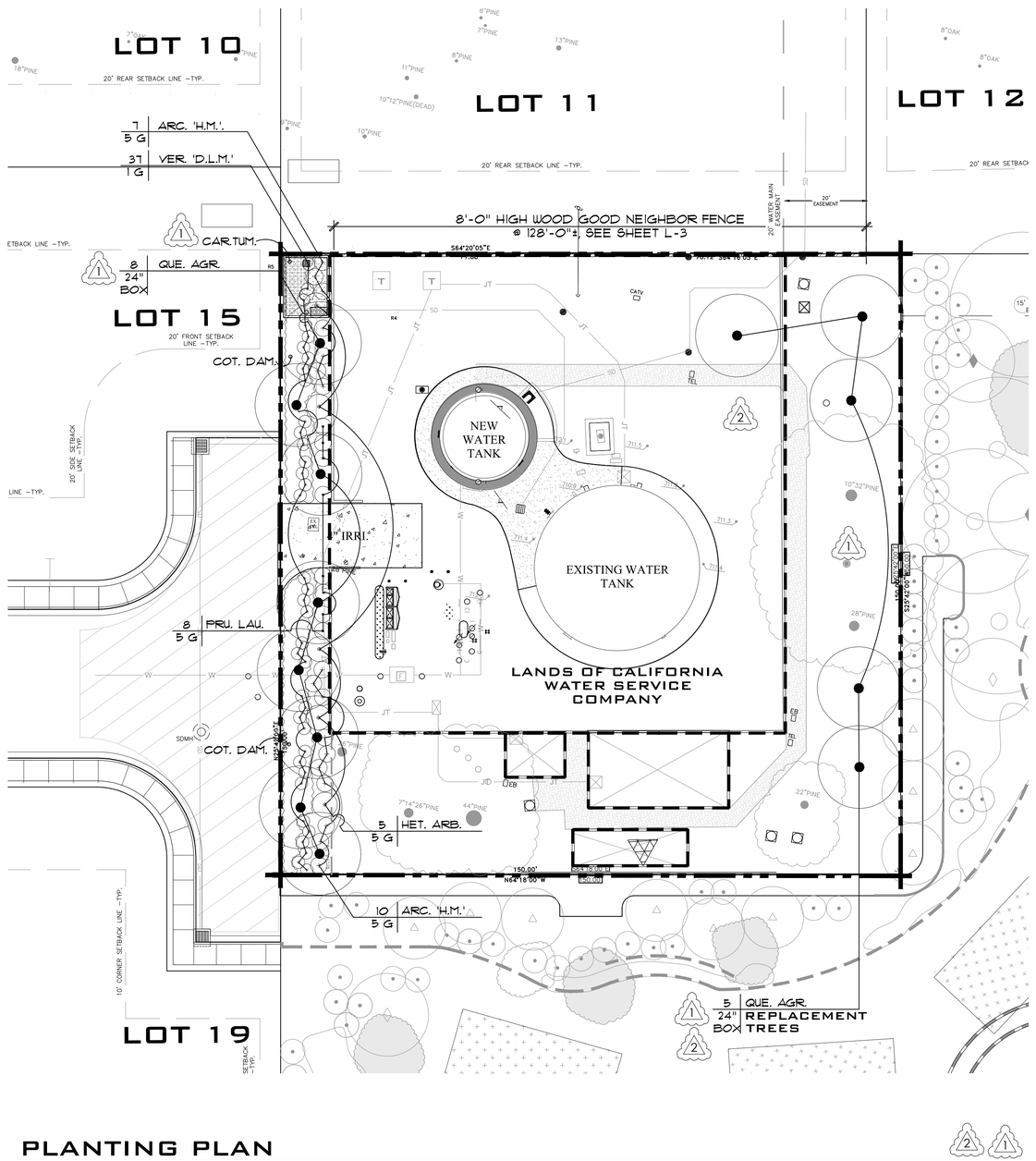
SCALE: 1/16"=1'-0"

LEGENDS:

EXISTING TREES TO REMAIN (TYP.).

EXISTING DEAD TREES REMOVED DUE TO STORM DAMAGE.

EXISTING TREE REMOVED FOR CONSTRUCTION (TYP.).



PLANTING PLAN

SCALE: 1/16"=1'-0"

NORTH SCALE: 1/16" = 1'-0"

0' 8' 16' 32' 48' 64'

SEE SHEET L-3 FOR PLANTING NOTES, LEGENDS AND DETAILS.

ROBERT MOWAT ASSOCIATES
LANDSCAPE ARCHITECTURE + LAND PLANNING
1501 N. Broadway Suite 400 Walnut Creek, CA 94596
Phone 925.705.7424 Fax 925.954.1390
www.rmalandscape.com

BEL AIRE HEIGHTS SUBDIVISION
1700 S. EL CAMINO REAL, #100
SAN MATEO, CA 94402

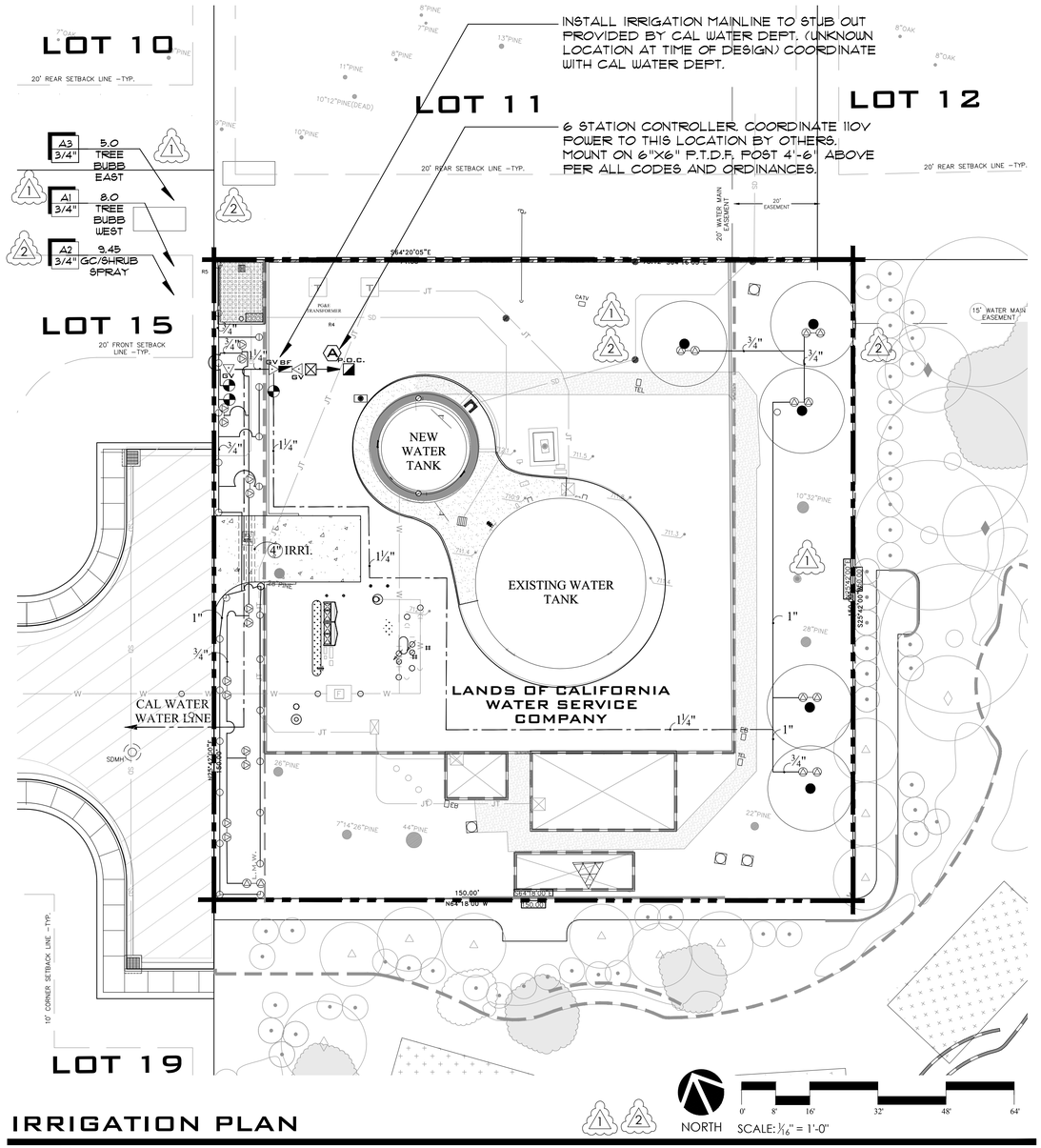
EXISTING CONDITIONS & PLANTING PLAN

DATE 10-13-21
REVISIONS
1 PLANT & IRR. SITE PLAN REV. 5-4-23
2 CAL WATER COMMENTS 6-5-23

SHEET L- 1 OF 3

BEL AIRE HEIGHTS, SAN MATEO, CA

PRINT DATE: 6-5-23



IRRIGATION PLAN

SCALE: 1/16"=1'-0"

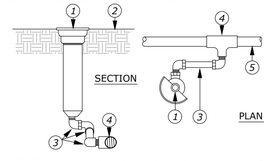
IRRIGATION LEGENDS

A	6 STATIONS RAINMASTER EAGLE PLUS WITH iCENTRAL COMPATABILITY W/ RAIN CLIK.
P.O.C.	POINT OF CONNECTION SERVICE BY OTHERS , COORDINATE EXACT LOCATION W/ CAL WATER
GV	2" PLASTIC GLOBE GATE VALVE IN AMETEK BOX W/ GRAVEL.
	WATTS PRESSURE REDUCER IF REQUIRED
BF	REDUCED PRESSURE FEBCO 3/4" #825Y BACKFLOW PREVENTER ASSEMBLY W/ PRIME 2X PAINTED 2X DARK GREEN. GALV. STEEL ENCLOSURE WITH FROST BLANKET (OR EQ.)
	HUNTER 1" PGV VALVE WITH FLOW CONTROL AND ACCU SYNC ADJUSTABLE PRESSURE REGULATOR.
	SCH 40 - PVC MAINLINE, BURY MIN. 18" DEEP, SIZE PER PLAN, 24" FOR ROADWAYS. THE CONTRACTOR SHALL INSTALL CONC. THRUST BLOCKS AT ALL JOINTS ON 2" AND LARGER MAINLINES. IF IRRIGATION CONTRACTOR IDENTIFIES AN ALTERNATE ROUTE FOR MAINLINE, THEY SHALL NOTIFY THE OWNER & LANDSCAPE ARCHITECT FOR A MEETING, SITE OBSERVATION AND DISCUSSION BEFORE PROCEEDING WITH THE WORK.
	SCH 40 PVC LATERAL LINE BELOW GRADE - BURY 12" ± .
	SCH 40 PVC SLEEVE, BURY24" DEEP, SIZE PER PLAN

SYMBOL	DISTRIBUTOR	TYPE	MODEL#	RADIUS	ARC	DESCRIPTION	FLOW
	HUNTER	PRS40 W/MP1000	PROS-12-PRS40-CV-MP1000360	12'	360°	12" POP-UP SHRUB MP ROTOR HEAD	.84 GPM
	HUNTER	PRS40 W/MP1000	PROS-12-PRS40-CV-MP1000210	12'	270°	12" POP-UP SHRUB MP ROTOR HEAD	.63 GPM
	HUNTER	PRS40 W/MP1000	PROS-12-PRS40-CV-MP100090	12'	180°	12" POP-UP SHRUB MP ROTOR HEAD	.42 GPM
	HUNTER	PRS40 W/MP1000	PROS-12-PRS40-CV-MP100090	12'	90°	12" POP-UP SHRUB MP ROTOR HEAD	.21 GPM
	HUNTER	BUBBLER	PCB-50	NA	360°	BUBBLER IN PREF. PIPE	0.5 GPM

IRRIGATION NOTES

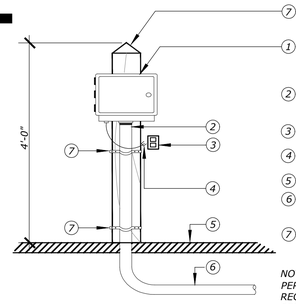
1. THIS DESIGN IS DIAGRAMMATIC. ALL PIPING, VALVES, ETC. SHOWN WITHIN THE PAVED AREAS OR BUILDINGS IS FOR DESIGN CLARIFICATION ONLY AND SHALL BE INSTALLED IN PLANTING AREAS WHERE POSSIBLE. AVOID CONFLICTS WITH PLANTING, PIPING, UTILITIES AND ARCHITECTURE WHERE POSSIBLE.
2. DO NOT WILLFULLY INSTALL THE SYSTEMS SHOWN ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT OBSTRUCTIONS, GRADE DIFFERENCES, GPM AVAILABILITY, OR PRESSURES EXIST THAT MAY NOT HAVE BEEN INCLUDED IN THE ENGINEERING. SUCH OBSTRUCTIONS OR DIFFERENCES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE CITY AND LAND. ARCH. FOR A DECISION. IN THE EVENT THAT NOTIFICATION IS NOT PERFORMED, THE IRRIGATION CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR ANY REVISIONS NECESSARY.
3. 120 VOLT ELECTRICAL POWER OUTLET AT THE AUTOMATIC CONTROLLER LOCATION SHALL BE PROVIDED BY OTHERS. THE IRRIGATION CONTRACTOR SHALL MAKE FINAL HOOK-UP FROM REMOTE CONTROL VALVES TO CONTROLLER.
4. IT IS THE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR TO FAMILIARIZE THEMSELVES WITH ALL GRADE DIFFERENCES, LOCATION OF WALLS, RETAINING WALLS, UTILITIES, PIPING, BUILDINGS, ETC. THEY SHALL COORDINATE THEIR WORK WITH THE GENERAL CONTRACTOR FOR THE INSTALLATION OR PIPE SLEEVES THROUGH WALLS, UNDER ROADWAYS, STRUCTURES, ETC.
5. THE IRRIGATION SYSTEM SHALL BE INSTALLED IN CONFORMANCE WITH ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES BY A LICENSED LANDSCAPE CONTRACTOR AND EXPERIENCED WORKMEN. CONTRACTOR TO OBTAIN AND PAY FOR ALL IRRIGATION PERMITS AND REQUIRED FEES.
6. CONTRACTOR IS TO CONFIRM THE LOCATION OF EXISTING UTILITIES AND UNDERGROUND STRUCTURES PRIOR TO THE EXCAVATION OF TRENCHES. CONTRACTOR TO REPAIR ANY DAMAGE CAUSED BY, OR DURING THE PERFORMANCE OF, HIS WORK AT NO ADDITIONAL COST TO THE CITY.
7. SYSTEM IS BASED UPON A STATIC MAINLINE PRESSURE OF 55 P.S.I.. A PRESSURE REDUCER MAY (MAY NOT) BE REQUIRED SO THAT THE STATIC MAINLINE PRESSURE AS MEASURED AT THE POINT OF CONNECTION (AFTER THE BACK FLOW DEVICE) IS DRIP 35 P.S.I.. AFTER CALCULATING PRESSURE LOSSES, THE SYSTEM IS DESIGNED TO OPERATE AT APPROXIMATELY 35-40 P.S.I. WORKING PRESSURE AT THE HEADS. THROUGH ANY ONE VALVE, THE SYSTEM IS DESIGNED TO OPERATE AT A MAXIMUM OF 18 GPM.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SLEEVING REQUIRED FOR ELECTRICAL AND IRRIGATION. CONTRACTOR TO COORDINATE AND LOCATE ANY ELECTRICAL AND IRRIGATION SLEEVES PRIOR TO CONCRETE POUR. LANDSCAPE ARCHITECT TO REVIEW LAYOUT PRIOR TO CONCRETE POUR. SLEEVES TO BE SCH. 40 PVC PIPE, SET IN A 2" SAND BED CONTINUOUS AROUND ENTIRE SLEEVE, WITH MARKING TAPE AT EACH END. EXTEND PAST PAVING 6"
9. TRENCHES ARE TO BE OF SUFFICIENT DEPTH TO PROVIDE 18" OF COVER OVER MAINLINE LATERAL LINES PRIOR TO THE INSTALLATION OF IRRIGATION HEADS. MAINLINE TO BE VISUALLY INSPECTED FOR LEAKS UNDER FULL OPERATING PRESSURE PRIOR TO BACKFILLING. MAINLINE UNDER STREETS TO BE 24" DEEP; MINIMUM.
10. FLUSH MAINLINES PRIOR TO THE INSTALLATION OF REMOTE CONTROL VALVES. FLUSH LATERAL LINES PRIOR TO THE INSTALLATION OF IRRIGATION HEADS. MAINLINE TO BE VISUALLY INSPECTED FOR LEAKS UNDER FULL OPERATING PRESSURE PRIOR TO BACKFILLING.
11. IRRIGATION CONTROL WIRE SHALL BE #14, U.L. APPROVED FOR DIRECT BURIAL. COMMON WIRE SHALL BE #14 U.L. APPROVED FOR DIRECT BURIAL, WHITE IN COLOR. WIRES TO BE MULTI-STRAND #18-9 REMOTE CONTROL VALVES SHALL BE A COLOR OTHER THAN WHITE. ALL SPLICES SHALL BE MADE WITHIN REMOTE CONTROL VALVE BOXES. LEAVE 24" EXCESS WIRE COIL AT REMOTE CONTROL LOCATIONS.
12. REMOTE CONTROL VALVE BOXES SHALL BE INSTALLED FLUSH WITH FINISH GRADE (NOT NECESSARILY PLUMB). ALIGN VALVE BOXES WITH ADJACENT PAVEMENT EDGES OR STRUCTURES. VALVE BOXES SHALL BE PLASTIC' WITH BOLT DOWN LIDS AND WITH WHITE NUMBERED VALVE STATIONS IN STENCILS.
13. ALL EXCAVATIONS SHALL BE BACKFILLED TO 90% COMPACTION (MIN.). CONTRACTOR TO REPAIR SETTLED TRENCHES FOR ONE YEAR AFTER COMPLETION OF WORK.
14. CONTRACTOR TO MAKE MINOR ADJUSTMENTS IN HEAD LOCATIONS AND ADJUST HEADS FOR RADIUS (ARC IF APPLICABLE), TO OPTIMUM COVERAGE, AND TO ELIMINATE SPRAYING ONTO PAVEMENT, BUILDINGS, AND WALLS. ADD HEADS AS NECESSARY FOR HEAD TO HEAD COVERAGE. INSTALL FLAT HEADS NEAR BLDGS.
15. CONTRACTOR TO MAINTAIN A SET OF "AS-BUILT" DRAWINGS THROUGHOUT THE COURSE OF CONSTRUCTION AND DELIVER THESE DRAWINGS TO THE OWNER / HOA UPON THE COMPLETION OF WORK. THE DRAWINGS SHALL BE IN REPRODUCIBLE FORM.
16. CONTRACTOR SHALL GUARANTEE THE SYSTEM AND MATERIALS TO BE FREE FROM DEFECTS FOR A PERIOD OF ONE YEAR STARTING WITH ACCEPTANCE AT THE FINAL SITE REVIEW.
17. ALL HEADS WHICH MAY EXPERIENCE LOW HEAD DRAINAGE SHOULD HAVE IN-LINE OR IN-HEAD CHECK VALVES INSTALLED.
18. THE IRRIGATION CONTRACTOR SHOULD ARRANGE WITH THE LAND. ARCH. & CITY REP. FOR A SITE REVIEW OF THE SYSTEM. CALL WITH TWO DAYS PRIOR NOTICE TO ARRANGE REVIEW DATES. REVIEWS WILL BE SCHEDULED TO REVIEW:
    1. PRESSURE TEST TO MAIN LINE PRIOR TO BACKFILLING TRENCHES.
    2. COVERAGE TEST OF SPRINKLER SYSTEM PRIOR TO PLANTING.
    3. FINAL WALK-THROUGH OF ALL ASPECTS OF THE IRRIGATION SYSTEM.
19. WATER JET ALL IRRIGATION TRENCHES, TYPICAL.
20. ALL CONTROLLERS SHALL HAVE A MAP OR IRRIGATION ZONE DESCRIPTION PLACED IN THE CONTROLLER CABINET.
21. DEFECTABLE WARNING TAPE SHALL BE INSTALLED DIRECTLY OVER ALL IRRIGATION MAIN LINES. THE TAPE SHALL BE SIX INCHES (6") WIDE, 5-MIL AND HAVE ALUMINUM BACKING TO MAKE IT EASY TO FIND UNDERGROUND USING A NON-FERROUS LOCATOR. TAPE SHALL HAVE "CAUTION BURIED WATER LINE BELOW" PRINTED IN BLACK LETTERING ON A BLUE BACKGROUND.



1. HEAD FLUSH WITH FINISH GRADE
2. FINISH GRADE
3. FLEXIBLE SWING JOINT ASSEMBLY LENGTH AS REQUIRED (BLUE COBRA NOT ACCEPTABLE)
4. SCH 40 PVC SST TEE
5. SCH 40 LATERAL

POP-UP SPRAY HEAD

NOT TO SCALE

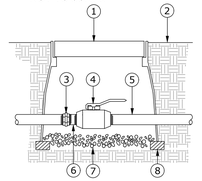


7. 6" X 6"P.T.D.F. POST.
1. CONTROLLER - MOUNT AT EYE-LEVEL AS APPROVED BY JOB SUPERINTENDENT
2. RIGID SCH. 80 GREY CONDUIT W/ 24 VOLT WIRES TO VALVES
3. GFI DUPLEX OUTLET
4. 120 POWER SOURCE N.I.C. PLUGGED INTO GFI OUTLET
5. FINISH FLOOR (INTERIOR)
6. CONDUIT TO EXTEND 2 FT. BEYOND BLDG. AND 1 FT. BEYOND PAVING
7. GALV. STRAPS; WATERPROOF TO HOUSE

NOTE: GROUND CONTROLLER PER MANUFACTURER'S RECOMMENDATIONS AND PER ALL LOCAL CODES

POST MOUNT CONTROLLER

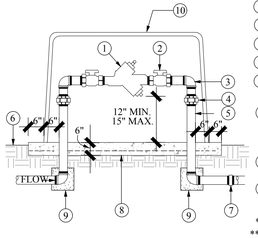
NOT TO SCALE



1. PLASTIC VALVE BOX WITH LOCKING LID & EXTENSIONS AS REQ'D. HEAT LABEL 'GATE VALVE' ON LID.
2. FINISH GRADE
3. PVC UNION
4. BRONZE GATE VALVE
5. MAIN LINE
6. PVC SCH. 80 NIPPLE
7. FILL BOTTOM OF BOX W/ 3" DEPTH DRAIN ROCK
8. BRICK TO SUPPORT BOX AS NEEDED

ISOLATION GATE VALVE

NOT TO SCALE

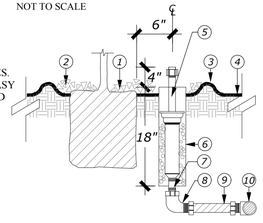


1. BACKFLOW PREVENTER
2. BALL VALVE SHUT OFFS
3. GALVANIZED ELLS
4. GALVANIZED UNION
5. GALVANIZED NIPPLES
6. FINISH GRADE
7. PVC ADAPTOR 30" BEYOND UNIT
8. CONCRETE FOOTING WITH 6x6 10/10 W.W.M., 6" LARGER THAN UNIT EACH SIDE
9. CONCRETE THRUST BLOCKS 10"x10"x10"
10. LOCKABLE AND PAINTED GALV. STEEL CAGE

* INSTALL PER ALL CODES
** PRIME 2X AND PAINT 2X DARK GREEN
*** INSTALL W/ FROST BLANKET

REDUCED PRESSURE BACKFLOW

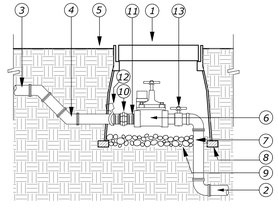
NOT TO SCALE



1. ROOTBALL- 2" ABOVE F.G.
2. MULCH
3. 3" HIGH WATERING BASIN
4. FINISH GRADE
5. 6" POP-UP BUBBLER
6. 4"Ø PERFORATED ABS PLASTIC SLEEVE. FILL TO BELOW NOZZLE WITH 3/4" DIAM. DRAIN ROCK
7. PVC SCH 80 NIPPLE
8. PVC STREET MARLEX ELL
9. PVC FLEX NIPPLE WITH MALE ADAPTORS
10. LATERAL

POP-UP BUBBLER HEAD AT TREES

NOT TO SCALE



1. PLASTIC VALVE BOX. INSTALL PARALLEL TO EDGES & ADJACENT TO PAVING WHERE POSSIBLE. HEAT LABEL VALVE NUM. ON LID.
2. PVC MAINLINE
3. PVC LATERAL
4. SCH 40 FITTINGS
5. FINISH GRADE
6. REMOTE CONTROL VALVE
7. MAIN LINE
8. BRICK TO SUPPORT BOX AS NEEDED
9. FILL BOTTOM OF BOX W/ 4" DEPTH DRAIN ROCK
10. PVC UNION - 1 EACH
11. SCH 40 PVC NIPPLE - THRD.
12. PLASTIC I.D. TAG W/ VALVE NUMBER
13. PVC BALL VALVE; SIZE PER MAINLINE

REMOTE CONTROL VALVE

NOT TO SCALE

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IRRIGATION PLANS, NOTES, LEGENDS & DETAILS

DATE
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REVISIONS
1 PLANT & IRR. SITE PLAN REV. 5-4-23
2 CAL WATER COMMENTS 6-5-23

SHEET
L-2
OF 3

BEL AIRE HEIGHTS, SAN MATEO, CA

PRINT DATE: 6-5-23

PLANTING LEGEND

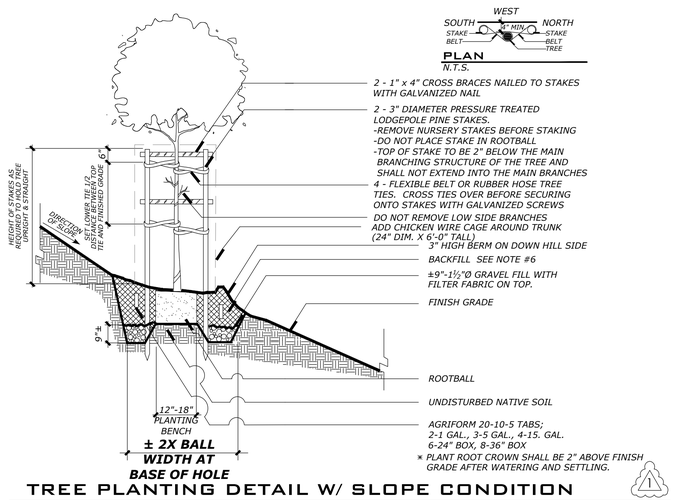
SYMBOL	SIZE	BOTANICAL NAME	COMMON NAME	WATER USE	QUANTITY
●	24" BOX	QUERCUS AGRIFOLIA	COAST LIVE OAK	LOW	13
⊕	15 GAL	HETEROMELESE ARBUTIFOLIA	TOYON	LOW	5
+	5 GAL	ARCTOSTAPHYLOS 'HOWARD MCMINN'	MANZANITA	LOW	17
■	5 GAL	PRUNUS LAURACERASUS	ENGLISH LAUREL	LOW	8
○	1 GAL	VERBENA LILACINA 'DE LA MINA'	DE LA MINA VERBENA	LOW	37
	1 GAL	COTONEASTER DAMMERI 'LOWFAST'	BEARBERRY COTONEASTER	LOW	3'-6" O.C.
	1 GAL	CAREX DIVULSA (TUMULICOLA)	BERKELEY SEDGE	LOW	2'-0" O.C.

PLANTING NOTES

1. ALL WORK SHALL BE PERFORMED BY A LICENSED LANDSCAPE CONTRACTOR AND PERSONNEL FAMILIAR WITH THE WORK AND UNDER THE SUPERVISION OF A QUALIFIED PLANTING FOREMAN.
2. PLANT MATERIAL LOCATIONS ARE DIAGRAMMATIC AND SUBJECT TO CHANGE IN THE FIELD AS DIRECTED BY THE LANDSCAPE ARCHITECT. LOCATE PLANT MATERIALS TO SCREEN UTILITIES, IRRIGATION DEVICES, ETC. AS MUCH AS POSSIBLE YET ALLOW ACCESS TO THEM.
3. ALL TREES SHALL BE STAKED AS SHOWN IN THE DETAILS.
4. THE OWNER RESERVES THE RIGHT TO MAKE SUBSTITUTIONS, ADDITIONS AND DELETIONS IN THE PLANTING SCHEME AS NECESSARY WHILE WORK IS IN PROGRESS. SUCH CASES ARE TO BE ACCOMPANIED BY EQUITABLE ADJUSTMENTS IN THE CONTRACT PRICE IF/WHEN NECESSARY.
5. THE PLANT COUNT IS FOR THE CONTRACTOR'S CONVENIENCE. IN CASE OF A DISCREPANCY, THE PLAN SHALL GOVERN.
6. LOOSEN THE TOP 10" OF TOPSOIL AND BLEND THE TOP 6" LAYER OF SOIL W/ FOLLOWING AMOUNTS / 1000 SQUARE FEET:
   - 6.0 CU. YDS. NITROGEN STABILIZED ORGANIC AMENDMENT*
   - 50.0 LBS. GYPSUM
   - 25.0 LBS. NITROFORM (38-0-0)
   - 50.0 LBS. TREBLE SUPERPHOSPHATE (0-45-0)
   - 25.0 LBS. POTASSIUM SULFATE (0-0-50)
   - 15.0 LBS. FERROUS SULFATE (10% FE)

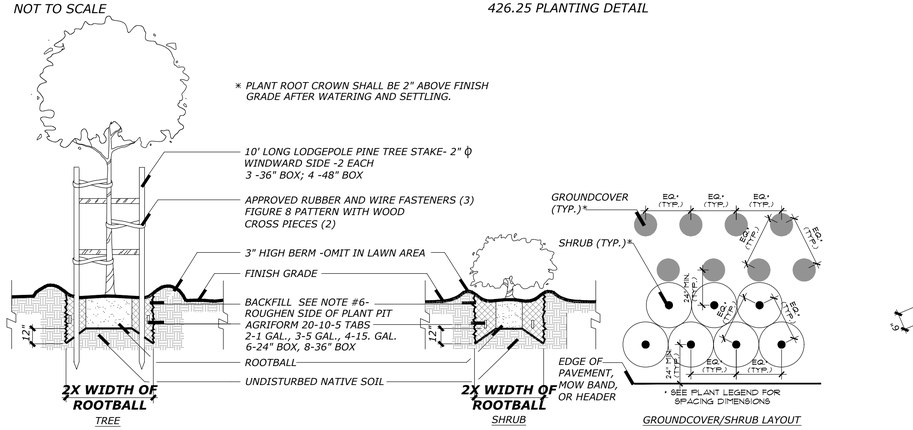
   THE TOP 12" OF PLANT BACKFILL AROUND THE SIDES OF THE ROOTBALL OF TREES AND SHRUBS SHALL CONSIST OF THE ABOVE AMENDED SOIL PREPARED AS FOLLOWS:
   - 3 PARTS PULVERIZED SITE SOIL
   - 1 PART NITROGEN STABILIZED ORGANIC AMENDMENT*
   - 1.0 LBS. IRON SULFATE

   UNIFORMLY BLENDED WITH: (AMOUNT / CUBIC YARD BACKFILL MIX)
   - 3/4 POUND 6-20-20 COMPLETE FETILZER
   - 1/4 POUND POTASSIUM SULFATE (0-0-50)
7. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL TREES FOR A PERIOD OF ONE YEAR AND ALL SHRUBS AND GROUND COVERS FOR A PERIOD OF 90 DAYS.
8. ANY REQUIREMENTS IN THE PLANS SHALL BE CONSIDERED BINDING. IN CASE OF DISCREPANCIES THE OWNER AND LAND. ARCH. SHALL BE IMMEDIATELY NOTIFIED FOR A DECISION BEFORE PROCEEDING WITH THE WORK.
9. THERE SHALL BE REGULAR SITE VISITS BY THE LANDSCAPE ARCHITECT AND THE OWNER THROUGHOUT CONSTRUCTION AND A FINAL SITE REVIEW.
   1. TO INSPECT PLANTS ON ARRIVAL FROM NURSERY
   2. AT TIME OF PLANTING
   3. A FINAL SITE REVIEW
10. ALL PLANT MATERIAL NOT APPROVED BY LANDSCAPE ARCHITECT MAY BE SUBJECT TO REJECTION.
11. ALL WORK SHALL BE INSTALLED IN CONFORMANCE WITH ALL LOCAL CODES AND ORDINANCES. THE LANDSCAPE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS.
12. PROTECT EXISTING TREES AS NECESSARY. FENCE AS NECESSARY. LOCATE ALL UTILITIES BEFORE PROCEEDING WITH THE WORK COORDINATE ALL DIGGING AND TRENCHING PRIOR TO BEGINNING WORK WITH THE PROJECT SUPERVISOR FIRST.
13. THE DESIGN INTENT OF THE PLANTING PLAN IS TO ESTABLISH AND IMMEDIATE, ATTRACTIVE AND MATURE LANDSCAPE APPEARANCE. FUTURE PLANT GROWTH WILL NECESSITATE TRIMMING, SHAPING, PRUNING AND IN MOST CASES, REMOVAL OF TREES AND SHRUBS AS PART OF AN ON-GOING MAINTENANCE PROGRAM.
14. ALL PLANT PITS SHALL BE FREE FROM ROCKS AND DEBRIS GREATER THAN 2" IN DIAMETER.
15. APPLY "RONSTAR" OR "ELANCO XL" PRE-EMERGENT HERBICIDE TO ALL PLANTED SHRUB AREAS. APPLY HERBICIDE IN STRICT ACCORDANCE WITH MANUFACTURER'S SPECS. THE LANDSCAPE SHALL BE WEED FREE AT THE TIME OF THE FINAL WALK-THROUGH.
16. CONTRACTOR TO PROVIDE MAINTENANCE DURING CONSTRUCTION AND FOR A PERIOD OF 60 DAYS FOLLOWING OWNER'S ACCEPTANCE OF THE COMPLETION OF THE FINAL PUNCH LIST AS PART OF THEIR BID. ALL PRUNING, SPRAYING, FERTILIZING, CLEAN-UP AND ASSOCITED LANDSCAPE PRACTICES SHALL BE INCLUDED. THE 60 DAY MAINTENANCE PERIOD DOES NOT END UNTIL FINAL ACCEPTANCE BY THE OWNER IS GRANTED.
17. CONTRACTOR TO SUBMIT UNIT PRICES FOR THE POSSIBLE ADDITION OF PLANTS TO THE PROJECT. SUBMIT UNIT PRICES FOR 15 GALLON TREES, 5 GALLON SHRUBS, 1 GALLON SHRUBS, GROUNDCOVER AT SQ. FT. PRICES.
18. 2" LAYER OF SHREDDED FIR BARK OVER ALL SHRUB/GROUNDCOVER AREAS.
19. ON ALL SLOPES 2:1 OR GREATER, INSTALL JUTE MESH NETTING, LAP MIN. 12", STAPLE AT 24" O.C. TYP.
20. ALL PLANT MATERIAL SHALL BE OF THE QUALITY AND SIZE IN ACCORDANCE WITH THE AMERICAN STANDARDS FOR NURSERY STOCK GUILDLINES, LATEST EDITION.
21. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL FROM THE OWNER'S PROPERTY ALL WASTE MATERIAL GENERATED BY FROM THE PLANTING OPERATIONS.
22. LANDSCAPE CONTRACTOR TO SHALL COORDINATE ALL WORK WITH RELATED SUB-CONTRACTORS AND WITH THE GENERAL CONSTRUCTION CONTRACTOR OF THE PROJECT.



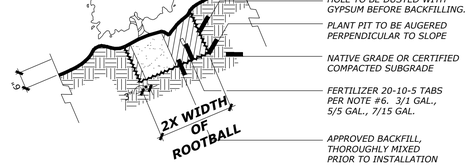
TREE PLANTING DETAIL W/ SLOPE CONDITION

NOT TO SCALE — 426.25 PLANTING DETAIL



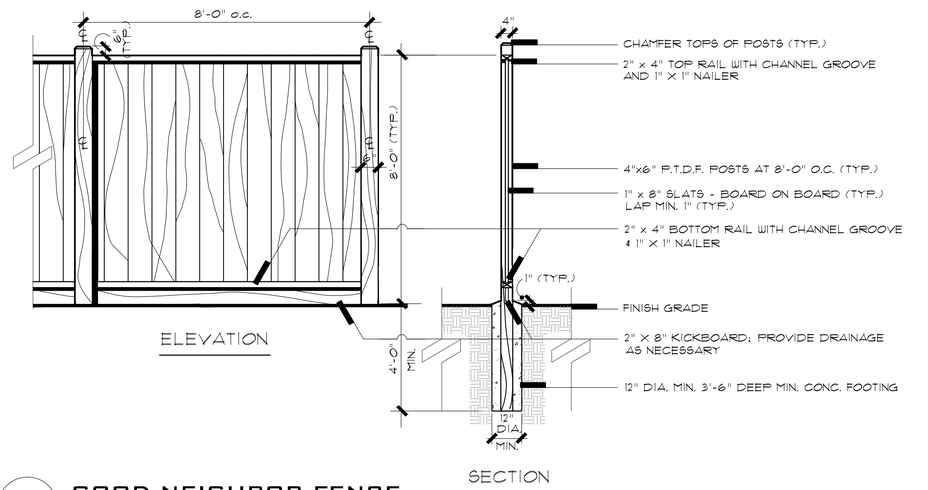
PLANTING DETAIL

NOT TO SCALE — 426.35 PLANTING DETAIL



SHRUB PLANTING W/ SLOPE CONDITION

NOT TO SCALE — 426.24 PLANTING DETAIL



1 GOOD NEIGHBOR FENCE

SCALE: 1/2" = 1' - 0" — 180.01 GOOD NEIGHBOR FENCE

ROBERT MOWAT ASSOCIATES
LANDSCAPE ARCHITECTURE + LAND PLANNING
1501 N. Broadway, Suite 400 Walnut Creek, CA 94596
Phone 925.705.7424 Fax 925.954.1390
www.rmalandscape.com

BEL AIRE HEIGHTS SUBDIVISION
1700 S. EL CAMINO REAL, #100
SAN MATEO, CA 94402

PLANTING NOTES, LEGENDS & DETAILS

DATE
10-13-21
REVISIONS
1 PLANT & IRR. SITE PLAN REV. 5-4-23
2 CAL WATER COMMENTS 6-5-23

SHEET
L-3
OF 3

BEL AIRE HEIGHTS, SAN MATEO, CA

PRINT DATE: 6-5-23

APPENDIX E

Revised Mitigation Monitoring and Reporting Program

Ascension Heights Water Tank Project - Addendum to the Ascension Heights Subdivision Project

Revised Mitigation Monitoring and Reporting Program

SCH No. 2013102009

JUNE 2023

PREPARED FOR

County of San Mateo
Planning and Building Department

PREPARED BY

SWCA Environmental Consultants

REVISED 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 Ascension Heights Water Tank Project is presented below in the Revised Mitigation and Monitoring Reporting Program table. The table 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.
- **Completion Status:** indicates whether the mitigation has been completed.

The County of San Mateo may modify how 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.

Revised Mitigation Monitoring and Reporting Program

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
AESTHETICS					
Impact 4.1-1: The Proposed Project could have a substantial adverse effect on a scenic vista; could substantially damage scenic resources, including trees; and could substantially degrade the existing visual character or quality of the site and its surroundings.	**Mitigation Measure 4.1-1a**: Prior to recordation of the final map, the project applicant shall submit a landscape plan for review and approval by the San Mateo County Planning Department (County Planning Department). The landscape plan shall include the location, size, and species of any proposed landscaping and shall include, but not be limited to, hedges or other appropriate vegetation that will provide opaque screening between the northeastern edge of the project site and the residences along the southern side of Parrott Drive. In addition, all proposed landscaping shall be of native, non-invasive species. Areas used for the storage of landscape maintenance or other equipment, supplies, or debris shall be shielded from view by fencing, landscaping or other means. Prior to final approval of the final map, a site inspection shall be required by the County Planning Department to verify that all approved landscaping has been implemented or bonds posted for performance; a maintenance bond shall be required. All perimeter landscaping shall serve to screen and/or enhance views of the project site from surrounding roadways and neighborhoods.	Applicant / San Mateo County Planning and Building Department	Prior to the approval of each phase of the Final Map	Site inspection to verify compliance with mitigation measure.	Complete. Landscape plan approved by San Mateo County for Subdivision Project.
	Mitigation Measure 4.1-1b. Prior to the issuance of a grading permit "hard card," the applicant is required to submit a tree replacement plan that shall not exceed the following specifications: • For each loss of a significant indigenous tree, there shall be a replacement with three or more trees, as determined by the Community Development Director, of the same species using at least 5-gallon size stock. • For each loss of a significant exotic tree, there shall be a replacement with three or more trees, as determined by the Community Development Director that the substitute tree can survive and	California Department of Fish and Wildlife / San Mateo County Planning and Building Department shall oversee tree placement	Prior/ during construction	Site inspection to verify compliance with mitigation measures during construction; and subsequent monitoring as stipulated in the measure.	Complete. Landscape Plan approved for Subdivision Project.

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
	flourish in the regional climatic conditions. • Replacement trees shall require a surety deposit for both performance (installation of tree, staking, and providing an irrigation system) and maintenance. Maintenance shall be required for no less than two and no more than five years as determined by the Community Development Director.				
AIR QUALITY AND GREENHOUSE GAS EMISSIONS					
Impact 4.2-1: Construction of the Proposed Project has the potential to generate emissions of ROG, NOx, PM10, and PM2.5.	**Mitigation Measure 4.2-1a:** The applicant shall ensure through the enforcement of contractual obligations that construction contractors implement a fugitive dust abatement program during construction, which shall include the following elements consistent with the Basic Construction Mitigation Measures recommended by the Bay Area Air Quality Management District (BAAQMD): • Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard. • Cover all exposed stockpiles. • Water all exposed roadway and construction areas two times a day. • Sweep paved streets three times daily (with water sweepers) if visible soil material is carried onto adjacent streets. • Limit traffic speeds on unpaved roads to 15 miles per hour (mph). • After grading is complete, construction of paved surfaces (e.g., roadways, driveways, sidewalks, building pads) should be completed as soon as possible unless protected by seeding, soil binders, or other similar measures. • Limit idling time to a maximum of five minutes and turn off equipment when not in use; clear signage indicating this shall be displayed at the project site access point. • All construction equipment shall be maintained and properly tuned in accordance with manufacturer's	San Mateo County Planning and Building Department / Construction Contractors / BAAQMD	During construction.	Site inspection to verify compliance with mitigation measures during construction; applicable forms submitted to BAAQMD.	Ongoing.

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
	specifications and shall be checked by a certified visible emissions evaluator. • Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph. • Any burning of cleared vegetation shall be conducted according to the rules and regulations of the BAAQMD's Regulation 5 (BAAQMD, 2008). Prior notification to BAAQMD shall be made by submitting an Open Burning Prior Notification Form to BAAQMD's office in San Francisco. • A publicly visible sign shall be posted with the telephone number and person to contact at the County regarding dust complaints. A response and corrective action shall occur within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.				
	Mitigation Measure 4.2-1b: The project applicant shall ensure though contractual obligations with construction contractors that the following Best Management Practices (BMPs) shall be implemented during all stages of construction: • All heavy duty construction equipment be equipped with diesel particulate matter filters. • Only low ROG coatings shall be utilized. • ~~The applicant shall use only Tier 2 or better heavy-duty construction equipment~~. The project applicant shall use Tier 4 Interim engines for all 75 horsepower or greater diesel-powered equipment, except where the project applicant establishes to the satisfaction of the County that Tier 4 Interim equipment is not available.	San Mateo County Planning and Building Department / Construction Contractors / Bay Area Air Quality Management District	During construction.	Site inspection to verify compliance with mitigation measures during construction	Ongoing.
Impact 4.2-8: Construction and operation of the Proposed Project has the potential to result in cumulatively considerable emissions	**Mitigation Measure 4.2-8:** The applicant shall purchase CO2e emissions reduction credits in the amount of 249 MT prior to the start of construction. GHG CO2e emissions reduction credits are generated by projects that reduce their GHG emissions by the use of technology or a reduction in business over business as usual. The CO2e emission reduction credits must be permanently retired by	Applicant / San Mateo County Planning and Building Department to verify purchase.	Prior to start of construction	Purchase credits and submit applicable forms to County Planning and Building.	Complete. Credits purchased February 22, 2022.

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
of GHGs**.**	the project applicant, thereby reducing annual emissions for the lifetime of the Proposed Project.				
BIOLOGICAL RESOURCES					
Impact 4.3-3: Construction activities have the potential to result in the disturbance of nesting or foraging habitat for northern harrier, burrowing owl, and white-tailed kite.	**Mitigation Measure 4.3-3a:** Prior to the commencement of construction activities on the project site during the nesting season, a qualified biologist shall conduct a minimum of two protocol level preconstruction surveys for listed bird species during the recommended survey periods for the nesting season that coincides with the commencement of construction activities: • Northern harrier: Present year-round, breeds March through August; • Burrowing owl: Present year-round, breeds primarily March through August, but can be February- December; and • White-tailed kite: Present year-round, breeding occurs in autumn. Nesting season begins in February and ends in August. These surveys will occur in accordance with the USFWS Division of Migratory Bird Management Guidelines for Raptor Conservation in the United States (2008). The qualified biologist shall conduct surveys within 14 days of commencement for Northern harrier, burrowing owl, and white-tailed kite in the project site and within 0.25 miles of construction activities where legally permitted. The biologist will use binoculars to visually determine whether nests occur beyond the 0.25-mile survey area if access is denied on adjacent properties. If no active nests are identified on or within 0.25 miles of construction activities within the recommended survey periods, a letter report summarizing the survey results shall be submitted to the County and the CDFW within 30 days following the survey, and no further mitigation for nesting habitat is required. Evidence, in the form of a letter report documenting the results of the survey, shall be submitted to the County prior to the issuance of any grading or building permits within the project site.	California Department of Fish and Wildlife / San Mateo County Planning and Building Department	Prior to issuance of grading building permits.	Verify completion of surveys and submittal of letter reports.	Complete. Biological surveys completed in April 2017

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
	Mitigation Measure 4.3-3b: If active listed bird nests are found within 0.25 mile of construction activities, the biologist shall contact the County and CDFW within one day following the pre- construction survey to report the findings. For purposes of this mitigation requirement, construction activities are defined to include heavy equipment operation associated with construction (use of cranes or draglines, new rock crushing activities) or other project-related activities that could cause nest abandonment or forced fledging within 0.25 mile of a nest site during the identified nesting period. Should an active nest be present within 0.25 mile of construction areas, then CDFW shall be consulted to establish an appropriate noise buffer, develop take avoidance measures, and implement a monitoring and reporting program prior to any construction activities occurring within 0.25 mile of the nest/burrow. The monitoring program would require that a qualified biologist shall monitor all activities that occur within the established buffer zone to ensure that disruption of the nest/burrow or forced fledging does not occur. Should the biologist determine that the construction activities are disturbing the nest/burrow, the biologist shall halt construction activities until CDFW is consulted. The construction activities shall not commence until the CDFW determines that construction activities would not result in abandonment of the nest/burrow site. If the CDFW determines that take may occur, the applicant would be required to obtain a CESA take permit. Should the biologist determine that the nest/burrow has not been disturbed during construction activities within the buffer zone, then a letter report summarizing the survey results will be submitted to the County and CDFW and no further mitigation for nesting habitat is required.	California Department of Fish and Wildlife / San Mateo County Planning and Building Department	Prior to construction.	Verify completion of surveys and additional stipulated mitigation if necessary.	Complete. Biological surveys completed in April 2018
Impact 4.3-4: Grading and construction activities have the potential to result in the disturbance of nesting habitat for migratory	**Mitigation Measure 4.3-4a:** A qualified biologist shall conduct a pre-construction bird survey for nesting within 14 days prior to commencement of construction activities if anticipated to commence during the appropriate nesting season (between February 1 and August 31). The qualified biologist shall document and submit the results	California Department of Fish and Wildlife / San Mateo County Planning and Building	Prior to construction.	Verify completion of surveys and submittal of letter reports.	Complete. Biological surveys completed in April 2019

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
birds and other birds of prey.	of the pre-construction survey in a letter to CDFW and the County within 30 days following the survey. The letter shall include: a description of the methodology including dates of field visits, the names of survey personnel, a list of references cited and persons contacted, and a map showing the location(s) of any bird nests observed on the project site. If no active nests are identified during the pre-construction survey, then no further mitigation is required. Evidence, in the form of a letter report documenting the results of the survey, shall be submitted to the County Planning Department prior to the issuance of any grading or building permits within the project site.	Department			
	Mitigation Measure 4.3-4b: If any active nests are identified during the pre- construction survey within the project site, a buffer zone will be established around the nests. A qualified biologist will monitor nests weekly during construction to evaluate potential nesting disturbance by construction activities. The biologist will delimit the buffer zone with construction tape or pin flags within 250 feet of the active nest and maintain the buffer zone until the end of the breeding season or until the young have fledged. Guidance from CDFW will be requested if establishing a 250-foot buffer zone is impractical. Guidance from CDFW will be requested if the nestlings within the active nest appear disturbed.	California Department of Fish and Wildlife / San Mateo County Planning and Building Department	Prior/ during construction.	Verify completion of weekly surveys contingent on results of survey detailed in Mitigation Measure 4.3-4a.	
	Mitigation Measure 4.3-4c: Trees anticipated for removal should be removed outside of the nesting season (February 1 and August 31). If trees are anticipated to be removed during the nesting season, a pre-construction survey shall be conducted by a qualified biologist. If the survey shows that there is no evidence of active nests, then the tree shall be removed within ten days following the survey. If active nests are located within trees identified for removal, a 250-foot buffer shall be installed around the tree. Guidance from CDFW will be requested if the 250-foot buffer is infeasible.	California Department of Fish and Wildlife / San Mateo County Planning and Building Department	Prior to construction.	Verify completion of survey.	Complete. Biological surveys completed in April 2019. Additional surveys may be required if additional tree removal occurs.
Impact 4.3-6: Construction of the	**Mitigation Measure 4.3-6:** Prior to the issuance of grading permits and removal of any trees, a certified	Applicant / California	Prior to issuance of	Verify completion of surveys and	Complete. Arborist report completed

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
Proposed Project has the potential to remove trees protected within the tree preservation ordinance specified in the San Mateo County Significant Tree Ordinance.	arborist or registered professional forester shall conduct an arborist survey documenting all trees with trunk circumferences of 38 inches or greater and their location, as well as any Tree Communities or Indigenous Trees regardless of size. The report shall be submitted to the County Planning Department. The applicant shall not remove any trees without prior approval from the County Planning Department. All recommendations of the arborist report shall be implemented prior to the issuance of building permits for development on the project site. The arborist report shall specify measures including, but not limited to the following: • To the extent feasible, trees anticipated for removal shall be removed outside of the nesting season for birds. Taking into account the nesting season for the white tailed kite, the nesting season shall be defined as February 1 to August 31. • The project proponent shall plant replacement significant and/or indigenous tree species recommended by the County at a 3:1 ratio within the project site.	Department of Fish and Wildlife / San Mateo County Planning and Building Department	grading permits.	submittal of letter reports.	October 2018. Additional Arborist reports prepared in September 2019 and August 2022 to inform Tree Protection Plan.
Impact 4.3-7: Development of the Proposed Project has the potential to contribute to the cumulative loss of special-status wildlife species or their habitat in the region.	**Mitigation Measure 4.3-7:** Implement **Mitigation Measures 4.3-1** through **4.3-6.**	See Above	See Above	See Above	See Above

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
GEOLOGY AND SOILS					
Impact 4.4-1: Earth-moving activities associated with construction of the Proposed Project have the potential to result in soil erosion or the loss of topsoil.	**Mitigation Measure 4.4-1a:** Implement Mitigation Measure 4.6-1 (Section 4.6; Hydrology and Water Quality) to identify and implement erosion control BMPs within the SWPPP prepared for construction activities in accordance with the State's Clean Water Act NPDES general permit for construction activities. Implementation of these BMPs would ensure that temporary and short-term construction-related erosion impacts under the Proposed Project would be reduced to a less-than-significant level.	Applicant / San Mateo County Planning and Building Department	See Mitigation Measure 4.6-1 (Prior to and during Construction)	Submit NOI to SWRCB. Verify that a SWPPP has been prepared and implemented	Ongoing.
	Mitigation Measure 4.4-1b: The applicant shall obtain a San Mateo County Grading Permit which includes the requirement of an Erosion and Sediment Control Plan. This Erosion and Sediment Control Plan shall be prepared by a licensed civil engineer or certified professional soil erosion and sediment control specialist. The plan shall show the location of proposed vegetative erosion control measures, including landscaping and hydroseeding, and the location and details of all proposed drainage systems. The plan shall include sufficient engineering analysis to show that the proposed erosion and sediment control measures during preconstruction, construction, and post-construction are capable of controlling surface runoff and erosion, retaining sediment on the project site, and preventing pollution of site runoff in compliance with the Clean Water Act.	Applicant / San Mateo County Planning and Building Department	Prior to issuance of a grading permit.	Verify that site-specific erosion control and sediment plans and post construction plans have been prepared and implemented.	Complete. Grading permit was approved July 28, 2020
Impact 4.4-2: The Proposed Project has the potential to result in structural damage and injury from seismic activity and related geologic hazards.	**Mitigation Measure 4.4-2a:** Grading and building designs, including foundation requirements, shall be consistent with the findings of the geotechnical investigation, the California Code of Regulations, and the California Building Code.	Applicant / San Mateo County Planning and Building Department	Prior to issuance of grading and building permits.	Project design review/grading and building standards.	Complete. Grading permit was approved July 28, 2021
	Mitigation Measure 4.4-2b: The project applicant shall comply with all recommendations contained within the site-specific Geotechnical Investigation conducted by Michelucci & Associates (2013) (FEIS; Appendix E).	Applicant / San Mateo County Planning and Building Department	Prior to issuance of grading and building permits.	Project design review/grading and building standards.	Complete. Grading permit was approved July 28, 2022

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
	Mitigation Measure 4.4-2c: The applicant shall retain a qualified engineering geologist. All grading and installation of fill shall be performed under the observation of the qualified engineering geologist.	Applicant / San Mateo County Planning and Building Department	During grading/ construction.	Verify site-specific grading standards.	Ongoing.
Impact 4.4-3: The Proposed Project could potentially result in shallow landslides due to the depth of unconsolidated colluvium on the project site.	**Mitigation Measure 4.4-3a:** Implement Mitigation Measure 4.6-2 (Section 4.6; Hydrology and Water Quality) to ensure that the site storm water drainage system (including individual systems for each residence) shall not allow discharge of uncontrolled runoff onto the site slopes. Concentrated runoff shall not be allowed to flow over graded slopes or areas of thick soil, colluviums, or fill.	San Mateo County Planning and Building Department / Homeowners Association	See Mitigation Measure 4.6-2 (During Project operations)	Project design review/Project operations.	Ongoing.
	Mitigation Measure 4.4-3b: Implement Mitigation Measure 4.4-2c to ensure the recommendations of the Geotechnical Investigation regarding subdrains and surface drainage are included in the project design.	Applicant / San Mateo County Planning and Building Department	See Mitigation Measure 4.4-2c (During grading/ construction)	Verify site-specific grading standards.	Ongoing.
Impact 4.4-4: Development of the Proposed Project in combination with future projects in the region could result in cumulative effects associated with geology and soils.	**Mitigation Measure 4.4-4:** Implement **Mitigation Measures 4.4-1** through **4.4-3.**	See Above	See Above	See Above	See Above.
HYDROLOGY AND WATER QUALITY					
Impact 4.6-1: Construction activities could substantially degrade surface water and/or groundwater quality, which could violate water quality	**Mitigation Measure 4.6-1:** The applicant shall comply with the SWRCB NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Permit). The SWRCB requires that all construction sites have adequate control measures to reduce the discharge of sediment and other pollutants to streams to ensure compliance with Section 303 of the	Applicant/State Water Resources Control Board	Prior / during Construction.	Submit NOI to SWRCB. Verify that a SWPPP has been prepared and implemented.	Complete- NOI was filed on September 18, 2019. SWPPP dated September 9, 2019; Amendments were filed on 1/14/21 and 11/4/21

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
standards.	Clean Water Act. To comply with the NPDES permit, the applicant will file a Notice of Intent with the SWRCB and prepare a SWPPP prior to construction, which includes a detailed, site- specific listing of the potential sources of stormwater pollution; pollution prevention measures (erosion and sediment control measures and measures to control non- stormwater discharges and hazardous spills) to include a description of the type and location of erosion and sediment control BMPs to be implemented at the project site, and a BMP monitoring and maintenance schedule to determine the amount of pollutants leaving the Proposed Project site. A copy of the SWPPP must be current and remain on the project site. Control measures are required prior to and throughout the rainy season. Water quality BMPs identified in the SWPPP shall include, but are not limited to, the following: • Temporary erosion control measures (such as silt fences, staked straw bales, and temporary revegetation) shall be employed for disturbed areas. No disturbed surfaces will be left without erosion control measures in place during the winter and spring months. • Sediment shall be retained onsite by detention basins, onsite sediment traps, or other appropriate measures. • A spill prevention and countermeasure plan shall be developed which would identify proper storage, collection, and disposal measures for potential pollutants (such as fuel, fertilizers, pesticides, etc.) used onsite. The plan would also require the proper storage, handling, use, and disposal of petroleum products. • Construction activities shall be scheduled to minimize land disturbance during peak runoff periods and to the immediate area required for construction. Soil conservation practices shall be completed during the fall or late winter to reduce erosion during spring runoff. Existing vegetation will be retained where possible. To the extent feasible, grading activities shall be limited to the				

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
	immediate area required for construction. • Surface water runoff shall be controlled by directing flowing water away from critical areas and by reducing runoff velocity. Diversion structures such as terraces, dikes, and ditches shall collect and direct runoff water around vulnerable areas to prepared drainage outlets. Surface roughening, berms, check dams, hay bales, or similar devices shall be used to reduce runoff velocity and erosion. • Sediment shall be contained when conditions are too extreme for treatment by surface protection. Temporary sediment traps, filter fabric fences, inlet protectors, vegetative filters and buffers, or settling basins shall be used to detain runoff water long enough for sediment particles to settle out. • Construction materials, including topsoil and chemicals, shall be stored, covered, and isolated to prevent runoff losses and contamination of groundwater. • Topsoil removed during construction shall be carefully stored and treated as an important resource. Berms shall be placed around topsoil stockpiles to prevent runoff during storm events. • Establish fuel and vehicle maintenance areas away from all drainage courses and design these areas to control runoff. • Disturbed areas shall be revegetated after completion of construction activities. • All necessary permits and approvals shall be obtained. • Provide sanitary facilities for construction workers.				
Impact 4.6-2: Urban runoff resulting from the development of impervious surfaces and urban land uses on the project site has the potential to degrade	Mitigation Measure 4.6-2a: Upon acceptance of the design concept, a maintenance agreement shall be developed between the County and the Homeowners Association (HOA) or equivalent entity requiring the HOA or equivalent entity to complete the following tasks and provide the following information on a routine basis. These requirements apply only to the bioretention	San Mateo County Planning and Building Department / Homeowners Association	During Project operations.	Project design review/Project operations	Complete. Recorded in August 2022.

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
water quality and violate water quality standards or waste discharge requirements.	treatment system area of the project site and are as follows: • Maintenance of soils and plantings, including routine pruning, mowing, irrigation, replenishment of mulch, weeding, and fertilizing with a slow-release fertilizer with trace elements • Removal of obstructions and trash from bioretention areas; • Use of only pesticides and fertilizers that are accepted within the integrated pest management approach for use in the bioretention areas; • Repair of erosion at inflow points; • Monthly review and inspection of bioretention areas for the following: o Obstruction of trash, o If ponded water is observed, the surface soils shall be removed and replaced and subdrain systems inspected, and o Condition of grasses; • Distribution of the following: o A copy of the storm water management plans shall be made available to personnel in charge of facility maintenance and shall be distributed to the subcontractor representative engaged in the maintenance or installation of the bioretention system, and o Material presented in the integrated pest management program will be made available to personnel in charge of facility maintenance and shall be distributed to the subcontractor representative engaged in the maintenance or installation of the bioretention system.				
	Mitigation Measure 4.6-2b: Upon acceptance of the design concept, a maintenance agreement shall be developed between the County and the HOA or equivalent entity requiring the HOA or equivalent entity to complete the following tasks and provide the following	San Mateo County Planning and Building Department / Homeowners	During Project operations.	Project design review/Project operations	Complete. Recorded in August 2022.

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
	information on a routine basis. These requirements apply to all common areas of the project site and are as follows: • Drainage inlets shall be inspected monthly and kept clean of any trash that may have accumulated. It is the responsibility of the property manager/owner to have those inspections performed, documented, and any repairs made. • Landscape areas shall be covered with plants or some type of ground cover to minimize erosion. No areas are to be left as bare dirt that could erode. Mounding slopes shall not exceed two horizontal to one vertical. • Pesticides and fertilizers shall be stored as hazardous materials and in appropriate packaging, over spraying onto paved areas shall be avoided when applying fertilizers and pesticides. Pesticides and fertilizers shall be prohibited from storage outside. • Landscape areas shall be inspected and all trash picked up and obstruction to the drainage flow removed on a monthly basis minimum. The project site shall be designed with efficient irrigation and drainage to reduce pesticide use. Plants shall be selected based on size and situation to reduce maintenance and routine pruning. • Integrated pest management information shall be provided to the building management.	Association			
	Mitigation Measure 4.6-2c: Infiltration systems shall be designed in accordance with the following procedures outlined in the California Storm Water Best Management Practice Handbooks to reduce runoff and restore natural flows to groundwater: • Biofilters and/or vegetative swale drainage systems will be installed at roof downspouts for all buildings on the project site, allowing sediments and particulates to filter and degrade biologically. • Structural source controls, such as covers, impermeable surfaces, secondary containment facilities, runoff diversion berms, sediment, and	Applicant / San Mateo County Planning and Building Department	During Project design phase and during construction activities.	Verify that infiltration systems are designed accordingly and that construction BMPs are implemented.	Ongoing.

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
	grease traps in parking areas will be installed. • Designated trash storage areas will be covered to protect bins from rainfall.				
Impact 4.6-3: Development of the Proposed Project would substantially alter the existing drainage patterns and may cause flows to exceed the capacity of existing stormwater drainage systems, result in substantial pollution on or off site, or result in flooding on or off site.	**Mitigation Measure 4.6-3a:** Upon acceptance of the design concept, a maintenance agreement shall be developed between the County and the HOA or equivalent entity requiring the HOA or equivalent entity to complete and provide the documentation of annual inspection and cleaning of each of the 19 individual lot storm drainage systems. The inspection shall be performed during the dry season and shall include removal of all trash and obstructions from area drains, cleanouts, and catch basins	San Mateo County Planning and Building Department/Homeowner's Association/ Community Development Department	During Project operations.	Project design review/Project operations.	Complete. Recorded in August 2022.
	Mitigation Measure 4.6-3b: The 15-inch diameter stormwater drain pipe flowing at 2 percent that crosses Ascension Drive at Enchanted Way shall be replaced with a 21-inch diameter pipe. The 30- inch diameter stormwater drain pipe flowing at 1.3 percent shall be replaced with a 36-inch diameter pipe sloped at 2 percent. Stormwater drain pipe infrastructure improvements shall adhere to all applicable regulations and ordinances.	Applicant / San Mateo County Planning and Building Department	During construction.	Site inspection to verify compliance.	Complete.
Impact 4.6-5: Implementation of the Proposed Project would neither degrade groundwater quality nor substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table.	**Mitigation Measure 4.6-5:** Implement **Mitigation Measures 4.6-1, 4.6-2a, and 4.6-2b.**	See Above	See Above	See Above	See Above
HAZARDS AND HAZARDOUS MATERIALS					
Impact 4.7-1:	**Mitigation Measure 4.7-1:** The project applicant shall	Applicant / San	During	Site inspection to	Ongoing.

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
Construction of the Proposed Project would include the routine transport, storage, and handling of hazardous materials, which has the potential to result in a public health or safety hazard from the accidental release of hazardous materials into the environment.	ensure through the enforcement of contractual obligations that all contractors transport, store, and handle construction-required hazardous materials in a manner consistent with relevant regulations and guidelines, including those recommended and enforced by the San Mateo County Planning and Building Department, Office of Environmental Health Services Division, and Office of Emergency Services. Recommendations may include, but are not limited to, transporting and storing materials in appropriate and approved containers, maintaining required clearances, and handling materials using approved protocols.	Mateo County Planning and Building Department / County of San Mateo Office of Environmental Health Services Division / San Mateo County Office of Emergency Services	construction.	verify compliance with mitigation measures during construction.	
Impact 4.7-2: Construction of the Proposed Project has the potential to release hazardous materials into the environment through reasonably foreseeable upset or accident conditions, which may create a significant hazard.	**Mitigation Measure 4.7-2:** The project applicant shall require through contractual obligations that the construction contractor(s) marks the areas planned to be disturbed in white paint and notify Underground Service Alert (USA) one week prior to the beginning of excavation activities. This will be completed so the entire construction area is properly surveyed in order to minimize the risk of exposing or damaging underground utilities. USA provides a free "Dig Alert" service to all excavators (contractors, homeowners and others), in northern California, and will automatically notify all USA Members (utility service providers) who may have underground facilities at their work site. In response, the USA Members will mark or stake the horizontal path of their underground facilities, provide information about, or give clearance to dig. This service protects excavators from personal injury and underground facilities from being damaged. The utility companies will be responsible for the timely removal or protection of any existing utility facilities located within construction areas.	Applicant	One week prior to excavation activities		Ongoing.
Impact 4.7-3: The Proposed Project has the potential to expose people or structures to a significant risk of loss, injury, or death involving wildland fires.	**Mitigation Measure 4.7-3a:** The applicant shall ensure through the enforcement of contractual obligations that the following measures are implemented by contractors during project construction: • Staging areas, welding areas, or areas slated for development using spark-producing equipment shall be cleared of dried vegetation or other materials that could serve as fire fuel. To the extent	San Mateo County Planning and Building Department	During construction.	Site inspection to verify compliance with mitigation measure during construction.	Ongoing.

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
	feasible, the contractor shall keep these areas clear of combustible materials in order to maintain a fire break. • Any construction equipment that normally includes a spark arrester shall be equipped with an arrester in good working order. This includes, but is not limited to, vehicles, heavy equipment, and chainsaws.				
	Mitigation Measure 4.7-3b: The building plans of the Proposed Project shall be reviewed by a representative from County Fire/CAL FIRE to ensure that regulations in the County's Fire Ordinance are met and the project complies with County Fire/CALFIRE requirements. The development of the Proposed Project shall be in compliance with Chapter 15 of the County General Plan with respect to residential uses adjacent to open space areas where wildfire is a threat.	Applicant / San Mateo County Planning and Building Department / County Fire/CAL FIRE	Prior to issuance of building permits.	Project design review/Chapter 15 County General Plan.	Ongoing.
Impact 4.7-5: The Proposed Project in combination with future growth and development in the project vicinity would result in cumulative effects associated with hazards and hazardous materials.	**Mitigation Measure 4.7-5:** Implement **Mitigation Measures 4.7-1** through **4.7-3.**	See Above	See Above	See Above	See Above
NOISE AND VIBRATION					
Impact 4.8-1: Construction of the Proposed Project has the potential to generate a substantial temporary or periodic noise level greater than existing ambient levels in the project vicinity.	**Mitigation Measure 4.8-1:** The project applicant shall ensure through contractual agreements that the following measures are implemented during construction: • Construction activities shall be limited to occur between the hours of 7:00 A.M. to 6:00 P.M. Monday through Friday, and 9:00 A.M. to 5:00 P.M. on Saturdays. Construction activities shall not occur on Sundays, Thanksgiving, or Christmas. The intent of this measure is to prevent construction activities during the more sensitive time period and	Applicant / San Mateo County Planning and Building Department	During construction.	Site inspection to verify compliance with mitigation measures during construction.	Ongoing.

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
	minimize the potential for effects. • Stationary equipment and staging areas shall be located as far as practical from noise-sensitive receptors. • All construction vehicles or equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and acoustical shields or shrouds, in accordance with manufacturers' recommendations. • Construction activities shall conform to the following standards: (a) there shall be no start-up of machines or equipment, no delivery of materials or equipment, no cleaning of machines or equipment and no servicing of equipment except during the permitted hours of construction; (b) radios played at high volume, loud talking and other forms of communication constituting a nuisance shall not be permitted. • The general contractors for all construction activities shall provide a contact number for citizen complaints and a methodology for dealing with such complaints such as designating a noise disturbance coordinator. This noise disturbance coordinator shall receive all public complaints about construction-related noise and vibration, shall be responsible for determining the cause of the complaint, and shall implement any feasible measures to be taken to alleviate the problem. All complaints and resolution of complaints shall be reported to the County weekly.				

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
Impact 4.8-2: Construction of the Proposed Project has the potential to expose existing sensitive noise receptors to construction traffic noise in excess of the County's noise standards.	**Mitigation Measure 4.8-2:** Implement **Mitigation Measure 4.8-1.**	See Above	See Above	See Above	See Above
PUBLIC SERVICES, UTILITIES, AND RECREATION					
Impact 4.10-2: The Proposed Project would require the construction of new and relocation of existing water supply facilities, the construction of which could cause significant environmental effects.	**Mitigation Measure 4.10-2a:** Residents of the Proposed Project shall comply with all requirements of Cal Water's Water Shortage Contingency Plan as mandated by Cal Water and BSD. These requirements may include, but are not limited to the following: • Voluntarily reduce water consumption at single-family residences; • Adhere to the minimum allocation given to single-family residential customers or pay penalty rate applied to service bill for use that is in excess of costumer's allocation; and/or • Comply with orders prohibiting the use of water for specific activities, such as a prohibition of potable water use for landscape irrigation.	Cal Water Bayshore District	Project **operations**.	Cal Water Shortage Contingency Plan.	To be implemented Post-Construction
	Mitigation Measure 4.10-2b: Pumping facilities shall be installed at the existing water tank owned by Cal Water to provide adequate water pressure for residential and fire protection uses. Cal Water shall be contacted to review pumping facilities design and ensure compliance with applicable standards. The project applicant shall fund the development of these facilities.	Applicant/ Cal Water Bayshore District	During construction.	Site inspection to verify compliance with mitigation measures during construction.	Ongoing

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
	Mitigation Measure 4.10-2c: Two existing water mains shall be relocated such that they are within the right-of-way of the proposed private street or at the property boundary so as to allow ease of maintenance of the water mains. New Cal Water easements shall be established on the project site to replace the existing Cal Water easements. The two water mains include an 8-inch diameter water main connecting the water tank to the water main located on Parrot Drive and a 10-inch diameter water main connecting the water tank to the water main located on Bel Aire Drive.	Applicant/ Cal Water Bayshore District	During construction	Site inspection to verify compliance with mitigation measures during construction.	Complete.
Impact 4.10-3: The Proposed Project would exceed the wet weather capacity of the wastewater conveyance system and would require upgrades to existing wastewater treatment facilities, the construction of which could cause significant environmental effects.	**Mitigation Measure 4.10-3:** The applicant shall offset the increase in sewer flow generated by the Proposed Project by reducing the amount of existing I&I into the CSCSD sewer system. The offset amount shall achieve a zero net increase in flow during wet weather events with implementation of the Proposed Project. This shall be achieved through the construction of improvements to impacted areas of the sewer system, with construction plans subject to CSCSD approval and required to be in compliance with applicable regulatory requirements. Construction of improvements, as approved by the CSCSD, shall be completed prior to the start of the construction of the residences.	Applicant / Crystal Springs County Sanitation District	Prior to construction	Approval of sewer system construction improvements.	Complete.
Impact 4.10-4: The Proposed Project would require the expansion of existing stormwater drainage facilities, the construction of which would cause significant environmental effects.	**Mitigation Measure 4.10-4:** Implement **Mitigation Measures 4.6-3a** and **4.6-3b.**	See Above	See Above	See Above	See Above

Impact	Mitigation Measure	Responsible for Implementing & Monitoring	Mitigation Timing	Monitoring Schedule	Completion Status
Impact 4.10-5: The Proposed Project would generate a demand for fire protection services, which could require the construction of new or expanded facilities that may cause significant environmental impacts.	**Mitigation Measure 4.10-5:** The applicant shall ensure that fire sprinklers with appropriate flow rates are installed for all structures that would be developed as a part of the Proposed Project, per County Fire/CAL FIRE's alternate materials and methods request.	County Fire/CAL FIRE	During construction.	Site inspection to verify compliance with mitigation measures during construction.	Ongoing.
TRANSPORTATION					
Impact 4.11-3: Implementation of the Proposed Project would not conflict with adopted policies, plans, or programs, including those related to safety and performance, regarding public transit, bicycle, and pedestrian facilities but does have the potential develop unsafe pedestrian and bicycle facilities.	**Mitigation Measure 4.11-3:** Either provide street lighting on the private streets to a level of 0.4 minimum maintained average foot-candles with a uniformity ratio of 6:1, average to minimum or ensure street lighting is consistent with safety standards of the County-governed Bel Aire Lighting District.	Applicant and Bel Aire Lighting District	During construction.	Site inspection to verify compliance with mitigation measures during construction.	Ongoing.
Impact 4.11-4: Implementation of the Proposed Project has the potential to substantially increase hazards due to the design of the new private street and proposed intersection with Bel Aire Drive.	**Mitigation Measure 4.11-4:** Within the corner sight triangles at the new street intersection there should be no walls, fencing, or signs that would obstruct visibility. Trees should be planted so as to not create a "wall" effect when viewed at a shallow angle. The type of shrubbery planted within the triangles should be such that it will grow no higher than three feet above the adjacent roadway surface. Trees planted within the sight triangle areas should be large enough that the lowest limbs are at least seven feet above the surface of the adjacent roadway. Street parking should be prohibited within the bounds of the sight triangle.	Applicant and Bel Aire Lighting District	During construction.	Project design review.	Ongoing.