CONSTRUCTION CONTRACT DOCUMENTS

BID #20-01

County of San Mateo

Memorial Park

Collection System Replacement Project

County of San Mateo
Memorial Park
9500 Pescadero Creek Road
Loma Mar, CA 94021

DOCUMENT 00 01 10 – TABLE OF CONTENTS

SPECIFICATION SECTIONS

NOTICE TO BIDDERS

NOTICE IS HEREBY GIVEN that the County of San Mateo will receive sealed bids for the Collection System Replacement project located at Memorial Park, 9500 Pescadero Creek Road, Loma Mar, California in accordance with the plans and specifications prepared by **Sherwood Design Engineers** ("Civil Engineer" or “Engineer of Record” or “EOR”).

1. Time of Opening: Bids will be opened on **October 14, 2020 at 2:00 p.m.** Bid documents must be sealed, marked with the project name and bid title. All Bids must be received at Capital Program Management Offices located at **1851 Heritage Lane, Suite 210, Sacramento, CA 95815 BEFORE 2:00:00 p.m.** Bids which are submitted on or after **2:00:00 p.m.** or facsimile bid transmissions will not be accepted. Due to COVID-19, the bid opening will be conducted via Zoom at:

https://us02web.zoom.us/j/82994583013

2. Contractors Requirements:

a. All Bidders must have and maintain a General Engineering “A” Class or General Contractor “B” Class contractor’s license in order for their bids to be considered responsive. Bidder may bid only on work of a kind for which it is properly licensed by the California Contractors' State License Board. Joint venture Bidders must possess a joint venture license. The Bidder must be licensed at the time of bid and the license must remain current for the duration of the Project. Failure to supply complete license requirement information and signature under penalty of perjury on the bid form may result in the bid being considered non-responsive and rejected.

b. Pursuant to Senate Bill (SB) 854, all bidders on public works, including any project resulting from this bid process, must register with the California Department of Industrial Relations (DIR) and pay an annual renewal fee to the DIR. Only bidders that have registered with the DIR and that are current in payment of annual renewal fees are eligible to bid as contractors or subcontractors on any project resulting from this bid process. Likewise, only contractors and subcontractors that have registered with the DIR and who are current in payment of their annual renewal fees shall be eligible to receive a contract or subcontract or to perform work under any contracts resulting from this bid process. Pursuant to the California Labor Code, the general prevailing rate of per diem wages and for holiday and overtime work shall be paid to all workers employed by the contractor selected for this project. Copies of prevailing rates of per diem wages are available upon request at the County’s Offices or at www.dir.ca.gov. The Department of Industrial Relations/Labor Commissioner will monitor and enforce compliance with applicable prevailing wage requirements on this project and enforce compliance with applicable prevailing wage requirements in accordance with the California Labor Code, including sections 1771, 1774, 1776, 1777.5, 1813, and 1815. Contractors on any project resulting from this bid process will be required to submit certified payroll records in electronic format to the California Labor Commissioner unless excused by the Labor Commissioner from this requirement.

3. Duration of Bid: All bid proposals submitted shall be considered irrevocable offers to perform the work in accordance with the Contract Documents if a Notice of Award is issued within forty-five (45) days from the bid opening.

4. Plans and Specifications: Plans and specifications for the above mentioned project will be available on **September 16, 2020**. Plans and specifications may be purchased, at the contractor's expense, from Prints Charles Reprographics, 1653 S. Main Street, Milpitas, CA 95035, Phone (408) 240-3330 email: incoming@printscharlesrepro.com. Please contact Owner's Representative, Justin Boon, for further information at justinb@capitalpm.com or (415)-779-6378.

5. Inspection of Site: Non-Mandatory Pre-Bid Site Inspection and Conference will be held at Memorial Park, 9500 Pescadero Creek Rd, Loma Mar, CA 94021 on **September 30, 2020 at 10:30 a.m.** All attendees are to meet in the Park Entrance. Attendees must comply with California state and County of San Mateo social distancing and face covering requirements. Attendees must sign in by scheduled time. The County shall have the discretion to bar attendees who fail to arrive by scheduled time from signing in if the circumstances warrant. Before submitting a bid proposal, Bidders shall examine the drawings, read the specifications, the form of Agreement, and other Contract Documents. They shall visit the site of the proposed Project; examine the building, or buildings, if any, and any work that may have been done thereon. They shall fully inform themselves of all conditions on, in, at, and about the site, the buildings, if any, and any work that may have been done thereon.

6. Format of Bids: Bid proposals shall be made on the Bid Form included with the Contract Documents. All items on the form must be filled out. Numbers on the Bid Form document shall be written as Arabic numbers and shall also be written out as words and the signatures of all individuals must be in longhand. The completed form should be without interlineations, alterations, or erasures. A bid response to any specific item of this bid with terms such as "negotiable" "will negotiate" or similar, will be considered as nonresponsive to that specific term.

7. Listing of Alternates: Bidders shall provide pricing for all requested alternates. Should the contractor fail to provide pricing for an alternate, the bid will be deemed non-responsive.

8. Method of Determining Lowest Bidder: The lowest bidder will be determined based on the lowest Total Base Bid as described on the Bid Form. The County has also included additive alternates which requires all bidders to price as part of their bid. However, the County may select all, none, or any combination of the Bid Alternates at their discretion.

9. Signatures on Bids: Each bid must give the full business address of the Bidder. Bids by partnerships must furnish the full name of all partners and must be signed in the partnership's name by one of the members of the partnership, or by an authorized representative, followed by the signature and designation of the person signing. Bids by corporations must be signed with the legal name of the corporation, followed by the name of the state of the incorporation and by the signature and designation of the president, secretary, or other person authorized to bind it in the matter. The name of each person signing shall also be typed or printed below the signature. When requested by the County satisfactory evidence of the authority of the officer signing on behalf of the corporation shall be furnished.

10. Taxes: Taxes shall be included in the bid prices.

11. Use of Subcontractors: Pursuant to the provisions of sections 4100 to 4114, inclusive, of the California Public Contract Code, every Bidder shall, in its bid, set forth:

a. The name and location of the place of business of each subcontractor who will perform work or labor or render service to the Bidder in or about the construction of the Project or improvement, or a subcontractor licensed by the State of California who, under subcontract to the Bidder, specially fabricates and installs a portion of the Project or improvement according to detailed drawings contained in plans and specifications, in an amount in excess of one-half (1/2) of one percent (1%) of the Bidder's total bid.

b. The portion of the Project which will be done by each such subcontractor. If the Bidder fails to specify a subcontractor for any portion of the Project to be performed under the Agreement

in excess of one-half (1/2) of one percent (1%) of the Bidder's total bid, it agrees to perform that portion itself. The successful Bidder shall not, without the consent of the County, either:

i. Substitute any person as subcontractor in place of the subcontractor designated in the original bid.

ii. Permit any subcontractor to be assigned or transferred or allow the work to be performed by anyone other than the subcontractor.

iii. Sublet or subcontract any portion of the Project in excess of one-half (1/2) of one percent (1%) of the total bid as to which its original bid did not designate a subcontractor. In accordance with Public Contract Code section 7106, each Bidder shall be required to complete the Non-Collusion Declaration form, which is included in and is part of the Contract Documents.

Further, pursuant to SB 854, only subcontractors who have registered with the DIR and who are current in paying the annual renewal fee to the DIR shall be eligible to perform work on the project resulting from this bid process.

12. Sureties: Any bonds must be issued by an admitted surety insurer, as defined in California Code of Civil Procedure sections 995.010, *et seq*.

13. Bid Proposal Security: Bid proposals should be accompanied by a certified cashier's check or Bidder's bond for an amount not less than ten percent (10%) of the maximum contract price. The cashier's check or bid bond shall be made payable to the order of the County. The cashier's check or bond shall be given as a guarantee that the Bidder will enter into the Agreement if awarded the Project, and in the case of refusal or failure to enter into the Agreement within ten (10) calendar days after notification of the award of the Agreement, the cashier's check or bond, as the case may be, shall be retained by the County as liquidated damages. Failure to provide bid security, or bid security in the proper amount, may result in rejection of the bid. Cashiers or certified checks that are filed with the bid will be returned to the unsuccessful Bidder(s) within ten (10) calendar days after the award of the Agreement resulting from this bid process.

14. Evidence of Responsibility: Prior to awarding a contract, the County may require the Bidder to submit evidence of the Bidder's and/or the Bidder's subcontractor's qualifications to perform the proposed agreement. The County may consider such evidence before making its decision awarding the proposed agreement. Failure to submit evidence of the Bidder's or its subcontractors' responsibility to perform the proposed agreement may result in rejection of the bid.

15. Bid Protest: Bid protests shall be filed in writing with the County of San Mateo, Office of the Superintendent, at 455 County Center, Redwood City, CA 94063 by registered mail, not later than three (3) working days after the bid opening. The protest shall specify the reasons and facts upon which the protest is based.

16. Award of Agreement/Rejection of Bids: The County may issue a "Notification of Apparent Low Bid" to the bidder that it determines to be the lowest responsible and responsive bidder. The County reserves the right to reject any or all proposals, to contract work with whomever and in whatever manner, to abandon the Project entirely, or to waive any informality in bids received. Unless and until a "Notice to Proceed" is issued by the County, no obligation on behalf of either party exists. Upon issuance of the "Notice to Proceed", the successful bidder will post all required bonds and submit proper evidence of insurance coverage as called for by the Contract Documents. If this is not accomplished within ten (10) calendar days, the County reserves the right to cash bidder's bid security check to cover the differential in the higher bid award and the County administrative costs, and award the bid to the next lowest responsible and responsive bidder or otherwise proceed as allowed by law.

17. Form of Agreement: The form of contract which the successful Bidder will be required to execute, if awarded the Project, shall be per the attached template that is contained in the bid package. The terms and conditions, in their entirety, in the County's Agreement are NOT NEGOTIABLE. Proposals requesting modifications to the non-negotiable terms will be deemed non-responsive and will not be reviewed. The Agreement shall contain, among other things, matters required by State law to be inserted in contracts for public work.

18. Payment and Performance Bonds: The successful Bidder, upon notice of award of bid and prior to commencing Project, shall furnish in duplicate a labor and material bond in the amount of one hundred percent (100%) of the contract sum and a faithful performance bond in the amount of one hundred percent (100%) of the contract sum.

19. Insurance: Prior to commencing work, the Contractor is required to furnish the County with Certificates of Insurance for workers' compensation, and comprehensive General Liability including broad form property damage, automobile liability and all additional requirements per Article 16 of the Agreement. As set forth more fully in Article 16 of the Agreement, the County has reserved the right to modify the insurance requirements contained in the Agreement, including but not limited to, by implementing, an Owner Controlled Insurance Program ("OCIP") for the Project.

20. Prevailing Wage Rates: In accordance with the provisions of section 1770 of the Labor Code, the Director of the Department of Industrial Relations of the State of California has determined the general prevailing rates of wages and employee payments for health and welfare, pension, vacation, travel time, working hours and apprenticeable training requirements which must be paid to all workers on public work contracts. (See Labor Code § 1770, *et seq.*)

21. Non-Discrimination: The County will affirmatively ensure that in any contract entered into pursuant to this advertisement, qualified contractors will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, creed, sex or national origin in consideration for award.

22. Withdrawal or Modification of Bid Proposals: Bid proposals may be withdrawn or modified by the Bidder prior to the time fixed for the opening of bids. A notice of withdrawal or modification to a bid must be signed by the Bidder or its designated representative. Following bid opening, a Bidder shall not be relieved of its bid unless by consent of the County or Bidder's recourse to Public Contract Code sections 5100-5108. Bidders must hold their bids open for one hundred and twenty (120) days after the Bid Opening Date.

23. Prevailing Law: In the event of any conflict or ambiguity between these instructions and state or federal law or regulations, the latter shall prevail.

24. Inquiries; Addenda: Questions regarding documents, discrepancies, omissions, or doubt as to meanings shall be referred immediately in writing to the Project Manager, Justin Boon, at Capital Program Management at: **justinb@capitalpm.com** who will review and if applicable forward to the Engineer of Record who will send written addenda clarifying such questions to each Bidder. Oral responses will not be binding upon the County. If, in the opinion of the bidder, the construction details indicated on the drawings or otherwise specified are in conflict with accepted industry standards for quality construction and therefore might interfere with the bidder's full guaranty of any work covered by this bid process, the bidder must promptly bring this information to the attention of the Project Manager in writing, for appropriate action before submission of a bid. Any addenda or bulletins issued during the time of bidding, shall be covered in the bid, and shall be made a part of the Contract Documents.

26. Forms to Submit with Bid: Except for Deferred Items, all bid proposals shall include the following documents, each complete in its entirety. Deferred Items shall be submitted within 24 hours after submission of Bid. Failure by the bidder to submit the documents/forms will render the bid non-responsive.

Bid Form
Bid Bond
Non-Collusion Declaration

Designation of Subcontractors
Statement of Compliance
Iran Contracting Act Certification

27. Bid Advertisement Publication Dates:

1. September 16, 2020
2. September 23, 2020
3. September 30, 2020

BID FORM

County of San Mateo Parks Department
Memorial Park
9500 Pescadero Creek Road
Loma Mar, CA 94021

Collection System Replacement at Memorial Park

_____
(Date)

County of San Mateo Parks Department
455 County Center, 4th Floor
Redwood City, CA 94063

The Undersigned, doing business under the firm name of _____, hereby proposes and agrees to enter into an agreement, to furnish any and all labor, materials equipment and services for the completion of work described hereinafter and in the Contract Documents entitled construction of:

Collection System Replacement at Memorial Park

Prepared by:

_____
(Estimator Name)

for the sum quoted below:

A. **BASE BID:** Based upon all work required to satisfactorily complete the work indicated in the related Plans and Specifications complying with the Division of State Architect and in Section 00700 Scope of Work, excluding the Alternate Bids.

TOTAL BASE BID: Collection System Replacement as indicated on the plans and specifications.

LUMP SUM IN WORDS & FIGURES

_____DOLLARS

$_____

The low bidder will be determined based on above "Total Base Bid".

B. **ALLOWANCES:** The Bidder's Base Bid shall **NOT** include the following Allowance(s). The County will add some or all of the following Allowance(s) amount(s) to the successful bidder's Contract, at the County's discretion. Contractor shall be permitted to invoice for Work under an Allowance in the identical structure as a Change Order.

Allowance #1 – Unforeseen Conditions and Owner Requested Changes	**$100,000.00**
Allowance #2 – Dry Rot Repairs of Bridge Supports	**$20,000.00**

C. **LETTER OF INTENT TO AWARD:** The undersigned hereby designates as its office to which the Notice of Apparent Low Bid may be mailed, e-mailed, or delivered:

_____

_____

D. **INSURANCE:**

(1) Our Public Liability and Property Damage Insurance is placed with

_____

_____

(2) Our Workers' Compensation Insurance is placed with

_____

_____

E. **COMPLETION DATE.**

Contractor agrees that all work required to be performed by the Contract Documents shall be completed by all milestone dates specified in Section 00800 Special Provisions. Contractor acknowledges that it shall be liable for liquidated damages if the Project is not completed by these dates.

F. **ADDENDA.**

Contractor acknowledges receipt of the following addenda:

Addendum No. ____	Date of Document: _____
Addendum No. ____	Date of Document: _____
Addendum No. ____	Date of Document: _____
Addendum No. ____	Date of Document: _____

G. **EXECUTION OF BID.**

If the Bidder is a corporation, state the capacity/title of the corporate officer signing and affix the corporate seal; if a partnership, all partners should sign under the partnership name on a separate page attached to and made part of the bid. Unsigned bids will not be accepted. The undersigned declares under penalty of perjury under the laws of the State of California that the representations made in this bid are true and correct.

_____	_____
SIGNATURE	**TITLE**
_____	_____
NAME OF COMPANY AS LICENSED	**CONTRACTOR LICENSE NO.**

ADDRESS

CLASS **EXPIRATION DATE**

CITY

STATE **ZIP**

TELEPHONE NUMBER

DATE

DIR REGISTRATION NO.

BID BOND

KNOW ALL MEN BY THESE PRESENTS that we the undersigned _____ as Principal and _____ as Surety, are hereby held and firmly bound unto the [County of San Mateo Parks] "County" in the sum of _____ Dollars ($_____) for payment of which sum, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that whereas the Principal has submitted to the County a certain bid, attached hereto and hereby made a part hereof, to enter into a contract in writing for the construction of

County of San Mateo Parks
Memorial Park
9500 Pescadero Creek Road
Loma Mar, CA 94021

Collection System Replacement at Memorial Park

in strict accordance with Contract Documents.

NOW, THEREFORE,

a. If said bid shall be rejected, or, in the alternative;

b. If said bid shall be accepted and the Principal shall execute and deliver a contract in the form of agreement attached hereto and shall execute and deliver Performance and Payment Bonds in the forms attached hereto (all properly completed in accordance with said bid), and shall in all other respects perform the agreement created by the acceptance of said bid;

Then this obligation shall be void, otherwise the same shall remain in full force and effect, it being expressly understood and agreed that the liability of the Surety for any and all default of the Principal hereunder shall be the amount of this obligation as herein stated.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract on the call for bids, or to the work to be performed hereunder, or the specifications accompanying the same, shall in any way affect its obligation under this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of said contract or the call for bids, or to the work, or to the specifications.

In the event suit is brought upon this bond by the County and judgment is recovered, the Surety shall pay all costs incurred by the County in such suit, including a reasonable attorney's fee to be fixed by the court.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under several seals this _____ day of _____, 20__, the name and corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body. In presence of:

(Notary Seal)

_____
(Principal)

_____
(Business Address)
_____

_____

_____
(Corporate Surety)

By:_____

_____
(Business Address)
_____

The rate or premium of this bond is _____ per thousand, the total amount of premium charged, $_____.

(The above must be filled in by Corporate Surety).

NONCOLLUSION DECLARATION

County of San Mateo Parks
Memorial Park
9500 Pescadero Creek Road
Loma Mar, CA 94021

Collection System Replacement at Memorial Park

I, _____, declare that I am the party making the foregoing bid, that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the Bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix any overhead, profit, or cost element of the bid price, or of that of any other Bidder, or to secure any advantage against the public body awarding the Agreement of anyone interested in the proposed Agreement; that all statements contained in the bid are true, and, further, that the Bidder has not, directly or indirectly, submitted its bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member of agent thereof to effectuate a collusive or sham bid.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

_____
(Date)

_____
(Print Name)

_____
(Signature)

_____
(Official Capacity)

_____
(Company Name)

_____
(Company Address)

_____

_____
(Company Telephone Number)

DESIGNATION OF SUBCONTRACTORS

Bidders shall state the portion of work by trade (electrical, painting, etc.) that each subcontractor will perform. Additionally, the Bidder shall state the name and business address for all designated subcontractors. Failure to provide this information in a legible manner may result in the rejection of an otherwise acceptable bid.

In compliance with the provisions of sections 4100 to 4113, inclusive, of the California Public Contract Code, and any amendments thereof, each Bidder shall set forth below the name and the location of the mill, shop, or office of each subcontractor who will perform work or labor or render service to the Bidder on, in, or about the construction of the work or improvement to be performed under these specifications and the portion of the work which will be done by each subcontractor. In addition, effective July 1, 2014, pursuant to Assembly Bill 44 (AB 44), Contractors are required to list the license numbers of all subcontractors required to be listed below. AB 44 provides a grace period of twenty-four hours after bid opening for Bidders to provide subcontractor license numbers that were omitted or incorrect as of the time of bid opening. Further, pursuant to Senate Bill 854 (SB 854), only subcontractors who have registered with the California Department of Industrial Relations (DIR) and who are current in paying the annual renewal fee to the DIR shall be eligible to perform work on the project resulting from this bid process.

If the Bidder fails to specify a subcontractor for any portion of the work to be performed under the contract, the Bidder shall be deemed to have agreed to perform such portion itself, and it shall not be permitted to subcontract that portion of the work except under the conditions hereinafter set forth.

Subletting or subcontracting of any portion of the work as to which no subcontractor was designated in the original bid shall only be permitted in cases of public emergency or necessity, and then only after a finding reduced to writing as a public record of the legislative body of the County.

[USE FORM ON THE FOLLOWING PAGE]

DESIGNATION OF SUBCONTRACTORS

PRINT LEGIBLY, USE ADDITIONAL PAGE AS NECESSARY

PORTION OF WORK	SUBCONTRACTOR	LOCATION (CITY & STATE)	SUBCONTRACTOR LICENSE #	SUBCONTRACTOR DIR #

STATEMENT OF COMPLIANCE

County of San Mateo Parks
Memorial Park
9500 Pescadero Creek Road
Loma Mar, CA 94021

Collection System Replacement at Memorial Park

_____
(Company Name)

(hereinafter referred to as "prospective Contractor") hereby certifies, unless specifically exempted, compliance with Government Code Section 12990 and provisions of the California Code of Regulations promulgated pursuant to Section 12990 in matters relating to the development, implementation, and maintenance of a nondiscrimination program. Prospective Contractor agrees not to unlawfully discriminate against any employee or applicants for employment because of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, genetic information, marital status, sex, gender, gender identity, gender expression, age, sexual orientation, or military and veteran status.

I, _____
(Name of Official)

hereby swear that I am duly authorized to legally bind the prospective Contractor to the above-described certification. I am fully aware that this certification, signed on _____
(date)

in the County of _____, is made under the penalty of perjury
(County)

under the laws of the State of California.

_____
(Signature)

_____

(Print or Type Title)

IRAN CONTRACTING ACT CERTIFICATION
(Public Contract Code Section 2200, *et seq*.)

County of San Mateo: Collection System Replacement at Memorial Park

Contractor Name: _____

I, the person who is identified below and who has signed this certification, hereby certify, subject to penalty for perjury, that: (i) I have inherent authority, or I have been duly authorized by the Contractor, to execute this certification on behalf of the Contractor; and (ii) the option checked below relating to the Contractor's status in regard to the Iran Contracting Act of 2010 (Public Contract Code Section 2200, *et seq*.) is true and correct:

□ The Contractor is not:

(i) identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203; or

(ii) a financial institution that extends, for 45 days or more, credit in the amount of $20,000,000 or more to any other person or entity identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203, if that person or entity uses or will use the credit to provide goods or services in the energy sector in Iran.

□ The County has exempted the Contractor from the requirements of the Iran Contacting Act of 2010 after making a public finding that, absent the exemption, the County will be unable to obtain the goods and/or services to be provided pursuant to the Contract.

□ The Final Contract Sum, as defined in Section 5 of the Agreement, payable to the Contractor for the Project as of the date of this certification does not exceed $1,000,000.

Certifier Signature: _____

Printed Name: _____

Title: _____

Date Executed: _____

Please note: In accordance with Public Contract Code Section 2205, false certification of this form may result in civil penalties equal to the greater of $250,000 or twice the contract amount, termination of the contract and/or ineligibility to bid on contracts for three years.

AGREEMENT

This Agreement made and entered into this _____ day of _____, 20__, between the **County of San Mateo Parks Department, 455 County Center Redwood City, CA 94063** ("County"), and _____ ("Contractor").

Contractor and County agree as follows:

ARTICLE 1 - THE PROJECT. Contractor agrees to obtain all necessary permits and licenses as are required by law, furnish all labor and materials, including required tools, implements, and appliances and to perform all the work in a good and workmanlike manner, free from any and all liens and claims of mechanics, material, men, subcontractors, artisans, machinists, teamsters, and laborers required in the bid proposal, all in strict compliance with the plans, drawings, and other Contract Documents, required for the Project, which, for purposes of this Agreement, refers to the following:

County of San Mateo Parks

Memorial Park
9500 Pescadero Creek Road
Loma Mar, CA 94021

Collection System Replacement at Memorial Park

Unless otherwise specifically noted, the Contractor shall provide and pay for all labor, materials, equipment, transportation, and other facilities and services necessary for the proper execution and completion of the Project. The Contractor shall at all times enforce strict discipline and good order among Contractor's employees and shall not employ on the Project any unfit person or anyone not skilled in the task assigned.

ARTICLE 2 - THE AGREEMENT: The Contractor and the County agree that the Contract Documents are composed of all those documents described in paragraph 2.1 of the General Conditions, all of which are incorporated herein by reference. The specifications and drawings are to be read together such that any work exhibited in the drawings and not mentioned in the specifications, or vice versa, is to be executed as if both mentioned in the specifications and set forth in the drawings to the true intent and meaning of the said drawings and specifications, when taken together. But no part of said specifications that is in conflict with any portion of this Agreement shall be considered as part of this Agreement.

ARTICLE 3 - CONTRACTOR'S LICENSE: Contractor shall have, and maintain in good standing, and require the same of all its subcontractors, the appropriate classification of California State contractor's license during the entire term of this Project. Contractor confirms that, pursuant to SB 854, it has registered with the California Department of Industrial Relations (DIR) and that it has, through the date of this Agreement, paid all annual renewal fees due to the DIR. Contractor shall pay all annual renewal fees to the DIR that come due during the term of the Agreement.

ARTICLE 4 - COMPLETION DATE / NOTICE TO PROCEED: Contractor agrees that all work required to be performed by the Contract Documents shall be completed by the milestone dates specified in the Section 00800 Special Provisions. Contractor acknowledges that it shall be liable for liquidated damages as set forth in this Agreement if the Project is not completed by these dates.

If the Notice to Proceed and/or the Agreement is issued more than ten (10) but less than ninety (90) days after the "Letter of Intent to Award Contract", Contractor's sole remedy shall be an extension to the Completion Date, measured by the number of days beyond ten (10) it took to issue the

Notice to Proceed. In such instances, Contractor shall not be entitled to any monetary damages or other compensation for lost profit or overhead or for increased cost of performance.

The term "day" as used in the Contract Documents shall mean calendar day.

ARTICLE 5 - CONTRACT SUM: The contract sum is the total amount payable by the County to Contractor for the performance of work under the Contract Documents. The contract sum is _____ Dollars ($_____) ("Contract Sum"), unless modified in writing in accordance with the Contract Documents.

ARTICLE 6 - LIQUIDATED DAMAGES: The Completion Date specified in Article 4 is of the essence of the Agreement. The Contractor shall complete the Project by the date specified in Article 4 unless the County agrees in writing to an extension of time.

Failure to complete the Project within the time and in the manner provided for by the Contract Documents shall subject the Contractor to liquidated damages. The actual occurrence of damages and the actual amount of the damages which the County would suffer if the Project were not completed within the specified times set forth are dependent upon many circumstances and conditions which could prevail in various combinations and, from the nature of the case, it is impracticable and extremely difficult to fix the actual damages. Damages which the County would suffer in the event of delay include, but are not limited to, loss of the use of the Project, disruption of school activities, costs of administration, inspection, supervision and the loss suffered by the public within the County.

Accordingly, the parties agree that the amount herein set forth shall be presumed to be the amount of damages which the County shall directly incur upon failure of the Contractor to complete the Project within the time specified: **One Thousand Dollars** ($**1000.00**), plus the extra inspection costs incurred by the County, during or as a result of each calendar day by which the substantial completion of the Project is delayed beyond the date specified in Article 4 of the Agreement and **One Thousand Dollars** ($**1000.00**), plus the extra inspection costs incurred by the County, during or as a result of each calendar day by which final completion of the Project is delayed beyond the date specified in the Article 4 of the Agreement.

If the Contractor becomes liable for liquidated damages under this section, the County, in addition to all other remedies provided by law, shall have the right to withhold any and all retained percentages of payments, and to collect the interest thereon, which would otherwise be or become due the Contractor until the liability of the Contractor under this section has been finally determined. If the retained percentage is not sufficient to discharge all liabilities of the Contractor incurred under this Article, the Contractor and its sureties shall continue to remain liable to the County until all such liabilities are satisfied in full.

If the County accepts any work or makes any payment under this Agreement after a default by reason of delays, the payment or payments shall in no respect constitute a waiver or modification of any Agreement provisions regarding time of completion and liquidated damages.

ARTICLE 7 - EARLY COMPLETION: Regardless of the cause therefore, the Contractor may not maintain any claim or cause of action against the County for damages incurred as a result of its failure or inability to complete its work on the Project in a shorter period than established in Article 4 of this Agreement, the parties stipulating that such period is a reasonable time within which to perform the work on the Project.

ARTICLE 8 – PAYMENT: The County agrees to pay the Contractor in current funds for the performance of the Agreement the amount proposed in this bid, including approved change orders, and to make payments on account thereof as follows: Each calendar month, ninety-five percent (95%) of the value, proportionate to the amount of the Agreement, of labor and materials incorporated in the Project up to the first day of that month as estimated by the County, and Project Manager, less the aggregate of previous payments. On substantial completion of the entire Project, a sum sufficient to increase the total payments to ninety-five percent (95%) of the contract sum set forth in Article 5 of this Agreement, and thirty-five (35) days after the Notice of Completion has been recorded, provided the Project is fully completed and the

Agreement fully performed, the balance due under the Agreement. The payment of progress payments by the County shall not be construed as an acceptance of the work done up to the time of such payments, except as to such matters as are open and obvious. The entire Project is to be subjected to inspection and approval of the County or Project Manager to defects not obvious upon inspection during the progress of the work at the time when it shall be claimed by the Contractor that the Agreement is completed. The County and Project Manager shall exercise all reasonable diligence in the discovery, and report to the Contractor as the Project progresses, materials and labor which are not satisfactory to the County, so as to avoid unnecessary trouble and cost to the Contractor in making good defective parts or work.

In accordance with the provisions of Public Contract Code section 22300, the County shall, at the request and expense of the Contractor, permit the substitution of securities or the payment of funds equivalent to the amount of monies withheld as retention from progress payments.

ARTICLE 9 - EARLY TERMINATION: Notwithstanding any provision herein to the contrary, if for any fiscal year of this Agreement the governing body of the County fails to appropriate or allocate funds for future periodic payments under the Agreement after exercising reasonable efforts to do so, the County may, upon thirty (30) days written notice, order work on the project to cease. The County will remain obligated to pay for the work already performed but shall not be obligated to pay the balance remaining unpaid beyond the fiscal period for which funds have been appropriated or allocated and for which the work has not been done.

ARTICLE 10 - TERMINATION FOR CAUSE: If Contractor (1) should be adjudged bankrupt; (2) should make a general assignment for the benefit of its creditors; (3) should persistently or repeatedly refuse or fail, except in cases for which an extension of time is provided, to supply enough properly skilled workers or proper materials; (4) should fail to make prompt payment to subcontractors or for material or labor; (5) persistently disregards laws, ordinances or the instructions of the County; or if any of its subcontractors should persistently violate any of the provisions of the Agreement; or (6) a receiver should be appointed on account of Contractor's insolvency, then the County may serve written notice upon the Contractor and its surety of its intention to terminate the Agreement. Unless, within five (5) days after the serving of such notice, such violations shall cease and satisfactory arrangements for corrections thereof be made, the Agreement shall, upon the expiration of said five (5) days, at the County's option, terminate.

In the event of any such termination, the County shall immediately serve written notice thereof upon the surety and the Contractor, and the surety shall have the right to take over and perform the Agreement; provided, however, that if the surety, within ten (10) days after the serving upon it of Notice of Termination, does not give the County written notice of its intention to take over and perform the Agreement or does not commence performance within ten (10) days from the date of the serving of such notice, the County may take over the Project and prosecute the same to completion by Agreement or by any other method it may deem advisable, for the account and at the expense of the Contractor, and the Contractor and the surety shall be liable to the County for any excess cost occasioned the County thereby. In such event, the County may without liability for so doing, take possession of and utilize in completing the Project, such materials, appliances and other property belonging to the Contractor as may be on the site of the Project and necessary therefore. In such case the Contractor shall not be entitled to receive any further payment until the Project is finished. If the unpaid balance of the contract sum shall exceed the expense of finishing the Project, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the County.

ARTICLE 11 - PERFORMING A PORTION OF THE WORK: If the Contractor fails to correct defective work or persistently fails to carry out the work in accordance with the Contract Documents, the County, by written order, may order the Contractor to stop the work, or any portion thereof, until the cause of such order has been eliminated. The County shall not have any duty to stop the work for the benefit of the Contractor or any other person or entity. If the County chooses to correct or carry out the work itself, it shall normally give the Contractor seven (7) days after providing written notice to commence and continue correction of such default or neglect with diligence and promptness. If, however, the condition constitutes an emergency which may subject the County to penalties or termination of the Project by outside jurisdictional agencies, the County may do so without notice to the Contractor. In either case, an appropriate change order shall be issued, deducting, from the payments then or thereafter due the

Contractor the cost of correcting such deficiencies, including compensation for the Project Manager's and consultants' additional services made necessary by such default, neglect, or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor and its surety shall pay the County the difference.

ARTICLE 12 - USE OF SUBCONTRACTORS: Contractor agrees that, as required by State law and the Instruction to Bidders, all subcontractors which will perform work on this project shall be listed on the Designation of Subcontractors form, provided with the Contract Documents.

ARTICLE 13 - PREVAILING WAGE RATES: In accordance with the provisions of section 1720, *et seq*., of the California Labor Code, the Director of the California Department of Industrial Relations has determined the general prevailing rates or wages and employer payments for health and welfare, pension, vacation, travel time, and subsistence pay as provided for in section 1770, *et seq.,* of the California Labor Code. **Pursuant to the California Labor Code, the general prevailing rate of per diem wages and for holiday and overtime work shall be paid to all workers employed by the Contractor selected for this project. Copies of prevailing rates of per diem wages are available upon request at the County's Offices or at www.dir.ca.gov. If this project is state funded, the Department of Industrial Relations will monitor and enforce compliance with applicable prevailing wage requirements on this project through the Compliance Monitoring Unit (CMU) and enforce compliance with applicable prevailing wage requirements in accordance with the California Labor Code, including sections 1771, 1774, 1776, 1777.5, 1813, and 1815. Further information regarding this requirement is available at https://www.dir.ca.gov/t8/16450.html.**

Contractor may be responsible for paying subcontractors' employees' prevailing wages if it does not comply with the provisions of Labor Code sections 1770, *et seq.*

The Contractor and each subcontractor shall keep or cause to be kept an accurate record showing the names and occupations of all laborers, workers and mechanics employed by it in connection with the execution of this Agreement or any subcontract thereunder, and showing also the actual per diem wage paid to each of such workers, which records shall be open at all reasonable hours to inspection by the County, its officers and agents and to the representatives of the Division of Labor Standards Enforcement of the State Department of Industrial Relations (DIR). Attention is directed to the provisions in section 1777.5 and section 1777.6 of the Labor Code concerning the employment of apprentices by the Contractor or any subcontractor under it.

Pursuant to Senate Bill (SB) 854, Contractor will electronically submit certified payroll records to the Labor Commissioner/DIR unless the Labor Commissioner excuses Contractor from this requirement. The parties understand and agree that the project will be subject to compliance monitoring and enforcement by the DIR.

This Agreement may be subject to a labor compliance program, as described in Section 1771.5 of the Labor Code. As required by law, the Department of Industrial Relations will monitor and enforce compliance with applicable prevailing wage requirements.

ARTICLE 14 - WORKING HOURS: In accordance with the provisions of the California Labor Code, eight (8) hours labor shall constitute a day's work, and no laborer, workman or mechanic in the employ of the Contractor, or any subcontractor, doing or contracting to do any part of the work contemplated by this Agreement, shall be required to or permitted to work more than eight (8) hours in one calendar day or forty (40) hours during any one calendar week unless such work is compensated at the lawful overtime rate set forth in the California Labor Code. The Contractor and each subcontractor shall also keep an accurate record showing the names and actual hours worked of all workers employed by it in connection with the work contemplated by this Agreement, which record shall be open at all reasonable hours to the inspection of the County, or its officers or agents and to the Chief of the Division of Labor Standards Enforcement of the DIR, its deputies or agents; and it is hereby further agreed that Contractor shall forfeit as a penalty to the County the sum of twenty-five dollars ($25.00) for each laborer, workman or mechanic who is required or permitted to labor more than eight (8) hours a day or forty (40) hours a week in violation of this Article 14.

ARTICLE 15 - EMPLOYMENT OF APPRENTICES: Contractor agrees to comply with all provisions of the law regarding the employment of apprentices, including, but not limited to Labor Code §§ 1773.3, 1777.5, 1777.6 and 3077, *et seq*. These sections require that contractors and subcontractors employ apprentices in apprenticeable occupations in a ratio of not less than one (1) apprentice hour for each five (5) journeyman hours, unless an exemption is granted, and that contractors and subcontractors shall not discriminate among otherwise qualified employees as indentured apprentices on any public work on the grounds of race, religious creed, color, national origin, ancestry, sex, or age. Only apprentices who are in training under written apprenticeship agreements will be employed on public works in apprenticeable occupations. The responsibility for compliance with these provisions for all apprenticeable occupations rests with the Contractor.

ARTICLE 16 – INSURANCE: The Contractor shall procure and maintain for the duration of this Contract and for two years thereafter, insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, and Contractor's agent, representatives, employees, or subcontractors. Contractor shall include in all of its contracts with Subcontractors provisions requiring such Subcontractors to meet the same insurance requirements as set forth herein.

Comprehensive or commercial general liability (CGL) insurance, on Insurance Office Services Form CG 00 01 (or a form at least as broad as Form CG 00 01) covering CGL on an "occurrence" basis, including products and completed operations, property damage, bodily injury and personal and advertising injury with limits no less than $1,000,000 per occurrence. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this Project and location or the general aggregate limit shall be twice the required occurrence limit.

Automobile Liability Insurance, on Insurance Services Office Form Number CA 0001 covering Code 1 (any auto) with limits no less than $5,000,000 per accident for bodily injury and property damage.

Workers' Compensation, including Employers' Liability Insurance, as required by the State of California with Statutory Limits, and Employers' Liability insurance with a limit of no less than $1,000,000 each accident, injury or disease. The Contractor shall require subcontractors to provide workers' compensation insurance for all subcontractors' employees engaged in Work under the subcontract. Any class of employee or employees not covered by a subcontractor's insurance shall be covered by the Contractor's insurance. If the Contractor fails to maintain such insurance, the County, at its sole option and without incurring any further obligation to provide insurance, may take out Workers' Compensation insurance to cover any compensation payable under the provisions of the Act by reason of any employee of the Contractor or a subcontractor being injured or killed, and to deduct the amount of the premium for such insurance from any sums due the Contractor. If injury occurs to any employee of the Contractor for which the employee, or its dependents in the event of its death, is entitled to compensation from the County under the provisions of said Act, or from the sums due the Contractor under these Contract Documents the County may deduct and retain an amount sufficient to cover such compensation or payment of such compensation.

The Contractor shall sign and file with the County the following certification prior to performing the Work of the Contract: "I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for Workers' Compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the Work of the Contract."

Fire insurance on all Work subject to loss or damage by fire. Contractor shall maintain fire insurance in an amount of fire insurance shall be sufficient to protect the Project and all appurtenant structures against loss of damage in full until the Work is accepted by the County.

Coverage for debris removal limits not less than $1,000,000. In the event that the Contractor is performing abatement of hazardous or contaminated materials work or employs a subcontractor or entity for abatement of hazardous or contaminated materials, environmental liability and pollution insurance, with limits not less than $1,000,000. The policy shall be written on an occurrence form and any deductible shall not exceed $25,000.

Minimum Amounts Required. The amounts of insurance coverage stated above are the minimums that Contractor is required to procure and maintain. If Contractor maintains higher limits than the minimums stated above, the County requires, and shall be entitled to, coverage for the higher limits maintained by the Contractor. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the County.

Deductibles and Self-Insured Retentions. Any deductibles or self-insured retentions must be declared to and approved by the County. At the option of the County, either the Contractor shall cause the insurer to reduce or eliminate such deductibles or self-insured retentions as respects the County, its officers, officials, employees and volunteers; or the Contractor shall provide a financial guarantee satisfactory to the County guaranteeing payment of losses and related investigations, claim administration, and defense expenses.

Required Endorsements. The insurance policies required in this Article 16 of this Agreement shall contain or shall be endorsed to contain the following provisions:

(a) The County, its officers, officials, employees, and volunteers are to be covered as additional insureds on the CGL policy with respect to liability arising out of work or operations performed by or on behalf of the Contractor, including materials, parts, or equipment furnished in connection with work or operation and automobiles owned, leased, hired, or borrowed by or on behalf of the Contractor. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance (at least as broad as ISO Form CG 20 10, CG 11 85 or both CG 20 10 and CG 20 37 if later revisions are used);

(b) For any claims related to the Project, the Contractor's insurance coverage shall be primary insurance as respects the County, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the County, its officers, officials, employees, or volunteers shall be excess of the Contractor's insurance and shall not contribute to it; and

(c) Each insurance policy required by this Agreement shall provide that coverage shall not be canceled, except with prior written notice to the County.

Acceptability of Insurers: Insurance companies providing coverage required under this Agreement shall be legally licensed and admitted through the California Department of Insurance to engage in the business of furnishing insurance in the State of California. All insurance companies shall have an "A-VII" in Bests Rating Guide and shall be satisfactory to the County.

Waiver of Subrogation: Contractor hereby waives the right of subrogation which any insurer of Contractor may acquire from Contractor by virtue of payment of any loss. Contractor agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation. The Workers' Compensation policy shall be endorsed with a waiver of subrogation in favor of the County for all work performed by the Contractor, its employees, agents, and subcontractors.

In the event of any damage, not insured by the County, as identified in this agreement under Builder's Risk/All Risk section, it shall be the Contractor's responsibility to perform at its expense all required repair and replacement including damage to adjacent areas.

Verification of Coverage. Before commencement of the Work under this Agreement, certificates of insurance shall be furnished to the County, with complete copies of policies to be furnished to the County promptly upon request. All policies of insurance, exclusions, deductibles, self-insured retentions, and certificates shall be reviewed by, and satisfactory to the County before Contractor commences work on the Project. Approval of the insurance by the County shall not relieve or decrease the extent to which the Contractor or subcontractor of any tier may be held responsible for payment of any and all damages resulting from its action, inaction or operations. Further, failure by Contractor to obtain the required documents prior to work beginning on the Project shall not relieve the Contractor of the obligation to obtain them or constitute a waiver by the County of Contractor's obligation to provide them. The County reserves the right to require complete, certified copies of all required insurance policies, including endorsements, required by this Agreement, at any time.

Liability insurance shall be on an occurrence basis. The coverage afforded thereby shall be primary and non-contributory to any other existing valid and collectable insurance to the full limit of liability stated in the declaration, and such insurance shall apply separately to each insured against whom claim is made or suit is brought, but the inclusion of more than one (1) insured shall not operate to increase the insurer's limits of liability.

Certificates of insurance shall state in particular those insured, the extent of insurance, location and operation to which the insurance applies, the expiration date, and cancellation and reduction notices. Certificates and insurance policies shall include the following clause: "This policy shall not be non-renewed, canceled, or reduced in required limits of liability or amounts of insurance until notice has been mailed to the County. Date of cancellation or reduction may not be less than thirty (30) days after the date of mailing notice." If, at any time during the life of this Agreement, the Contractor fails to maintain any item of the required insurance in full force and effect, all Work of this Agreement may, at the County's sole option, be discontinued immediately, and all payments due or that become due under the Agreement will be withheld, until notice is received by the County as provided hereinabove that such insurance has been restored to full force and effect and that the premiums therefrom have been paid for a period satisfactory to the County.

Any failure to maintain any item of the required insurance may, at County's sole option, be considered material breach of the Agreement and, in such an event, the County may immediately terminate this Agreement.

Subcontractors. Contractor shall require and verify that all subcontractors maintain insurance meeting all the requirements stated in this Agreement and Contractor shall ensure that the County is an additional insured on insurance required from subcontractors. For CGL coverage, subcontractors shall provide coverage with a format at least as broad as ISO Form CG 20 38 04 13.

Reservation of Rights to Implement Owner Controlled Insurance Program.

Notwithstanding the foregoing requirements set forth in this Article 16 of the Agreement, the County hereby reserves the right to modify the insurance requirements set forth in the Agreement, including but not limited to reserving the right to implement an Owner Controlled Insurance Program ("OCIP") for the Project.

In the event an OCIP is implemented, the OCIP will provide certain specified insurance coverages for County, and any Contractor or Subcontractor working on the Project who are eligible for, and are properly enrolled in the OCIP. The insurance coverages that may potentially be included in the OCIP include, but are not limited to, workers compensation insurance, commercial general liability insurance, and excess liability insurance. The selection of insurance coverages that may be included in the OCIP, and the limits, terms, and conditions of coverage, shall be established by the County, in its sole discretion. The coverages included in the OCIP will be identified by County, in writing, if and when the County decides to implement an OCIP for the Project.

In the event an OCIP is implemented, Contractor and any Subcontractor eligible for the OCIP shall be required to enroll in the OCIP. As part of the OCIP enrollment process, Contractor and each eligible Subcontractor shall be required to provide information to County, or its agents, sufficient to enable County to determine each Contractor's and Subcontractor's reduction in insurance costs due to enrollment in the OCIP. In order to enroll in the OCIP, Contractor and any eligible Subcontractor will be required to accept an insurance credit, either by accepting a deductive credit to their contract price, or by agreeing to exclude from their contract price an amount equal to their reduction insurance costs due to enrollment in the OCIP. The methodology and procedures for identifying the insurance credit, and enrolling in the OCIP, will be established in writing, by the County, if and when an OCIP is implemented.

In the event an OCIP is implemented, Contractor and all Subcontractors will still be required to maintain other insurance coverages that are not provided under the OCIP. For example, Contractor and Subcontractor will generally still be required to maintain off-site workers compensation, off-site commercial general liability, and commercial automobile liability insurance consistent with the terms of the Agreement, or as further directed by County.

ARTICLE 17 - INDEMNIFICATION AGAINST LIABILITY: Notwithstanding any other provision of the Contract Documents, Contractor agrees to indemnify, defend and save harmless the County, its Governing Board, related entities and divisions, officers, agents, consultants and employees from and against any and all claims, demands, losses, defense costs, or liabilities of any kind or nature which they may sustain or incur or which may be imposed upon them for injury to or death of persons, damage to property, or delay or damage to another contractor, or for attorney's fees incurred in defending or prosecuting suits to enforce laws relating to public works contracts, resulting or arising out of, or in any manner connected with Contractor or Contractor's agents, employees or subcontractors' performance or failure to perform under the terms of the Contract Documents, excepting only liability arising out of the sole negligence or willful misconduct of the County. The parties stipulate that any such claims, demands, losses, defense costs, or liabilities would be above, beyond, and entirely separate from, those damages which would be liquidated pursuant to Article 6.

ARTICLE 18 - CONTRACT MATERIALS: At the end of this Agreement, or in the event of termination, all finished or unfinished documents, data, studies, maps, photographs, reports, and other written materials (collectively referred to as "contract materials") prepared by Contractor under this Agreement shall become the property of County and shall be promptly delivered to County. Upon termination, Contractor may make and retain a copy of such contract materials if permitted by law.

ARTICLE 19 - RELATIONSHIP OF PARTIES: Contractor agrees and understands that the work/services performed under this Agreement are performed as an independent contractor and not as an employee of County and that neither Contractor nor its employees acquire any of the rights, privileges, powers, or advantages of County employees.

ARTICLE 20 - ASSIGNABILITY AND SUBCONTRACTING: Contractor shall not assign this Agreement or any portion of it to a third party or subcontract with a third party to provide services required by Contractor under this Agreement without the prior written consent of County. Any such assignment or subcontract without County's prior written consent shall give County the right to automatically and immediately terminate this Agreement without penalty or advance notice.

ARTICLE 21 - COMPLIANCE WITH LAWS: All services to be performed by Contractor pursuant to this Agreement shall be performed in accordance with all applicable Federal, State, County, and municipal laws, ordinances, and regulations, including but not limited to the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and the Federal Regulations promulgated thereunder, as amended (if applicable), the Business Associate requirements set forth in Attachment H (if attached), the Americans with Disabilities Act of 1990, as amended, and Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination on the basis of disability in programs and activities receiving any Federal or County financial assistance. Such services shall also be performed in accordance with all applicable ordinances and regulations, including but not limited to appropriate licensure, certification regulations, provisions pertaining to confidentiality of records, and applicable quality assurance regulations. In the event of a conflict between

the terms of this Agreement and any applicable State, Federal, County, or municipal law or regulation, the requirements of the applicable law or regulation will take precedence over the requirements set forth in this Agreement.

Further, Contractor certifies that it and all of its subcontractors will adhere to all applicable provisions of Chapter 4.106 of the San Mateo County Ordinance Code, which regulates the use of disposable food service ware. Accordingly, Contractor shall not use any non-recyclable plastic disposable food service ware when providing prepared food on property owned or leased by the County and instead shall use biodegradable, compostable, reusable, or recyclable plastic food service ware on property owned or leased by the County. (This paragraph may be deleted without County Counsel Review if not relevant to this agreement)

Contractor will timely and accurately complete, sign, and submit all necessary documentation of compliance.

ARTICLE 22 - NON-DISCRIMINATION AND OTHER REQUIREMENTS:

a. General Non-discrimination

No person shall be denied any services provided pursuant to this Agreement (except as limited by the scope of services) on the grounds of race, color, national origin, ancestry, age, disability (physical or mental), sex, sexual orientation, gender identity, marital or domestic partner status, religion, political beliefs or affiliation, familial or parental status (including pregnancy), medical condition (cancer-related), military service, or genetic information.

b. Equal Employment Opportunity

Contractor shall ensure equal employment opportunity based on objective standards of recruitment, classification, selection, promotion, compensation, performance evaluation, and management relations for all employees under this Agreement. Contractor's equal employment policies shall be made available to County upon request.

c. Section 504 of the Rehabilitation Act of 1973

Contractor shall comply with Section 504 of the Rehabilitation Act of 1973, as amended, which provides that no otherwise qualified individual with a disability shall, solely by reason of a disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination in the performance of any services this Agreement. This Section applies only to contractors who are providing services to members of the public under this Agreement.

d. Compliance with County's Equal Benefits Ordinance

Contractor shall comply with all laws relating to the provision of benefits to its employees and their spouses or domestic partners, including, but not limited to, such laws prohibiting discrimination in the provision of such benefits on the basis that the spouse or domestic partner of the Contractor's employee is of the same or opposite sex as the employee.

e. Discrimination Against Individuals with Disabilities

The nondiscrimination requirements of 41 C.F.R. 60-741.5(a) are incorporated into this Agreement as if fully set forth here, and Contractor and any subcontractor shall abide by the requirements of 41 C.F.R. 60–741.5(a). This regulation prohibits discrimination against qualified individuals on the basis of disability and requires affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified individuals with disabilities.

f. History of Discrimination

Contractor certifies that no finding of discrimination has been issued in the past 365 days against Contractor by the Equal Employment Opportunity Commission, the California Department of Fair Employment and Housing, or any other investigative entity. If any finding(s) of discrimination have been issued against Contractor within the past 365 days by the Equal Employment Opportunity Commission, the California Department of Fair Employment and Housing, or other investigative entity, Contractor shall provide County with a written explanation of the outcome(s) or remedy for the discrimination prior to execution of this Agreement. Failure to comply with this Section shall constitute a material breach of this Agreement and subjects the Agreement to immediate termination at the sole option of the County.

g. Reporting; Violation of Non-discrimination Provisions

Contractor shall report to the County Manager the filing in any court or with any administrative agency of any complaint or allegation of discrimination on any of the bases prohibited by this Section of the Agreement or the Section titled "Compliance with Laws". Such duty shall include reporting of the filing of any and all charges with the Equal Employment Opportunity Commission, the California Department of Fair Employment and Housing, or any other entity charged with the investigation or adjudication of allegations covered by this subsection within 30 days of such filing, provided that within such 30 days such entity has not notified Contractor that such charges are dismissed or otherwise unfounded. Such notification shall include a general description of the circumstances involved and a general description of the kind of discrimination alleged (for example, gender-, sexual orientation-, religion-, or race-based discrimination).

Violation of the non-discrimination provisions of this Agreement shall be considered a breach of this Agreement and subject the Contractor to penalties, to be determined by the County Manager, including but not limited to the following:

i. termination of this Agreement;

ii. disqualification of the Contractor from being considered for or being awarded a County contract for a period of up to 3 years;

iii. liquidated damages of $2,500 per violation; and/or

iv. imposition of other appropriate contractual and civil remedies and sanctions, as determined by the County Manager.

To effectuate the provisions of this Section, the County Manager shall have the authority to offset all or any portion of the amount described in this Section against amounts due to Contractor under this Agreement or any other agreement between Contractor and County.

h. Compliance with Living Wage Ordinance

As required by Chapter 2.88 of the San Mateo County Ordinance Code, Contractor certifies all contractor(s) and subcontractor(s) obligated under this contract shall fully comply with the provisions of the County of San Mateo Living Wage Ordinance, including, but not limited to, paying all Covered Employees the current Living Wage and providing notice to all Covered Employees and Subcontractors as required under the Ordinance. (If LWO is not applicable to this contract, you may delete this section without County Counsel review. Contact your assigned County Counsel if you are unsure if LWO is applicable)

ARTICLE 23 - **COMPLIANCE WITH COUNTY EMPLOYEE JURY SERVICE ORDINANCE:** Contractor shall comply with Chapter 2.85 of the County's Ordinance Code, which states that Contractor shall have and adhere to a written policy providing that its employees, to the extent they are full-time employees and live in San Mateo County, shall receive from the Contractor, on an annual basis, no fewer than five days of regular pay for jury service in San Mateo County, with jury pay being provided only for each day of actual jury service. The policy may provide that such employees deposit any fees received for such jury service with Contractor or that the Contractor may deduct from an employee's regular pay the fees received for jury service in San Mateo County. By signing this Agreement, Contractor certifies that it has and adheres to a

policy consistent with Chapter 2.85. For purposes of this Section, if Contractor has no employees in San Mateo County, it is sufficient for Contractor to provide the following written statement to County: "For purposes of San Mateo County's jury service ordinance, Contractor certifies that it has no full-time employees who live in San Mateo County. To the extent that it hires any such employees during the term of its Agreement with San Mateo County, Contractor shall adopt a policy that complies with Chapter 2.85 of the County's Ordinance Code." The requirements of Chapter 2.85 do not apply if this Agreement's total value listed in the Section titled "Payments", is less than one-hundred thousand dollars ($100,000), but Contractor acknowledges that Chapter 2.85's requirements will apply if this Agreement is amended such that its total value meets or exceeds that threshold amount.

ARTICLE 24 - PAYMENT OF PERMITS/LICENSES: Contractor bears responsibility to obtain any license, permit, or approval required from any agency for work/services to be performed under this Agreement at Contractor's own expense prior to commencement of said work/services. Failure to do so will result in forfeit of any right to compensation under this Agreement.

ARTICLE 25 - ACCOUNTING/RETENTION OF RECORDS:

a. Contractor shall maintain all required records relating to services provided under this Agreement for three (3) years after County makes final payment and all other pending matters are closed, and the Contractor shall be subject to the examination and/or audit by County, a Federal grantor agency, and the State of California.

b. Contractor shall comply with all program and fiscal reporting requirements set forth by applicable Federal, State, and local agencies and as required by County.

c. Contractor agrees upon reasonable notice to provide to County, to any Federal or State department having monitoring or review authority, to County's authorized representative, and/or to any of their respective audit agencies access to and the right to examine all records and documents necessary to determine compliance with relevant Federal, State, and local statutes, rules, and regulations, to determine compliance with this Agreement, and to evaluate the quality, appropriateness, and timeliness of services performed.

ARTICLE 26 - MISCELLANEOUS PROVISIONS:

a. Entire Agreement: This Agreement constitutes the entire agreement between the parties, and supersedes any prior agreement between the parties, oral or written, including the County's award of the Project to Contractor, unless such agreement is expressly incorporated herein. The County makes no representations or warranties, express or implied, not specified in this Agreement.

b. Execution of Other Documents: The parties to this Agreement shall cooperate fully in the execution of any and all other documents and in the completion of any additional actions that may be necessary or appropriate to give full force and effect to the terms and intent of this Agreement.

c. Execution in Counterparts: This Agreement may be executed in counterparts such that the signatures may appear on separate signature pages. A copy, or an original, with all signatures appended together, shall be deemed a fully executed agreement.

d. Binding Effect: Contractor, by execution of this Agreement, acknowledges that Contractor has read this Agreement, understands it, and agrees to be bound by its terms and conditions. This Agreement shall inure to the benefit of and shall be binding upon the Contractor and the County and their respective successors and assigns.

e. Severability: If any provision of this Agreement shall be held invalid or unenforceable by a court of competent jurisdiction, such holding shall not invalidate or render unenforceable any other provision hereof.

f. Amendments: The terms of this Agreement shall not be waived, altered, modified, supplemented or amended in any manner whatsoever except by written agreement signed by the parties.

g. Assignment of Agreement: The Contractor shall not assign or transfer by operation of law or otherwise any or all of its rights, burdens, duties or obligations without the prior written consent of the surety on the payment bond, the surety on the performance bond and the County.

h. Written Notice: Written notice shall be deemed to have been duly served if delivered in person to the individual or member of the firm or to an officer of the corporation for whom it was intended, or if delivered at or sent by registered or certified mail or courier to the last business address known to it who gives the notice.

i. Electronic Signature. Both County and Contractor wish to permit this Agreement and future documents relating to this Agreement to be digitally signed in accordance with California law and County's Electronic Signature Administrative Memo. Any party to this Agreement may revoke such agreement to permit electronic signatures at any time in relation to all future documents by providing notice pursuant to this Agreement.

j. Controlling Law; Venue. The validity of this Agreement and of its terms, the rights and duties of the parties under this Agreement, the interpretation of this Agreement, the performance of this Agreement, and any other dispute of any nature arising out of this Agreement shall be governed by the laws of the State of California without regard to its choice of law or conflict of law rules. Any dispute arising out of this Agreement shall be venued either in the San Mateo County Superior Court or in the United States District Court for the Northern District of California. In the event of breach or other dispute arising out of this Agreement, County reserves the right to pursue all remedies, legal, contractual, administrative or otherwise against Contractor, including the recovery of any sanctions and penalties authorized by law.

IN WITNESS WHEREOF the parties have executed this Agreement on the date first hereinabove written.

CONTRACTOR,
(By signing below, also certifies awareness of and compliance with Labor Code Sections 1861 and 3700 concerning Worker's Compensation Law.)

By: _____ _____
Signature Date

Type or Print Name: _____

Official Capacity: _____ (Affix Corporate Seal)

By: _____ _____
Signature Date

Type or Print Name: _____

Official Capacity: _____

County of San Mateo

By: _____ _____
Mr. Warren Slocum Date
Supervisor

Note to Contractor:

a. For corporations, the contract must be signed by two officers. The first signature must be that of the chairman of the board, president or vice president; the second signature must be that of the secretary or chief financial officer. The signatures must be acknowledged by a Notary Public and seal attached.

b. If Partnership, all partners should sign under the partnership name. The signatures must be acknowledged by a Notary Public and seal attached.

PERFORMANCE BOND

County of San Mateo ("County") and _____ ("Contractor") have entered into a contract for the furnishing of all materials and labor, services and transportation which are necessary, convenient, and proper to construct:

County of San Mateo

Memorial Park
9500 Pescadero Creek Road
Loma Mar, CA 94021

Collection System Replacement at Memorial Park

WHEREAS, the Agreement between the County and the Contractor dated _____, 20__, and all of the documents attached to or forming a part of the Contract Documents, are hereby referred to and made a part hereof; and

WHEREAS, the Contractor is required by the Agreement, before entering upon the performance of the work, to file a good and sufficient bond with the County to ensure Contractor's good and faithful performance thereunder.

NOW, THEREFORE, the Contractor and _____ ("Surety"), as Corporate Surety, hereby bind themselves, their heirs, executors, administrators, successors, or assigns, jointly and severally, unto the County in the sum of _____ Dollars ($_____), to be paid to the County upon the occurrence of the condition set forth below.

THE CONDITION OF THIS OBLIGATION IS that if the Contractor shall fail to well and truly perform and fulfill all the undertakings, covenants, terms, and conditions of the Agreement during the original term of the Agreement and any extensions thereof that may be granted by the County, and during the life of any guaranty required under the Agreement, or shall fail to well and truly perform and fulfill all the undertakings, covenants, terms, and conditions of any and all duly authorized modifications to the Agreement that may hereafter be made, then the Surety shall indemnify the County for any damage or loss suffered thereby. In case suit is brought upon this bond the Surety shall pay all court costs, expenses and reasonable attorney's fees.

IT IS HEREBY EXPRESSLY STIPULATED AND AGREED that no change, extension of time, alteration, or addition to the terms of the contract or the work to be performed thereunder or the specifications accompanying the same, shall in any way diminish the Surety's obligation on this bond, and the Surety does hereby waive notice of any such change, extension, alteration, or addition.

SHOULD THE CONDITION of this bond be fully performed, this obligation becomes void; otherwise the obligation shall remain in full force and effect.

IN WITNESS WHEREOF, this instrument has been duly executed by the Contractor and Surety this _____ day of _____, 20__.

(Notary Seal)

_____
(Principal)

_____
(Business Address)
_____

_____

_____
(Corporate Surety)

By: _____

_____
(Business Address)
_____

The rate or premium of this bond is _____ per Thousand Dollars; the total amount of premium charged, $_____.

(The above must be filled in by Corporate Surety).

PAYMENT BOND
(Labor and Material)

County of San Mateo ("County") and _____ ("Principal") have entered into a contract for the furnishing of all materials and labor, services and transportation, necessary, convenient, and proper to construct:

County of San Mateo

Memorial Park
9500 Pescadero Creek Road
Loma Mar, CA 94021

Collection System Replacement at Memorial Park

WHEREAS, the Agreement between the County and the Principal dated _____, 20__, and all of the documents attached to or forming a part of the Contract Documents, are hereby referred to and made a part hereof; and

WHEREAS, the Principal is required by the Agreement, before entering upon the performance of the work, to file a good and sufficient bond with the body by whom the contract is awarded to secure the claims arising under the Agreement.

NOW, THEREFORE, the Principal and the undersigned _____ ("Surety"), as Corporate Surety, hereby bind themselves, their heirs, executors, administrators, successors, or assigns, jointly and severally, unto the County for the use and benefit of all persons provided under Civil Code section 9554, subdivision (b), in the sum of _____ Dollars ($_____).

THE CONDITION OF THIS OBLIGATION IS that if the Principal or a subcontractor, or their heirs, executors, administrators, successors, or assigns fails to pay any of the persons named in Civil Code section 9100, or any of the amounts due as specified in Civil Code section 9554, subdivision (b), Surety will pay the same in an amount not exceeding the amount hereinabove set forth. Additionally, Surety shall pay all court costs, expenses and reasonable attorneys' fees as fixed by the Court associated with any suit brought upon this bond, including costs and attorneys' fees incurred by the County.

IT IS HEREBY EXPRESSLY STIPULATED AND AGREED that this bond shall inure to the benefit of any and all persons, companies, and corporations entitled to file claims so as to give a right of action to them or their assigns in any suit brought upon this bond.

IT IS FURTHER EXPRESSLY STIPULATED AND AGREED that no change, extension of time, alteration, or addition to the terms of said contract or the specifications accompanying the same, shall in any manner diminish the Surety's obligations on this bond, and the Surety does hereby waive notice of any such change, extension, alteration, or addition.

SHOULD THE CONDITION of this bond be fully performed, then this obligation shall become void; otherwise the obligation shall be and remain in full force and effect.

IN WITNESS WHEREOF, this instrument has been duly executed by the Principal and Surety this _____ day of _____, 20__.

(Notary Seal)

_____
(Principal)

_____
(Business Address)
_____

_____

_____
(Corporate Surety)

By: _____

_____
(Business Address)
_____

The rate or premium of this bond is _____ per thousand; the total amount of premium charged, $_____.

(The above must be filled in by Corporate Surety).

GENERAL CONDITIONS

Article 1 DEFINITIONS

1.1 Project Manager: Individual designated to represent the County. The term "County" shall also be defined to include the County's Representative. The Project Manager will be the Contractor's primary contact during construction of the Project.

1.2 Day: The term "day" as used in the Contract Documents shall mean calendar day.

1.3 CO: Change Order.

1.4 COR: Change Order Request.

1.5 Submit/Submission: An application for payment, request for information, substitution, or change order or requests for approval of samples or submittals or shop drawings. Includes resubmission after initial denial or direction to provide additional information.

1.6 Beneficial Occupancy: Notwithstanding any common law principal to the contrary, occupancy by the County shall be "beneficial" when occupancy for teaching purposes is safe and convenient (considering all visual, sound, and odor factors); the Project is weather-tight, functional, and aesthetically pleasing; all portions of the Project (including finishes, painting, hardware, services, safety systems and utilities) are complete and operational; and any remaining punch list work may be conveniently and effectively performed after 3:30 p.m. and/or on weekends and can and shall be completed within the immediately subsequent twenty eight (28) days after such occupancy.

1.7 Substantial Completion: Substantial Completion is the stage in progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents, except for minor punch list items, that the building may be Beneficially Occupied.

1.8 Final Completion: The point at which Contractor fully completes all contract work including punch list work and has submitted closeout documentation to the satisfaction of the County and Project Manager.

Article 2 CONTRACT DOCUMENTS.

2.1 The Contract Documents are the following:

1. Agreement
2. Bid Form
3. Bid Bond
4. Payment Bond
5. Performance Bond
6. Insurance Forms
7. Notice to Bidders and Instructions
8. Designation of Subcontractors Form
9. Non-Collusion Affidavit
10. Iran Contracting Act Certification
11. General and Special Conditions
12. Conditional Waiver and Release Upon Progress Payment for General Contractor

13. Conditional Waiver and Release Upon Progress Payment for Subcontractor (when requested)
14. Unconditional Waiver and Release Upon Progress Payment for General Contractor
15. Unconditional Waiver and Release Upon Progress Payment for Subcontractor (when requested)
16. Conditional Waiver and Release Upon Final Progress Payment for General Contractor
17. Conditional Waiver and Release Upon Final Progress Payment for Subcontractor
18. Contractor's Affidavit of Release of Liens
19. Consent of Surety Company to Final Payment
20. Contractor's Affidavit of Payment of Debts and Claims
21. Contractor's Affidavit of Payment of Prevailing Wage
22. Subcontractor's Affidavit of Payment of Prevailing Wage
23. Supplementary Conditions (if applicable)
24. Plans and Specifications and Drawings
25. County's Schedule of Milestones
26. Other Forms and Attachments (if applicable)
27. Addenda or Clarifications to any of the above

2.2 The County must approve any additions to the listed Contract Documents. Any modification amending or extending the Work covered by the Contract Documents shall be as binding as if originally included in the Contract Documents.

2.3 The Contract Documents are complementary, and what is required by any one shall be as binding as if required by all. The intention of the documents is to include all labor, materials, equipment, and other items necessary for the proper execution, completion, and operation of the Project. It is not intended that work not covered under any heading, section, branch, class, or trade of the specifications shall be supplied unless it is required elsewhere in the Contract Documents or is reasonably inferable therefrom as being necessary to produce the intended results. Words which have well-known technical or trade meanings are used herein in accordance with such recognized meanings.

2.4 The organization of the specifications into divisions, sections, and articles, and the arrangement of drawings shall not control the Contractor in dividing the Project among subcontractors or in establishing the extent of work to be performed by any trade. Neither the stated description nor the division of the Plans and Specifications to various sections, which is done solely for convenience, shall be deemed to limit the work required, divide or indicate it by labor jurisdiction or trade practice, or set up any bidding barriers to the various sub-contractors or suppliers.

2.5 The Contractor shall be responsible for the proper execution of all work required by the Contract Documents and for allocating such portions as it sees fit to the various sub-contractors. The Contractor is cautioned that the various individual sections may not contain all work that the Contractor may wish to allocate to a particular sub-contractor or everything bearing on the work of a particular trade, some of which may appear in other portions of the Plans or Specifications.

2.6 Intent of Drawings and Specifications.

2.6.1 The Contractor shall make its own layout of lines and elevations and shall be responsible for the accuracy of both its and the subcontractors' work resulting therefrom. All dimensions affecting proper fabrication and installation of all contract Work must be verified prior to fabrication by taking field measurements of the true conditions. The Contractor

shall take, and assist subcontractors in taking, all field dimensions required in performance of the work, and shall verify all dimensions and conditions on the site. If there are any discrepancies between dimensions in drawings and existing conditions which will affect the work, the Contractor shall bring such discrepancies to the attention of the Project Manager for adjustment immediately and in any case before proceeding with the Work. The Contractor shall be responsible for the proper fitting of all Work and for the coordination of all trades, subcontractors and persons engaged upon this Contract.

2.6.2 It is the intent of the Contract Plans and Specifications to show and describe complete installations. Items shown but not specified, or specified but not shown, shall be included unless specifically omitted. These Plans and Specifications shall be deemed to include and require everything necessary and reasonably incidental to the completion of all work described and indicated on the drawings, whether or not particularly mentioned or shown.

2.6.3 The specifications and drawings are intended to be explanatory of each other. Any work shown on the drawings, and not in the specifications, or vice versa, is to be treated as if indicated in both. In the case of conflict or inconsistency, the Supplementary Conditions (if any) shall control over the General Conditions and the specifications shall control over the drawings. In case of conflict within the drawings, larger scale drawings shall govern smaller scale drawings, written dimensions shall govern over scaled dimensions and figured dimensions shall control over scaled measurements. In all cases, the more costly or expensive interpretation is deemed to control and is to be the interpretation incorporated into the Contract Documents and Contract Sum.

2.7 Ambiguities, Errors, and Inconsistencies: If, in the opinion of the Contractor, the construction details indicated on the drawings or otherwise specified are in conflict with accepted industry standards for quality construction and therefore might interfere with Contractor's full guarantee of the Work involved, the Contractor shall promptly bring its opinion and the basis for it to the attention of the Project Manager for appropriate action before submittal of the bid. Contractor's failure to request clarification or interpretation of an apparent ambiguity, error or inconsistency waives that Contractor's right to thereafter claim any entitlement to additional compensation based upon an ambiguity, inconsistency, or error, which should have been discovered by a reasonably prudent Contractor, subject to the limitations of Public Contract Code §1104. During the Project, should any discrepancy appear or any misunderstanding arise as to the import of anything contained in the Contract Documents, the matter shall be promptly referred to the Project Manager, who will issue instructions or corrections.

2.8 Lines and Planes: All lines and planes appearing on Contract drawings to be horizontal or vertical and not explicitly indicated otherwise shall be constructed true and plumb. All lines and planes appearing on Contract drawings to intersect at right angles and not explicitly indicated otherwise shall be constructed at true right angles. Where details are indicated covering specific conditions, such details also apply to all similar conditions not specifically indicated.

2.9 Standards: The specification standards of the various sections of the Specifications shall be the procedural, performance, and material standards of the applicable association publications identified and shall be the required level of installation, materials, workmanship, and performance for the applicable work. Except where a specific date of issue is mentioned hereinafter, references to specification standards shall mean the edition, including amendments and supplements, in effect on the date of the Notice to Bidders for the Project. Where no standard is identified and a manufacturer is specified,

the manufacturer's specifications are the standards. All standards shall be subordinate to the requirements of the applicable codes and regulations.

2.10 Reference to the Singular: Wherever in the Specifications an article, device or piece of equipment is referred to in the singular number, such reference shall include as many such items as are shown on drawings or required to complete the installation.

Article 3 PROJECT MANAGER

3.1 Nothing contained in the Contract Documents shall create any contractual relationship between the Project Manager and the Contractor.

3.2 The Project Manager will be the County's representative during construction and until final payment. Unless directed otherwise herein, all communications and correspondence from the Contractor shall be directed jointly to the Project Manager and the County.

3.3 The Project Manager shall at all times have access to the Project wherever it is in preparation and progress.

3.4 The Project Manager will make periodic visits to the Project site to familiarize itself generally with the progress and quality of the work and to determine in general if the Project is proceeding in accordance with the Contract Documents and will keep the County informed of its observations.

3.5 Based on such observations and the Contractor's applications for payment, the Project Manager will determine and verify the amounts owing to the Contractor and will issue recommendations for payment to the County as provided herein.

3.6 The Project Manager's decision in matters relating to artistic effect will be final if consistent with the intent of the Contract Documents.

3.7 The Project Manager will have authority to reject work which does not conform to the Contract Documents. Whenever, in its reasonable opinion, the Project Manager considers it necessary or advisable to ensure the proper implementation of the intent of the Contract Documents, it will have authority to require the Contractor to stop the Project or any portion thereof, or to require special inspection or testing of the work as provided herein whether or not such work be then fabricated, installed or completed. However, neither the authority to act under this subparagraph, nor any decision made by the Project Manager in good faith, either to exercise or not to exercise such authority, shall give rise to any duty or responsibility of the Project Manager to the Contractor, any subcontractor, any of their agents or employees, or any other person performing any of the work.

3.8 Submittals.

3.8.1 The Project Manager will monitor the submittal process. The Project Manager will review or take other appropriate action upon the Contractor's submittals, such as shop drawings, product data and samples, but only for the limited purpose of checking for conformance with the information given and design concept expressed in the Contract Documents. Contractor shall assume that the Project Manager may take as many as fourteen (14) days to review submittals and shall include such review period in its Project schedule. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents.

3.9 The Project Manager will have authority to order minor changes in the Project after notifying the County. The Project Manager will prepare change orders in accordance with the Contract Documents. Upon a change order request by the County, the Contractor is to submit a breakdown of all costs and/or credits incurred to accomplish the requested change. The breakdown is to be of sufficient detail to allow justification of additional costs and/or credits. All change orders shall be signed by the County, Project Manager, Engineer, and Contractor, and if applicable, must be approved by the County Building Department.

3.10 The Project Manager will conduct inspections to determine the dates of Substantial Completion and Final Completion. The Project Manager will receive written guarantees and waivers and related documents required of and assembled by the Contractor, and, upon review by the design team, will recommend issuance of a final certificate of payment.

3.11 The duties, responsibilities and limitations of authority of the Project Manager as the County's representative during construction as set forth in these General Conditions will not be modified without written consent of the County which the modification will be shown to the Contractor.

3.12 The Project Manager will not be responsible for the acts or omissions of the Contractor, or any subcontractors, or any of its agents or employees, or any other persons performing any of the work.

Article 4 THE COUNTY.

4.1 The County shall not be held responsible for delays caused by the period of time during which the County Building Department or any other state or local government agency reviews change order requests, requests for information or submittals unless (and then only to the extent to which) the County caused the delay.

4.2 Information and Services:

4.2.1 The County shall furnish all existing surveys describing the physical characteristics, known utility locations, legal limitations, and a legal description of the Project site.

4.2.2 Except as provided herein, the County shall secure and pay for necessary approvals, easements, assessments, and charges required for the construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

4.2.3 The County shall forward all instructions to the Contractor through the Project Manager.

4.2.4 The County will reimburse the Contractor with no additional markup for all fees required by the County Building Department.

4.3 County's Right to Carry Out the Work. If the Contractor defaults or neglects to carry out any portion of the work for the Project in accordance with the Contract Documents and fails within seven (7) days after receipt of written notice from the County to commence and continue correction of such default or neglect with diligence and promptness, the County may, without prejudice to any other remedy it may have, make good such deficiencies. In such case, an appropriate change order shall be issued deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the additional services of the Architect, and Engineers, and other representatives and consultants made necessary by such default, neglect, or failure. If

payments then or thereafter due the Contractor are not sufficient to cover such amount, County shall have the right to recover the difference from the Contractor or its sureties.

4.4 Use of Completed Parts of the Work before Acceptance.

4.4.1 Prior to Substantial Completion, whenever the work or any part thereof is in a condition making use thereof possible, and the best interest of the County requires such use, the County may take possession of, connect to, open for public use, or use the work or a part thereof. When so used, maintenance and repairs due to ordinary wear and tear or vandalism will be made at the County's expense.

4.4.2 The use by the County of the work or part thereof as contemplated in this section shall in no case be construed as constituting acceptance of the work or any part thereof and shall not constitute Substantial Completion until the County may take Beneficial Occupancy, as such is defined in these General Conditions. Such use shall neither relieve the Contractor of any of its responsibilities under the Contract nor act as a waiver by the County of any of the conditions thereof. Contractor shall continue to maintain all required insurance on the Project.

Article 5 CONTRACTOR.

5.1 Review of Contract Documents.

5.1.1 The Contractor shall carefully study and compare the Agreement, general conditions, drawings, specifications, addenda and modifications and shall at once report to the Project Manager any error, inconsistency or omission it may discover. The Contractor shall do no work without proper drawings and specifications or interpretations. If the Contractor performs any construction activity knowing it involves a recognized error, inconsistency or omission in the Contract Documents without such notice to the Project Manager, the Contractor shall assume appropriate responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

5.1.2 The County will not be responsible for the cost of delays related to Contractor's failure to submit complete RFIs, submittals, or requests for substitution in sufficient time to receive a response prior to commencement of the related work.

5.1.3 The Contractor shall perform all the work and activities required by the Contract Documents and furnish all labor, materials, equipment, tools and appurtenances necessary to perform the work and complete it to the County's satisfaction within the time specified. The Contractor shall at all times perform the work of this Contract in a competent and workmanlike manner and, if not specifically stated, accomplish the work according to the best standards of construction practice. The Contractor in no way is relieved of any responsibility by the activities of the Project Manager, Architect, Engineer, or County Building Department in the performance of such duties.

5.1.4 Contractor shall make the layout of lines and elevations and shall be responsible for the accuracy of both the Contractor's and the Subcontractors' work resulting therefrom. All dimensions affecting proper fabrication and installation of all Contract work must be verified by the Contractor prior to fabrication and installation by taking field measurements of the true conditions. The Contractor shall take, and assist Subcontractors in taking, all field dimensions required in performance of the work, and shall verify all dimensions and conditions on the site. If there are any discrepancies between dimensions in drawings and existing conditions which will affect the work, the Contractor shall promptly bring such

discrepancies to the attention of the Project Manager for adjustment before proceeding with the work. Contractor shall be responsible for the proper fitting of all work and for the coordination of all trades, Subcontractors and persons engaged upon this Contract.

5.1.5 Contractor shall do all cutting, fitting, or patching of Contractor's work that may be required to make its several parts come together properly and fit it to receive or be received by work of other contractors as shown, or reasonably implied by, the drawings and Specifications for the completed work. Any cost incurred by the County due to defective or ill-timed work shall be borne by the Contractor.

5.2 Personnel.

5.2.1 The Contractor shall comply with Education Code Section 45125.2 regarding Contractor/Subcontractor personnel and pupil safety and Contractor will take, and will ensure that all subcontractors take, all measures mandated under section 45125.2. Contractor acknowledges that it has responsibility for Contractor's and all Subcontractors' compliance with this requirement and that failure to comply shall with this requirement shall be a material breach of this Agreement.

5.2.2 All persons working for Contractor and subcontractors on the Project will refrain from using profane or vulgar language, or any other language that is inappropriate if it were spoken by employees of the County, on the job site. Contractor will take all reasonable measures to ensure that its personnel and personnel of all subcontractors comply with this Section 5.2.2 of these General Conditions.

5.2.3 The Contractor shall employ a full-time, on site competent superintendent and necessary assistants who shall have complete authority to act for the Contractor on all matters pertaining to the work, who shall be designated in writing by the Contractor prior to commencement of work on the Project. The superintendent shall have a minimum of five (5) years of experience in construction supervision. The superintendent shall be satisfactory to the County and, if not satisfactory, shall be replaced by the Contractor with one that is acceptable. The superintendent shall not be changed without the written consent of the County unless the superintendent ceases to be employed by the Contractor.

5.2.4 The Contractor shall employ a competent estimator and necessary assistants, or contract for sufficient services of an estimating consultant who shall be designated in writing by the Contractor prior to commencement of work on the Project. The estimator shall have a minimum of five (5) years of experience in estimating. The estimator shall be satisfactory to the County and, if not satisfactory, shall be replaced by the Contractor with one that is acceptable. The estimator shall not be changed without the written consent of the County unless the estimator ceases to be employed by the Contractor.

5.2.5 The Contractor shall employ a competent scheduler and necessary assistants, or contract for sufficient services of a scheduling consultant who shall be designated in writing by the Contractor prior to commencement of work on the Project. The scheduler shall have a minimum of five (5) years of experience in scheduling. The scheduler shall be satisfactory to the County and, if not satisfactory, shall be replaced by the Contractor with one that is acceptable. The scheduler shall not be changed without the written consent of the County unless the scheduler ceases to be employed by the Contractor.

5.2.6 Contractor shall at all times enforce strict discipline and good order among Contractor's employees, and shall not employ on the Project any unfit person or anyone not skilled in the task assigned.

5.2.7 If Contractor or any subcontractor on the Project site fails to comply with any provision of this paragraph 5.2 of these General Conditions, the County may have the non-complying person(s) immediately removed from the Project site, and such person(s) shall be replaced, at no additional expense to the County, within three (3) days of such removal. Contractor, on behalf of it and its subcontractors, hereby waives any claim that the provisions of this paragraph or the enforcement thereof interferes, or has the potential to interfere, with its right to control the means and methods of its performance of its duties under this Contract.

5.3 Subcontractors.

5.3.1 Within ten (10) days of the date that the County executes the Agreement, the Contractor shall provide the Project Manager with signed contracts with all of its subcontractors (including those which need not be listed in the Bid), and a typed list of all subcontractors, which shall include the following information:

1. Address
2. Telephone and Facsimile numbers
3. Contractor's License Type and Number
4. Contractor's DIR Number
5. Contact Person
6. Portion of Work to be Performed
7. Subcontractor Bid Proposal
8. Contract Amount

5.4 The list shall be accompanied by proof of all required bonds to be carried by subcontractors.

5.4.1 If the Contractor elects to enter into any subcontract for any section of the work, the Contractor assumes all responsibility for ascertaining that the sub-contractor for the work is competent, solvent and thoroughly acquainted with all conditions of the work and has included all materials and appurtenances in connection therewith.

5.4.2 It shall be the responsibility of the Contractor to notify its Subcontractors of all portions of specifications or plans that the Contractor intends to include as part of the subcontract.

5.4.3 The Contractor shall insert the following language into all of its contracts with its subcontractors: "[Subcontractor's name] hereby warrants that it has reviewed all portions of [contractor's name]'s contract with the County, including all scheduling requirements. Such Contract Documents are hereby incorporated into this Agreement, and subcontractor shall be as responsible for carrying out the provisions thereof which relate to its scope of work as if it had contracted directly with the County."

5.4.4 The Contractor shall be responsible to its subcontractors for damages justifiably incurred by the subcontractors, including delay damages, except those which are caused by the action or inaction of that subcontractor or those with whom that subcontractor has contracted. The Contractor shall be responsible to the County for the acts and omissions of all employees, agents and all other persons performing any of the work on behalf of the Contractor or any subcontractor.

5.5 Communication Procedures.

5.5.1 The Contractor shall attend a mandatory Pre-Construction Conference, during which the County's Representative, Engineer of Record, and Project Inspector shall review the Project reporting procedures and other requirements.

5.5.2 The Contractor shall meet weekly with the County's Representative, Engineer of Record, and Project Inspector to review the project status. The Contractor shall provide copies of its superintendent's daily logs for the previous week, current project schedules and logs of outstanding submittals, requests for information, and requests for change orders (which shall include respective dates of submittal and required responses and shall designate the party whose response is pending).

5.5.3 The Project Manager will prepare minutes of the weekly construction meetings describing all agreements and commitments made (including who made them and when the commitments are to be fulfilled) and shall endeavor to distribute a copy to each required attendee, whether its representative attended or not, within three (3) days. Attendees will have two (2) days after receipt of the minutes to advise the Engineer of Record of any difference in understanding of what occurred at the meeting.

5.5.4 When the Contractor sends correspondence regarding samples, submittals, or shop drawings, Contractor shall send them to the Project Manager who will forward them onto the appropriate party(ies).

5.6 The Contractor shall supervise and direct the work, using its best skill and attention. It shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Project under the Contract Documents.

5.7 Timing of Design Team Review.

5.7.1 The Contractor shall provide a revised and updated Priority Schedule with each RFI and submittal. The Priority Schedule shall include a listing of pending requests, including the most current request, ranked in order of priority.

5.7.2 The Project Manager shall endeavor to respect the Contractor's requested order of priorities. The total response time is subject to the complexity of the RFIs and submittals, the number of RFIs or submittals submitted concurrently and any re-prioritization by the Contractor.

5.7.3 The County will not be responsible for the costs of delays related to Contractor's failure to submit RFIs, submittals, or requests for substitution in sufficient time to receive a response prior to commencement of the related work.

5.8 Shop Drawings, Product Data, Samples and Similar Submittals.

5.8.1 Shop Drawings are drawings, diagrams, illustrations, schedules, and other data that is specifically prepared by the Contractor or a subcontractor, sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the work.

5.8.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the work.

5.8.3 Samples are physical examples, which illustrate materials, equipment or workmanship, and establish standards by which the work will be judged.

5.8.4 Shop drawings, product data, samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents.

5.8.5 All submittals shall be forwarded to the Project Manager within thirty (30) days of issuance of the Notice of Intent to Award if not requested earlier in the scope of work or supplementary conditions document. Contractor must make any request for extension of this time period within this time for any incomplete submittal. Any such request must include a schedule reflecting the anticipated submission, which incorporates adequate time for review and procurement, so as not to impede progress of the Project.

5.8.6 The Contractor shall perform no portion of the work requiring submittal and review of shop drawings, product data, samples or similar submittals until the respective submittal has been approved by the Project Manager. All such work shall be in accordance with approved submittals. In the event Contractor makes substitutions in materials, equipment, or designs without approval of the County and Engineer of Record, the Contractor shall remove the improper material and install the correct material and restore the area as if the unapproved substitution had never occurred.

5.8.7 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor thereby represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the work, Schedule, and Contract Documents.

5.8.8 Samples which are of value after testing will remain the property of the Contractor.

5.8.9 All requests for substitution shall be submitted the Project Manager no fewer than ten (10) days prior to the bid date. The Contractor shall clearly identify any request for substitution and provide sufficient product data to facilitate review by the Engineer of Record. No substitutions will be considered for any board-approved County standard items.

5.9 Requests for Information.

5.9.1 The Contractor shall review any request for information prior to submission to the Project Manager to ensure that the information requested in such RFI is not already provided in the Contract Documents. RFIs shall contain information regarding any potential cost or schedule impacts. RFIs shall come only from the Contractor and not from any subcontractor.

5.10 Whenever the Contractor arranges to work at night, or at any time when work is not usually in progress, or to vary the period during which work is carried out each day, it shall obtain advance approval from the County. Such work shall be done without extra compensation to the Contractor, and such additional inspection costs shall be chargeable to the Contractor providing such work is not performed at the request of the County to meet an earlier completion time than that established in the Agreement.

5.11 The Contractor shall maintain at the site for the County one stamped copy of all drawings, specifications, addenda, approved shop drawings, change orders, and other modifications, in good order and marked to record all changes made during construction, which shall be available to the County's Representative, Engineer of Record, and Project Inspector. The drawings, marked to record all changes made during construction, shall be delivered to the County upon completion of the Project.

5.12 Review of the Contractor's submittals shall not:

1. relieve the Contractor of any of the Contractor's obligations;
2. constitute approval of safety precautions, construction means, methods, techniques or procedures;

3. relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents unless the Contractor has informed the Project Manager in writing of such deviation at the time of submission and the Project Manager has given written approval of such deviation; or

4. Indicate approval of an assembly of which the item is a component.

5.13 Temporary Office and Site Conditions.

5.13.1 The Contractor shall obtain County Approval for any space or area used for temporary facilities and staging requirements. Refer to Logistics Plan included in bid documents for phasing and temporary fencing requirements.

5.13.2 The Contractor shall obtain permits for, install and maintain in safe condition whatever scaffolds, hoisting equipment, barricades, walkways, or other temporary structures that may be required to accomplish the work or pursuant to State or local regulations. Such structures shall be adequate for the intended use and capable of safely accepting all loads that may be imposed upon them. They shall be installed and maintained in accordance with all applicable federal, state and local codes and regulations.

5.14 Portable chemical toilets or water closets and urinals shall be provided by the Contractor for the use of its employees, trade contractors, subcontractors and their employees; and in no case shall the permanent plumbing fixtures of buildings on the site be used for such purpose.

5.14.1 The Contractor shall promptly remove all such temporary facilities when they are no longer needed for the work or on completion of the project and shall make any necessary repairs caused by such use and removal.

5.14.2 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with any materials or equipment.

5.14.3 The Contractor will provide, at its expense, water and utilities, excluding telephone, including all connections and related charges.

5.14.4 The Contractor shall provide and maintain temporary heat from an approved source whenever in the course of the work it may become necessary for curing, drying or warming spaces as may be required for the installation of materials or finishes. The Contractor shall provide and maintain any and all facilities that may be required for dewatering in order that work may proceed on the project. If it is necessary for dewatering to occur continually, the Contractor shall have on hand whatever spare parts or equipment that may be required to avoid interruption of service.

5.14.5 The Contractor shall submit written request to the County for any utility shut downs no fewer than five (5) days prior to any utility (including, but not limited to, water, electricity, gas, and sewer) being disconnected or turned off, and shall inform the County of the anticipated duration of the unavailability of such utility.

5.15 Contractor's Safety Program.

5.15.1 Each Contractor who will perform work at the site shall prepare and submit to the County for general review a safety program, as required by the Contract Documents and all other governing laws and ordinances. The safety program, in addition to normal regulatory and statutory requirements of a safety program, will address the additional requirements to

provide for the safety of anyone using the school site, to separate the construction area from the remaining school property, and to prohibit the use of school facilities by Contractor's employees unless specifically permitted otherwise.

5.15.2 The County, the Project Manager, the Engineer of Record, and their representatives shall not be responsible for Contractor's implementation of or compliance with its safety programs, or for initiating, maintaining, monitoring or supervising the implementation of such programs or the procedures and precaution associated therewith, or for the coordination of any of the above with others at the site.

5.16 The Contractor shall perform all the work required by the Contract Documents and furnish all labor, materials, plant, equipment, tools and appurtenances necessary to perform said work and complete it within the time specified. The Contractor shall at all times perform the work of this Contract in a competent and workmanlike manner and, if not specifically stated, accomplish the work according to the best standards of construction practice.

5.17 Contractor shall do all cutting, fitting, or patching of its work that may be required to make its several parts come together properly and fit it to receive or be received by work of other contractors as shown, or reasonably implied by, the Contract Plans and Specifications for the completed structure, and shall restore finishes to the satisfaction of the Project Manager. Any cost caused by defective or ill-timed work shall be borne by the party responsible therefore.

5.18 The Contractor shall cooperate and coordinate with technical inspection and testing required of other contractors.

5.19 The Contractor shall submit Verified Reports as defined in Sections 4-336 and 4-343(c), Group 1, Chapter 4, Part I, Title 24, and California Code of Regulations.

5.20 Instructions and Manuals.

5.20.1 Prior to Final Completion of the Project, the Contractor shall compile manufacturers' operations and maintenance manuals, warranties and guarantees, and certificates, and index into two (2) bound copies and one electronic copy in an organized manner. This information shall then be submitted to the Project Manager for approval within seven (7) days of Substantial Completion.

5.20.2 The Contractor shall instruct the County’s personnel in the operation and maintenance of the more complex equipment incorporated into the Project prior to final acceptance of the Project.

5.20.3 Receipt of complete instructions and manuals by the Engineer of Record is a condition precedent to release of payments by the County to the Contractor.

5.20.4 All manufacturers’ application/installation instructions shall be given to the Project Manager at least ten (10) days prior to first material application or installation of the item.

5.21 The Contractor shall maintain at the work site a separate complete set of contract drawings which will be used solely for the purpose of recording changes made in any portion of the work during the course of construction, regardless of the reason for the change. As changes occur, there will be included or marked on this record set on a daily basis. Actual locations to scale shall be identified on the drawings for all runs of mechanical and electrical work, including all site utilities, etc., installed underground, in walls, floors, and furred spaces, or otherwise concealed. Deviations from the drawings shall be shown in detail.

All main runs, whether piping, conduit, ductwork, drain lines, etc., shall be located in addition by dimension and elevation. Progress payments shall be withheld until such time as the record set is brought up to date.

5.22 The Contractor shall not unnecessarily interfere with use of any roadway, walkway or other facility for vehicular or pedestrian traffic at the Project site, by any party entitled to use it. Wherever such interference becomes necessary for the proper and convenient performance of the work and no satisfactory detour route exists, the Contractor shall, before beginning the interference, provide a satisfactory detour, temporary bridge, or other proper facility for traffic to pass around or over the interference, shall maintain it in satisfactory condition as long as the interference continues and shall coordinate and obtain the approval of the authority having jurisdiction over the affected right of way or property all without extra payment unless otherwise expressly stipulated in the Contract Documents.

5.23 Project Completion.

5.23.1 When the work to be performed under this Contract is completed to the point that the County can take Beneficial Occupancy, the Contractor shall notify the Project Manager in writing. The Contractor, Project Manager, Engineer of Record, Project Inspector and subcontractor representatives shall thereafter inspect the work. As a result of this inspection, the Engineer of Record will prepare a list of items that are incomplete or not installed according to the Contract Documents (the "punch list"). Failure to include items on this list does not relieve the Contractor from fulfilling all requirements of the Contract.

5.23.2 After receipt of the “punch list” the Contractor shall have seven (7) days to make good, correct or otherwise properly address all items. If it is not feasible to complete all items within the stipulated time the Contractor shall immediately submit in writing a request for time extension including an explanation for such request. Should the Contractor not complete all items within the allotted time the County reserves the right to perform the work per section Article 11 of the Agreement.

5.23.3 On completion of all items on the punch list, verified by a final inspection, and all other Contract requirements, the County will issue a Notice of Acceptance to the Contractor and file a Notice of Completion with the County Recorder.

5.23.4 If, through no fault of the County, more than one inspection is required to determine whether the punch list has been completed, the Contractor will be back charged for the costs of the County’s representatives’ time, at the rate of Seven Hundred Fifty Dollars ($750) per additional inspection.

5.23.5 Final cleaning, such as sweeping, dusting, vacuuming, dry and wet mopping, polishing, sealing, waxing and other finish operations normally required on newly installed work shall be taken to indicate the required finished conditions of the various new and existing surfaces at the time of acceptance. At the time of acceptance, all marks, stains, fingerprints, dust, dirt, splattered paint and blemishes resulting from the various operations shall be removed in all areas of the Project. Stair treads and risers shall be wet-mopped. Glass, new and existing, shall be left clean and polished both inside and outside. Plumbing fixtures and light fixtures shall be washed clean. Hardware and other unpainted metals shall be cleaned and all building papers and other temporary protections shall be removed throughout the building, or portion of the building where Contractor was involved. Finally, the exterior of the buildings shall be pressure-washed prior to Beneficial Occupancy and the play field, courts, streets and planting spaces shall be clean and in good order. Such measures shall be taken to the satisfaction of the Project Manager.

5.23.6 Prior to Final Completion of the Project, the Contractor shall submit one set of as-built drawings on a clean set of plans for the Project Manager review and Engineer of Record approval. This information shall then be submitted to the Project Manager for approval within twenty eight (28) days of substantial completion.

5.24 The Contractor and subcontractors shall investigate and become aware of the amount of time required for the manufacture and delivery of all equipment and materials required to perform the work under this Contract. No extension of time or damages shall be granted due to failure to order said equipment and materials sufficiently before their incorporation into the work so as to avoid delay to the Project.

5.25 The Contractor and subcontractors shall provide and maintain sufficient labor, materials, and equipment to ensure a rate of construction progress that will complete the Project within the time specified and according to the schedule of work. If, in the County's reasonable discretion, the Contractor and/or its subcontractors are not prosecuting the work at a sufficient rate of progress to meet the Project schedule, the County may direct the Contractor to (1) provide additional labor, materials or equipment; (2) work additional hours, holidays or weekends; and/or (3) contract with a Subcontractor without additional cost to the County until the work is progressing in a manner satisfactory to the County. Failure to prosecute the work in a timely manner and according to the Project schedule shall be a material breach of Contract and is cause for termination of the Contract pursuant to Article 10 of the Agreement between the parties.

5.26 If any person or subcontractor employed by the Contractor appears to the County to be incompetent, he shall be discharged immediately upon the request of the County, and such subcontractor or person shall not again be employed on the Project.

5.27 Contractor shall pay all sales, consumer, use and other similar taxes required by law and shall secure and pay for all permits, fees and licenses necessary for the execution of the Project.

5.28 The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by Contractor's operations. At the completion of the Project, Contractor shall remove all Contractor's waste materials and rubbish from and about the Project as well as Contractor's tools, construction equipment, machinery and surplus materials. If the Contractor fails to clean up, the County may do so and charge the cost to the Contractor.

Article 6 SEPARATE CONTRACTS.

6.1 County's Right to Award Separate Contracts.

6.1.1 The County reserves the right to award other contracts in connection with other portions of the Project under these or similar conditions.

6.1.2 When separate contracts are awarded for different portions of the Project, "the Contractor" in the Contract Documents in each case shall be the contractor who signs each separate contract.

6.2 Mutual Responsibility of Contractors.

6.2.1 The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work and shall properly connect and coordinate Contractor's work with theirs.

6.2.2 If Contractor's work depends for proper execution or results upon the work of any other separate contractor, the Contractor shall inspect and promptly report to the Project Manager any patent discrepancies or defects in such other work that render it unsuitable for such proper execution and results. Failure of the Contractor to inspect and report such shall constitute acceptance of the other contractor's work as fit and proper to receive work.

6.2.3 If, through acts of negligence on the part of this Contractor, any other contractor or subcontractor shall suffer loss or damage to the work, this Contractor shall make a reasonable effort to settle with such other contractor and subcontractor. If such other contractor or subcontractor shall assert any claim against the County, the Project Manager, or Engineer of Record, on account of any damage alleged to have been so sustained, the County, the Project Manager, or Engineer of Record shall notify this Contractor which shall defend such proceedings at its own expense and indemnify and save harmless the County, Project Manager, and Engineer of Record from any such claim.

6.3 Cutting & Patching Under Separate Contracts.

6.3.1 The Contractor shall do all cutting, fitting, or patching of work that may be required to fit it to receive or be received by the work of other contractors shown upon, or reasonably implied by, the Contract Documents. The Contractor shall not endanger any work of any other contractors by cutting, excavating or otherwise altering any work and shall not cut or alter the work of any other contractor except with the written consent of the Project Manager and Engineer of Record.

6.3.2 Any costs caused by defective or ill-timed work shall be borne by the party responsible therefore.

Article 7 PERFORMANCE AND PAYMENT BONDS.

7.1 In order to ensure that any Change Order work will be as fully bonded as work envisioned under the original Contract Documents, the Contractor shall provide, within five (5) days of the Execution Date of the Agreement, written proof, satisfactory to the County, that (1) it has pre-reserved bonding capacity in the amount of One Hundred Fifteen Percent (115%) of the Contract amount; or (2) its bonding company will bond any Change Order work which may be added to the Contract.

7.2 During the period covered by the Contract, if any of the sureties upon the bonds shall become insolvent or unable, in the opinion of the County, to pay promptly the amount of such bonds to the extent to which surety might be liable, the Contractor, within ten (10) days after notice given by the County to the Contractor, shall provide supplemental bonds or otherwise substitute another and sufficient surety approved by the County in place of the surety becoming insolvent or unable to pay. If the Contractor fails within such ten (10) day period to substitute another and sufficient surety, the Contractor shall, if the County so elects, be deemed to be in material breach of the Agreement and to be in default with respect to the payment bond, and the County, in addition to any and all other remedies, may terminate the Contract or bring any proper suit or other proceedings against the Contractor and the sureties or any of them, or may deduct from any monies then due or which thereafter may become due the Contractor under the Contract, the amount for which the surety, insolvent or unable to pay as aforesaid, shall have justified on the bonds, and the monies so deducted shall be held by the County as collateral security for the performance of the conditions of the bonds.

7.3 Corporate sureties on these bonds and on bonds accompanying bids must be admitted surety insurers as defined in California Code of Civil Procedure section 995.120(a), legally authorized to engage in the business of furnishing surety bonds in the State of California. All sureties and bond forms must be satisfactory to the County. Bond forms are furnished herewith.

Article 8 PAYMENTS AND COMPLETION.

8.1 Before the first application for payment, the Contractor shall submit to the Project Manager a schedule of values of the various portions of the Project, including quantities aggregating the total Contract Sum set forth in Article 5 of the Agreement, divided so as to facilitate payments to subcontractors, prepared in such form as specified, supported by such substantiating data as the Project Manager may require. Each item in the schedule of values shall include its proper share of overhead and profit. The schedule, when approved by the Project Manager and Engineer of Record, shall be used as a basis for the Contractor's applications for payment under the terms of the Agreement. Should any scope of work be later deleted in its entirety by Change Order, the value of that work shall be as stated in the schedule of values.

8.2 Progress Schedules.

8.2.1 Contractor shall, prior to commencing construction and with each application for payment, submit to the Project Manager a Critical Path Method (CPM) schedule for the remainder of the Project showing anticipated beginning and ending dates for all critical path activities and the logical connection between and among such activities. Any changes in logic on subsequent schedules must be noted.

8.2.2 If Contractor wishes to construct the Project in a shorter period of time than that stated in Article 4 of the Agreement, any difference between the Contractor's desired performance period and the stipulated performance period shall be incorporated into the schedule as float.

8.2.3 Either party responsible for an event or condition which delays the Project shall be entitled to take advantage of any remaining float in the Contractor's Progress Schedule.

8.2.4 Submission of schedules pursuant to this paragraph is a condition precedent to payment. Even if Contractor does not submit a Progress Payment Request, it must submit all other documents which are required to be submitted with the Request at the designated time.

8.3 Releases.

8.3.1 The Contractor shall submit the following with each specified application for payment.

8.3.1.1 Progress Payment. Contractor shall submit the following documents in support of all applications for a progress payment:

- Application for Payment on the standard AIA Form. (Each Application for Payment shall be consistent with previous applications and payments as certified by the Engineer of Record and shall include any the signatures of the Project Manager and Project Inspector.)
- A conditional waiver and release upon progress payment from the General Contractor.

- An unconditional waiver and release upon progress payment from the General Contractor and, when requested, the General Contractor must supply an unconditional waiver and release for each subcontractor.
- Schedule of Values.
- Certified Payroll for the General Contractor and all Subcontractors MUST be submitted as required under section 16461 of Title 8 of the California Code of Regulations and as may be required by any additional County and Project-specific requirements, which the County will inform Contractor of. As required under section 16461(b) of Title 8 of the California Code of Regulations, certified payroll for state funded projects shall be submitted to the Department of Industrial Relation's Compliance Monitoring Unit at least monthly. The County and/or the Owner's Representative will detail in writing any additional submittal requirements and such additional requirements shall be deemed incorporated herein by reference. Certified Payroll cannot be more than two weeks in arrears for each payment application submitted. At the end of the Project ALL certified payroll must be submitted before Final Retention is released. Contractor will cooperate with any efforts by the Compliance Monitoring Unit to confirm the accuracy of payroll records submitted by Contractor and will include in its contracts with subcontractors a requirement that such subcontractors will likewise cooperate.

Note: The Contractor understands and agrees that it is required to retain copies of all certified payroll records for this Project for a minimum of 3 years after project completion and the Contractor will include in its contracts with all subcontractors a requirement that they retain certified payroll records for this Project for a minimum of three years after project completion.

8.3.1.2. Final Progress Payment. Contractor will submit the following in support of an application for Final Progress Payment:

- All of the above documents listed as required under Section 8.3.1.1., above, for a "Progress Payment".
- A Conditional waiver and release upon FINAL progress payment from Contractor and each subcontractor.

8.3.1.3. Retention Payment. A Notice of Completion (NOC) will be filed after the County approves the Project as complete. Retention may be released, at a minimum, 31 days after filing of the NOC with the County Recorder.

- All of the above documents listed above under Section 8.3.1.1. as required for a "Progress Payment." (Note: Payment application MUST note "Final Retention")
- If an Escrow Account has been set up, a letter to the Escrow holder, requesting release of funds, MUST accompany this application.
- An Unconditional waiver and release upon FINAL progress payment from the Contractor and release of liens evidenced by an Affidavit of Release of Liens (see below).

The following Notarized Affidavits MUST be submitted with the Final Retention Payment Request

- Contractor's Affidavit of Release of Liens.

- Contractor's Affidavit of Payment of Debts and Claims.
- Consent of Surety Company to Final Payment
- Affidavit from the General Contractor certifying that during ALL payroll periods for ALL personal employed by Contractor under this project have been paid the specified prevailing rate as per diem wages and any amounts due pursuant to Section 1813 of the California Labor Code

8.3.2 An Affidavit, signed by each subcontractor, under penalty of perjury, that the subcontractor has paid the specified general prevailing rate of per diem wages to his or her employees on this public works project and any amounts due pursuant to Section 1813 (LC1775 (b)(4))

8.3.3 If the Contractor is unable to comply with paragraph 8.3 for an individual subcontractor due to a dispute about the subcontractor's quality of work or scope of work, the Contractor shall submit a statement to the Project Manager stating such, in lieu of that Waiver and Release.

8.4 Payments Withheld.

8.4.1 The Project Manager, Engineer of Record, or County may also decline any applications for payment or, because of subsequently discovered evidence or subsequent inspections, may nullify the whole or any part of any certificate of payment previously issued to such extent as may be necessary, in its opinion to protect the County from loss because of, but not limited to:

1. defective work not remedied;
2. reasonable doubt that the Project can be completed for the unpaid balance of the Contract Sum;
3. reasonable indication that the Project will not be completed within the contract time;
4. unsatisfactory prosecution of the work by the Contractor;
5. Contractor's failure to pay subcontractors or materialmen;
6. damage to another contractor;
7. failure to provide waivers, schedules, labor compliance and other required documentation; or
8. Breach of any provision of the Contract Documents.

8.4.2 When any of the factors listed in Article 8.4 of these General Conditions resulting in withholding of payment is satisfactorily addressed by the Contractor, payment shall be made for amounts withheld because of them.

8.4.3 The granting of any progress payment or payments by the County or the receipt thereof by the Contractor, shall not constitute acceptance of the work or of any portion thereof, and shall in no way lessen the liability of the Contractor to replace unsatisfactory work or material.

8.4.4 It is mutually understood and agreed that when under any provision of this Agreement the County shall charge any sums of money against the Contractor, the amount of such charge shall be deducted and retained by the County from the amount of the next succeeding progress estimate, or from any other monies due or that may become due the Contractor on account of the Agreement. If on completion or termination of the Agreement such

monies due the Contractor are found insufficient to cover the County's charges against it, the County shall have the right to recover the balance from the Contractor or its sureties.

8.5 Completion and Final Payment. Upon receipt of written notice that the Project is ready for final inspection and acceptance, and upon receipt of a final application for payment, less retention, the Project Manager, Project Inspector, and Engineer of Record will promptly make such inspection. When the Project Manager finds the Project acceptable under the Contract Documents and the Agreement fully performed, the Project Manager will process the Contractor's final pay application and include a statement indicating that to the best of its knowledge, information, and belief, and on the basis of observations and inspections, the Project has been completed in accordance with the terms and conditions of the Contract Documents and that it recommends payment of the remainder of the Agreement balance.

Article 9 PROTECTION OF PERSONS AND PROPERTY.

9.1 Until Substantial Completion of the Project, the Contractor shall have the charge and care of all work, complete or incomplete, permanent or temporary, and of the materials to be used therein, including materials for which it has received partial payment.

9.2 The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury, or loss to the following until the work is accepted by the County:

1. all employees of the Contractor, subcontractors of every tier, and their respective agents, officers, employees or representatives on the Project and all other persons who may be affected thereby;

2. all the work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor, its subcontractors, sub-subcontractors or their officers, agents or employees; and

3. other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

9.3 If the Contractor encounters any facilities or utilities not shown on the drawing or reasonably inferable therefrom, it shall promptly notify the Project Manager, and it shall do no further work which may cause damage to same.

9.4 If it is determined that some action needs to be taken regarding facilities not shown, the Contractor will be given directives on what action to take, and any additional cost to the Contractor incurred thereby will be addressed through Change Order.

9.5 The Contractor shall obtain permits for, install and maintain in safe condition all barricades, walkways, fences, railings, and whatever other safeguards that may be necessary to protect persons and property from damage as a result of the construction under this Agreement.

9.6 Contractor shall not endanger any Project Work by cutting, excavating, or otherwise altering the Work and shall not cut or alter the work of any other Contractor except with the written consent of the Project Manager and the Engineer of Record, nor overload any new or existing structures by the placing or storage of materials, equipment, or other items thereon. If necessary, Contractor shall provide calculations proving the safety in so doing.

9.7 If it is necessary to work at night, or where daylight is obscured, the Contractor shall provide and maintain lighting of adequate level to properly prosecute the work and to permit thorough inspection of same.

9.8 Contractor shall take extraordinary care to prevent fires and keep all flammable materials and oily rags in tightly closed metal containers. Contractor shall exercise particular care when welding or cutting, and with regard to the disposition of waste materials, the nature and quantity of which might create or increase a fire hazard.

9.9 The Contractor and each subcontractor of every tier shall supply to their respective employees and, where site is occupied, to the County, copies of Material Safety Data Sheets for hazardous substances that may be used in the course of the work, together with notice of actual hazardous substances to which employees may be exposed while performing work and appropriate protective measures.

9.10 Contractor shall secure the site, as well as all doors and windows thereon, prior to leaving the site each work Day. If Contractor fails to do so, the County may secure the site, doors, and windows itself, and may back charge Contractor for its associated costs.

9.11 When the Contractor's superintendent is not on site, the County may take all necessary steps to affect required emergency work and may back charge Contractor for the costs of such work.

9.12 Unless caused by the County's willful act or sole negligence, the Contractor shall rebuild, repair, restore, and make good all injuries, losses, or damages to any portion of the work or the materials occasioned by any cause before its Final Completion and acceptance and shall bear the expense thereof. Should improper work of any trade be covered by another and damage or defects result, the whole work affected shall be made good to the satisfaction of the Project Manager, Engineer of Record and the County without expense to the County.

9.13 Upon commencement of work and until Substantial Completion, Contractor assumes all risk of loss or damage to the Project arising from any cause save the sole negligence of the County.

Article 10 CHANGE ORDERS.

10.1 In addition to any statement governing change orders elsewhere in the Contract Documents, the Contractor and the County agree that changes in the Agreement or in the Project to be done under the Agreement shall become effective only when written in the form of supplemental agreement or change order and approved and signed by the Project Manager, the Engineer of Record, and the Contractor and approved by the County and the County Building Department as applicable.

10.2 All Contractors are warned against acting on verbal instructions. If verbal instructions are necessary for expediting the work and are accepted by the Contractor, it shall then be the responsibility of the Contactor to obtain written instructions of the work involved conforming to the verbal instructions from the Project Manager issuing such verbal instructions. No work will be accepted by the County that differs from the Plans and Specifications that has not been approved pursuant to the required written approvals.

10.3 The Contractor shall not be entitled to any adjustment of the Contract Sum or Contract Time for extra work, without prior written approval or directive from the Engineer of Record and/or the Project Manager. Failure to agree on an adjustment of the Contract Sum or

Contract Time shall not excuse the Contractor from proceeding with the execution of the work as changed. If there is no agreement on cost, a construction change directive may be issued approving or directing that the work be compensated on a Force Account basis.

10.4 It is specifically agreed that the County shall have the right to direct any alterations, deviations, reductions, or additions to the Contract Documents and the amount of the cost thereof shall be added to or deducted from the amount of Contract Sum by fair and reasonable valuations.

10.5 If the Contractor wishes to make a claim for an increase in the Contract Sum, it shall submit a complete itemized estimate to the County written within seven (7) days after the occurrence of the event giving rise to such claim for increase. This Request for Change Order shall be given by the Contractor before proceeding to execute the work, except in an emergency endangering life or property. Failure to present such claim within the stipulated timeframe constitutes a waiver of such claim. Any change in the Contract Sum resulting from such claim shall be authorized by written Change Order.

10.6 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be assumed by inspection, shall be accompanied by a complete itemization of costs including labor, materials and subcontracts. Labor and materials shall be itemized in a manner deemed acceptable by the Project Manager. Where major cost items are subcontracts, they shall be itemized also with backup documentation.

10.7 In determining the cost of any additive change order, Contractor agrees that the percentage markup for all overhead and profit shall be calculated as follows:

10.7.1 If the Contractor performs the work with its own forces, its percentage markup for overhead and profit shall not exceed fifteen percent (15%) of its hard costs.

10.7.2 If the Contractor performs the work through a subcontractor that is not owned or controlled by it, its percentage markup shall not exceed five percent (5%) of its subcontractor’s hard costs for such work.

10.7.3 If the Contractor performs the work through a subcontractor that is not owned or controlled by it, subcontractor’s percentage markup shall not exceed ten percent (10%) of its subcontractor’s hard costs for such work.

10.7.4 The total percentage markup on any change order shall not exceed fifteen percent (15%) of the actual cost of such work.

10.7.5 The above percentage markups for overhead and profit (including that for work performed by subcontractors) are understood to include Contractor's and subcontractor's site supervision costs, home office overhead, profit margin, insurance, general conditions, small tools, consumables, and all other factors. The actual cost of additional bond capacity, not to exceed two percent (2%) of the increased value of the Contract, shall be added to change orders.

10.8 Direct Cost of Materials: For all materials purchased by the Contractor and used in this specific Work, it shall receive the actual cost of such materials including freight charges, as shown by original receipted invoices for materials and freight.

10.8.1 If the actual costs, in the opinion of the Project Manager and/or Engineer of Record, are excessive, or if the Contractor does not furnish satisfactory evidence of the cost of such materials from the actual supplier thereof, then the cost of such materials shall be deemed

to be the lowest current wholesale price at which such materials are available in the quantities concerned delivered to the job site.

10.9 Direct Labor Costs: For all craft labor and foremen engaged in the specific operation, the Contractor shall receive the wage prevailing and paid on the project for each and every hour that said labor and foremen are actually engaged in such work, an amount equal to the Contractor's cost of Workmen's Compensation Insurance, Social Security taxes, Public Liability and Property Damage Insurance, and any and all fringe benefit costs required by prevailing wage agreement.

10.10 Direct Equipment Costs: For any machine, apparatus, or equipment which shall be deemed necessary or desirable to use, the Contractor shall be allowed a reasonable rental price, which shall be approved in writing before commencing such work, for each and every hour that said machinery, apparatus, or equipment is in use on such work.

10.10.1 Rental rates shall be deemed to include the cost of fuel, oil, lubrication, supplies, brooms or brushes, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, bonds and all incidentals.

10.10.2 A reasonable rental price for non-rented equipment will be the rental rates listed for such equipment in the California Department of Transportation publication entitled Labor Surcharge and Equipment Rental Rates (hereinafter "State Rental Rates"), which is in effect on the date upon which the work is accomplished. If it is deemed necessary to use equipment not listed in said publication, a suitable rental rate for such equipment shall be established by the Project Manager. The Contractor may furnish any cost data which might assist the Project Manager in the establishment of such rental rate.

10.10.3 A reasonable rental price for rented equipment shall be based on the actual and reasonable hourly rate shown on the rental agency invoice or agreement for the time used on force account work. If a minimum equipment rental amount is required by the local equipment rental agency, the actual amount charged will be paid to the Contractor. Approval for payment of rental equipment will be based on Contractor's paid vouchers approved by the Project Manager and Engineer of Record. If the Contractor does not furnish satisfactory evidence of the cost of the use of such equipment, the cost then shall be determined by the Project Manager and Engineer of Record as the lesser of (a) the rental rates listed for the equipment in the State Rental Rates, or (b) the rental rates for such equipment prevailing in the locality from local equipment rental agencies.

10.10.4 Individual pieces of tools or equipment not listed in said publication and having a replacement value of $500.00 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefore.

10.10.5 Time for the rental period of equipment already on site shall be based on the time the equipment is in operation on the subject work being performed. Moving time, loading and transporting costs will not be paid for if the equipment is used at the site of the subject work for other than such subject work, unless in the determination of the Project Manager and Engineer of Record, the payment would cover costs that the Contractor would not otherwise have incurred.

10.10.6 Time for the rental period for equipment not already on the site shall begin at the time the equipment is unloaded at the site, shall include each day that the Contractor reasonably has the equipment at the site, excluding Saturdays, Sundays, and legal holidays unless the equipment is used to perform the subject work on such days, and shall terminate at the earlier of the end of the day on which the work for which the equipment is reasonably required to be present is completed and the end of the day on which the Project Manager

and/or Engineer of Record directs the Contractor to discontinue the use of such equipment. When hourly rates are listed in the State Rental Rates, Contractor shall be paid a minimum of four (4) hours. When daily rates are listed in the State Rental Rates, Contractor shall be paid (i) 1/2 day if the equipment is not used, and (ii) one day if the equipment is used.

10.10.7 Contractor shall be entitled to no payment for any cost associated with any temporary or permanent equipment breakdown, including without limitation costs of transportation for repair purposes or costs of repair and replacement parts. Contractor, however, shall be entitled to payment for time of actual use of any equipment substituted for equipment subject to breakdown, and for moving the substitute equipment. In computing the time to be paid for equipment, the Project Manager and/or Engineer of Record shall not count any period of delay caused by equipment breakdown, and to the extent feasible, shall merge into a single period the time of use before breakdown and the time of use thereafter of the repaired equipment or any substitute equipment.

10.11 The value of any work resulting from a change order shall be determined in one or more of the following ways:

10.11.1 By Contractor's estimate with a detailed breakdown showing labor, materials profit and overhead. Such estimates shall be promptly provided upon receipt of a change request and in no case more than ten (10) days after the change is issued.

10.11.2 By unit price stated in the Contract or subsequently agreed upon;

10.11.3 By cost and the percentage allowed by this Contract or by cost and a fixed fee.

10.12 If none of the above methods mentioned in section 10.11 of these General Conditions is agreed upon, the Contractor, provided it received a written order to proceed from the Project Manager, shall proceed with the work. The cost of such work shall then be determined by the County. In such case, the Contractor shall keep and present in such form as the Project Manager and/or Engineer of Record may prescribe, an itemized accounting together with appropriate supporting data as may be required by the Project Manager or Engineer of Record.

10.13 If the Contractor disagrees as to the amount to be paid for the work performed pursuant to the Change Order, the Contractor shall give to the County written notice of its disagreement, the basis therefore, and all supporting documentation within ten (10) days after delivery to the Contractor of the Project Manager's determination of cost. Such notice of disagreement does not excuse performance by the Contractor of all obligations under the Contract Documents and the Contractor shall proceed with the work. Payments shall be made to the Contractor based on the County's or Engineer of Record's determination of cost. Failure to present such notice of disagreement constitutes a waiver by the Contractor of any entitlement to additional cost above the amount determined by the Project Manager and/or Engineer of Record.

10.14 Force Account. If it is impossible, because of the nature of the work, or for any other reason, to fix an increase in price in advance, the Change Order may fix a maximum price and time extension period, which shall not under any circumstances be exceeded.

10.14.1 Subject to such limitation, such alteration, modification or extra shall be paid for at the actual necessary cost as determined by the sum of the following items 1 to 5, inclusive:

1. Labor, computed at prevailing wage rates, plus related tax(es);

2. Material, including sales taxes and other taxes pertaining to materials;

3. Necessary plant and equipment rental;

4. Overhead and profit computed as indicated under 10.2; and

5. The proportionate cost of premiums on bonds, computed as indicated under section 10.7.5 of these General Provisions, of the total Items 1 to 4, inclusive.

10.14.2 At the end of each day, the Contractor and the Project Manager shall compare records of extra work which is compensated on a force account basis. Said reports shall become the basis of payment for the work performed, but shall not preclude subsequent adjustment based on a later audit by the County.

10.14.2.1 The daily force account work reports shall be on forms satisfactory to the Project Manager and Engineer of Record, and itemize the materials, state the direct cost of labor, state equipment used or on site and its direct cost. Separate daily force account work reports shall be submitted for Contractor and each subcontractor for each separate item of force account work.

10.14.2.2 The daily force account work reports shall show names or identifications, classifications or workers, the hourly rate of pay and hours worked, and the size, type and identification number of equipment, whether the equipment is rented, the time the equipment is on-site and hours the equipment was operated.

10.14.2.3 Material charges shall be substantiated by valid copies of vendor's invoices. Such invoices shall be submitted with the daily force account work reports, or if not available, they shall be submitted with subsequent daily force account work reports or as soon thereafter as may be practicable. Should said vendor's invoices not be submitted within 50 days after the date of delivery of the material or within 15 days after completion of the work under this Agreement, whichever occurs first, the County reserves the right to establish the cost of such materials at the lowest current wholesale prices at which said materials are available in the quantities concerned delivered to the work on the date of delivery.

10.14.2.4 Rented equipment charges shall be substantiated by valid copies of lessor’s invoices. Such invoices shall be submitted with the daily force account work reports, or if not available, they shall be submitted with subsequent daily force account work reports or as soon thereafter as may be practicable Should a leaser's invoice not be submitted within 60 days after the last day of use on the job site of rented equipment which would be covered by such invoices, or within 15 days after completion of the work of the contract, whichever occurs first, the County reserves the right to establish the cost of use of the rented equipment as the lesser of (a) rental rates listed for the equipment in the State Rental Rates, and (b) the rental rates for such equipment prevailing in the locality.

10.14.3 The Contractor's cost records pertaining to work paid for on a force account basis shall be open to inspection and/or audit by representatives of the County during the life of the contract and for a period of three years after the date of acceptance thereof, and the Contractor shall retain such records for that period. Where payment for materials or labor is based on the cost thereof to forces other than the Contractor, the Contractor shall make every reasonable effort to ensure that the cost records of such other forces will be on the same terms and conditions as the cost records of the Contractor. If an audit is to be

commenced more than 60 days after the acceptance date of the contract, the Contractor will be given a reasonable notice of time when such audit is to begin

10.15 Contractor shall provide the Project Manager and Engineer of Record with all information requested to substantiate the cost of the change order and to inform the Project Manager and Engineer of Record whether the work will be done by the Contractor or a subcontractor.

10.16 The Contractor shall submit with the proposed change order its request for time extension (if any), and include sufficient information and dates to demonstrate whether and to what extent the change will delay the completion of the Project. In the event of an agreed upon extension of time, the Contractor shall not be subject to any claim for liquidated damages for this period of time, but the Contractor shall have no claim for any compensation for any such delay other than that set forth in the change order itself.

10.17 If the Contractor believes it is entitled to a change order for work it is being required to perform, or is entitled to an extension of time greater than that agreed to by the County, and the County refuses to issue a change order or include the requested extension of time in the change order, Contractor must, at least twenty-four (24) hours prior to commencing the disputed work, inform the County of the reason for the dispute and the amount of the requested change order. No change order will later be approved, or compensation made, for work performed without such prior notice to the County.

10.18 No change or modification by Change Order shall release or exonerate any surety upon any guarantee or bond given in connection with the Contract Documents.

10.19 All Change Orders must comply with the procedures and obtain the approvals required by Title 24 of the California Code of Regulations, section 4-338.

Article 11 DELAYS AND TIME EXTENSIONS.

11.1 The date of completion of Project or designated portion thereof is the date certified by the Engineer of Record when construction is complete and in accordance with the Contract Documents.

11.2 If the Contractor seeks an extension of time, it must present the request to the County within five (5) calendar days of the commencement of the act or occurrence of the event causing the delay that gives rise to the need for extension. The Contractor's failure to provide notice of such a request within the stipulated timeframe constitutes a waiver of such claim.

11.3 Requests for extensions of time must:

11.3.1.1 include a revised schedule, as described in paragraph **8.2.1**, showing the effect of the delaying event; and

11.3.1.2 document all damages incurred or to be incurred by the Contractor as a result of such delay.

11.3.2 In order to document damages, the Contractor and its subcontractors must provide or make available all of its correspondence, bid-related documents, accounting records, superintendent's records, payroll documents, and other pertinent data relating to the Project.

11.4 The Contractor may be granted a time extension if it encounters an Excusable Delay of the work. For purposes of the Agreement and these General Conditions, an "Excusable Delay" is defined as a delay which occurs due to causes completely beyond the control of the Contractor and which it could not have avoided by the exercise of reasonable care, prudence, foresight and diligence.

11.4.1 Excusable Delays: Excusable Delays are any acts of the public enemy, act of God, fire, strike, lockout or commandeering of materials, products, plants, or facilities by the Government, acts of another Contractor in the performance of another contract with the County, action or inaction on the part of the County Building Department, priority of a governmental agency for materials or equipment, flood, violent wind storm, epidemic, quarantine restriction, or freight embargo. The financial inability of the Contractor or any subcontractor and default of any subcontractor, without limitation, shall not be deemed conditions beyond the Contractor's control and are therefore not Excusable Delays. The Contractor will not be granted time extensions for weather conditions. Excusable Delays shall be grounds for an extension of time, measured in length by the amount of delay to the Project actually suffered by Contractor as a result thereof, but shall not be grounds for any increase in compensation to the Contractor, whether for home, office, general or administrative expenses, field expenses, increased costs of materials or labor, or any other thing.

11.4.2 Compensable Delay: Compensable Delays are, for purposes any delay of the completion of the work beyond the expiration date of the Contract Time caused by the gross negligence or willful acts of the County, Project Manager, or Engineer of Record, and which delay is unreasonable under the circumstances involved, and not within the contemplation of the parties. A Compensable Delay may entitle the Contractor to an extension of the Contract Time and/or increase in the Contract Sum. Except as provided herein, the Contractor shall have no claim for damage or compensation for any delay, interruption, hindrance, or disruption.

11.4.3 Inexcusable Delay: Inexcusable Delays are any delays of the completion of the Project beyond the expiration of the Contract Time resulting from causes other than those listed above. An Inexcusable Delay shall not entitle the Contractor to an extension of the Contract Time or an adjustment of the Contract Sum.

11.5 The Contractor may make a Claim for an extension of the Contract Time, for an Excusable Delay or a Compensable Delay, subject to the following:

11.5.1 If an Excusable Delay and a Compensable Delay occur concurrently, the maximum extension of the Contract Time shall be the number of days from the commencement of the first delay to the cessation of the delay which ends last.

11.5.2 If an Inexcusable Delay occurs concurrently with either an Excusable Delay or a Compensable Delay, the maximum extension of the Contract Time shall be the number of days, if any, by which the Excusable Delay or the Compensable Delay exceeds the Inexcusable Delay.

11.5.3 If an Inexcusable Delay occurs concurrently with both an Excusable Delay and a Compensable Delay, the maximum extension in the Contract Time shall be the number of days determined pursuant to Subparagraph (a) exceeds the number of days of the Inexcusable Delay.

11.5.4 For a Compensable Delay, the Contractor shall only be entitled to an adjustment in the Contract Sum in an amount equal to the actual additional labor costs, material costs, and unavoidable equipment costs incurred by the Contractor as a result of the Compensable

Delay, plus the actual additional wages or salary and fringe benefits and payroll taxes of supervisory and administrative personnel necessary and directly employed at the Project site for the supervision of the work during the period of Compensable Delay. Except as provided herein, the Contractor shall have no claim for damage or compensation for any delay, interruption, hindrance, or disruption. There shall be no Compensable Delay unless the event or occurrence giving rise to the Compensable Delay extends the actual completion of the Project past the Contract Time.

11.6 Regardless of the cause of a delay the Contractor may not maintain any claim or cause of action against the County for damages incurred or claimed to be incurred as a result of Contractor's failure or inability to complete its work on the Project in a shorter period than established in this Agreement, the parties stipulating to such period as a reasonable time within which to perform the work on the Project.

11.7 Compliance with this Article is a condition precedent to the County's duty to pay for damages incurred by the Contractor as a result of delays.

Article 12 DISPUTES.

12.1 If a dispute arises between the County and the Contractor as to an interpretation of any of the specifications or Contract Documents or as to the quality or sufficiency of materials or workmanship, the decision of the County shall for the time being prevail, and the Contractor, without delaying the job, shall proceed with all work to be performed under the Contract as directed by the County without prejudice to a final determination of the dispute.

12.2 All claims against the County must be filed by the Contractor in writing. The Contractor must include all documents necessary to substantiate that claim.

12.3 The Contractor shall not be entitled to the payment of any additional compensation for any act or failure to act on the part of the County or its representatives, including failure or refusal to issue a change order, or for the happening of any event, thing, occurrence, or other cause, unless it shall have given the County due written notice of potential claim, in the manner described in paragraphs 11.2 and 12.4.

12.4 The written notice of potential claim shall set forth the reasons for which the Contractor believes additional compensation will or may be due, the nature of the costs involved, and, insofar as possible, and the amount of the potential claim. The said notice as above required must be given to the County prior to the time that the Contractor performs the work giving rise to the potential claim for additional compensation, if based on an act or failure to act by the County, and in all other cases, within five (5) days after the happening of the event, thing, occurrence, or other cause, giving rise to the potential claim. Notwithstanding this paragraph, if another provision of these General Conditions specifies that a notice of claim must be given to the County in a shorter period of time, that shorter time period shall prevail.

12.5 In resolving all claims, whatever the amount of the claim, the parties shall proceed pursuant to the terms of California Public Contract Code section 20104, *et seq*.

Article 13 WARRANTY OF SUPPLIES, EQUIPMENT AND RELATED SERVICES.

13.1 In addition to warranties called for elsewhere in these specifications, Contractor shall warranty all work and materials, for a minimum period of at least two (2) years after recordation of Notice of Completion, against defective material or faulty workmanship that may arise within that period.

13.2 Additionally, the Contractor agrees to repair or replace, to the satisfaction of the County, any and all such work that may prove defective in workmanship or materials within that period, ordinary wear and tear and unusual abuse or neglect excepted, together with any other work which may be damaged or displaced in so doing. If the Contractor fails to comply with the above mentioned conditions within five (5) calendar days after being notified in writing, the County may have the defects repaired and made good at the Contractor's expense and the Contractor will pay the costs and charges incurred by the County as a result, including the costs for additional services of the County's Project Manager, Engineer of Records, engineers, and other representatives, immediately upon demand. Any and all warranties and guarantees offered by manufacturers of equipment used or installed in the Project shall also be extended to the County.

13.3 Notwithstanding inspection and acceptance by the Engineer of Record of all supplies, equipment and related services furnished under the Agreement, the Contractor warrants that:

1. All supplies, equipment and related services under the Agreement will be free from defects in material or workmanship and will comply with the specifications of the Agreement; and

2. All aspects of the shipment of the supplies and equipment related to the Agreement will conform to the specifications of the Agreement.

13.4 Within a reasonable time the County may either:

1. By written notice, require the prompt correction or replacement of any supplies, equipment or related services that are defective, or that are not shipped in accordance with the specifications of the Agreement, or that otherwise do not conform to the Agreement; or

2. Retain such defective, improperly shipped, or otherwise nonconforming supplies, equipment and related services; whereupon the contract sum shall be reduced by an amount that is equitable under the circumstances and the Contractor shall promptly make appropriate repayment.

13.5 When correction or replacement is required, the County may return such supplies, equipment and related services. Transportation charges and risk of loss or damage for such quantities returned while in transit shall be borne by the Contractor.

13.6 If the Contractor fails to correct or replace the nonconforming supplies, equipment or related services within ten (10) days (or such longer period if so specified by the County in writing) after receipt of notice specifying such failure, the County may, by contract or otherwise, correct or replace them with supplies, equipment and related services of similar quality, at the expense of the Contractor. If the Contractor fails to furnish timely disposition instructions, the County may dispose of the defective, improperly shipped or otherwise nonconforming supplies, equipment and related services in a reasonable manner. In such case, the County is entitled to reimbursement for the costs related to disposition from the Contractor and/or from any proceeds generated by the disposition of such supplies, equipment and related expenses.

13.7 Any replacement supplies, equipment or related services furnished by the Contractor to remedy a defect or nonconformity under the warranty shall also be covered by the terms of the warranty.

13.8 The Contractor shall indicate the total period of the warranty after the supplies, equipment and related services are placed into service. Any defects shall be promptly corrected by the Contractor to the satisfaction of the County and without expense to the County.

13.9 Warranty of Title. The Contractor warrants that title to all work, materials or equipment included in a request for payment shall pass over to the County whether or not they are installed or incorporated in the Project, free from any claims, liens or encumbrances, when such payment is made to the Contractor. It further warrants that no such work, materials or equipment have been purchased for work under the Agreement subject to an agreement by which an interest therein or an encumbrance thereon is retained by the seller or supplier. Notwithstanding this provision, the Contractor retains the responsibility for full replacement of any portion of the Project which is damaged or destroyed prior to the Notice of Completion, as specified elsewhere in this Agreement.

13.10 The rights and remedies included in the warranty are in addition to and do not limit the County's rights under any other clause of the Contract Documents.

Article 14 TRENCHING.

14.1 The Contractor shall take reasonable precautions and make reasonable efforts to detect and protect electrical utilities and appurtenances, including hand digging and use of underground detection instruments and services. Contractor will be required to, at its own cost, promptly and satisfactorily repair damages, which could otherwise have been avoided.

14.2 The Contractor shall comply with Government Code section 4216, *et seq*., relating to subsurface installations and the Regional Notification Center System.

14.3 If the Agreement involves the excavation of any trench five (5) feet or more in depth, the Contractor shall submit in advance of such excavation, for approval of the Project Manager, Engineer of Record, and County, a detailed plan showing the design of shoring, bracing, sloping or other provisions to be made for worker protection from the hazard of caving ground during the excavation of any such trench.

14.4 Contractor shall promptly, and before the following conditions are disturbed, notify the Project Manager and Engineer of Record, in writing, of any:

1. Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the California Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.

2. Subsurface or latent physical conditions at the site differing from those indicated, or

3. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Agreement.

14.5 If any condition described in paragraphs 14.3 is discovered, the County shall promptly investigate the conditions, and if it finds that the conditions differ materially from the conditions described in the bid package, or do involve hazardous waste, and cause a material decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the Project, it may issue a change order to the Contractor or contract with another to perform work necessitated by such condition.

14.6 In the event that a dispute arises between the County and the Contractor regarding whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the Project, the Contractor shall not be excused from any scheduled completion date provided for in the Agreement, but shall proceed with all work to be performed under the Agreement. The Contractor shall retain any and all rights provided either by contract or by law which pertain to the resolution of disputes and protests between contracting parties.

Article 15 Not Used

Article 16 TOXIC SUBSTANCES CONTROL ACT.

The Engineer of Record, in accordance with 40 CFR, Part 763, EPA Final Rule under Section 203 of Title II of the Toxic Substances Control Act (TSCA), 15, U.S.C. 2641 - 2654, must submit a statement to the County verifying that no asbestos containing building material (ACBM) was specified as a building(s) material, and to the best of its knowledge no ACBM was used as a building material in the building(s). The signed statement shall be submitted prior to Engineer of Record's making recommendation to the Board that the building(s) be accepted.

Article 17 INSPECTIONS.

17.1 The County will provide a full time Project Inspector (PI) to assist the Engineer of Record in providing competent and adequate inspection during all normal working periods. No work shall be performed except under the inspection of a PI.

17.2 The Project Inspector:

1. shall personally examine items used in the Project for compliance with the Contract Documents and technical instructions from the Engineer of Record;
2. shall report to the Engineer of Record any related work to be installed prior to final approval of shop drawings by the Engineer of Record.
3. shall inspect all materials to determine whether they comply with the Contract Documents and are in a good and acceptable condition;
4. shall monitor materials to determine whether those accepted are the materials that are installed;
5. shall be responsible for monitoring time and material work, by accounting for materials used and logging actual time the Contractor worked on the task;
6. shall supervise on-site testing and ensure that all required tests are performed by a competent testing laboratory; and
7. shall ensure that the Contractor's payment requests accurately reflect progress on the Project and all work completed in compliance with plans and specifications.

17.3 The PI shall recommend to the Engineer of Record to cause the removal and replacement of rejected material and to recommend deduction of the cost thereof from any monies due or to become due the Contractor.

17.4 The PI shall not do any of the following: authorize any deviations from the Contract Documents; advise on, or issue directions relative to, any aspect of the building technique or sequence unless a specific technique or sequence is called for in the Contract Specifications; or approve shop drawings or samples.

17.5 Notwithstanding the foregoing, the Contractor may not rely upon the PI to perform any function for which it would otherwise be responsible. For example, that the PI is expected to attempt to anticipate unacceptable construction practices and to relay such concerns to the Contractor does not remove any responsibility from the Contractor to perform such functions itself.

17.6 When specific inspection is required, the Contractor shall inform the Engineer of Record and PI of the schedule of such work.

17.7 Consistent with requirements of Title 21 and Title 24, Part 1, of the California Code of Regulations, test samples or specimens of material for testing shall be taken by the Engineer of Record, the Project inspector or a representative of the testing agency. In no case shall the Contractor or the Contractor's inspector take the sample. The Engineer of Record shall forward one copy of all test reports to the County. Testing and inspection shall be paid by the County. Retesting and inspection costs shall be reimbursed to the County by the Contractor.

17.8 Uncovering of Work.

17.8.1 If any work is covered contrary to the request of the County or Engineer of Record, it shall be uncovered for observation and replaced, at the Contractor's expense.

17.8.2 If any other work has been covered which the Engineer of Record has not specifically requested to observe prior to being covered, the Engineer of Record may request to see such work and it shall be uncovered by the Contractor. If such work was performed in accordance with the Contract Documents, the cost of uncovering the replacement shall, by appropriate change order, be charged to the County. If such work was not performed in accordance with the Contract Documents, the Contractor shall pay such costs.

17.9 Correction of Work.

17.9.1 The Contractor shall promptly correct all work rejected by the County/Engineer of Record as defective or as failing to conform to the Contract Documents whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear all costs of correcting such rejected work, including the cost for additional services of the County’s representatives thereby made necessary.

17.9.2 The Contractor shall bear the cost of making good all work of separate contractors that is destroyed or damaged by removal or correction.

17.10 Final Inspections. The Contractor will be allowed two (2) inspections by the County, the Project Inspector or the County’s representatives at the close of the Project to determine completion. The first inspection will be a pre-final inspection. The second inspection, if required, will be the final inspection. All items listed on the pre-final list and any other items required by the Contract Documents and brought to the attention of the Contractor a

minimum of five (5) working days before the final inspection shall be completed prior to the final inspection. Any visits to the Project by the County or the County's representative to confirm the completeness of the Project after the final inspection will be charged to the Contractor at the County and the County's representative's normal hourly rates and deducted from the contract sum.

17.11 If work is performed on Saturdays, Sundays, holidays, or after regular work hours during the week, the Contractor shall reimburse the County for all inspection costs incurred during such hours.

Article 18 AUDITING PROCEDURES.

18.1 Upon written notice to Contractor, the County shall have the right to audit all records and documents of any nature whatsoever under the custody or control of the Contractor or Contractor's agents, subcontractors, or representatives, which relate to the Project. Upon the County's request, Contractor shall make these records available to the County, the County's auditors or other representatives appointed by the County.

18.2 The Contractor agrees to comply with the provisions of Sections 1776 and 1812 of the California Labor Code, included, but not limited to the requirement that the Contractor and each subcontractor of every tier shall keep or cause to be kept an accurate record showing the names, addresses, social security numbers, work classifications, activity code for the work provided, straight time and overtime hours worked each day and week of all workmen employed by it in connection with the execution of this Contract or any subcontract thereunder and showing the actual wages paid to each of such workers. These records shall be certified under penalty of perjury as stated in Section 1776 of the California Labor Code and shall be made available for inspection by the Chief of the Division of Labor Standards Enforcement of the State Department of Industrial Law Enforcement of the State Department of Industrial Relations, his deputies and agents.

18.3 Contractor shall ensure that all subcontractors maintain appropriate records relating to the Project. Contractor agrees to furnish records of any subcontractors or other agents of Contractor to the County upon request. If the County requests records relating to a subcontractor or other agent's involvement in the Project, such requests shall be processed through the Contractor. A Contractor's failure to abide by the provisions of the Article shall be deemed a material breach of the contract and, upon the County's election, may be considered a default.

Article 19 MISCELLANEOUS.

19.1 All practices, materials, and workmanship shall conform to all provisions of law applicable to public works projects, including but not limited to: The County of San Mateo Building Regulations and County Ordinances; the California Code of Regulations, Titles 19, 21, and 24; Public Contract Code Sections 4100-14; Government Code Section 4215; Labor Code Sections 1720-35, 1770-81, 1810-15, 1860, and 3700; the National Electric Code; the Uniform Plumbing Code; the Uniform Mechanical Code; and all other applicable laws and regulations, each of which are incorporated into this Agreement by reference. Further, all work and materials shall be in full accordance with the most current rules and regulations of the Fire Marshal and the Division of Industrial Safety. Such laws and regulations shall be considered a part of theses specifications as if set forth herein in full and all work hereunder shall be executed in accordance therewith. Nothing in these plans or specifications is to be construed to permit work not conforming to all requirements of law. The Contractor shall keep a copy of Titles 19, 21, and 24 of the California Code of Regulations on the job at all times.

19.2 The Contractor may not assign or delegate all or any portion of this Contract without the written consent of the County and no such consent shall be given which would relieve the Contractor or its surety of their responsibilities under the Contract. The Contractor may assign monies due it under the Contract to banks, trust companies or other financial institutions provided written notice thereof is promptly delivered to the County. Assignment of monies earned by the Contractor shall be subject to the same retention as other payments made to it, and shall also be subject to any prior liens for labor, services, materials, equipment or other appliances supplied for the performance of Work under this Contract.

19.3 AS-BUILT DRAWINGS: The Contractor and all Subcontractors shall maintain on the work site a separate complete set of contract drawings which will be used solely for the purpose of recording changes made in any portion of the work during the course of construction, regardless of the reason for the change. As changes occur, there will be included or marked on this record set on a daily basis if necessary to keep them up to date at all times. Actual locations to scale shall be identified on the drawings for all runs of mechanical and electrical work, including all site utilities installed underground, in walls, floors, and furred spaces, or otherwise concealed. Deviations from the drawings shall be shown in detail. All main runs, whether piping, conduit, duct work, drain lines, etc., shall be located in addition by dimension and elevation. Progress payments may be delayed or withheld until such time as the record set is brought up to date to the satisfaction of the Engineer of Record. The Contractor shall verify that all changes in the work are included in the "AS-BUILT" drawings and deliver the complete set thereof to the Engineer of Record for review and approval within thirty (15) calendar days after County's substantial completion. County's acceptance and approval of the "AS-BUILT" drawings are a necessary condition precedent to the release of the final retention.

END OF SECTION

00630
GUARANTEE FORM

County of San Mateo

Memorial Park
9500 Pescadero Creek Road
Loma Mar, CA 94021

Collection System Replacement at Memorial Park

We hereby guarantee that the _____work performed for the County of San Mateo ("County") for Collection System Replacement at Memorial Park has been performed in accordance with the Drawings and Specifications and that the work, as installed, will fulfill the requirements of the Guarantee included in the Specifications. We agree to repair or replace all of our work, together with adjacent work which may be displaced by so doing, that may be proven to be defective in its workmanship or materials within a period of Two (2) year(s) from date of recordation of Notice of Completion for the above-named project by the County, without any expense whatsoever to the said County, ordinary wear and tear and unusual abuse or neglect excepted.

Further, we agree that the guarantee period for corrected defective work shall continue for a duration equivalent to the original guarantee period.

In the event of our failure to comply with the above-mentioned conditions within seven (7) days after being notified in writing by the County, we collectively or separately do hereby authorize the County to proceed to have said defects repaired and made good at our expense and we will honor and pay the costs and charges therefrom upon demand.

Date: _____ Signed: _____
(Subcontractor) (Supplier)

Date: _____ Signed: _____
(Contractor)

Date: _____ Signed: _____
(Trade Contractor Countersignature if applicable)

Local Representative to be contacted for services:

Name: _____ Phone No. _____

Address: _____

00700
SCOPE OF WORK

Following is a summary of the scope of work. It is in no way to limit the scope of work as indicated in the Plans and Specifications or all work necessary for a complete and functional sewer collection system.

1. All Work as indicated in Exhibit A – Mitigation Monitoring Reporting Program (MMRP)
    a. The required CEQA mitigation measures for the Waste Water Treatment Plant apply to this project. All items indicated in the exhibit identified as the responsibility of the Contractor and all items required by the County to be included in the specifications are included in scope.

2. All boring and excavations through known rock as indicated in Exhibit B – Geotechnical Report
    a. See geotechnical report for existing soil and rock conditions. It is to be assumed that the conditions between bores should be similar in nature.

3. All Work as necessary to accommodate Exhibit C – Phasing and Logistics Plan
    a. Temporary tie-ins between phases to accommodate Water Treatment Plant and infiltration discharges.
    b. Work shall be sequenced in a manner to minimize sewer system being out of service. New lines are to be installed prior to tie-in to maintain operational system. All shut-off of system require prior written notice and are not to extend beyond 5-days.

4. All Work indicated in Specification Section 01 11 00 – Summary of Work

5. All Work indicated in Specification Section 01 50 00 – Temporary Facilities

6. All Work indicated in Specification Section 01 73 29 – Field Engineering and Survey Controls

7. All Work indicated in Specification Section 01 74 00 – Final Cleaning

8. All Work indicated in Specification Section 02 82 13 – Asbestos Abatement

9. All Work indicated in Specification Section 31 13 11 – Tree Protection

00800
SPECIAL PROVISIONS

1.1 CONSTRUCTION MILESTONE SCHEDULE

The time for completion of all Work is within **110 calendar days** of the date of the Notice to Proceed which shall be scheduled in accordance with the General Conditions. Included in this duration are all weather-related delays. As indicated in section 00700 - Scope of Work, Contractor is responsible to provide all necessary dewatering, additional shoring, tarping, tents, as necessary to implement this project through the winter months.

Time for completion of milestones is as set forth in the below Construction Milestone Schedule. Any extensions of time for completion of milestones are governed by the same terms and restrictions as applicable to extensions of the Contract Time referenced in the General Conditions.

Schedule of Work to accommodate the following milestone requirements:

Bid Date	October 14, 2020
BOS Approval of Construction Agreement	November 10, 2020
Anticipated Issuance of Notice of Intent to Award	November 11, 2020
Anticipated Notice to Proceed (NTP)	November 20, 2020
Mobilization and Start of Construction for Phase 1	November 23, 2020
Phase 1 Work Complete, Final Clean, & Punchlist	December 23, 2020
Phase 2 Start of Construction	December 24, 2020
Phase 2 Work Complete, Final Clean, & Punchlist	January 22, 2021
Phase 3 Start of Construction	January 25, 2021
Phase 3 Work Complete, Final Clean & Punchlist	February 24, 2021
Complete all Punch list Items and Closeout Documents	March 10, 2021

1.2 COUNTY ALLOWANCE

County allowance listed on the bid form is to be used only for approved change orders. County allowance shall be a line item in the Schedule of Values. Any unused allowance shall be returned to the County.

1.3 SOIL CONDITIONS AND ROCK BORING

Exhibit C, Geotechnical Report, indicates the presence of rock in areas of pits and bores. Contractor assumes all costs for excavation and boring through rock.

Exhibit A – MITIGATED MONITORING AND REPORTING PROGRAM (MMRP)

See Attached on Next Page

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Aesthetics				
	None.			
Agricultural and Forest Resources				
	None.			
Air Quality				
AIR-1	**Mitigation Measure AIR-1:** During construction, the County shall require its contractor(s) to implement all the BAAQMD's Basic Construction Mitigation Measures, listed below: • All exposed surfaces (e.g., unpaved parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day when the construction site is active and when no precipitation is evident. • All haul trucks transporting soil, sand, or other loose material off-site shall be covered. • All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. • All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. • Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. • All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. • Post a publicly visible sign with the telephone number and person to contact regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Bay Area Air Quality Management District's phone number shall also be visible to ensure compliance with applicable regulations.	The County shall require BAAQMD's Basic Construction Measures be included in contractor specifications. The contractor will implement measures in the program.	Prior to and during construction.	The County will review construction specifications. The County's contractor will document that measures are being implemented.

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Biological Resources				
BIO-1a	**Mitigation Measure BIO-1a:** A qualified botanist with a minimum of four years of academic training and professional experience in botanical sciences and a minimum of two years of experience conducting rare plant surveys shall conduct appropriately timed surveys for special-status plant species with a moderate or high potential to occur in the study area (i.e., Santa Cruz cypress, minute pocket moss, Dudley's lousewort, and white-flowered rein orchid) in all suitable habitat that would be potentially disturbed by the project (i.e., where vegetation removal [including downed logs] may occur). Surveys shall be conducted following the most recent CDFW protocol (CDFW, 2018b). If no special-status plants are found during focused surveys, the botanist shall document the survey findings in a report to CDFW, and no further mitigation will be required. If special-status plants are found during focused surveys, the following measures shall be implemented: 1. Information regarding the special-status plant populations shall be reported to the CNDDB, mapped, and documented in a technical memorandum provided to the County. 2. If any population can be avoided during project implementation, it shall be clearly marked in the field by a qualified botanist and avoided during construction activities. Before vegetation removal, ground clearing or ground disturbance, all on site construction personnel shall be instructed as to the species' presence and the importance of avoiding impacts to this species and its habitat though the Worker Environmental Awareness Program training (see Measure BIO-1b). 3. If special-status plant populations cannot be avoided, the County shall coordinate with CDFW on relocation of special-status plants. To the extent feasible, special-status plants that would be impacted by the project shall be relocated within local suitable habitat. This can be done either through salvage and transplanting or by collection and propagation of seeds or other vegetative material. Any plant relocation would be done under the supervision of a qualified botanist or restoration ecologist.	The County-approved biologist will conduct preconstruction surveys. The County will incorporate survey results and avoidance recommendations into construction specifications. The County/contractor will avoid buffer zones during construction and/or transplant special-status plants, as necessary.	Prior to construction and during construction.	The County will review construction specifications for inclusion of recommendations and document that measures are being implemented.
BIO-1b	**Mitigation Measure BIO-1b:** A project-specific Worker Environmental Awareness Program (WEAP) training shall be developed and implemented by a qualified biologist for the project and attended by all construction personnel prior to beginning work onsite. The training could consist of a recorded presentation that could be reused for new personnel. The WEAP training shall generally address but not be limited to the following: 1. Applicable State and federal laws, environmental regulations, project permit conditions, and penalties for non-compliance; 2. Special-status animal species with potential to occur at or in the vicinity of the project site, their habitat, the importance of these species and their habitat, the general measures that are being implemented to conserve these species as they	The County-approved qualified biologist will develop Worker Environmental Awareness Program. WEAP training will be attended by all new personnel.	Prior to and during construction, with worker awareness training taking place no more than 2 weeks prior to construction.	The County shall have sign-in sheets for those who attended the WEAP training. The construction foreman will ensure that biologist conducts worker awareness training.

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Biological Resources (cont.)				
BIO-1b (cont.)	relate to the project, and the boundaries within which the project construction shall occur, avoidance measures, and a protocol for encountering such species including a communication chain; 3. Pre-construction surveys and biological monitoring requirements associated with each phase of work and at each project site; 4. Known sensitive resource areas in the project vicinity that are to be avoided and/or protected as well as approved project work areas; and 5. Best management practices (BMPs) and their location on the project site for erosion control and/or species exclusion.			
BIO-1c	**Mitigation Measure BIO-1c:** The County shall ensure that the following general measures are implemented by the contractor while working in the project site during construction to prevent and minimize impacts on special-status species and sensitive biological resources: 1. Project-related vehicles shall observe a 10 mile-per-hour speed limit on unpaved roads in the project site. 2. No pets shall be allowed in the project site. 3. The contractor shall provide wildlife-proof (closed) garbage containers for the disposal of all food-related trash items. All garbage shall be collected daily from the project sites and placed in a closed container from which garbage shall be removed weekly. Construction personnel shall not feed or otherwise attract wildlife to the project site. 4. As necessary, erosion control measures shall be implemented to prevent any soil or other materials from entering any nearby aquatic habitat. Erosion control measures shall be installed adjacent to aquatic habitat (i.e., at work site boundaries adjacent to Pescadero Creek) when excavation or ground disturbance is necessary to prevent soil from eroding or falling into the area. 5. Sediment control measures shall be furnished, constructed, maintained, and later removed. Plastic monofilament coir rolls or mats (including those labeled as biodegradable, photodegradable, or UV-degradable) shall not be used. Only natural burlap, coir, or jute wrapped fiber rolls and mats shall be used. 6. If vehicle or equipment maintenance is necessary, it shall be performed in designated upland staging areas, and spill kits containing cleanup materials shall be available onsite. Maintenance activity and fueling must occur away at least 100 feet from Pescadero Creek. 7. No staff, equipment, or materials in support of project implementation (e.g., small Bobcat skid steer or motorized wheelbarrow) shall enter or cross creeks while water is flowing (with the exception of the road crossing on Sequoia Flat Road).	The County shall ensure that construction specifications include appropriate measures. Contractor shall implement construction measures.	Prior to and during construction	The County will review construction specifications and Contractor will monitor to ensure compliance.

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Biological Resources (cont.)				
BIO-1c (cont.)	8. Project personnel shall be required to report immediately any harm, injury, or mortality of a listed species (federal or State) during construction, including entrapment, to the construction foreman, qualified biologist, or County staff. County staff or their consultant shall provide verbal notification to the USFWS Endangered Species Office in Sacramento, California, and/or to the local CDFW warden or biologist (as applicable) within 1 working day of the incident. County staff shall follow up with written notification to the appropriate agencies within 5 working days of the incident. All special-status species observations shall be recorded on California Natural Diversity Data Base (CNDDB) field sheets and sent to the CDFW by the County staff or their consultant. 9. The spread of invasive non-native plant species and plant pathogens shall be avoided or minimized by implementing the following measures: a. Construction equipment shall arrive at the project clean and free of soil, seed, and plant parts to reduce the likelihood of introducing new weed species. b. Any imported fill material, soil amendments, gravel, or other materials required for construction and/or restoration activities that will be placed within the upper 12 inches of the ground surface shall be free of vegetation and plant material. c. Certified weed-free imported erosion control materials (or rice straw in upland areas) shall be used exclusively, if possible. d. To reduce the movement of invasive weeds into uninfested areas, the contractor shall stockpile topsoil removed during excavation (e.g., during excavation for open-cut-trench construction) and shall subsequently reuse the stockpiled soil for re-establishment of disturbed project areas, if possible.			
BIO-1d	**Mitigation Measure BIO-1d:** The following conservation measures shall be implemented to minimize or eliminate potential adverse impacts on California red-legged frog, foothill yellow-legged frog, Santa Cruz black salamander, California giant salamander, western pond turtle, and red-bellied newt during project-related activities: 1. A qualified biologist shall survey the work sites 2 weeks before the onset of construction for California red-legged frog (CRLF), foothill yellow-legged frog (FYLF), Santa Cruz black salamander (SCBS), California giant salamander (CAGS), western pond turtle (WPT), and red-bellied newt (RBN to determine presence (and life stage) of these species within the project sites, particularly those in proximity to Pescadero Creek. Typical credentials for a qualified biologist include a minimum of four years of academic training and professional experience in biological sciences and related resource management activities, and a minimum of two years of experience conducting surveys for each species that may be present within the project area.	County shall include avoidance and minimization measures in the construction specifications. Qualified biologist will survey work sites 2 weeks prior to construction. Project work areas will be monitored by a qualified biologist during exclusion fence installation and ground disturbing activities Qualified biologist will contact USFWS in the event that a special-status species is observed.	Two weeks prior to construction and during construction	The County will review construction specifications. The qualified biologist will document that measures are being implemented.

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Biological Resources (cont.)				
BIO-1d (cont.)	A qualified biologist shall conduct a pre-construction survey of these project work areas for CRLF, FYLF, SCBS, CAGS, WPT, and RBN immediately prior to the start of construction activities. The surveys will consist of walking the project work limits in areas where natural habitat will be disturbed or removed to ascertain presence of these species. Unless explicitly authorized by the USFWS and CDFW (e.g., through issuance of an Incidental Take Permit (ITP)), neither CRLF nor FYLF shall be relocated if encountered in project areas. Rather they shall be allowed to disperse of their own volition while all work is halted within 50 feet of individuals. If they do not disperse on their own volition, the on-site biologist shall monitor the frog while work continues, as long as the on-site biologist can ensure the safety of the frog. The qualified biologist shall immediately inform the construction manager that work should be halted or modified (in the case of a buffer or non-dispersing individual), if necessary, to avert take of listed species. USFWS and CDFW approval is not required for the relocation of SCBS, CAGS, WPT, or RBN as these species are not federally- or State-listed threatened or endangered. If adult SCBS, CAGS, WPT, or RBN are found within project sites during surveys, they will be relocated outside of the work area by a qualified biologist. The specific methods for handling amphibians or reptiles and decontamination shall follow USFWS (2005) and USGS (2015) protocols, respectively. These protocols describe field equipment maintenance, disinfection, and field hygiene procedures designed to minimize potential spread of pathogens when handling amphibians or reptiles. Should egg masses, metamorphs, or tadpoles of CRLF, FYLF, SCBS, CAGS, WPT, or RBN be identified within the Pescadero Creek corridor adjacent to a work site, a 100-foot no-disturbance buffer shall be established around the location(s) within the creek corridor until juveniles disperse from the breeding sites. The 100-foot no-disturbance buffer around egg masses, metamorphs, or tadpoles would not extend into the upland area if species exclusion fencing is installed at the worksite boundary. 2. Project work areas shall be monitored by a qualified biologist during exclusion fence installation and ground disturbing activities to identify, capture, and relocate non-listed sensitive amphibians (SCBS, CAGS, WPT, or RBN) if found, and halt or observe work in the vicinity of CRLF and FYLF if encountered onsite. The qualified biologist shall have the authority to stop construction activities and develop alternative work practices, in consultation with construction personnel and resource agencies (as appropriate), if construction activities are likely to affect special-status species or other sensitive biological resources. 3. County staff or its contractors shall install temporary exclusion fencing around key project boundaries, including project sites where ground disturbance will occur adjacent to Pescadero Creek, at the existing treatment plant and new plant sites, and around all project staging and laydown areas throughout the Park.			

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Biological Resources (cont.)				
BIO-1d (cont.)	• Fencing shall be installed immediately prior to the start of construction activities under the supervision of a qualified biologist. • The County staff or their contractor shall ensure that the temporary exclusion fencing is continuously maintained until all construction activities are completed. • County staff or their consultant shall ensure daily visual inspections of the fence for any amphibians or reptiles that may get stuck by the fence, including weekends. These daily checks shall be conducted by the qualified biologist for the first week of construction. If no species are observed, the qualified biologist may train the contractor to conduct daily inspections and call the qualified biologist if any species are encountered. • The fencing shall be of a material that meets CDFW standards for species exclusion, a minimum height of 3 feet above ground surface, with an additional 4 to 6 inches of fence material buried such that species cannot crawl under the fence, and shall include escape funnels to allow species to exit the work areas. • The exclusion fence shall not cross Pescadero Creek to allow wildlife movement to continue through the creek corridor when work is not occurring. 4. All excavations of a depth of 8 inches or greater shall be either backfilled at the end of each workday, covered with heavy metal plates, or escape ramps shall be installed at a 3:1 grade to allow wildlife that fall in a means to escape. 5. Vehicles or equipment parked overnight at the project staging areas or creek sites shall be inspected for harboring species each morning by the qualified biologist before vehicles or equipment are moved.			
BIO-1e	**Measure BIO-1e:** Breeding birds, their nests, and marbled murrelet nest trees shall be protected during construction through the following measures: 1. Tree removal, tree trimming, ground vegetation removal, and building demolition and removal shall occur outside of the bird breeding season (February 1 to September 15), to the extent feasible. If these activities cannot be avoided during bird breeding season, the measures in parts 5 and 6, below, shall apply. 2. Trees identified for removal under the project shall first be assessed for suitability as marbled murrelet nest trees by a qualified wildlife biologist. Typical credentials for a qualified biologist include a minimum of four years of academic training and professional experience in biological sciences and related resource management activities, and a minimum of two years of experience conducting surveys for each species that may be present within the project area. Those trees determined to have suitable elements for nesting marbled murrelet will be retained under the project, if feasible. If suitable nest trees cannot be retained in order to achieve project objectives, County staff shall coordinate with USFWS and CDFW regarding removal of a potential marbled murrelet nest tree from occupied and designated critical habitat.	The County-approved biologist shall conduct nesting bird survey and tree assessment. In the event that any active nests are discovered near the construction zone, biologist shall contact CDFW to establish buffer. The County shall include in its construction specifications that buffer zones shall be avoided during construction.	Prior to and during construction, with nesting bird surveys taking place within 7 days prior to the start of such activities or after any construction breaks of 14 days or more during bird breeding season (February 1 to September 15)	The County will obtain appropriate biologist to conduct survey. The County will consult with CDFW. The County will document that measures are being implemented.

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Biological Resources (cont.)				
BIO-1e (cont.)	3. If known suitable nest trees for marbled murrelet occur within 50-meters of trees to be removed or trimmed or buildings to be demolished under the project, these activities shall not occur during the marbled murrelet breeding season (April 1 to September 15). 4. Project activities which produce noise levels between 70 dB and 90 dB shall be restricted to between two-hours after sunrise and two-hours before sunset during the marbled murrelet breeding season (April 1 to September 15). Project activities which produce noise levels of 91 dB or greater shall be prohibited during marbled murrelet breeding season. 5. If tree removal, tree trimming, ground vegetation removal, and building demolition and removal during bird breeding season (February 1 to September 15) cannot be fully avoided, a qualified wildlife biologist shall conduct pre-construction nesting surveys within 7 days prior to the start of such activities or after any construction breaks of 14 days or more. Surveys shall be performed for the individual project sites, vehicle and equipment staging areas, and suitable habitat within 250-feet in order to locate any active passerine (perching bird) nests and within 500-feet of these individual sites to locate any active raptor (birds of prey) nest sites. County staff shall additionally coordinate with CDFW and USFWS offices to identify any recent or historic marbled murrelet nest sites within 0.5-mile of the project sites. Focused marbled murrelet surveys shall be performed if warranted based on agency communications. 6. If active nests or nest trees presumed to be occupied are located during the pre-construction nesting bird surveys or identified prior to or during project construction, the wildlife biologist shall evaluate if the schedule of construction activities could affect the active nests and the following measures shall be implemented based on their determination: a. If construction is not likely to affect the active nest, construction may proceed without restriction; however, a qualified biologist shall regularly monitor the nest at a frequency determined appropriate for the surrounding construction activity to confirm there is no adverse effect. Spot-check monitoring frequency would be determined on a nest-by-nest basis considering the particular construction activity, duration, proximity to the nest, and physical barriers which may screen activity from the nest. The qualified biologist may revise his/her determination at any time during the nesting season in coordination with the County staff. b. If it is determined that construction may affect the active nest, the qualified biologist shall establish a no-disturbance buffer around the nest(s) and all project work would halt within the buffer until a qualified biologist determines the nest is no longer in use. Typically, these buffer distances are 250 feet for passerines and 500 feet for raptors; however, the buffers may be adjusted if an obstruction, such as a building, is within line-of-sight between the nest and construction. Buffer distances for nesting marbled murrelet shall initially be 0.25 mile from the project area.			

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Biological Resources (cont.)				
BIO-1e (cont.)	For special-status bird species (i.e., fully protected, endangered, threatened, species of special concern), a County representative, supported by the wildlife biologist, shall coordinate with CDFW (and USFWS for FESA–protected species nests such as marbled murrelet) regarding modifying nest buffers, prohibiting construction within the buffer, and modifying or restricting construction activities until nesting is complete. c. Modifying nest buffer distances, allowing certain construction activities within the buffer, and/or modifying construction methods in proximity to active nests of all other non-listed species protected under the MBTA and California Fish and Game Code shall be done at the discretion of the qualified biologist and in coordination with the County staff. d. Any work that must occur within established no-disturbance buffers around active nests shall be monitored by a qualified biologist. If adverse effects in response to project work within the buffer are observed and could compromise the nest, work within the no-disturbance buffer(s) shall halt until the nest occupants have fledged. 7. With the exception of marbled murrelet nest sites, any birds that begin nesting within the project site and survey buffers amid construction activities shall be assumed to be habituated to construction-related or similar noise and disturbance levels and no work exclusion zones shall be established around active nests in these cases; however, should birds nesting nearby begin to show disturbance associated with construction activities, no-disturbance buffers shall be established as determined by the qualified wildlife biologist.			
BIO-1f	**Mitigation Measure BIO-1f:** A qualified biologist who is experienced with bat surveying techniques (including auditory sampling methods), behavior, roosting habitat, and identification of local bat species shall conduct a pre-construction habitat assessment of the project study area to characterize potential bat habitat and identify potentially active roost sites. No further action is required if the pre-construction habitat assessment does not identify bat habitat or signs of potentially active bat roosts within the project study area (e.g., guano, urine staining, dead bats, etc.). If the surveying biologist identifies potential roosting habitat or potentially active bat roosts within or in the immediate vicinity of project sites, including trees that could be trimmed or removed under the project or buildings that would be disturbed under the project (e.g., existing treatment plant), the following measures shall be implemented: 1. Removal of- or disturbance to trees or structures (e.g., buildings, other man-made structures) identified as potential bat roosting habitat or active roosts shall occur when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15, to the extent feasible. These dates avoid bat maternity roosting season (approximately April 15 to August 31) and period of winter torpor (approximately October 15 to February 28).	The County shall contract with a qualified biologist to conduct pre-construction surveys for bat surveys. The Biologist shall perform pre-construction surveys, make recommendations as necessary, and County implements appropriate measures. If potential roosting habitat or active bat roosts are identified, the contractor shall implement measures that avoid disturbance or removal of trees and structures during specified seasonal restrictions.	Prior to and during construction	The County will document that appropriate recommendations are implemented.

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Biological Resources (cont.)				
BIO-1f (cont.)	2. If removal of- or disturbance to trees and structures identified as potential bat roosting habitat or active roosts during the periods when bats are active is not feasible, a qualified biologist will conduct pre-construction surveys within 14 days prior to disturbance to further evaluate bat activity within the potential habitat or roost site. a. If active bat roosts are not identified in potential habitat during pre-construction surveys, no further action is required prior to removal of- or disturbance to trees and structures within the pre-construction survey area. b. If active bat roosts or evidence of roosting is identified during pre-construction surveys, the qualified biologist shall determine, if possible, the type of roost and species. i. If special-status bat species or maternity or hibernation roosts are detected during these surveys, appropriate species- and roost-specific avoidance and protection measures shall be developed by the qualified biologist. County staff or their consultant may choose to coordinate with CDFW depending on what species has been found roosting within the project study area. Such measures may include postponing the removal of or disturbance to structures or trees, or establishing exclusionary work buffers while the roost is active. A minimum 100-foot no disturbance buffer shall be established around special-status species, maternity, or hibernation roosts until the qualified biologist determines they are no longer active. The size of the no-disturbance buffer may be adjusted by the qualified biologist, in coordination with CDFW, depending on the species present, roost type, existing screening around the roost site (such as dense vegetation or a building), as well as the type of construction activity that would occur around the roost site, and if construction would not alter the behavior of the adult or young in a way that would cause injury or death to those individuals. Under no circumstances shall active maternity roosts be disturbed until the roost disbands at the completion of the maternity roosting season or otherwise becomes inactive, as determined by the qualified biologist. ii. If a common species, non-maternity or hibernation roost (e.g., bachelor daytime roost) is identified, disturbance to- or removal of trees or structures may occur under the supervision of a qualified biologist as described under 3). 3. The qualified biologist shall be present during tree and structure disturbance or removal if active non-maternity or hibernation bat roosts or potential roosting habitat are present. Trees and structures with active non-maternity or hibernation roosts of common species or potential habitat shall be disturbed or removed only under clear weather conditions when precipitation is not forecast for three days and when nighttime temperatures are at least 50°F, and when wind speeds are less than 15 mph.			

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Biological Resources (cont.)				
BIO-1f (cont.)	a. Trimming or removal of trees with active (non-maternity or hibernation) or potentially active roost sites of common bat species shall follow a two-step removal process: i. On the first day of tree removal and under supervision of the qualified biologist, branches and limbs not containing cavities or fissures in which bats could roost, shall be cut only using hand tools (e.g., chainsaws). ii. On the following day and under the supervision of the qualified biologist, the remainder of the tree may be removed, either using hand tools or other equipment (e.g. excavator or backhoe). iii. All felled trees shall remain on the ground for at least 24 hours prior to chipping, off-site removal, or other processing to allow any bats to escape, or be inspected once felled by the qualified biologist to ensure no bats remain within the tree and/or branches. b. Disturbance to- or removal of structures containing or suspected to contain active (non-maternity or hibernation) or potentially active common bat roosts shall be done in the evening and after bats have emerged from the roost to forage. Structures shall be partially dismantled to significantly change the roost conditions, causing bats to abandon and not return to the roost. Removal will be completed the subsequent day. 4. Bat roosts that begin during construction are presumed to be unaffected as long as a similar type of construction activity continues, and no buffer would be necessary. Direct impacts on bat roosts or take of individual bats will be avoided.			
BIO-2	**Mitigation Measure BIO-2:** The County or its contractor shall implement the following measures to avoid or minimize impacts to protected trees: 1. The County or its contractor shall contract a certified arborist to perform a tree survey of the project sites to determine presence of significant trees within 100 feet of Pescadero Creek Road and heritage trees anywhere within the project site which could be adversely affected by project implementation prior to initiation of construction activities, and identify trees to be removed or trimmed under the project at each such project site. 2. Should heritage trees be identified within the project sites or significant trees be present at project sites within 100 feet of Pescadero Creek Road, a certified arborist shall determine appropriate protective measures to be implemented during construction and which may include but is not limited to the following: a. A certified arborist shall accurately locate root protection zones and identify other specific measures that would limit potential indirect impacts on trees that may be encroached upon (e.g., fencing around 1.5 times the canopy area) consistent with the County's tree protection measures. Tree protection measures shall be maintained throughout the duration of the project.	The County shall retain a certified arborist to perform tree survey. If heritage trees are present within the project site, the County shall ensure protective measures are incorporated in construction specifications or permits are obtained for tree trimming or removal. The County shall review construction specifications to ensure that replanting requirements are incorporated. The County shall replant affected trees measuring 12 inches DBH or greater at a 3:1 ratio and shall replace trees measuring less than 12 inches DBH at a ratio of 1:1.	Prior to, during, and after construction	The County will obtain appropriate arborist to conduct survey. The qualified arborist reviews construction specifications. The County will document that measures are being implemented. If appropriate, the County shall complete permit application process for heritage trees. The County will document that trees are monitored for at least 5 years.

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Biological Resources (cont.)				
BIO-2 (cont.)	b. Construction drawings shall depict areas to be avoided such as tree trunks and root protection zones. c. If any large roots or large masses of roots need to be cut, the roots shall be inspected by a certified arborist or forester prior to cutting. Any root cutting shall be undertaken by an arborist or forester and documented. Roots to be cut shall be severed cleanly with a saw or toppers. d. If pruning is necessary (proceed to 3), pruning should be done by an arborist or forester to clean and raise canopy per International Society of Arboriculture pruning standards. 3. If trimming or removal of heritage trees within the project sites or significant trees within 100 feet of Pescadero Creek Road cannot be avoided, the County or its contractor shall complete the permit application process and obtain a permit from the County to trim or remove trees. The permit application process requires an Existing Tree Plan be prepared and an Arborists Report that assesses tree health and provides tree protection measures which may be incorporated into a Tree Protection Plan for trees that could be indirectly affected by work in their immediate vicinity. Any heritage tree removed under the project would also be replaced according to step 4, below, unless otherwise specified in the County permit. 4. If trimming or removal of significant trees cannot be avoided, qualifying trees identified for removal measuring 17.5 inches DBH or greater shall be replaced at a 1:1 ratio (replacement trees to removed trees) with the species removed (if native) or other native species (if non-native) within the immediate vicinity of the removal site of at least a 5-gallon stock. Replacement trees shall be monitored at least once a year for at least five years or longer, concurrent with restored areas of riparian habitat or wetlands.			
Cultural Resources				
CUL-1	**Mitigation Measure CUL-1:** If prehistoric or historic-era archaeological resources are encountered, all construction activities within 100 feet of the find shall halt and the San Mateo County Parks Department shall be notified. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. An archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology (qualified archaeologist) shall inspect the findings within 24 hours of discovery. ~~If it is determined that the project could damage a historical resource or a unique archaeological resource (as defined pursuant to the CEQA Guidelines), mitigation shall be implemented in accordance with Public Resources Code (PRC)~~	The County shall review construction specifications to ensure procedures for inadvertent discovery of cultural resources are included. In the event of a historic-period archaeological resource discovery, construction in the area shall be halted and the contractor shall notify the County. The qualified archaeologist shall be contacted and inspect the findings to determine appropriate mitigation and feasibility of preservation.	Prior to and during construction	The County will review construction specifications. The contractor shall notify the County of the discovery. The Qualified archaeologist shall inspect the findings and determine appropriate next steps, consistent with PRC Section 21083.2 and Section 15126.4 of the CEQA Guidelines.

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Cultural Resources (cont.)				
CUL-1 (cont.)	~~§ 21083.2 and CEQA Guidelines § 15126.4, with a preference for preservation in place.~~ If the County determines, based on recommendations from the qualified archaeologist, that the resource may qualify as a historical resource or unique archaeological resource (as defined in CEQA Guidelines § 15064.5) or if the resource is indigenous in origin, the resource shall be avoided and preserved in place, if feasible. Avoidance means that no activities associated with the project that may affect cultural resources shall occur within the boundaries of the resource or any defined buffer zones. Consistent with CEQA Guidelines § 15126.4(b)(3), preservation in place may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If avoidance is not feasible, the County shall consult with appropriate Native American tribes (if the resource is indigenous), and other appropriate interested parties to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource pursuant to PRC § 21083.2 and CEQA Guidelines § 15126.4, including possible preparation and implementation of a detailed treatment plan by a qualified archaeologist ~~shall prepare and implement a detailed treatment plan~~ in consultation with the County Parks Department, and appropriate Native American tribes if the resource is indigenous. Treatment of unique archaeological resources shall follow the applicable requirements of PRC § 21083.2. Treatment for most resources would consist of (but would not be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by the project. The treatment plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals.			
CUL-2	**Mitigation Measure CUL-2:** In the event of discovery or recognition of any human remains during construction activities, such activities within 100 feet of the find shall cease until the San Mateo County Coroner has been contacted to determine that no investigation of the cause of death is required. The Native American Heritage Commission (NAHC) will be contacted within 24 hours if it is determined that the remains are Native American. The NAHC will then identify the person or persons it believes to be the most likely descendant from the deceased Native American (PRC § 5097.98), who in turn would make recommendations to the County Parks Department for the appropriate means of treating the human remains and any associated funerary objects [CEQA Guidelines § 15064.5(d)].	The County shall review construction specifications to ensure procedures for human remains discovery are included. In the event human remains are discovered, construction in the area shall be halted and the contractor shall notify the County Coroner. Native American Heritage Commission will be contacted within 24 hours if necessary.	Prior to and during construction	The County will review construction specifications. The contractor shall notify County of the discovery.
Geology and Soils				
	None.			

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Climate Change				
	None.			
Hazards and Hazardous Materials				
HAZ-1	**Mitigation Measure HAZ-1:** The County shall require the construction contractor to use the following best management practices (BMPs) to minimize potential adverse effects of the project to groundwater and soils from chemicals used during construction activities: • Follow manufacturer's recommendations on use, storage and disposal of chemical products used in construction; • Avoid overtopping construction equipment fuel gas tanks; • Provide secondary containment for any hazardous materials temporarily stored onsite; • During routine maintenance of construction equipment, properly contain and remove grease and oils; • Perform regular inspections of construction equipment and materials storage areas for leaks and maintain records documenting compliance with the storage, handling and disposal of hazardous materials; and • Properly dispose of discarded containers of fuels and other chemicals • Any disturbances to asbestos cement pipe or suspected asbestos cement pipe shall be performed by a California licensed asbestos contractor. Disturbances (including pipe cutting or removal) shall be done in accordance with California OSHA requirements for asbestos containing materials.	The County shall review construction specifications to ensure that BMPs for handling hazardous materials are included. The Contractor implements required BMPs.	Prior to and during construction	The County will document that measures are being implemented.
HAZ-2	**Mitigation Measure HAZ-2:** The County shall require the construction contractor to follow the procedures below in the event contaminated soil or groundwater is encountered (either visually or through odor detection) during construction: • Stop work in the vicinity of the suspected material; • Secure the area of suspected contamination; • Notify the County and appropriate regulatory agencies; • Retain a qualified environmental specialist to identify the nature and extent of contamination; • Contain the areas of contamination; • Perform appropriate clean-up procedures (e.g., segregate, profile, and dispose of all contaminated soil). Required disposal method will depend on the type and concentration of contamination identified; and	The County shall require construction specifications include protective measures. The contractor implements required measures in the event contaminated soil or groundwater is encountered.	Prior to and during construction	The County will review construction specifications. The County will document that measures are being implemented.

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Hazards and Hazardous Materials (cont.)				
HAZ-2 (cont.)	• Any site investigation or remediation shall be performed in accordance with applicable regulations. Work shall not resume in the area(s) affected until the above measures have been implemented under the oversight of the County or regulatory agency, as appropriate.			
HAZ-3	**Mitigation Measure HAZ-3:** The contractor(s) shall identify underground utility lines such as natural gas, electricity, sewer, telephone, fuel, and water lines that may be encountered during excavation work. Information regarding the size, color, and location of existing utilities will be confirmed by the utility service provider. A detailed engineering and construction plan that identifies construction methods and protective measures to minimize impacts on aboveground and belowground utilities shall be prepared. Construction shall be scheduled to minimize or avoid interruption of utility services to customers. The contractor(s) shall promptly reconnect any disconnected utility lines.	The County shall require construction specifications include utility identification, preparation of an engineering and construction plan, protection and avoidance measures. The Contractor observes required restrictions.	Prior to and during construction	The County will document that measures are being implemented.
HAZ-4	**Mitigation Measure HAZ-4:** The County shall require the construction contractor to ensure that the following fire safety construction practices are implemented: • Earthmoving and portable equipment with internal combustion engines shall be equipped with a spark arrestor to reduce the potential for igniting a wildland fire; • Appropriate fire suppression equipment shall be maintained at the construction site; • Flammable materials shall be removed to a distance of 10 feet from any equipment that could produce a spark, fire, or flame; and • Construction personnel shall be trained in fire safe work practices, use of fire suppression equipment, and procedures to follow in the event of a fire.	The County shall require construction specifications include fire safety construction practices. The contractor implements required fire hazard construction practices.	Prior to and during construction	The County will document that measures are being implemented.
Hydrology and Water Quality				
HYD-1	**Mitigation Measure HYD-1:** The County shall, by contract specifications, ensure contractors prepare and implement a SWPPP for each phase of the proposed project to be implemented. Erosion control measures shall be in place prior to the start of each phase's respective construction activities and remain in place throughout the construction duration. The plan must provide a BMP monitoring and maintenance schedule and identify parties responsible for monitoring and maintenance of construction-phase BMPs. Erosion and water quality control measures identified in the plan must comply with the Construction Site Control requirements (C.6) of the San Francisco Bay Region Municipal Regional Stormwater NPDES Permit (Order No. R2-2015-0049[1]), and the County's standard Water Pollution Control Plan specifications. At a minimum, the SWPPP shall include, but not be limited to, the following measures (County of San Mateo, 2017):	The County shall require construction specifications include requirements regarding preparation and implementation of a comprehensive stormwater pollution and erosion control plan. The contractor implements BMPs.	Prior to and during construction	The County will document that BMPs are being implemented.

[1] Or by extension, the requirements of the San Mateo Countywide Water Pollution Prevention Program, as applicable.

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Hydrology and Water Quality (cont.)				
HYD-1 (cont.)	• 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. • Sediment shall be retained on-site by a system of sediment basins, traps, or other appropriate measures. • A spill prevention and countermeasure plan shall be developed that will identify proper storage, collection, and disposal measures for potential pollutants (such as fuel, fertilizers, pesticides, etc.) used on-site. The plan will 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. Existing vegetation will be retained where possible. To the extent feasible, grading activities shall be limited to the immediate area required for construction. • Surface waters, including ponded waters, must be diverted away from areas undergoing grading, construction, excavation, vegetation removal, and/or any other activity which may result in a discharge to the receiving water. Diversion activities must not result in the degradation of beneficial uses or exceedance of water quality objectives of the receiving waters. Any temporary dam or other artificial obstruction constructed must only be built from materials such as clean gravel which will cause little or no siltation. Normal flows must be restored to the affected stream immediately upon completion of work at that location. • 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. Store, cover, and isolate construction materials, including topsoil and chemicals, 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. All removed topsoil shall be reused during construction to the extent feasible. Unused topsoil, if any, shall be broadly redistributed to the surrounding ruderal/developed areas in such a manner that topography and vegetation cover would not be adversely impacted. • Establish fuel and vehicle maintenance areas away from all drainage courses and design these areas to control runoff. • Disturbed areas will be re-vegetated after completion of construction activities. • All necessary permits and approvals shall be obtained. • Provide sanitary facilities for construction workers.			

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Land Use and Planning				
	None.			
Mineral Resources				
	None.			
Noise				
	None.			
Population and Housing				
	None.			
Public Services				
	None.			
Recreation				
	None.			
Transportation/Traffic				
TRA-1	**Mitigation Measure TRA-1:** The County shall require the construction contractor to conduct 24-hour traffic counts on Pescadero Creek Road during a one-week period prior to construction in order to establish what the peak travel periods are. The county shall require the construction contractor to avoid lane closure during established peak travel periods.	The County shall require construction specifications include avoidance of lane closures during commute hours. The contractor implements measures.	Prior to and during construction	The County will review construction specifications. The County will document that avoidance measures are being implemented.
TRA-2	**Mitigation Measure TRA-2:** The County shall require the construction contractor(s) to prepare and implement a traffic control plan to reduce traffic impacts on the roadways at and near the work sites, as well as to reduce potential traffic safety hazards and ensure adequate access for emergency responders and construction vehicles, as appropriate. The County and construction contractor(s) shall coordinate development and implementation of this plan with the community of Loma Mar and Caltrans, as appropriate. To the extent applicable, the traffic control plan shall conform to the California Manual on Uniform Traffic Control Devices (MUTCD), Part 6 (Temporary Traffic Control) (Caltrans, 2014). The traffic control plan shall include, but not be limited to, the following elements: • Circulation and detour plans to minimize impacts on local road circulation during road and lane closures. Flaggers and/or signage shall be used to guide vehicles through and/or around the construction zone.	The County shall require construction specifications include traffic control plan. The Contractor implements measures.	Prior to and during construction	The County will review construction specifications. The county will document that traffic control plan measures are being implemented.

TABLE 1
MITIGATION, MONITORING AND REPORTING PROGRAM

Mitigation No.	Mitigation Measure	Implementation Responsibility	Implementation Timing	Monitoring, Enforcement, and Reporting Responsibility
Transportation/Traffic (cont.)				
TRA-2 (cont.)	• Identifying truck routes designated by the County. Haul routes that minimize truck traffic on local roadways shall be utilized to the extent possible. • Sufficient staging areas for trucks accessing construction zones to minimize disruption of access to adjacent public right-of-ways. • Controlling and monitoring construction vehicle movement through the enforcement of standard construction specifications by on-site inspectors • Scheduling truck trips outside the peak morning and evening commute hours to the extent possible. • Limiting the duration of road and lane closures to the extent possible. • Implementing roadside safety protocols. Advance "Road Work Ahead" warning and speed control signs (including those informing drivers of State legislated double fines for speed infractions in a construction zone) shall be posted to reduce speeds and provide safe traffic flow through the work zone. • Coordinating construction administrators of emergency service providers (including all fire protection agencies), and recreational facility managers. Operators shall be notified at least one month in advance of the timing, location, and duration of construction activities and the locations of detours and lane closures, where applicable. All roads shall remain passable to emergency service vehicles at all times. • Repairing and restoring affected roadway rights-of-way to their original condition after construction is completed.			
Utilities and Service Systems				
	None.			

Exhibit B – GEOTECHNICAL REPORT

See Attached on Next Page

CONSTRUCTION TESTING SERVICES

GEOTECHNICAL INVESTIGATION REPORT

MEMORIAL PARK WASTEWATER COLLECTION SYSTEM
9500 PESCADERO CREEK ROAD
LOMA MAR, CA

August 31, 2020

Prepared for

The San Mateo County Parks Department

CTS Job 16600

4400 Yankee Hill Road, Rocklin, CA 95677 • Phone (916) 419-4747 • Fax (916) 419-4774
2118 Rheem Drive, Pleasanton, CA 94588 • Phone (925) 462-5151 • Fax (925) 462-5183
One Embarcadero Center, Suite 535, San Francisco, CA 94111 • Phone (415) 438-2357 • Fax (415) 334-4747
246 30th St., Suite 101, Oakland, CA 94601 • Phone (510) 444-4747 • Fax (510) 835-1825

CONSTRUCTION TESTING SERVICES

August 31, 2020

Mr. Mike Wasserman
San Mateo County Parks Department
455 County Center, 4th Floor
Redwood City, CA 94063

Subject: **Geotechnical Investigation Report**
Memorial Park Wastewater Collection System
9500 Pescadero Creek Road, Loma Mar, CA

Dear Mr. Wasserman,

Construction Testing Services (CTS) is pleased to present this Geotechnical Investigation Report for the proposed Memorial Park Wastewater Collection project located at 9500 Pescadero Creek Road in Loma Mar, California. The purpose of our investigation was to explore and evaluate the subsurface conditions at the site and develop soils engineering opinions and recommendations for project design and construction. A discussion of the subsurface conditions, our conclusions, and recommendations for geotechnical-related aspects of design and construction for the planned site redevelopment are presented in the following report.

We appreciate the opportunity to be of service to you over the course of this project. If you have any questions regarding the contents of this report, or if we could provide further assistance, please contact the undersigned.

Sincerely,

CONSTRUCTION TESTING SERVICES

REGISTERED GEOLOGIST
MICHAEL LOUIS TURNER
CERTIFIED ENGINEERING GEOLOGIST
No. 2500
Exp. 3/31/22
STATE OF CALIFORNIA

Andrew Q. Poelvoorde, PE
Associate Engineer

Mike Turner, CEG
Associate Geologist

REGISTERED PROFESSIONAL ENGINEER
ANDREW POELVOORDE
No. 86532
Exp. 3/31/21
CIVIL
STATE OF CALIFORNIA

Reviewed by:

Bradford Quon, GE
Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER
BRADFORD LEE QUON
GE 2841
EXP. 6/30/2022
GEOTECHNICAL
STATE OF CALIFORNIA

4400 Yankee Hill Road, Rocklin, CA 95677 • Phone (916) 419-4747 • Fax (916) 419-4774
2118 Rheem Drive, Pleasanton, CA 94588 • Phone (925) 462-5151 • Fax (925) 462-5183
One Embarcadero Center, Suite 535, San Francisco, CA 94111 • Phone (415) 438-2357 • Fax (415) 334-4747
246 30th St., Suite 101, Oakland, CA 94601 • Phone (510) 444-4747 • Fax (510) 835-1825

TABLE OF CONTENTS

4400 Yankee Hill Road, Rocklin, CA 95677 • Phone (916) 419-4747 • Fax (916) 419-4774
2118 Rheem Drive, Pleasanton, CA 94588 • Phone (925) 462-5151 • Fax (925) 462-5183
One Embarcadero Center, Suite 535, San Francisco, CA 94111 • Phone (415) 438-2357 • Fax (415) 334-4747
246 30th St., Suite 101, Oakland, CA 94601 • Phone (510) 444-4747 • Fax (510) 835-1825

GRAPHICS

Plates

Appendix A Field Exploration

Appendix B Laboratory Testing

Appendix C Seismic Refraction Line Results

4400 Yankee Hill Road, Rocklin, CA 95677 • Phone (916) 419-4747 • Fax (916) 419-4774
2118 Rheem Drive, Pleasanton, CA 94588 • Phone (925) 462-5151 • Fax (925) 462-5183
One Embarcadero Center, Suite 535, San Francisco, CA 94111 • Phone (415) 438-2357 • Fax (415) 334-4747
246 30th St., Suite 101, Oakland, CA 94601 • Phone (510) 444-4747 • Fax (510) 835-1825

1 INTRODUCTION

1.1 GENERAL

This report presents the results of the geotechnical investigation conducted for the proposed Wastewater Collection System Improvement project located at Memorial County Park in Loma Mar, California. The purpose of our investigation was to explore and evaluate the subsurface conditions at the site, and to develop soils engineering opinions and recommendations for project design and construction. The site location is shown on Plate 1, Site Location Map.

1.2 PROJECT DESCRIPTION

Based on discussions and email correspondence with you, we understand the proposed Wastewater Collection project includes the installation of a sewer line system by horizontal direction drilling techniques. Additionally, it is understood the purpose of this geotechnical investigation report is to provide information for bidding purposes related to the general rippability (or drillability) of the subsurface materials likely to be encountered along the proposed pipeline alignment.

The approximate alignment of the proposed sewer replacement is shown on Plate 1. The existing invert depths were not provided to CTS during preparation of this report.

1.3 SCOPE OF SERVICES

The approved scope of services was outlined in our Proposal incorporated into the County of San Mateo, Task Order #4 dated June 29, 2020. The scope of services generally included the following:

- Review of available background documentation.
- Performance of an initial site reconnaissance, utility mark out, and private utility location on June 30, 2020.
- Notifying of Underground Service Alert (USA) to mark underground utilities at the project site.
- Performance of seismic refraction lines on August 4th, 2020.
- Performance of a field investigation consisting of four geotechnical borings on August 5th and 6th, 2020.
- Compilation of the data obtained.

4400 Yankee Hill Road, Rocklin, CA 95677 • Phone (916) 419-4747 • Fax (916) 419-4774
2118 Rheem Drive, Pleasanton, CA 94588 • Phone (925) 462-5151 • Fax (925) 462-5183
One Embarcadero Center, Suite 535, San Francisco, CA 94111 • Phone (415) 438-2357 • Fax (415) 334-4747
246 30th St., Suite 101, Oakland, CA 94601 • Phone (510) 444-4747 • Fax (510) 835-1825

- Preparation of this report to present the findings, conclusions, and recommendations related to the drilling and excavatability conditions expected at the project site.

It is noted the geotechnical engineering aspects of design of the horizontal direction drilling will be performed by others and the intent of this study was limited to providing drilling and excavatability conditions expected at the site.

4400 Yankee Hill Road, Rocklin, CA 95677 • Phone (916) 419-4747 • Fax (916) 419-4774
2118 Rheem Drive, Pleasanton, CA 94588 • Phone (925) 462-5151 • Fax (925) 462-5183
One Embarcadero Center, Suite 535, San Francisco, CA 94111 • Phone (415) 438-2357 • Fax (415) 334-4747
246 30th St., Suite 101, Oakland, CA 94601 • Phone (510) 444-4747 • Fax (510) 835-1825

2 INVESTIGATIONS

2.1 FIELD EXPLORATION

Prior to initiating the field exploration, the areas to be explored were marked with white marking paint and stakes. Underground Service Alert – North 811 (USA) was then contacted for required notification of the planned explorations. A private utility locator was also used in the areas to be explored.

The field exploration was performed on August 5th and 6th, 2020 and consisted of advancing four (4) borings identified as Borings WW-1 through WW-4 to depths ranging between approximately 15.8 and 70.2 feet below the ground surface (bgs). The locations of the borings are shown on Plate 2, Boring Location Map. Each boring was advanced using a CME-75 drill rig equipped with 8-inch (nominal) outer diameter hollow stem augers, and 6-inch (nominal) diameter solid stem augers. Samples were collected with standard penetration test samplers or split barrel samplers with brass or stainless-steel liners having a nominal outer dimension of 3-inches. The samplers were advanced with a 140-pound hammer free falling 30 inches. Relatively undisturbed and bulk samples were collected at selected depths from the borings and were transported to the laboratory for geotechnical testing. The samples were then placed in sealed bags to prevent moisture loss, and transported to the geotechnical laboratory for further analysis and testing.

The drilling activities were supervised by a representative of CTS. Our field engineer maintained a continuous log of the borings, classified the soils encountered in accordance with the Unified Soils Classification System (USCS), ASTM D 2488, and labeled and packaged the samples. Uncorrected blow counts were recorded for the entire length of the sample. The sum of the blow counts (uncorrected for sampler size, overburden, etc.) are reported on the logs as the "N-value". Upon completion of drilling, the borings were backfilled with neat cement grout in accordance with the local drilling permit. The remaining cuttings and spoils generated from the field explorations were spread onsite.

Laboratory testing included in-situ moisture content and dry density, Atterberg Limits, gradation, unconfined compressive strength, and corrosivity. The results of the in-situ moisture content and dry density tests are shown at the corresponding sample depths on the boring logs in Appendix A. The results for the corrosivity can be found in Table 3. The results of the other laboratory tests performed are presented in Appendix B.

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2.2 LABORATORY TEST RESULTS

Laboratory testing was performed to quantify and evaluate the geotechnical characteristics of the soil samples obtained at the site. The following laboratory tests were performed on selected samples from the borings:

- Moisture Content (ASTM D 2216)
- Dry Density (ASTM D 2937)
- Atterberg Limits (ASTM D 4318)
- Unconfined Compressive Strength (ASTM D 2166)
- Particle Size Distribution (ASTM D 6913)
- Material Finer than 75-m by Washing (ASTM D 1140)
- pH and Electrical Resistivity (CT 643)
- Sulfate and Chloride Content (CT417 and CT422)

Results of the tests performed above are discussed in the Subsurface Conditions section of the report.

2.3 SEISMIC REFRACTION SURVEY

CTS consulted with Norcal Geophysical to perform a seismic refraction survey along portions of the alignment. The purpose of the seismic refraction survey was to provide information related to drillability of expected soft bedrock conditions encountered. See below in Section 4.2 for discussions of the results the seismic refraction survey and Appendix C for the seismic refraction survey report and plates.

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3 FINDINGS

3.1 REGIONAL GEOLOGIC SETTING

The site is located in the Coast Ranges California Geomorphic Province. According to the California Geologic Survey Note 36, the Coast Ranges are northwest-trending mountain ranges (2,000 to 4,000, occasionally 6,000 feet elevation above sea level) and valleys. The ranges and valleys trend northwest, subparallel to the San Andreas Fault. The strata dip beneath alluvium of the Great Valley to the east. To the west of the site is the Pacific Ocean. The coastline is uplifted, terraced and wave-cut. The Coast Ranges are composed of thick Mesozoic and Cenozoic sedimentary strata. The northern and southern ranges are separated by a depression containing the San Francisco Bay. The northern Coast Ranges are dominated by irregular, knobby, landslide-topography of the Franciscan Complex. The eastern border is characterized by strike-ridges and valleys in Upper Mesozoic strata. In several areas, Franciscan rocks are overlain by volcanic cones and flows of the Quien Sabe, Sonoma and Clear Lake volcanic fields. The Coast Ranges are subparallel to the active San Andreas Fault. The San Andreas is approximately 672 miles long, extending from Pt. Arena to the Gulf of California. West of the San Andreas is the Salinian Block, a granitic core extending from the southern extremity of the Coast Ranges to the north of the Farallon Islands.

3.2 GEOLOGIC LITERATURE REVIEW

We reviewed the following available published geologic maps from websites pertinent to the site and vicinity for the project. Summaries of the maps and websites reviewed are provided below.

- Brabb, E.E., Pampeyan, E. H.; Preliminary Map of Landslide Deposits in San Mateo County, California; 1972.
- Brabb, E.E.; Preliminary Geologic Map of the La Honda and San Gregorio Quadrangles, San Mateo County, California; 1980.
- Brabb, E.E., Graymer, R.W., and Jones, D.L.; Geology of the Palo Alto 30 x 60 Quadrangle, California: Derived from the Digital Database Open-File 98-348; 1998.
- Bryant, W.A., Jennings, C.W.; Fault Activity Map of California, California Geologic Survey; 2010.
- Association of Bay Area Governments Resilience Program; Landslide Maps and Information; http://resilience.abag.ca.gov/landslides/
- California Geologic Survey, Earthquake Zones of Required Investigation; (Website: https://maps.conservation.ca.gov/cgs/EQZApp/app/)
- U.S. Geological Survey; Quaternary Fault and Fold Database of the United States; (website: https://earthquake.usgs.gov/cfusion/qfault/show_report_AB_archive.cfm?fault_id=1&section_id=c)

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- U.S. Geological Survey; La Honda Quadrangle, San Mateo County, California, 1955
- U.S. Geological Survey; La Honda Quadrangle, San Mateo County, California, 2018

3.2.1 Brabb and Pampeyan – 1972

The 1972 Preliminary Map of Landslide Deposits in San Mateo County does not show any landslides mapped within the limits of the Property, nor does it show nearby mapped landslides which could adversely affect the project alignment. See Plate 8. Additional generalized landslide mapping provided be the Association of Bay Area Governments Resilience Program is discussed below in Section 3.2.6 and shown on Plate 9. This mapping shows the ridge north of the Property boundary and north of Pescadero Road mapped as an area that could contain few landslides. The central portion of the property is not mapped as an area that could contain landslides.

3.2.2 Brabb – 1980

The 1980 Preliminary Geologic Map of the La Honda and San Gregorio Quadrangles, San Mateo County, shows the northern half of the Property mapped as the Tertiary aged Tahana Member of the Purisima Formation (Tpt). Memoria Park is labeled on the map. The literature indicates this formation is typically greenish-gray to white to buff, medium- to very fine-grained sandstone and siltstone, with some silty mudstone. Near Memorial Park the formation is indicated to include dark-gray porcelaneous mudstone. Pebble conglomerates are indicated to occur near the base of the formation from Memorial Park eastward. A syncline is mapped trending northwest-southeast through the Purisima Formation north of the property producing bedding dip angles ranging from 27 degrees to 80 degrees north to northeast south of the syncline hinge-line to between 15 degrees and 30 degrees southwest north of the syncline hinge-line.

The southern half of the Property is generally mapped as the Tertiary aged Santa Cruz Mudstone (Tsc). This formation is indicated to be composed of brown and gray to light-gray, buff, and light yellow porcelaneous shale, and mudstone with nonsiliceous mudstone and siltstone and minor amounts of sandstone. Bedding dip angles range from 83 degrees north and overturned up to 75 degrees to the south.

The middle to lower Ecoene Butano Sandstone (Tb) is mapped south of the Santa Cruz Mudstone. The Butano Sandstone is indicated to be light-gray to buff, very fine to very coarse-grained arkosic sandstone in thin to very thick beds interbedded with dark-gray to brown mudstone and shale. Conglomerate, containing boulders of granite and metamorphic rocks and well-rounded cobbles and pebbles of quartzite and porphyry, are present locally in the lower part of the section. An anticline is mapped trending northwest-southeast through the Butano Sandstone Formation south of the property producing bedding dip angles ranging from 33 degrees north to northeast to overturned 50 degrees south north of the anticline hinge-line to between 33 degrees and 50 degrees southwest, south of the anticline hinge-line. The mapped bedding orientation of the Butano Sandstone indicates this material may be discovered stratigraphically below the Santa Cruz Mudstone and Tahana Member of the Purisima Formation discussed above.

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Discontinuous areas of course-grained older alluvium fan and stream terrace deposits (Oaf) are mapped on top of the formations noted above. These deposits are indicated to be composed of Pleistocene poorly consolidated gravel, sand, and silt, and coarser-grained at heads of old fans and in narrow canyons.

Pescadero Creek meanders east to west through the central portion of the Property. The Butano Fault is mapped as a normal fault, and as both concealed and approximately located. The Butano Fault geomorphically creates the valley to which Pescadero Creek has cut. See Plates 5 through 7 for details and map and geologic unit explanations.

3.2.3 Brabb, Graymer, and Jones – 1998

The 1998 Geology of the Palo Alto 30 x 60 Quadrangle, California is derived from the United States Geological Survey (USGS) Digital Database Open File Report 98-348. The map is generally a refined digital version of the 1980 map discussed above and shows the same geologic formations and features. This is shown in Plate 4.

3.2.4 Bryant and Jennings – 2010 / Quaternary Fault and Fold Database

The 2010 Fault Activity Map of California and the Quaternary Fault and Fold Database shows the Butano fault mapped crossing through the Property in general alignment with the river valley. The generally east-west trending Butano fault is mapped as well constrained west of the confluence of Pescadero Creek and Peterson Creek (a tributary creek with headwaters to the south) and as inferred west of this confluence; however, the literature indicates the fault is mapped with poor reliability of location. The fault is listed as undifferentiated Quaternary with the most recent prehistoric deformation approximated at <1.6 million years ago. Based on the age of deformation the Butano fault is not anticipated to pose a hazard to the planned improvements.

The database and map show other faults in the vicinity of the property including:

- The San Andres fault zone – mapped approximately 8 miles to the northeast (Historic displacement)
- The San Gregorio fault zone – mapped approximately 4.5 miles to the west (Holocene displacement)

3.2.5 Website: Association of Bay Area Governments Resilience Program

The Association of Bay Area Governments Resilience Program website shows the ridge north of the Property boundary and the ridge to the south of Pescadero Creek as areas with few landslides. The active alluvium in the riverbed of Pescadero Creek is mapped as highly susceptible to liquefaction and the adjacent flood plan is mapped as moderately susceptible to liquefaction. It should be noted that the approved scope of services did not include liquefaction analysis on the project. The finalized alignment should be reviewed by the geotechnical engineer of record in conjunction with the noted mapped geologic hazards to determine the potential hazards to the project.

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3.2.6 Website: CGS Earthquake Zones of Required Investigation

The California Geologic Survey (CGS) website, Earthquake Zones of Required Investigation shows the Property identified as Assessor's Parcel Number 084080030. The parcel is not mapped within an Earthquake Fault Zone, but has not been evaluated the CGS for liquefaction or seismic landslide hazards. Based on review of the landslide mapping in the area and the field investigation, seismic induced liquefaction and landslides are not anticipated hazards at the site.

3.2.7 U.S. Geological Survey – 1955 and 2018

The 1995 La Honda Quadrangle identifies the limits of the Memorial Park with dashed lines. Memorial Park is positioned in a river valley created by Pescadero Creek with Mount Ellen to the north and Butano Ridge to the south. The campground is built upon the Quaternary river terraces north of Pescadero Creek. The campground roadways are shown as light-duty roads. Wurr Road is mapped south of Pescadero Creek as a light-duty road.

Elevation across the Property ranges from approximately 250 feet (msl) along Pescadero Road, down to 200 feet elevation in the river valley, and 200 to 360 feet elevation along Wurr Road. The ridge north of Psecadero Road rises up to 1,000 feet elevation and Butano Ridge to the south rises up to 1,640 feet elevation.

The 2018 La Honda Quadrangle shows similar information as the 1955 map.

3.3 SITE GEOLOGY

Review of the above geologic literature indicates the property is located on Quaternary alluvial terrace deposits positioned above inclined beds of Tertiary sandstone, siltstone, mudstone, and shale. The active channel and banks of Pescadero Creek are expected to contain loose alluvial gravel, sand, and silt deposits.

3.4 SITE CONDITIONS

The proposed project site is located within Memorial County Park at 9500 Pescadero Creek Road in Loma Mar, California. The park is situated within the northwest section of the Santa Cruz Mountains, which is generally bounded by the Golden Gate to the north, the Pajaro River to the south, the Pacific Ocean to the west, and the west side of the San Francisco Bay to the east. In general, the park consists of 673 undulating acres of land with moderately dense amounts of old growth redwood trees, 158 camp sites, and various camp site amenities. A new wastewater treatment plant will be located in the eastern portion of the park in the Sequoia Flat Campground. The proposed sanitary sewer line will connect with the restrooms located in Sequoia Flat Campground. A section of the pipeline will also cross Pescadero Creek, and connect with the restrooms located in the Tan Oaks Flat Campground, as well as the Camp Store located near the entrance to the park.

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The project coordinates referenced from Google maps are:

- Between 37.275414 and 37.275986° N Latitude
- Between -122.296047 and -122.287861° W Longitude

Refer to Plate 1 for approximate location of site.

3.5 SUBSURFACE CONDITIONS

Boring WW-1 encountered alternating layers of medium dense silty sand, stiff sandy silt, very stiff sandy lean clay, and medium dense clayey sand to the maximum depth explored at approximately 16 ½ feet bgs.

Boring WW-2 encountered stiff to hard sandy lean clay and lean clay to depth of approximately 15 feet bgs. The clay exhibited unconfined compressive strength of 2 tsf at approximately 8 ½ feet bgs and a moist unit weight of 120.7 pcf. The clay was underlain by weakly cemented silty sandstone at approximately 16 feet bgs.

Boring WW-3 encountered alternating layers approximately 5 feet thick comprised of medium dense to very dense clayey and silty sand, and hard lean clay and sandy lean clay to depth of approximately 25 feet bgs. These alluvial soils were further underlain by strongly cemented silty sandstone and mudstone to the final depth of approximately 70 feet bgs. The sandstone and mudstone encountered sampler refusal (>50 blows per foot) from approximately 25 to 70 feet deep.

Boring WW-4 encountered alternating layers consisting of medium dense to very dense silty sand and very stiff sandy silt to depth of approximately 25 feet bgs. These soils were underlain by mudstone and sandstone to the final depths of approximately 50 feet bgs. The sandstone and mudstone encountered sampler refusal (>50 blows per foot) from approximately 25 to 50 feet deep.

3.6 GROUNDWATER CONDITIONS

Groundwater was not encountered in any of the borings during drilling. The borings were immediately backfilled upon completion of the drilling.

Groundwater levels may vary in the future specifically due to natural factors such as season rain fluctuations, and other non-geotechnical factors such as modified landscape irrigation, new construction, runoff, or other man-caused conditions beyond our control.

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4 CONCLUSIONS AND RECOMMENDATIONS

4.1 GENERAL

Based on the results of our findings and analysis, the project is feasible for design and construction from a geotechnical standpoint. A discussion of the anticipated excavation and drilling conditions are discussed herein.

4.2 ANTICIPATED EXCAVATION AND DRILLING CONDITIONS

The near surface native soils encountered in the borings consisted primarily of medium to very dense silty and clayey sand and stiff to hard sandy silt, sandy lean clay, and lean clay. The majority of these soils are expected to stand near vertical for short periods of time. If seepage or gravelly materials within the fine soils are encountered, the excavation sidewalls may not stand near vertical.

In borings WW-3 and WW-4, the boreholes advanced encountered dense to very dense and very stiff to hard soils consisting of silty sand, clayey sand, sandy silt, and lean clay materials overlying very dense formational materials consisting of strongly cemented silty sandstones and strongly indurated mudstones. Drilling was performed using a CME-75 drill rig equipped with 8-inch diameter solid-stem flight augers. In WW-3, the boring was to advance to a depth of 70.2 feet without hitting drill refusal. It should be noted, however, that although practical drilling refusal was not encountered, sampler refusal was encountered consistently at each sample drive starting at approximately 30 feet bgs and continued through the final depths explored. In WW-4, the boring was advanced to a depth of approximately 50 feet without encountering drill refusal. Similarly, in WW-3, although practical drilling refusal was not encountered, sampler refusal was encountered consistently at each sample drive starting at approximately 30 feet bgs and continued through to the final depth explored.

Hard, well indurated rock may pose moderate to very difficult excavation characteristics which may require nonconventional methods to penetrate to the proposed depth for the pipeline.

To assess rippability of the underlying rock materials, two (2) seismic refraction surveys, SR-1 and SR-2, were performed to estimate the seismic velocity of the underlying formational materials. Those seismic velocities were then referenced within the Caterpillar Performance Handbook (Caterpillar, 2018) to evaluate the rippability of rock materials with varying seismic velocities by varying equipment types.

Results of the refraction surveys are presented in Appendix C. Based on the surveys, seismic velocities measured generally ranged between 1,000 ft/sec and 6,000 ft/sec in indicating a range of surficial soils and poorly consolidated sedimentary rock in the upper portion, to more consolidated, or more strongly cemented/indurated sedimentary rock, or highly fractured and/or weathered rock in the lower portions of the seismic refraction survey profiles. At SR-1, seismic velocities measured indicated approximately 10 to 15 feet of surficial soils with values generally between 1,000 ft/sec and 4,000 ft/sec, underlain by sedimentary formations with seismic velocities between 4,000 ft/sec and less than 6,000 ft/sec to the bottom of the survey profile.

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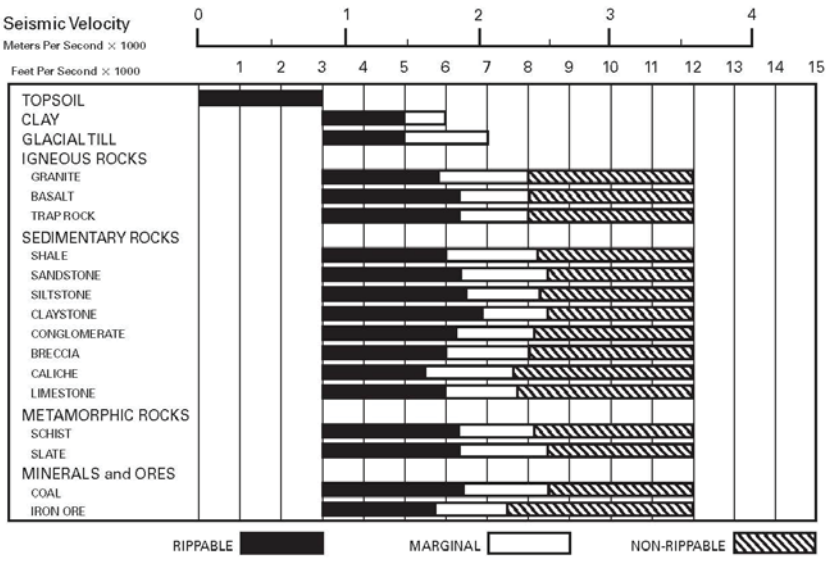
In SR-2, seismic velocities measured indicated approximately 25 to 35 feet of surficial soils with values generally between 1,000 ft/sec and 4,000 ft/sec, underlain by sedimentary formations with seismic velocities between 4,000 ft/sec and greater than 6,000 ft/sec to the bottom of the survey profile.

Shale, sandstone, siltstone and claystone with seismic velocities measuring approximately 6000 ft/s or slower are generally considered "rippable" to "marginal" using a Caterpillar D8 bulldozer or equivalent (Caterpillar, 2018).

CHART 1
RIPPER PERFORMANCE OF D8R/D8T BASED ON SEISMIC VELOCITY



Caterpillar, 2018

Based on the seismic velocity values obtained from the refraction surveys and the Caterpillar rippability charts, it is our opinion that the low seismic velocities in the underlying mudstone and sandstone indicate "rippable" to "marginal" rippability. However, rippability is reliant on tooth penetration in order to be effective. Even with low seismic velocities, sedimentary rock can prove to be difficult if the fractures and bedding joints in the material do not allow for proper tooth penetration.

The Contractor should use its judgement and the advice of equipment manufacturers when evaluating the type of equipment needed to obtain plan and profile requirements of the proposed pipeline.

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4.3 TEMPORARY EXCAVATIONS

Excavations can be performed with typical conventional excavating machines generally in use for such projects. During construction, excavations as deep as 4 feet should temporarily stand vertically. The majority of the near surface soils within the upper 10 feet will be OSHA Type C. Temporary cuts deeper/higher than 4 feet should be sloped back above the 4-foot level or stabilized by shoring in accordance with OSHA regulations. The Contractor is responsible for applicable shoring design and implementation to fit the site soil conditions for the excavations intended. Shoring should be designed and monitored by a responsible registered professional engineer experienced in similar protections.

4.4 CORROSIVITY

Laboratory testing was performed on representative samples of the on-site earth materials to evaluate pH and electrical resistivity, as well as chloride and sulfate contents. The pH and electrical resistivity tests were performed in accordance with California Test (CT) 643 and the sulfate and chloride content tests were performed in accordance with CT 417 and CT 422, respectively. These laboratory test results are summarized in Table 3 below, and are also presented in Appendix B.

Concrete in contact with soil or water that contains high concentrations of water-soluble sulfates can be subject to premature chemical and/or physical deterioration. According to American Concrete Institute (ACI) 318, the potential for sulfate attack is negligible for water-soluble sulfate contents in soil ranging from 0.00 to 0.10 percent by weight (i.e., 0 to 1,000 ppm).

TABLE 3
SUMMARY OF SOIL CORROSION RESULTS

Boring	Depth (ft)	Resistivity (Ohm-cm)	Chloride (ppm)	Sulfate (%)	pH
WW-1	8.5-9	2951	4	0.0031	7.8
WW-2	11-11.5	2730	67	0.0054	7.7
WW-3	11-11.5	1714	29	0.0068	7.8
WW-4	26-26.5	750	4	0.0168	8.4

Based on the Caltrans corrosion (2015) criteria, with the exception of the WW-4, our results indicate that the on-site soils would not be classified as corrosive. Corrosive soils are defined as soils with an electrical resistivity of 1,000 ohm-cm or less, more than 500 ppm chlorides, more than 0.2 percent sulfates, and a pH less than 5.5.

It is noted that CTS is reporting the results as shown as a preliminary screening. For specific recommendations, please consult a California licensed Corrosion Engineer.

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5 ADDITIONAL SERVICES

5.1 PLAN AND SPECIFICATIONS REVIEW

Preparation of the geotechnical investigation for design purposes is a portion of the services CTS can provide. It is recommended CTS be requested to perform a general review of the plans and specifications to evaluate if the recommendations contained in this report are properly interpreted and implemented during the design phase. CTS will not be responsible for any misinterpretation of our recommendations in the event that CTS is not retained to perform this recommended task.

5.2 EARTHWORK OBSERVATIONS, SPECIAL INSPECTIONS, AND MATERIALS TESTING

To provide project continuity, we recommend CTS be retained to observe earthwork construction, to evaluate exposed foundation soils for appropriate bearing capacity, and provide special inspections and materials testing. The purpose in having a representative of CTS observe the grading operations during site preparation, and test trench backfill, engineered fill, would be to observe the surface and subsurface conditions during construction, evaluate the applicability of the recommendations contained in this report, and recommend appropriate changes in construction procedures if conditions are found to differ from those encountered during this investigation.

Separate proposals and estimates can be provided for each of the additional services described above when requested. CTS can also prepare a master agreement for providing all of these services.

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6 LIMITATIONS

The conclusions and recommendations provided in this report are based on the understanding of the proposed improvements, data developed from the results of our field and laboratory testing program laboratory testing, and our engineering analyses. The field explorations were located in the field by pacing from available landmarks as surveying was not part of our work scope. It is possible that actual subsurface conditions can vary between the points of exploration provided during this investigation. If this is found to be the case, CTS should be notified and requested to review the changes and provide appropriate modifications to our recommendations if needed.

CTS has strived to prepare this report in substantial accordance with generally accepted geotechnical engineering practice as it exists in the local area at the time of the work. No warranty, express or implied, is made. This report may be used by the Client, for the purposes stated, for a reasonable time from issuance. If construction is delayed, land use, or other factors could modify site and subsurface conditions, which may necessitate additional field work being performed (i.e. additional borings and/or laboratory testing) and an updated report to be issued. CTS shall be released from any liability resulting from any misuse of the report by the authorized party.

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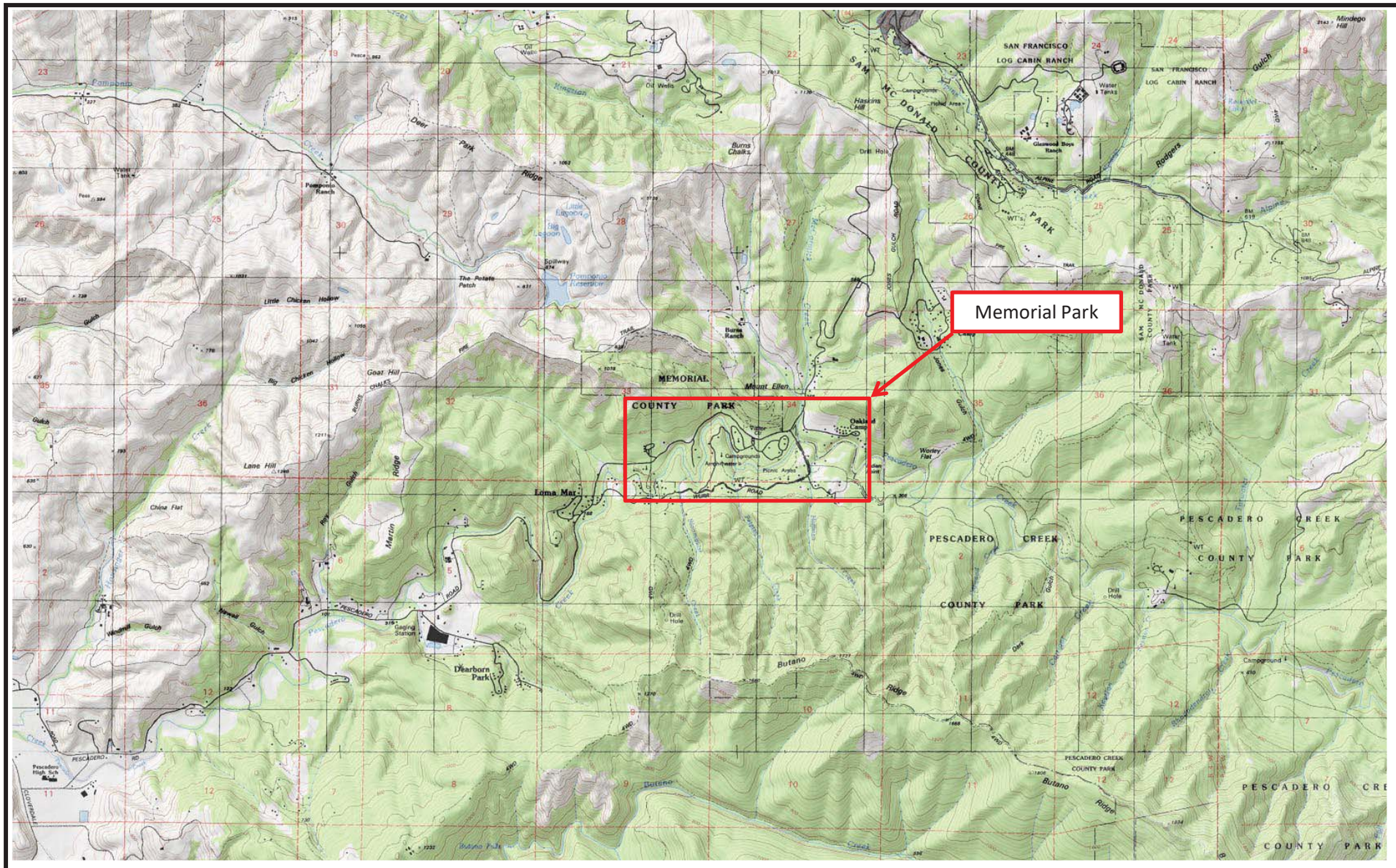
PLATES



North

Not to Scale

Legend

Approximate site location

Notes:
1. Map referenced from "Topozone"

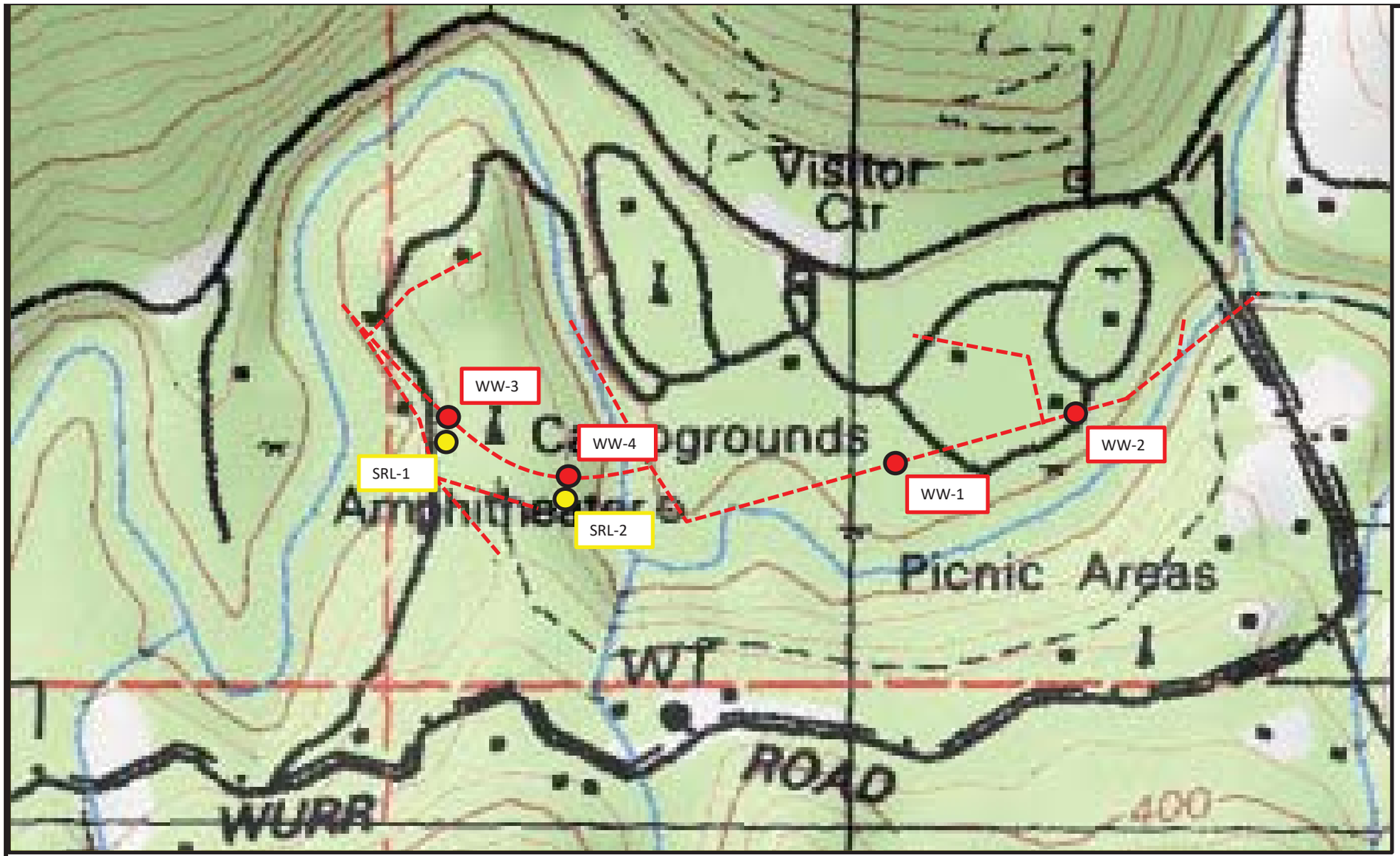
CONSTRUCTION TESTING SERVICES

Drawn by: Gavin Lynch
CTS Job: 16600

Date: 08/20/20
File: Site Location

SITE LOCATION MAP
MEMORIAL COUNTY PARK
WASTEWATER COLLECTION SYSTEM
LOMA MAR, CA

PLATE
1



North

Not to Scale

Legend

- Approximate boring location
- Approximate seismic refraction location
- Approximate sanitary sewer layout

Notes:
1. Topographic map referenced from "Topozone"

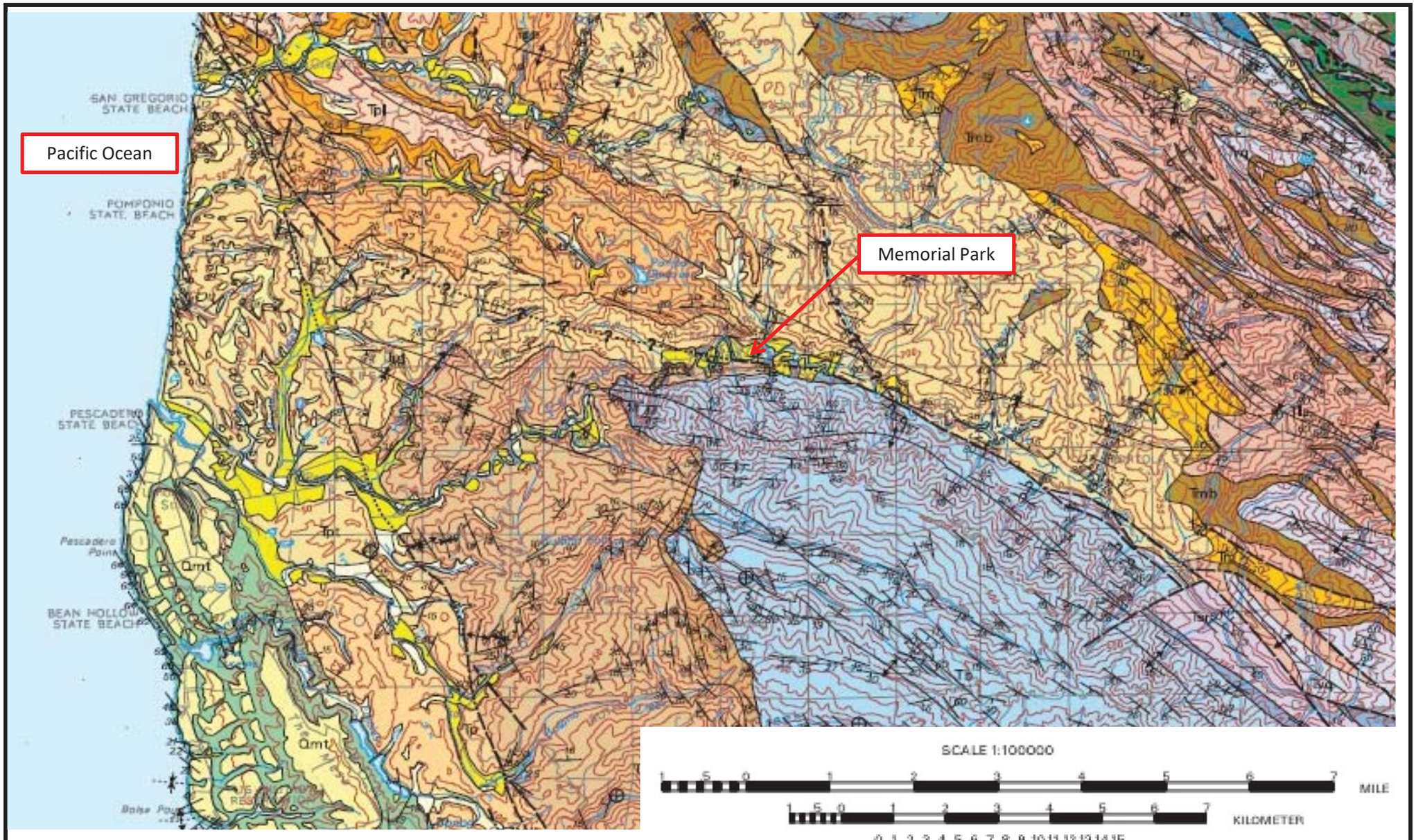
CONSTRUCTION TESTING SERVICES

Drawn by: Gavin Lynch
CTS Job: 16600

Date: 08/20/2020
File: Exploration Location

EXPLORATION LOCATION MAP
MEMORIAL COUNTY PARK
WASTEWATER COLLECTION SYSTEM
LOMA MAR, CA

PLATE
2



Source: Brabb, E.E., Graymer, R.W., and Jones, D.L.; Geology of the Palo Alto 30 x 60 Quadrangle, California: Derived from the Digital Database Open-File 98-348; 1998.

North

CONSTRUCTION TESTING SERVICES

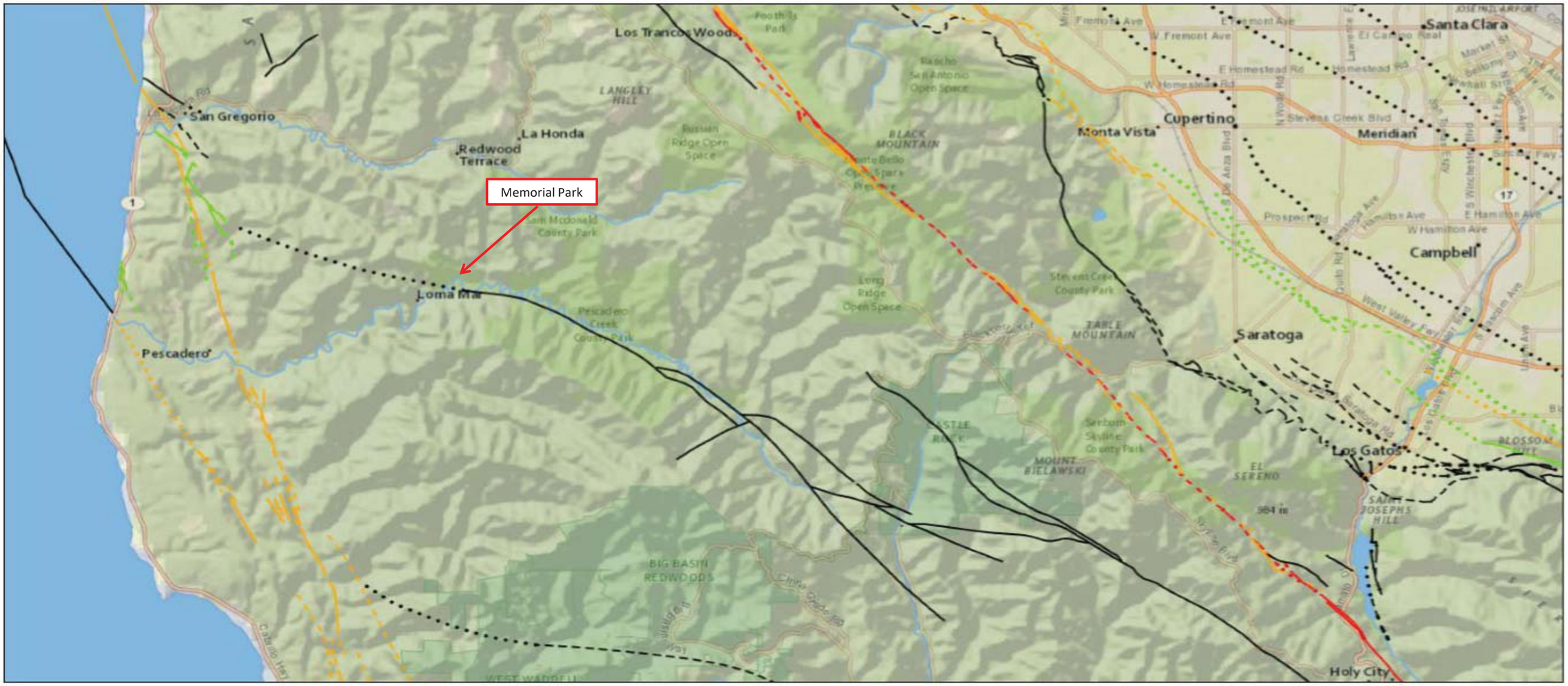
Drawn by: M. Turner
CTS Job: 16600

Date: 08/28/2020
File: Regional Geology

REGIONAL GEOLOGIC MAP
MEMORIAL COUNTY PARK
WASTEWATER COLLECTION SYSTEM
LOMA MAR, CA

PLATE
3

U.S. Geological Survey Quaternary Faults



10/29/2019, 7:56:46 AM

1:144,448

0 1.25 2.5 5 mi

0 2.25 4.5 9 km

USGS, National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

Fault Areas

- Historic (< 150 years)
- Latest Quaternary (< 15,000 years)
- Late Quaternary (< 130,000 years)
- Middle and Late Quaternary (< 750,000 years)
- Undifferentiated Quaternary (< 1.6 million years)

Quaternary Faults Database

- Historic (< 150 years), well constrained location
- Historic (< 150 years), moderately constrained location
- Historic (< 150 years), inferred location
- Latest Quaternary (<15,000 years), well constrained location
- Latest Quaternary (<15,000 years), moderately constrained location
- Latest Quaternary (<15,000 years), inferred location

USGS
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp. | USGS |

Source: U.S. Geological Survey; Quaternary Fault and Fold Database of the United States

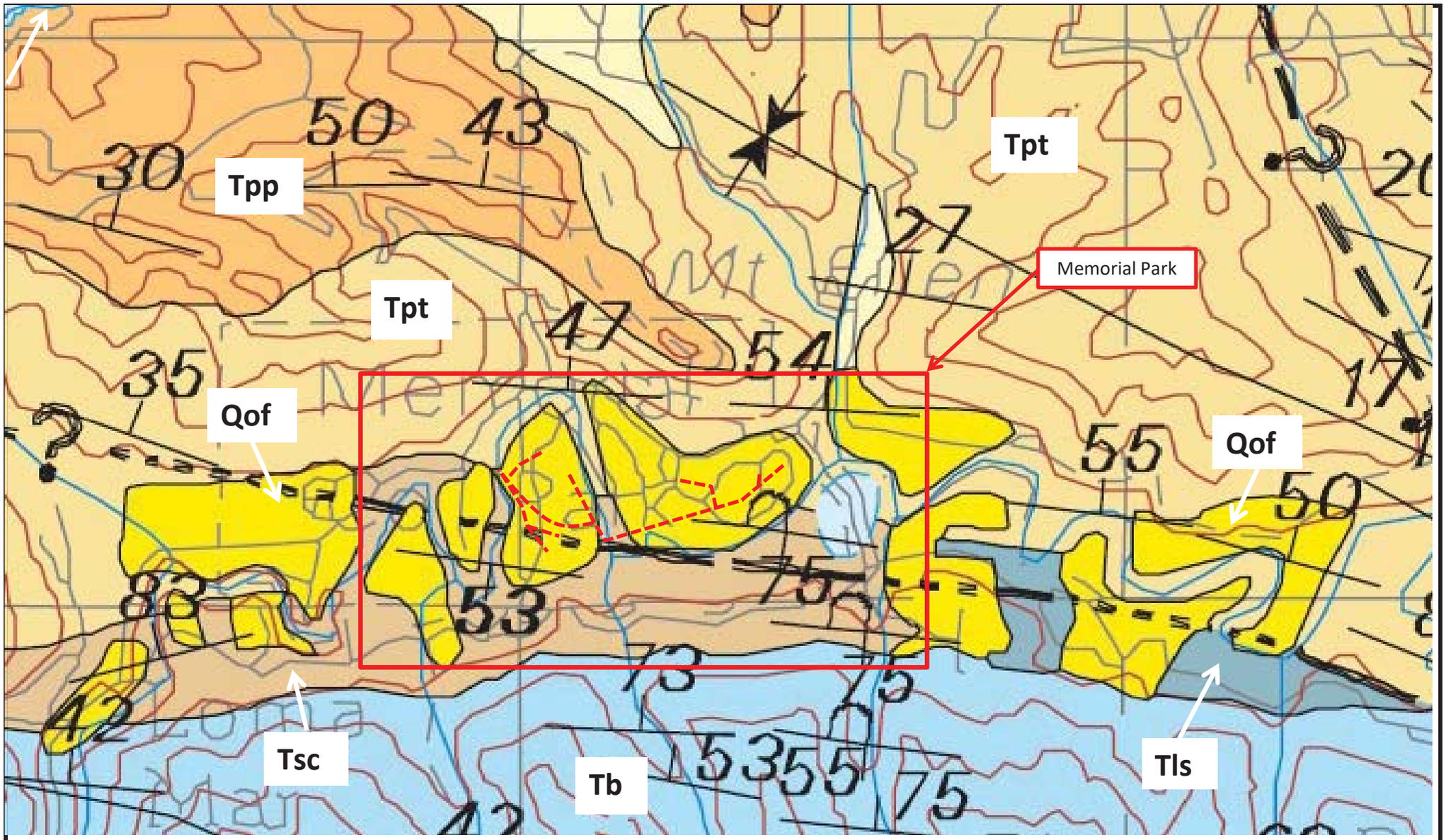
CONSTRUCTION TESTING SERVICES

Drawn by: M. Turner
CTS Job: 16600

Date: 08/28/2020
File: Landslides

REGIONAL FAULT MAP
MEMORIAL COUNTY PARK
WASTEWATER COLLECTION SYSTEM
LOMA MAR, CA

PLATE
4



North

1 MILE

Source: Brabb, E.E., Graymer, R.W., and Jones, D.L.; Geology of the Palo Alto 30 x 60 Quadrangle, California: Derived from the Digital Database Open-File 98-348; 1998.

Legend

--- Approximate sanitary sewer layout

CONSTRUCTION TESTING SERVICES

Drawn by: M. Turner
CTS Job: 16600

Date: 08/28/2020
File: Local Geology

LOCAL GEOLOGIC MAP
MEMORIAL COUNTY PARK
WASTEWATER COLLECTION SYSTEM
LOMA MAR, CA

PLATE
5

Qof — **Coarse-grained older alluvial fan and stream terrace deposits** (Pleistocene) —Poorly consolidated gravel, sand, and silt, coarser

Tpp — **Pomponio Mudstone Member (Pliocene)** —Gray to white porcelaneous shale and mudstone, in places rhythmically bedded with alternating

Tpt — **Tahana Member (Pliocene and upper Miocene)** —Greenish-gray to white or buff, medium- to very fine-grained sandstone and siltstone, with

Tsc — **Santa Cruz Mudstone (upper Miocene)** —Brown and gray to light-gray, buff, and light-yellow siliceous mudstone with nonsiliceous mudstone and siltstone and minor amounts of sandstone. Santa Cruz Mudstone is more than 1000 m thick

Tls — **Lambert Shale and San Lorenzo Formation, Undivided (lower Miocene,** Oligocene, and middle and upper Eocene) —Brown and dark-gray to gray, brown, and red mudstone, siltstone, and shale. Includes some beds of fine- to coarse-grained sandstone. Lambert Shale is generally more siliceous than San Lorenzo Formation, but the two units cannot be distinguished where out of stratigraphic sequence and without fossils

Tb — **Butano Sandstone (middle and lower Eocene)** —Light-gray to buff, very fine- to very coarse-grained arkosic sandstone in thin to very thick beds interbedded with dark-gray to brown mudstone and shale. Conglomerate, containing boulders of granitic and metamorphic rocks and well-rounded cobbles and pebbles of quartzite and porphyry, is present locally in lower part of section. Amount of mudstone and shale varies from 10 to 40 percent of volume of formation. About 3000 m thick

Source: Brabb, E.E., Graymer, R.W., and Jones, D.L.; Geology of the Palo Alto 30 x 60 Quadrangle, California: Derived from the Digital Database Open-File 98-348; 1998.

CONSTRUCTION TESTING SERVICES

Drawn by: M. Turner
CTS Job: 16600

Date: 08/28/2020
File: Geology Legend

GEOLOGIC LEGEND
MEMORIAL COUNTY PARK
WASTEWATER COLLECTION SYSTEM
LOMA MAR, CA

PLATE
6

MAP SYMBOLS

Contact—Depositional or intrusive contact, dashed where approximately located, dotted where concealed

Fault—Dashed where approximately located, small dashes where inferred, dotted where concealed, queried where location is uncertain.

Reverse or thrust fault—Dotted where concealed

Anticline—Shows fold axis, dotted where concealed

Syncline

35 **Strike and dip of bedding**

Overturned bedding

Flat bedding

Vertical bedding

35 **Strike and dip of foliation**

Vertical foliation

35 **Strike and dip of joints in plutonic rocks**

Vertical joint

Source: Brabb, E.E., Graymer, R.W., and Jones, D.L.; Geology of the Palo Alto 30 x 60 Quadrangle, California: Derived from the Digital Database Open-File 98-348; 1998.

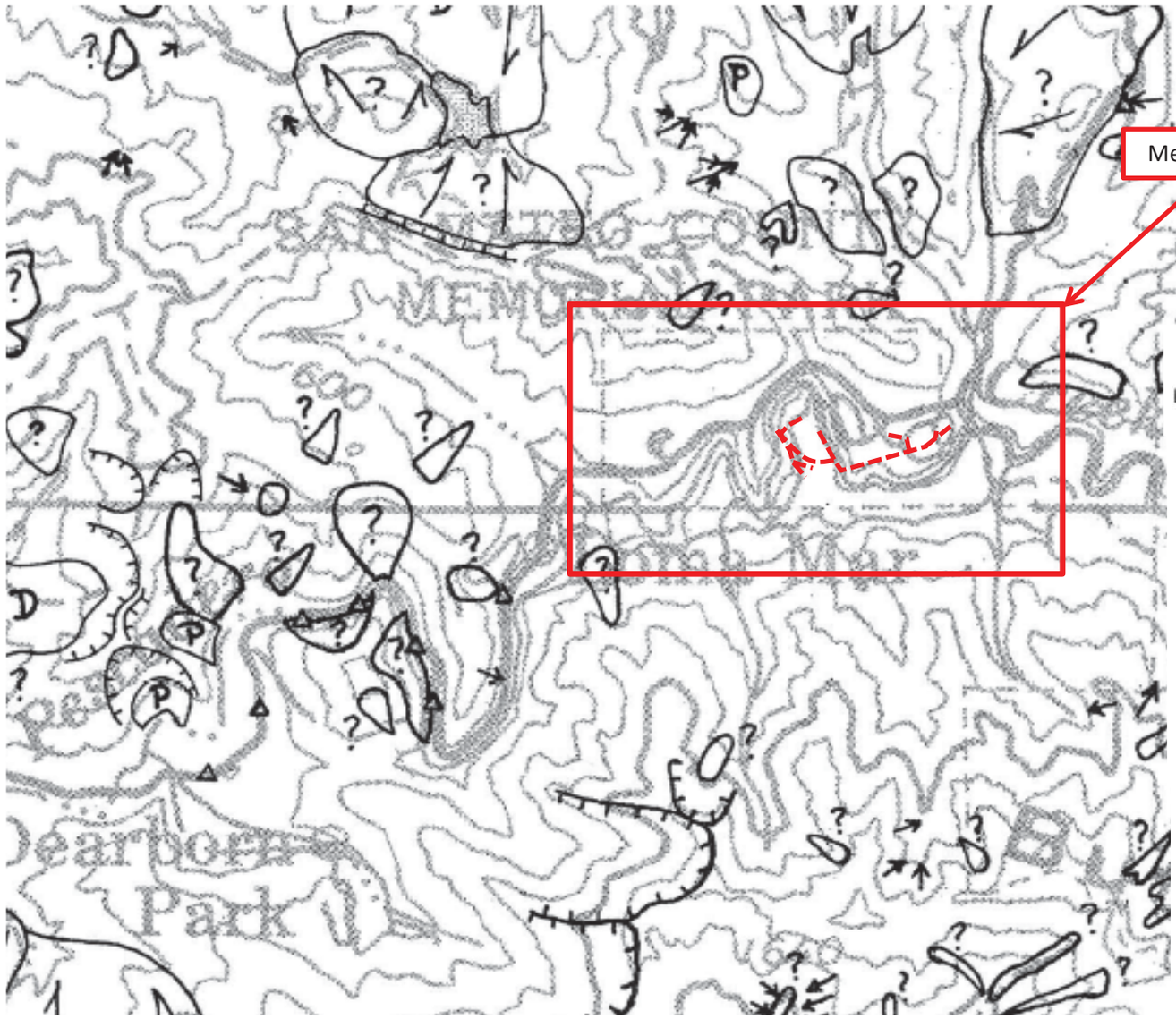
CONSTRUCTION TESTING SERVICES

Drawn by: M. Turner
CTS Job: 16600

Date: 08/28/2020
File: Geology Symbols

GEOLOGIC MAP SYMBOLS
MEMORIAL COUNTY PARK
WASTEWATER COLLECTION SYSTEM
LOMA MAR, CA

PLATE
7



MAP SYMBOLS

LANDSLIDE DEPOSITS MAPPED BY PHOTOINTERPRETATION

Large landslide deposit

More than 500 feet in maximum dimension. Arrows indicate general direction of downslope movement (omitted for lack of space on some landslides). D, definite landslide deposit; P, probable landslide deposit; ?, questionable landslide deposit; A, landslide features on photos suggest that the landslide may be active. Hachured line shows the approximate position of an inferred main scarp

Small landslide deposit

50 to 500 feet in maximum dimension. Arrow indicates general direction of downslope movement and is centered over location of deposit

SCALE 1:62500

1 ½ 0 1 2 3 4 MILES

North

Not to Scale

Source: Brabb, E.E., Pampeyan, E. H.; Preliminary Map of Landslide Deposits in San Mateo County, California; 1972.

Legend

--- Approximate sanitary sewer layout

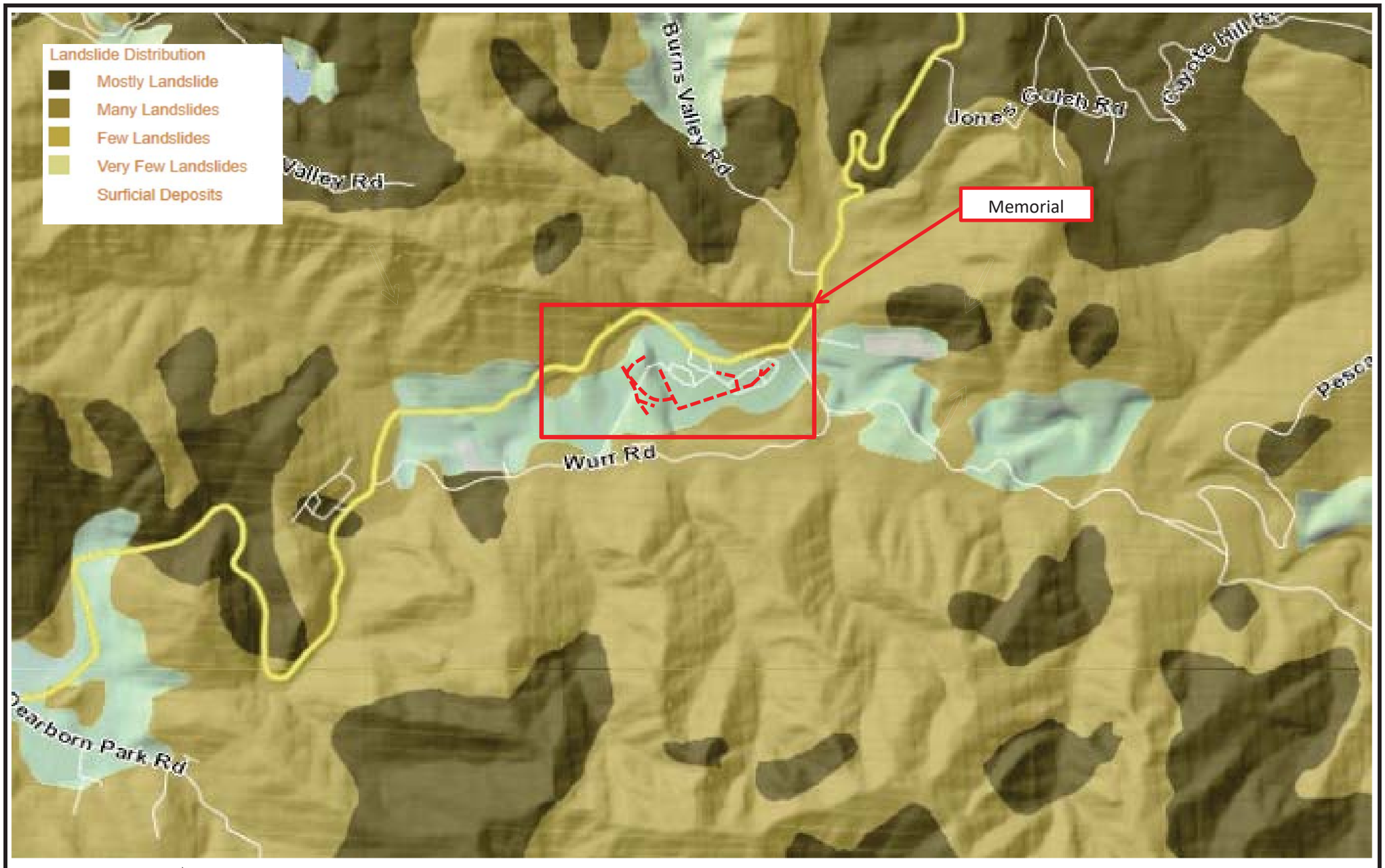
CONSTRUCTION TESTING SERVICES

Drawn by: M. Turner
CTS Job: 16600

Date: 08/28/2020
File: Landslides

MAP OF LANDSLIDES
MEMORIAL COUNTY PARK
WASTEWATER COLLECTION SYSTEM
LOMA MAR, CA

PLATE
8



North

Not to Scale

Source: Association of Bay Area Governments Resilience Program; Landslide Maps and Information

Legend

--- Approximate sanitary sewer layout

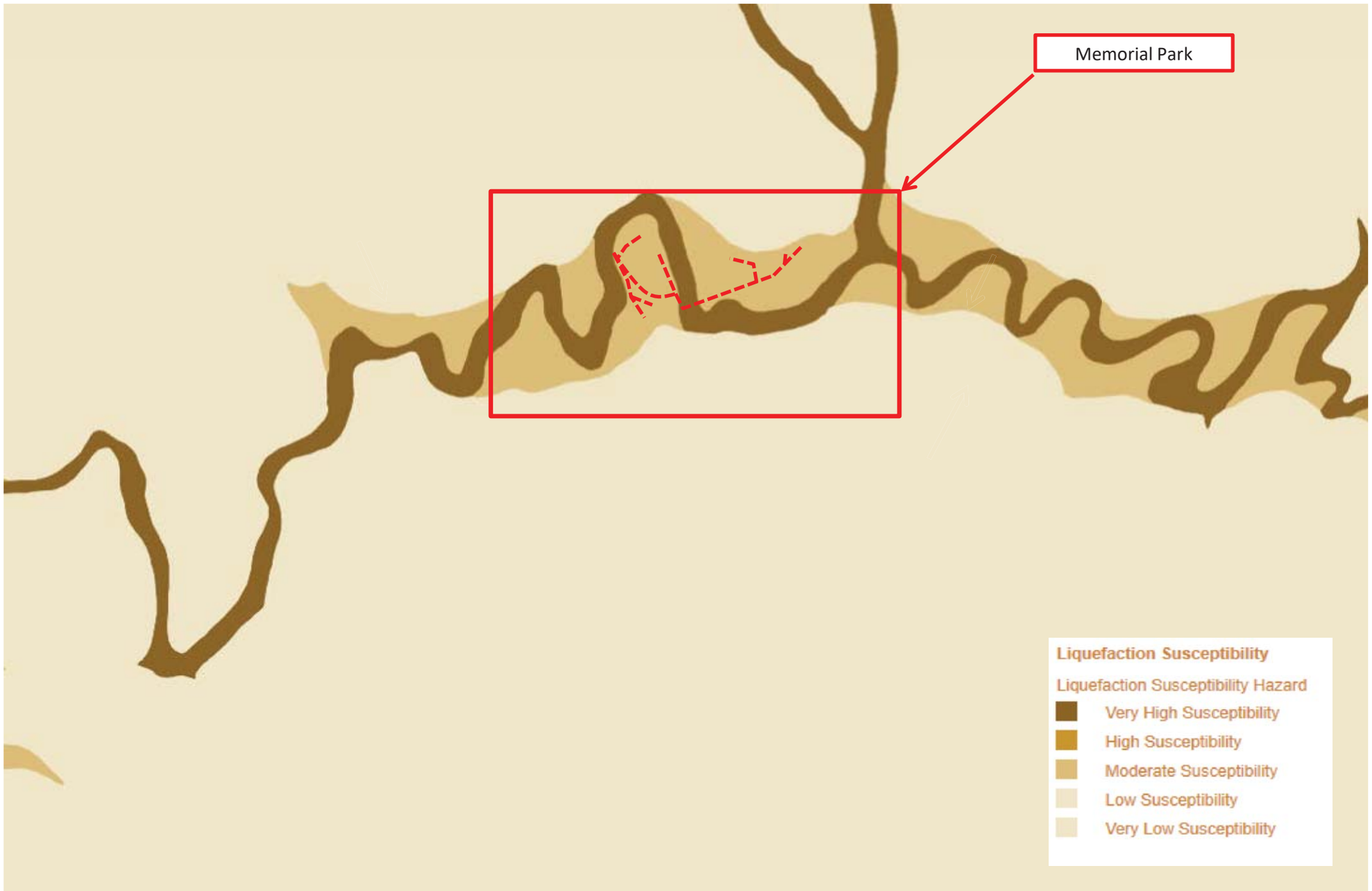
CONSTRUCTION TESTING SERVICES

Drawn by: M. Turner
CTS Job: 16600

Date: 08/28/2020
File: Landslide Distrubution

LANDSLIDE DISTRIBUTION MAP
MEMORIAL COUNTY PARK
WASTEWATER COLLECTION SYSTEM
LOMA MAR, CA

PLATE
9



North

Not to Scale

Legend

--- Approximate sanitary sewer layout

Source: Association of Bay Area Governments Resilience Program; Landslide Maps and Information

CONSTRUCTION TESTING SERVICES

Drawn by: M. Turner
CTS Job: 16600

Date: 08/28/2020
File: Liquefaction

LIQUEFACTION SUSCEPTIBILITY MAP
MEMORIAL COUNTY PARK
WASTEWATER COLLECTION SYSTEM
LOMA MAR, CA

PLATE
10

APPENDIX A

FIELD EXPLORATION

BORING LOGS

KEY TO SYMBOLS

CONSTRUCTION TESTING SERVICES
2118 Rheem Drive
Pleasanton, CA 94588
T: (925) 462-5151
F: (925) 462-5183

CLIENT San Mateo County Parks Department
PROJECT NAME Memorial Park Wastewater Collection
PROJECT NUMBER 16600
PROJECT LOCATION 9500 Pescadero Creek Road, Loma Mar, CA

LITHOLOGIC SYMBOLS
(Unified Soil Classification System)


ASPHALT: Asphalt


CH: USCS High Plasticity Clay


CL: USCS Low Plasticity Clay


CLG: USCS Low Plasticity Gravelly Clay


FILL: Fill (made ground)


GC: USCS Clayey Gravel


GM: USCS Silty Gravel


SC: USCS Clayey Sand


SW-SM: USCS Well-graded Sand with Silt

SAMPLER SYMBOLS


Auger Cuttings


Split Spoon with 2.5"ID


Grab Sample


Standard Penetration Test

WELL CONSTRUCTION SYMBOLS

ABBREVIATIONS

LL - LIQUID LIMIT (%)
PI - PLASTIC INDEX (%)
W - MOISTURE CONTENT (%)
DD - DRY DENSITY (PCF)
NP - NON PLASTIC
-200 - PERCENT PASSING NO. 200 SIEVE
PP - POCKET PENETROMETER (TSF)
TV - TORVANE
PID - PHOTOIONIZATION DETECTOR
UC - UNCONFINED COMPRESSION
ppm - PARTS PER MILLION
▽ Water Level at Time Drilling, or as Shown
▼ Water Level at End of Drilling, or as Shown
▼ Water Level After 24 Hours, or as Shown

BORING NUMBER WW-1

CTS

CLIENT San Mateo County Parks Department
PROJECT NAME Memorial Park Wastewater Collection System Improvements
PROJECT NUMBER 16600
PROJECT LOCATION Loma Mar, CA
DATE STARTED 8/6/2020 **COMPLETED** 8/6/2020
GROUND ELEVATION 205 ft MSL **HOLE SIZE** 6 inches
DRILLING CONTRACTOR HEW Drilling
GROUND WATER LEVELS:
DRILLING METHOD CME 75 with Solid Stem Augers
AT TIME OF DRILLING --- No Groundwater Encountered
LOGGED BY Gavin Lynch **CHECKED BY** Brad Quon, GE
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (FT)	SAMPLE TYPE NUMBER	POCKET PEN (tsf)	BLOW COUNTS (N VALUE)	UNCONFINED STRENGTH (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		(SM) Brown, dry to moist, medium-dense, silty **SAND**.		1									
				2		3-5-8 (13)							33
				1									
5		Moist.											
			199.5	3		4-6-8 (14)							
		(ML) Mottled grayish brown and reddish brown, moist, stiff, sandy **SILT**.											
		Reddish brown; less sand.		4		7-10-12 (22)							
10			195.0										
		(CL) Reddish brown, mosit, very stiff, sandy **LEAN CLAY**.		5		5-8-9 (17)		94	26	33	17	16	50
15													
			189.0	6		6-6-9 (15)	1.4	98	21				
		(SC) Reddish brown, moist, medium-dense, clayey **SAND**.	188.5										

Bottom of borehole at 16.5 feet.

BORING LOG WITH ELEVATIONS - GINT STD US LAB.GDT - 8/30/20 09:36 - \\GALWAY\DATA\ENGINEERING\GEOTECHNICAL ENGINEERING\GINT\PROJECTS\16600_MEMORIAL PARK WASTEWATER.GPJ

BORING NUMBER WW-2

CTS

CLIENT San Mateo County Parks Department
PROJECT NAME Memorial Park Wastewater Collection System Improvements
PROJECT NUMBER 16600
PROJECT LOCATION Loma Mar, CA
DATE STARTED 8/6/2020 **COMPLETED** 8/6/2020
GROUND ELEVATION 215 ft MSL **HOLE SIZE** 6 inches
DRILLING CONTRACTOR HEW Drilling
GROUND WATER LEVELS:
DRILLING METHOD CME 75 with Solid Stem Augers
AT TIME OF DRILLING --- No Groundwater Encountered
LOGGED BY Gavin Lynch **CHECKED BY** Brad Quon, GE
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (FT)	SAMPLE TYPE NUMBER	POCKET PEN (tsf)	BLOW COUNTS (N VALUE)	UNCONFINED STRENGTH (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		(CL) Brown, dry to moist, stiff, sandy **LEAN CLAY**; trace organics (roots).		1									
		(CL) Gray, dry to moist, hard, **LEAN CLAY**; scattered iron oxide staining.	212.0	2	5	8-14-19 (33)							
5				1									
		(CL) Light brown, moist, hard, sandy **LEAN CLAY**.	209.5	3	4.5	7-14-18 (32)							64
		Very stiff.		4		7-12-12 (24)	1.8	95	27				
10		Mottled brown and gray, stiff; scattered iron oxide staining.		5		5-7-7 (14)				38	22	16	60
15			200.0										
		Gray and greenish gray, dry to moist, weakly cemented silty **SANDSTONE**.	199.3	6		33-50/2"	2.9	74	19				24

Refusal at 15.7 feet.
Bottom of borehole at 15.7 feet.

BORING NUMBER WW-3

CTS

CLIENT San Mateo County Parks Department
PROJECT NAME Memorial Park Wastewater Collection System Improvements
PROJECT NUMBER 16600
PROJECT LOCATION Loma Mar, CA
DATE STARTED 8/5/2020 **COMPLETED** 8/5/2020
GROUND ELEVATION 200 ft MSL **HOLE SIZE** 8 inches
DRILLING CONTRACTOR HEW Drilling
GROUND WATER LEVELS:
DRILLING METHOD CME 75 with Hollow Stem Augers
AT TIME OF DRILLING --- No Groundwater Encountered
LOGGED BY Andrew Poelvoorde, PE **CHECKED BY** Brad Quon, GE
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (FT)	SAMPLE TYPE NUMBER	POCKET PEN (tsf)	BLOW COUNTS (N VALUE)	UNCONFINED STRENGTH (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		(SC) Brown, dry to moist, medium dense, **CLAYEY SAND**.		1									
			197.0	2	5	14-20-20 (40)							
		(CL) Mottled brown, gray, and orange, dry to moist, hard, **LEAN CLAY**.		1									
5				3	5	20-20-26 (46)							
				4	5	12-18-23 (41)							
		Moist; few fine sand; scattered granitic rock pieces (weathered).											
10			189.5	5		7-10-15 (25)		95	27				39
		(SM) Gray and tan, moist, medium dense, silty **SAND**; scattered iron-oxide staining; scattered siltstone pieces (< 1/2").											
15			184.5	6		29-50/4"				49	25	24	
		(CL) Gray, dry to moist, hard, sandy LEAN CLAY.											
20			180.0										

(Continued Next Page)

CLIENT San Mateo County Parks Department **PROJECT NAME** Memorial Park Wastewater Collection System Improvements

PROJECT NUMBER 16600 **PROJECT LOCATION** Loma Mar, CA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (FT)	SAMPLE TYPE NUMBER	POCKET PEN (tsf)	BLOW COUNTS (N VALUE)	UNCONFINED STRENGTH (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
20		(SC) Gray, dry to moist, very dense, clayey SAND.		7		26-50/5"		105	15				17
25		Gray, dry to moist, strongly cemented silty **SANDSTONE**.	175.0	8		25-32-50 (82)		106	17				10
30						50/3"							
35						50/3"							
40			160.0										

(Continued Next Page)

CLIENT San Mateo County Parks Department **PROJECT NAME** Memorial Park Wastewater Collection System Improvements

PROJECT NUMBER 16600 **PROJECT LOCATION** Loma Mar, CA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (FT)	SAMPLE TYPE NUMBER	POCKET PEN (tsf)	BLOW COUNTS (N VALUE)	UNCONFINED STRENGTH (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
40		Gray, dry to moist, strongly indurated **MUDSTONE**.		9		50/3"		102	19				
45				10		50/5"				69	25	44	
50				11		50/3"							
55			145.0	12		50/3"		92	19				31
60		Gray, dry to moist, strongly cemented silty **SANDSTONE**.	140.0										

(Continued Next Page)

CLIENT San Mateo County Parks Department **PROJECT NAME** Memorial Park Wastewater Collection System Improvements

PROJECT NUMBER 16600 **PROJECT LOCATION** Loma Mar, CA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (FT)	SAMPLE TYPE NUMBER	POCKET PEN (tsf)	BLOW COUNTS (N VALUE)	UNCONFINED STRENGTH (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
60		Gray, dry to moist, strongly indurated **MUDSTONE**.		13		50/3"		100	18				
65				14		50/2"	2.7						
70		Moist.	129.8	15		50/2"		93	23				74
		Bottom of borehole at 70.2 feet.											

BORING NUMBER WW-4

CTS

CLIENT San Mateo County Parks Department
PROJECT NAME Memorial Park Wastewater Collection System Improvements
PROJECT NUMBER 16600
PROJECT LOCATION Loma Mar, CA
DATE STARTED 8/6/2020 **COMPLETED** 8/6/2020
GROUND ELEVATION 245 ft MSL **HOLE SIZE** 8 inches
DRILLING CONTRACTOR HEW Drilling
GROUND WATER LEVELS:
DRILLING METHOD CME 75 with Hollow Stem Augers
AT TIME OF DRILLING --- No Groundwater Encountered
LOGGED BY Gavin Lynch **CHECKED BY** Brad Quon, GE
AT END OF DRILLING ---
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (FT)	SAMPLE TYPE NUMBER	POCKET PEN (tsf)	BLOW COUNTS (N VALUE)	UNCONFINED STRENGTH (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0		(SM) Reddish brown, dry to moist, dense, silty **SAND**; trace organics (roots).		1									
				2		5-13-22 (35)							
5				1									
				3		14-19-23 (42)							
		Reddish yellow and dark brown.											
				4		13-12-14 (26)							
		(ML) Reddish yellow, dry to moist, very stiff, sandy **SILT**.	236.5										
10				5		8-23-50/3"							
		(SM) Dark brown, dry to moist, very dense, silty **SAND**.	234.0										
15		Dark brown, reddish brown, and tan, moist; scattered gravel (< 1/4").		6		27-50/4"							
		Scattered sandstone pieces (< 1.5").											
20			225.0										

(Continued Next Page)

CLIENT San Mateo County Parks Department **PROJECT NAME** Memorial Park Wastewater Collection System Improvements

PROJECT NUMBER 16600 **PROJECT LOCATION** Loma Mar, CA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (FT)	SAMPLE TYPE NUMBER	POCKET PEN (tsf)	BLOW COUNTS (N VALUE)	UNCONFINED STRENGTH (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
20		(SM) Dark brown, dry to moist, medium dense, silty **SAND**.		7		7-8-16 (24)	0.8						19
			223.5										
		(ML) Light gray, moist, very stiff, sandy **SILT**; iron oxide staining throughout.											
25			219.5	8		8-21-50 (71)		87	26				53
		Gray, dry to moist, strongly indurated **MUDSTONE**.											
30				9		9-29-50 (79)		94	23	63	29	34	77
35		Dark gray.		10		16-31-50/4"	2	95	22				81
40													

(Continued Next Page)

BORING NUMBER WW-4

CTS

CLIENT San Mateo County Parks Department **PROJECT NAME** Memorial Park Wastewater Collection System Improvements

PROJECT NUMBER 16600 **PROJECT LOCATION** Loma Mar, CA

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (FT)	SAMPLE TYPE NUMBER	POCKET PEN (tsf)	BLOW COUNTS (N VALUE)	UNCONFINED STRENGTH (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
40		Gray, dry to moist, strongly indurated **MUDSTONE**. *(continued)*		11		7-50/5"	3.2						
45				12		50/5"	0.9						
		Light gray and dark gray.											
50			195.0										
		Dark gray, dry to moist, strongly cemented silty **SANDSTONE**.	194.7	13		50/4"		94	22				41
		Bottom of borehole at 50.3 feet.											

APPENDIX B

LABORATORY TESTING

CONSTRUCTION TESTING SERVICES

SOIL MOISTURE CONTENT AND DENSITY

Test Performed in General Accordance with ASTM D 2216 - Moisture Content and ASTM D 2937 - Density

Project Name:	Memorial Park - Wastewater System	**CTS Job No.**	16600
Project Location:	Loma Mar, CA	**Client:**	San Mateo Parks
Date Sampled:	8/5/20 + 8/6/20	**Report Date:**	8/12/20
Date Tested:	8/11/20	**Sampled by:**	AQP/GL

☐ Method A (to nearest 1g) ☑ Method B (to nearest 0.1g)

	Moisture Content Determination						
	Boring or Test	**WW-1**	**WW-1**	**WW-2**	**WW-2**	**WW-3**	**WW-3**
	Area or Depth	**10.5-11'**	**15.5-16'**	**8-8.5'**	**15.5-16'**	**10.5-11'**	**20.5-20.9'**
	Container No.	A3	KP2	Z5	X103	D13	J10
A	Wet Wt + Container (g)	1223.6	1146.1	1156.5	648.4	1062.2	1112.6
B	Dry Wt + Container (g)	1050.2	1015.9	975.6	606.7	893.8	1004.9
C=A-B	Wt of Water (g)	173.4	130.2	180.9	41.7	168.4	107.7
D	Wt of Container (g)	390.6	388.6	303.8	382.5	271.4	304.6
E=B-D	Dry Wt of Soil (g)	659.6	627.3	671.8	224.2	622.4	700.3
F=C/E*100	**Water Content (%)**	**26.3**	**20.8**	**26.9**	**18.6**	**27.1**	**15.4**
Oven temp if other than 110° C							
Mass used less than minimum in Section 8.2							

	Density Determination						
G	Mass of Soil (g)	833	757.5	852.7	265.9	790.8	808
H	Length of Sample (in)	5.89	5.31	5.93	2.56	5.48	5.64
I	Diameter of Sample (in)	2.4	2.42	2.41	2.39	2.41	2.40
$J=\pi*I^2/4$	Area of Sample (in^2)	4.524	4.600	4.562	4.486	4.562	4.524
K=H*J	Volume of Sample (in^3)	26.646	24.424	27.051	11.485	24.998	25.515
L=G/K	Moist Density (pcf)	119.1	118.2	120.1	88.2	120.5	120.6
L	Water Content (from F, above)	26.3	20.8	26.9	18.6	27.1	15.4
M=K/(1+L)	**Dry Density (pcf)**	**94.3**	**97.8**	**94.6**	**74.4**	**94.8**	**104.6**

Notes: **1. Divide "grams" by 453.6 to get lbs**

Reviewed by: Gavin Lynch Date: 8/12/2020

Title: Staff Engineer

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CONSTRUCTION TESTING SERVICES

SOIL MOISTURE CONTENT AND DENSITY

Test Performed in General Accordance with ASTM D 2216 - Moisture Content and ASTM D 2937 - Density

Project Name:	Memorial Park - Wastewater System	**CTS Job No.**	16600
Project Location:	Loma Mar, CA	**Client:**	San Mateo Parks
Date Sampled:	8/5/20 + 8/6/20	**Report Date:**	8/12/20
Date Tested:	8/11/20	**Sampled by:**	AQP/GL

☐ Method A (to nearest 1g) ☑ Method B (to nearest 0.1g)

	Moisture Content Determination						
	Boring or Test	**WW-3**	**WW-3**	**WW-3**	**WW-3**	**WW-3**	**WW-4**
	Area or Depth	**26-26.5'**	**40-40.3'**	**55-55.3'**	**60-60.3'**	**70-70.2'**	**25.5-26'**
	Container No.	CAT	Z3	CH-200	NP6	M02	CH2
A	Wet Wt + Container (g)	1016.8	808.1	962.7	893.2	948.8	1097.3
B	Dry Wt + Container (g)	903.3	728.4	869.3	817.0	842.2	953.8
C=A-B	Wt of Water (g)	113.5	79.7	93.4	76.2	106.6	143.5
D	Wt of Container (g)	232.6	307.8	386.1	395.8	386.4	390.6
E=B-D	Dry Wt of Soil (g)	670.7	420.6	483.2	421.2	455.8	563.2
F=C/E*100	**Water Content (%)**	**16.9**	**18.9**	**19.3**	**18.1**	**23.4**	**25.5**
Oven temp if other than 110° C							
Mass used less than minimum in Section 8.2							

	Density Determination						
G	Mass of Soil (g)	784.2	500.3	576.6	497.4	562.4	706.7
H	Length of Sample (in)	5.24	3.39	4.34	3.48	4.29	5.42
I	Diameter of Sample (in)	2.42	2.43	2.42	2.42	2.35	2.41
$J=\pi*I^2/4$	Area of Sample (in^2)	4.600	4.638	4.600	4.600	4.337	4.562
K=H*J	Volume of Sample (in^3)	24.102	15.722	19.962	16.007	18.607	24.724
L=G/K	Moist Density (pcf)	123.9	121.2	110.0	118.4	115.1	108.9
L	Water Content (from F, above)	16.9	18.9	19.3	18.1	23.4	25.5
M=K/(1+L)	**Dry Density (pcf)**	**106.0**	**101.9**	**92.2**	**100.2**	**93.3**	**86.8**

Notes: **1. Divide "grams" by 453.6 to get lbs**

Reviewed by: Gavin Lynch Date: 8/12/2020

Title: Staff Engineer

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CONSTRUCTION TESTING SERVICES

SOIL MOISTURE CONTENT AND DENSITY

Test Performed in General Accordance with ASTM D 2216 - Moisture Content and ASTM D 2937 - Density

Project Name:	Memorial Park - Wastewater System	**CTS Job No.**	16600
Project Location:	Loma Mar, CA	**Client:**	San Mateo Parks
Date Sampled:	8/5/20 + 8/6/20	**Report Date:**	8/12/20
Date Tested:	8/11/20	**Sampled by:**	AQP/GL

☐ Method A (to nearest 1g) ☑ Method B (to nearest 0.1g)

	Moisture Content Determination						
	Boring or Test	**WW-4**	**WW-4**	**WW-4**			
	Area or Depth	**30.5-30.9'**	**35.5-35.9'**	**50-50.5'**			
	Container No.	D18	QT	NP1			
A	Wet Wt + Container (g)	919.5	1057.5	1104.3			
B	Dry Wt + Container (g)	796.9	938.3	978.7			
C=A-B	Wt of Water (g)	122.6	119.2	125.6			
D	Wt of Container (g)	273.3	395.4	394.4			
E=B-D	Dry Wt of Soil (g)	523.6	542.9	584.3			
F=C/E*100	**Water Content (%)**	**23.4**	**22.0**	**21.5**			
Oven temp if other than 110° C							
Mass used less than minimum in Section 8.2							

	Density Determination						
G	Mass of Soil (g)	646.2	662.1	709.9			
H	Length of Sample (in)	4.61	4.71	5.15			
I	Diameter of Sample (in)	2.42	2.42	2.42			
$J=\pi*I^2/4$	Area of Sample (in^2)	4.600	4.600	4.600			
K=H*J	Volume of Sample (in^3)	21.204	21.664	23.688			
L=G/K	Moist Density (pcf)	116.1	116.4	114.2			
L	Water Content (from F, above)	23.4	22.0	21.5			
M=K/(1+L)	**Dry Density (pcf)**	**94.1**	**95.5**	**94.0**			

Notes: **1. Divide "grams" by 453.6 to get lbs**

Reviewed by: Gavin Lynch Date: 8/12/2020

Title: Staff Engineer

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Atterberg Limits - Plasticity

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-1 (11-11.5')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/06/2020	**Lab Log No.:**	217663

Description: Sandy Lean Clay
Liquid Limit: 33
Plastic Limit: 17
Plasticity Index: 16

Test Method (As Applicable):ASTM D4318

08/17/2020

Reviewed by: Gavin Lynch - Staff Engineer — Date

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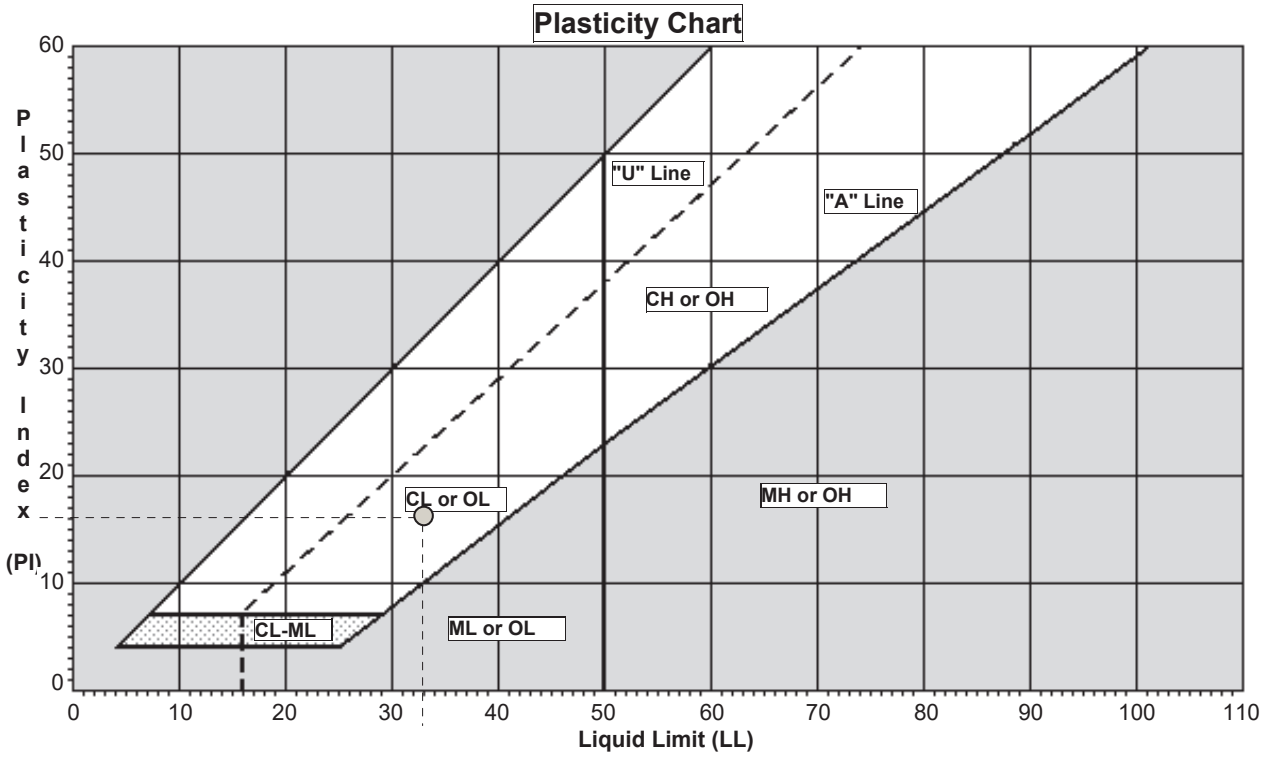
Atterberg Limits - Plasticity

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-1 (11-11.5')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/06/2020	**Lab Log No.:**	217663



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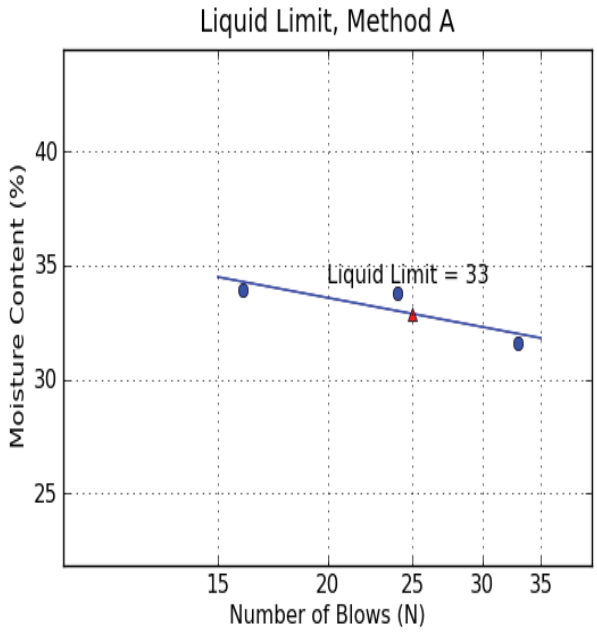
Atterberg Limits - Plasticity

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-1 (11-11.5')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/06/2020	**Lab Log No.:**	217663



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Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-2 (10.5-11')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217718

Description: Sandy Lean Clay
Liquid Limit: 38
Plastic Limit: 22
Plasticity Index: 16

Test Method (As Applicable):ASTM D4318

08/17/2020

Reviewed by: Gavin Lynch - Staff Engineer — Date

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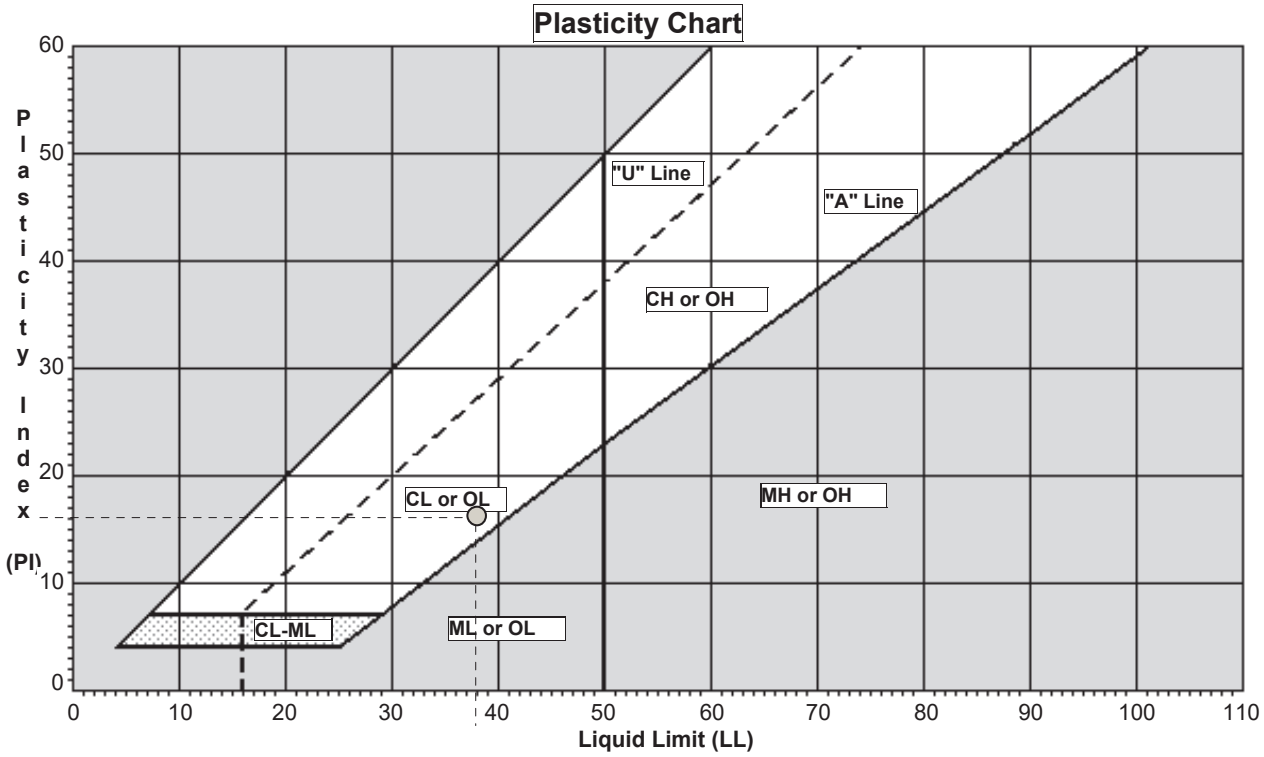
Atterberg Limits - Plasticity

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-2 (10.5-11')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217718



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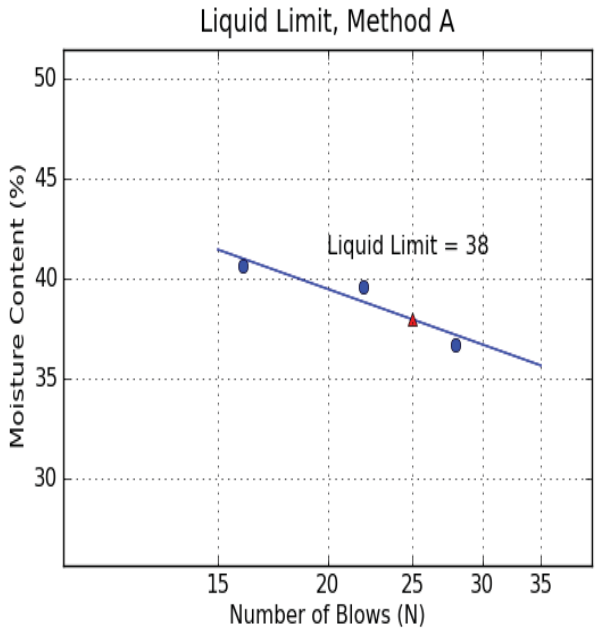
Atterberg Limits - Plasticity

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-2 (10.5-11')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217718



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Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-3 (15.5-16')		pending
Project No.:	16600	**Sampled By:**	Andrew Poelvoorde, PE	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217722

Description: Sandy Lean Clay
Liquid Limit: 49
Plastic Limit: 25
Plasticity Index: 24

Test Method (As Applicable):ASTM D4318

Date

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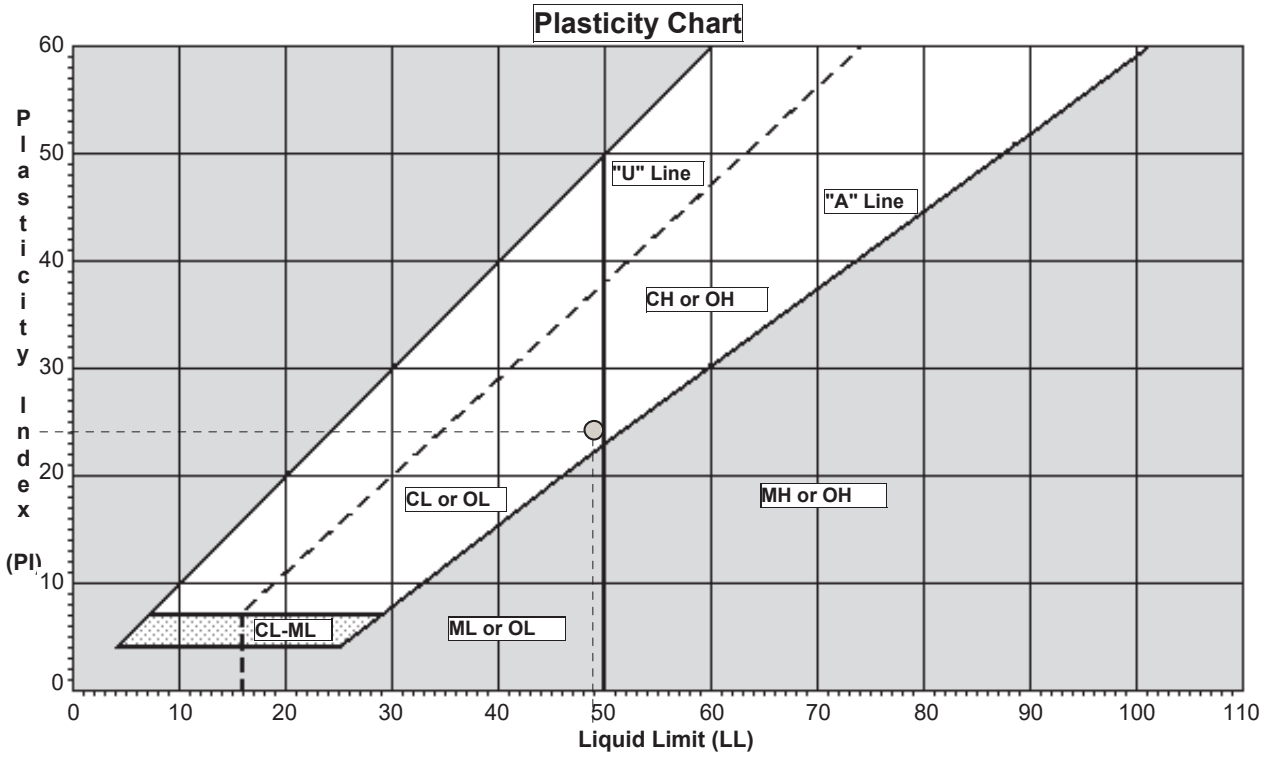
Atterberg Limits - Plasticity

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-3 (15.5-16')		pending
Project No.:	16600	**Sampled By:**	Andrew Poelvoorde, PE	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217722



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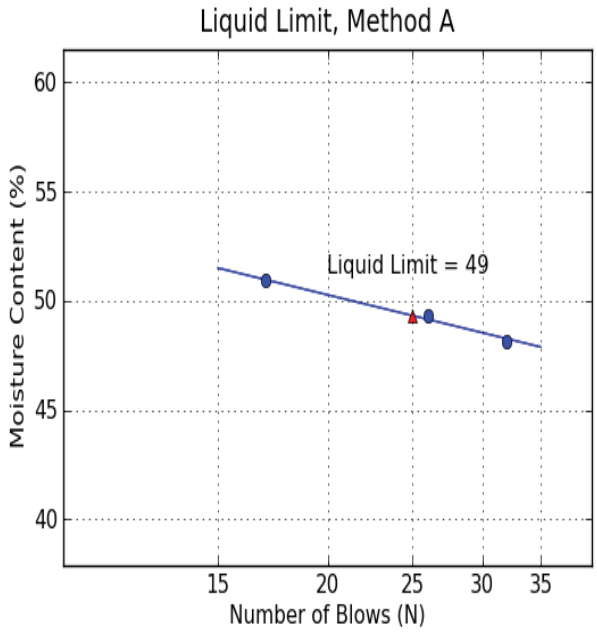
Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-3 (15.5-16')		pending
Project No.:	16600	**Sampled By:**	Andrew Poelvoorde, PE	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217722



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Atterberg Limits - Plasticity

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-3 (45-45.4')		pending
Project No.:	16600	**Sampled By:**	Andrew Poelvoorde, PE	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217733

Description: Silty Sandstone
Liquid Limit: 69
Plastic Limit: 25
Plasticity Index: 44

Test Method (As Applicable):ASTM D4318

08/17/2020

Reviewed by: Gavin Lynch - Staff Engineer — Date

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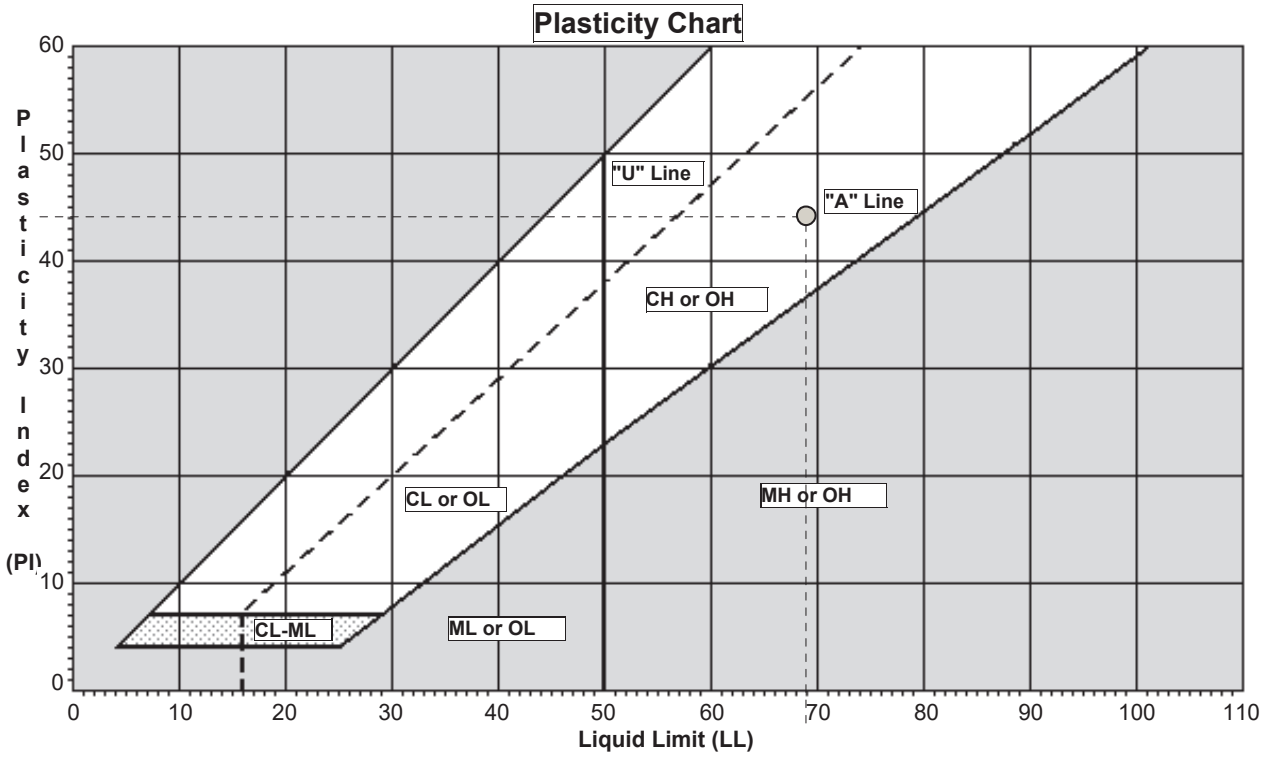
Atterberg Limits - Plasticity

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-3 (45-45.4')		pending
Project No.:	16600	**Sampled By:**	Andrew Poelvoorde, PE	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217733



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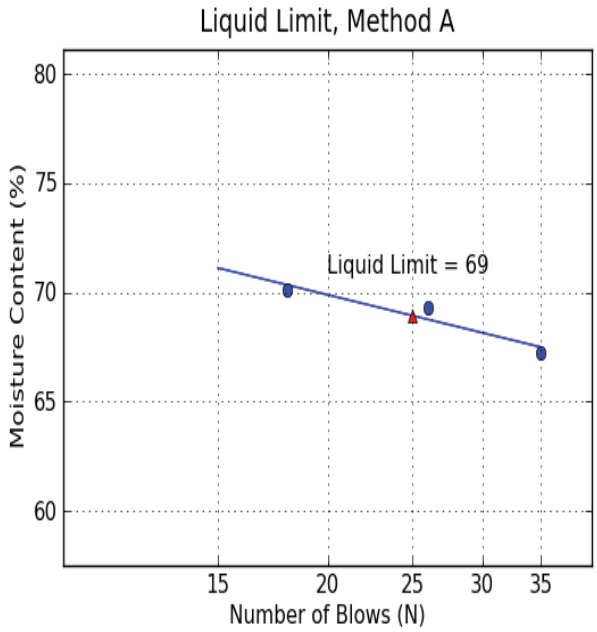
Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-3 (45-45.4')		pending
Project No.:	16600	**Sampled By:**	Andrew Poelvoorde, PE	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217733



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Atterberg Limits - Plasticity

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-4 (31-31.5')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217750

Description: Mudstone
Liquid Limit: 63
Plastic Limit: 29
Plasticity Index: 34

Test Method (As Applicable):ASTM D4318

08/17/2020

Reviewed by: Gavin Lynch - Staff Engineer — Date

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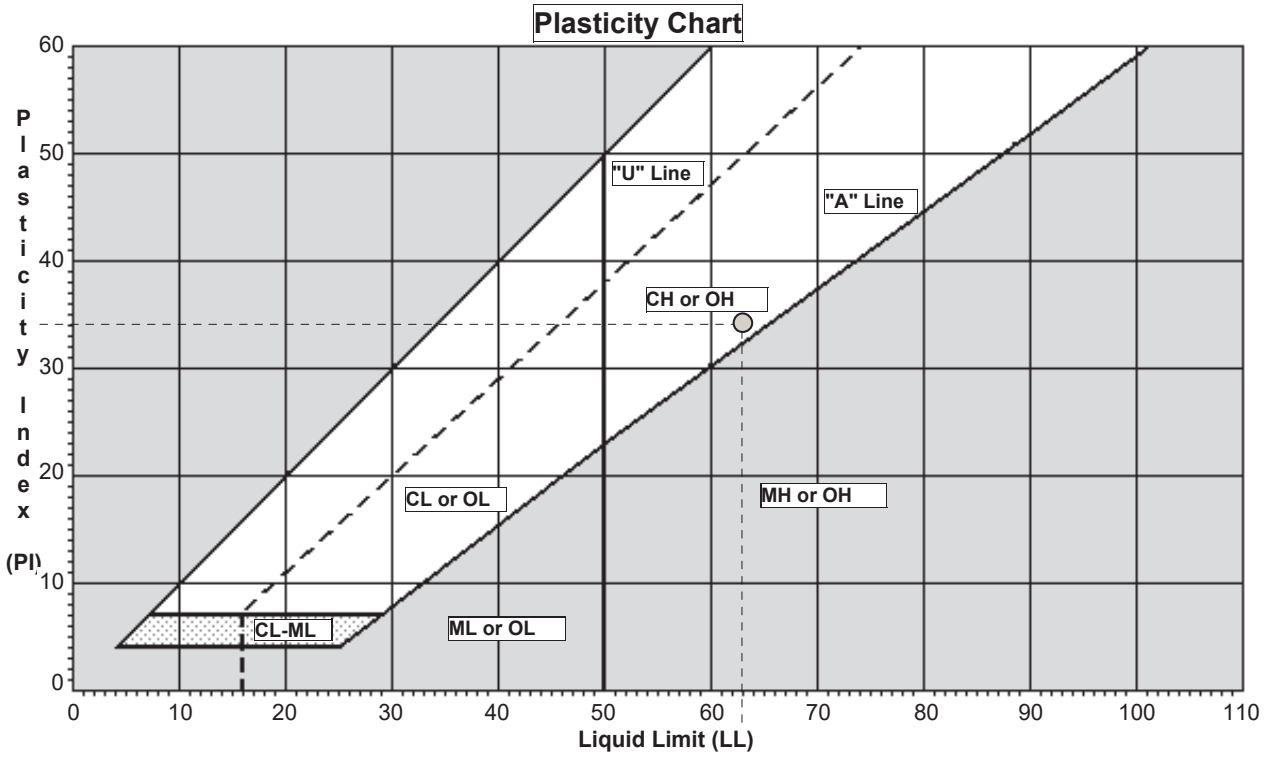
Atterberg Limits - Plasticity

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-4 (31-31.5')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217750



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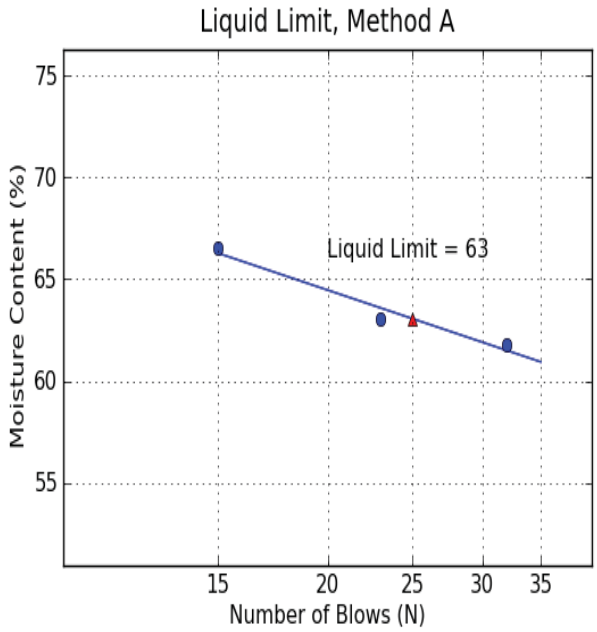
Atterberg Limits - Plasticity

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-4 (31-31.5')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217750



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Sieve Analysis

Project Name: Wastewater Colleciton System Improvements Geo Report
Place of Sampling: Boring WW-1 (3.5-4') pending

Project No.: 16600
Sampled By: Gavin Lynch
Report Date: 08/17/2020
Client: San Mateo County Parks Department
Date of Sampling: 08/11/2020
Lab Log No.: 217847

Material: Silty Fine Sand
Source: Native
Test Performed By: CJ Michael Mahurin
Boring No.: WW-1
Specific Gravity: 2.7 Estimated
Max Particle Size: #30
Date Tested: 08/14/2020

Sieve Designation	Sieve Size		Individual % Retained	Cumulative % Retained	Cumulative % Passing	Required
No. 16	0.047 in	1.18 mm	0	0	100	
No. 30	0.023 in	600.0 µm	0.1	0.1	100	
No. 50	0.012 in	300.0 µm	2.6	2.7	97	
No. 100	0.006 in	150.0 µm	33.5	36.2	64	
No. 200	0.003 in	75.0 µm	30.4	66.6	33	

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ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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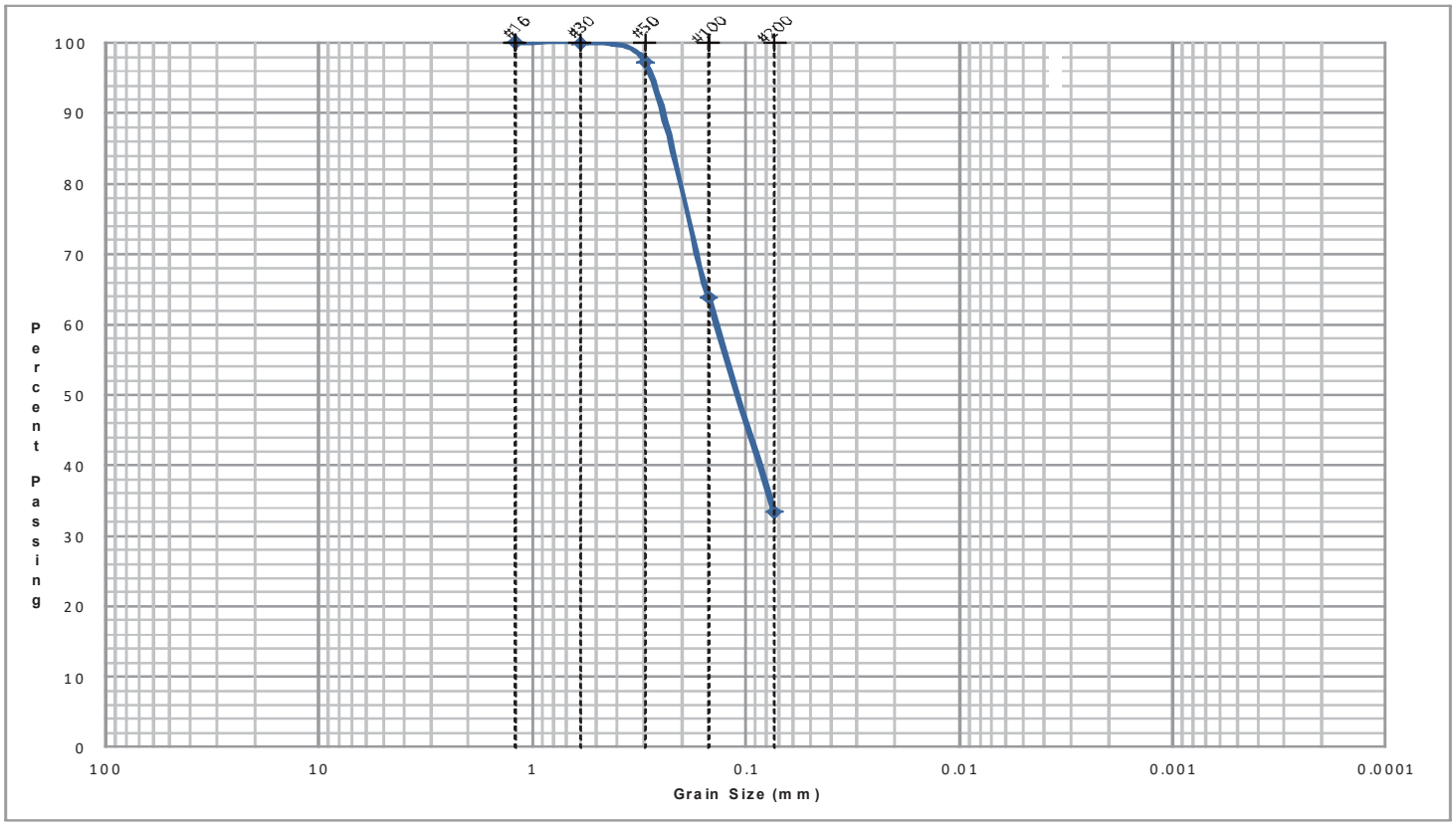
Sieve Analysis

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-1 (3.5-4')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/11/2020	**Lab Log No.:**	217847



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Reviewed by: Gavin Lynch - Staff Engineer — Date

ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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Sieve Analysis

Project Name: Wastewater Colleciton System Improvements Geo Report
Place of Sampling: Boring WW-1 (10.5-11') pending

Project No.: 16600
Sampled By: Gavin Lynch
Report Date: 08/17/2020
Client: San Mateo County Parks Department
Date of Sampling: 08/06/2020
Lab Log No.: 217662

Material: Silty Fine Sand
Source: Native
Test Performed By: CJ Michael Mahurin
Boring No.: WW-1
Specific Gravity: 2.7 Estimated
Max Particle Size: #30
Date Tested: 08/14/2020

Sieve Designation	Sieve Size		Individual % Retained	Cumulative % Retained	Cumulative % Passing	Required
No. 16	0.047 in	1.18 mm	0	0	100	
No. 30	0.023 in	600.0 µm	0.2	0.2	100	
No. 50	0.012 in	300.0 µm	0.9	1.1	99	
No. 100	0.006 in	150.0 µm	6.2	7.3	93	
No. 200	0.003 in	75.0 µm	43.0	50.3	50	

Reviewed by: Gavin Lynch - Staff Engineer — 08/17/2020 Date

ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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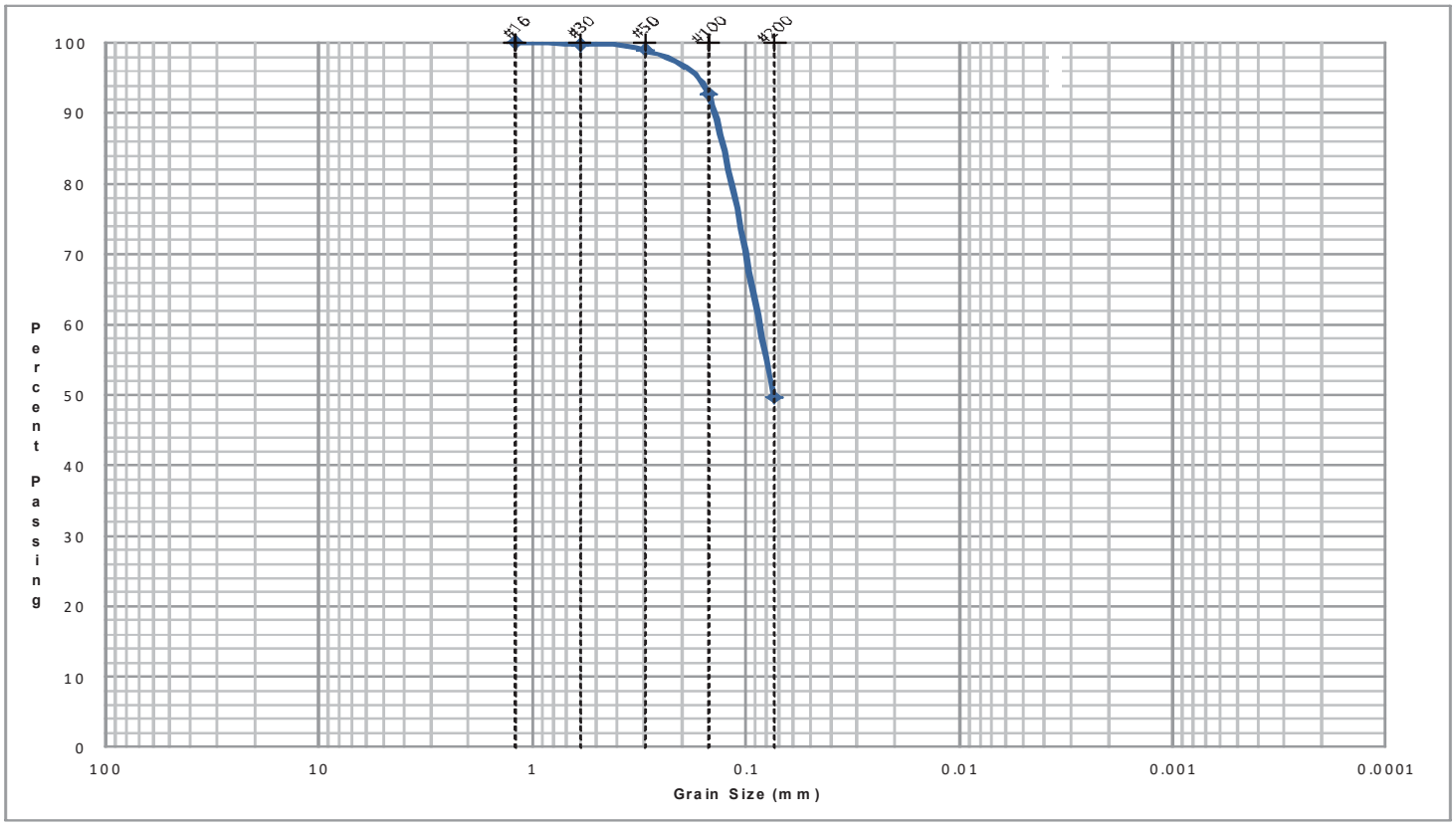
Sieve Analysis

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-1 (10.5-11')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/06/2020	**Lab Log No.:**	217662



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Reviewed by: Gavin Lynch - Staff Engineer — Date

ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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Sieve Analysis

Project Name: Wastewater Colleciton System Improvements Geo Report
Place of Sampling: Boring WW-2 (6-6.5') pending

Project No.: 16600
Sampled By: Gavin Lynch
Report Date: 08/17/2020
Client: San Mateo County Parks Department
Date of Sampling: 08/11/2020
Lab Log No.: 217850

Material: Sandy Lean Clay
Source: Native
Test Performed By: CJ Michael Mahurin
Boring No.: WW-2
Specific Gravity: 2.7 Estimated
Max Particle Size: #16
Date Tested: 08/13/2020

Sieve Designation	Sieve Size		Individual % Retained	Cumulative % Retained	Cumulative % Passing	Required
No. 8	0.094 in	2.36 mm	0	0	100	
No. 16	0.047 in	1.18 mm	0.1	0.1	100	
No. 30	0.023 in	600.0 µm	0.3	0.4	100	
No. 50	0.012 in	300.0 µm	0.8	1.2	99	
No. 100	0.006 in	150.0 µm	5.9	7.1	93	
No. 200	0.003 in	75.0 µm	29.0	36.1	63.9	

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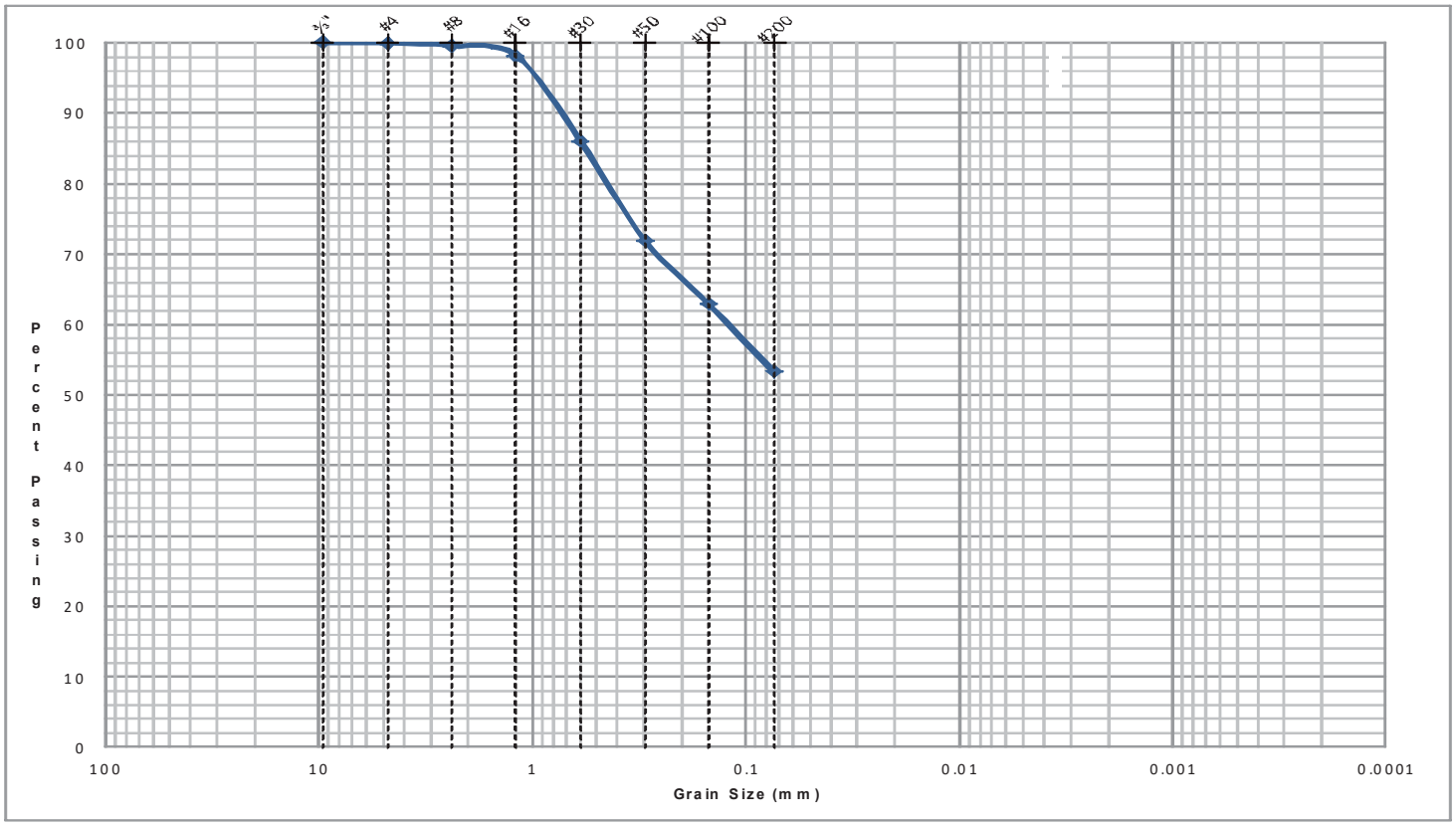
Sieve Analysis

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-2 (6-6.5')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/11/2020	**Lab Log No.:**	217850



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Sieve Analysis

Project Name: Wastewater Colleciton System Improvements Geo Report
Place of Sampling: Boring WW-2 (10-10.5') pending

Project No.: 16600
Sampled By: Gavin Lynch
Report Date: 08/17/2020
Client: San Mateo County Parks Department
Date of Sampling: 08/11/2020
Lab Log No.: 217846

Material: Sandy Silt
Source: Native
Test Performed By: CJ Michael Mahurin
Boring No.: WW-2
Specific Gravity: 2.7 Estimated
Max Particle Size: #8
Date Tested: 08/14/2020

Sieve Designation	Sieve Size		Individual % Retained	Cumulative % Retained	Cumulative % Passing	Required
No. 4	0.187 in	4.75 mm	0	0	100	
No. 8	0.094 in	2.36 mm	0.1	0.1	100	
No. 16	0.047 in	1.18 mm	0.0	0.1	100	
No. 30	0.023 in	600.0 µm	0.4	0.5	100	
No. 50	0.012 in	300.0 µm	2.4	2.9	97	
No. 100	0.006 in	150.0 µm	4.8	7.8	92	
No. 200	0.003 in	75.0 µm	32.5	40.3	60	

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ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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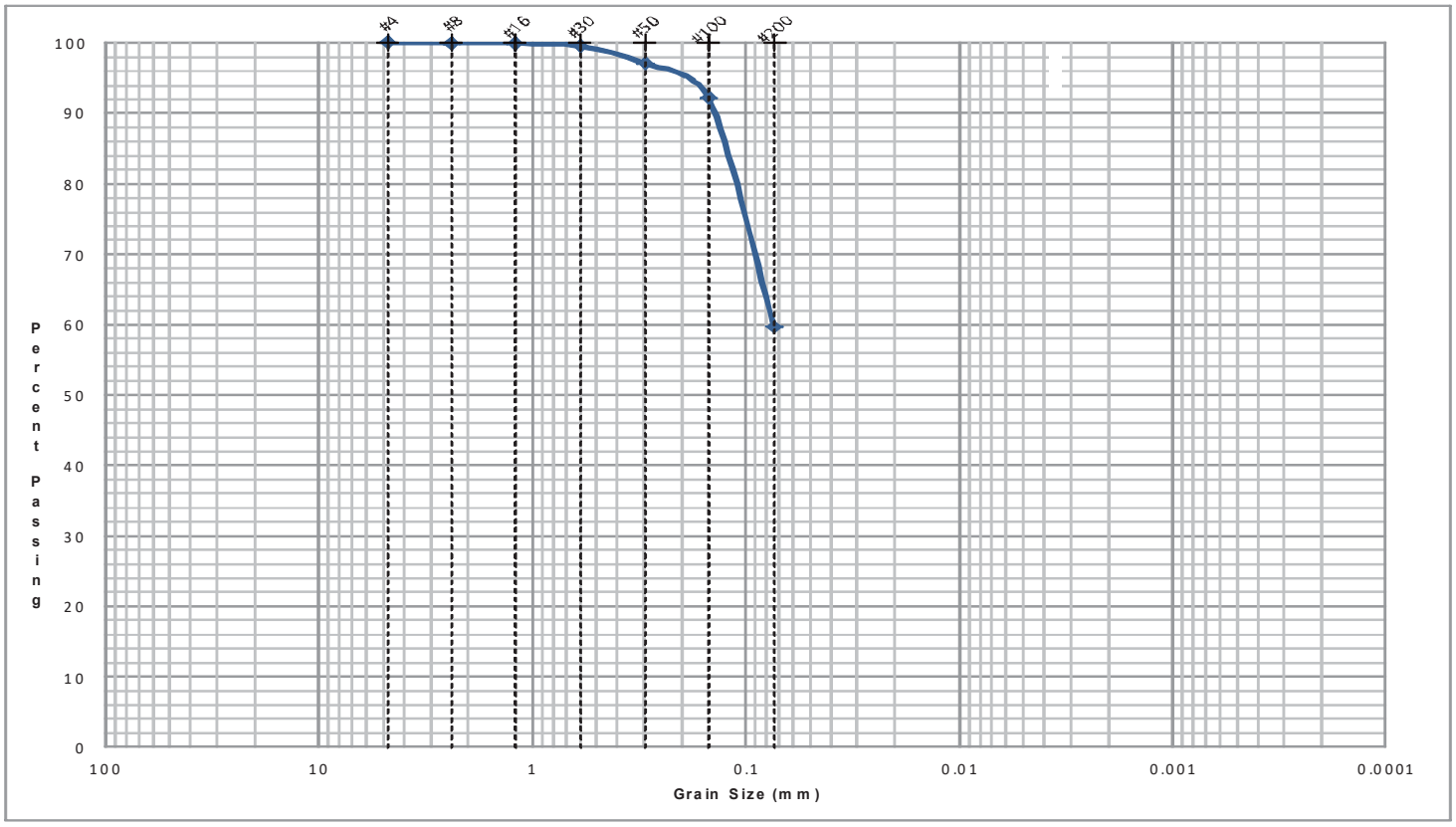
Sieve Analysis

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-2 (10-10.5')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/11/2020	**Lab Log No.:**	217846



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ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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Sieve Analysis

Project Name: Wastewater Colleciton System Improvements Geo Report

Place of Sampling: Boring WW-2 (15.5-16') pending

Project No.: 16600

Sampled By: Gavin Lynch

Report Date: 08/17/2020

Client: San Mateo County Parks Department

Date of Sampling: 08/10/2020

Lab Log No.: 217719

Material: Silty Sandstone

Source: Native

Test Performed By: CJ Michael Mahurin

Boring No.: WW-2

Specific Gravity: 2.7 Estimated

Max Particle Size: #4

Date Tested: 08/14/2020

Sieve Designation	Sieve Size		Individual % Retained	Cumulative % Retained	Cumulative % Passing	Required
3/8 in	0.375 in	9.5 mm	0	0	100	
No. 4	0.187 in	4.75 mm	0.1	0.1	100	
No. 8	0.094 in	2.36 mm	1.1	1.2	99	
No. 16	0.047 in	1.18 mm	1.5	2.7	97	
No. 30	0.023 in	600.0 µm	2.2	5.0	95	
No. 50	0.012 in	300.0 µm	3.6	8.5	91	
No. 100	0.006 in	150.0 µm	23.0	31.5	68	
No. 200	0.003 in	75.0 µm	44.1	75.6	24	

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Reviewed by: Gavin Lynch - Staff Engineer — Date

ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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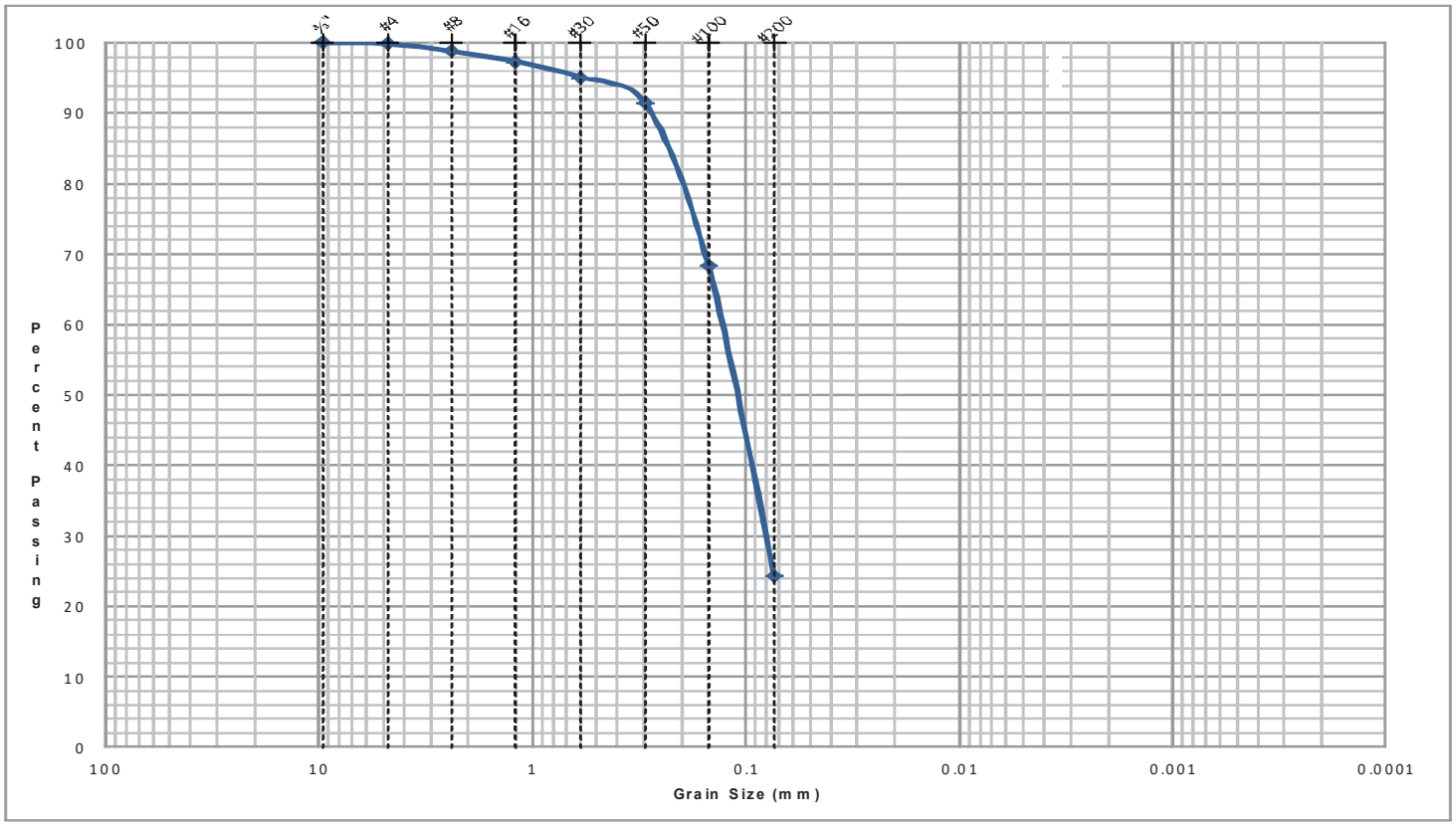
Sieve Analysis

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-2 (15-15.5')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217719



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ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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Sieve Analysis

Project Name: Wastewater Colleciton System Improvements Geo Report
Place of Sampling: Boring WW-3 (10.5-11') pending

Project No.: 16600
Sampled By: Andrew Poelvoorde, PE
Report Date: 08/17/2020
Client: San Mateo County Parks Department
Date of Sampling: 08/10/2020
Lab Log No.: 217721

Material: Silty Sand
Source: Native
Test Performed By: CJ Michael Mahurin
Boring No.: WW-3

Specific Gravity: 2.7 Estimated
Max Particle Size: #4
Date Tested: 08/14/2020

Sieve Designation	Sieve Size		Individual % Retained	Cumulative % Retained	Cumulative % Passing	Required
3/8 in	0.375 in	9.5 mm	0	0	100	
No. 4	0.187 in	4.75 mm	4.7	4.7	95	
No. 8	0.094 in	2.36 mm	7.1	11.8	88	
No. 16	0.047 in	1.18 mm	9.2	21.0	79	
No. 30	0.023 in	600.0 µm	8.3	29.3	71	
No. 50	0.012 in	300.0 µm	8.5	37.8	62	
No. 100	0.006 in	150.0 µm	10.0	47.7	52	
No. 200	0.003 in	75.0 µm	13.2	60.9	39	

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ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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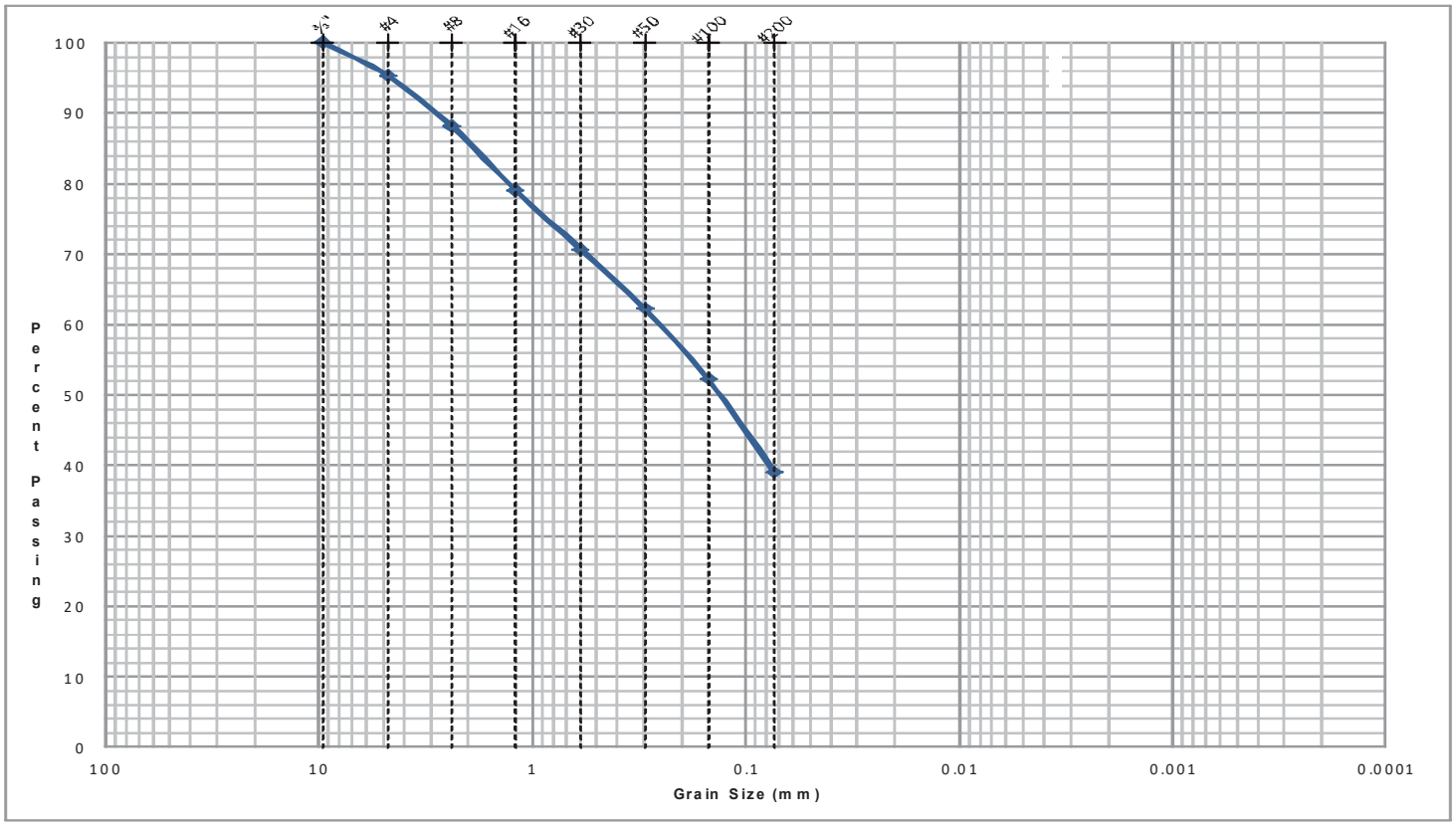
Sieve Analysis

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-3 (10.5-11')		pending
Project No.:	16600	**Sampled By:**	Andrew Poelvoorde, PE	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217721



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ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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Sieve Analysis

Project Name: Wastewater Colleciton System Improvements Geo Report
Place of Sampling: Boring WW-3 (20.5-20.9') pending

Project No.: 16600
Sampled By: Andrew Poelvoorde, PE
Report Date: 08/17/2020
Client: San Mateo County Parks Department
Date of Sampling: 08/10/2020
Lab Log No.: 217723

Material: Silty Sand
Source: Native
Test Performed By: CJ Michael Mahurin
Boring No.: WW-3

Specific Gravity: 2.7 Estimated
Max Particle Size: 3/8"
Date Tested: 08/14/2020

Sieve Designation	Sieve Size		Individual % Retained	Cumulative % Retained	Cumulative % Passing	Required
1/2 in	0.5 in	12.5 mm	0	0	100	
3/8 in	0.375 in	9.5 mm	1.9	1.9	98	
No. 4	0.187 in	4.75 mm	6.6	8.5	92	
No. 8	0.094 in	2.36 mm	12.3	20.8	79	
No. 16	0.047 in	1.18 mm	20.5	41.3	59	
No. 30	0.023 in	600.0 µm	20.3	61.6	38	
No. 50	0.012 in	300.0 µm	9.9	71.5	29	
No. 100	0.006 in	150.0 µm	5.6	77.0	23	
No. 200	0.003 in	75.0 µm	5.7	82.7	17	

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Reviewed by: Gavin Lynch - Staff Engineer — Date

ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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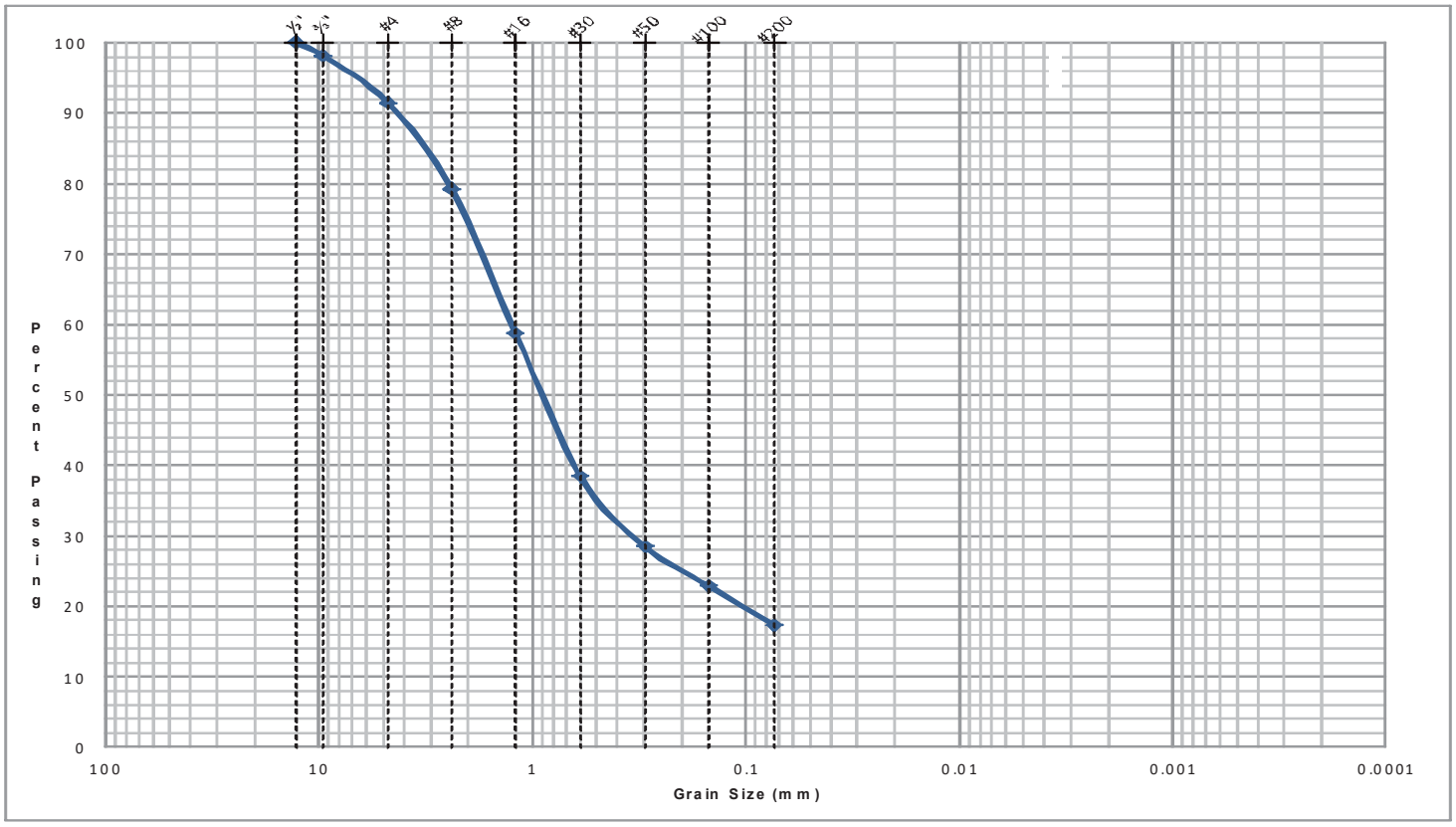
Sieve Analysis

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-3 (20.5-20.9')		pending
Project No.:	16600	**Sampled By:**	Andrew Poelvoorde, PE	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217723



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ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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Sieve Analysis

Project Name: Wastewater Colleciton System Improvements Geo Report

Place of Sampling: Boring WW-3 (26-26.4') pending

Project No.: 16600

Sampled By: Andrew Poelvoorde, PE

Report Date: 08/17/2020

Client: San Mateo County Parks Department

Date of Sampling: 08/10/2020

Lab Log No.: 217725

Material: Silty Sandstone

Source: Native

Test Performed By: CJ Michael Mahurin

Boring No.: WW-3

Specific Gravity: 2.7 Estimated

Max Particle Size: 3/8"

Date Tested: 08/14/2020

Sieve Designation	Sieve Size		Individual % Retained	Cumulative % Retained	Cumulative % Passing	Required
1/2 in	0.5 in	12.5 mm	0	0	100	
3/8 in	0.375 in	9.5 mm	6.2	6.2	94	
No. 4	0.187 in	4.75 mm	12.6	18.8	81	
No. 8	0.094 in	2.36 mm	26.1	44.8	55	
No. 16	0.047 in	1.18 mm	18.4	63.2	37	
No. 30	0.023 in	600.0 µm	10.8	74	26	
No. 50	0.012 in	300.0 µm	6.3	80.3	20	
No. 100	0.006 in	150.0 µm	5.1	85.3	15	
No. 200	0.003 in	75.0 µm	4.7	90.0	10.0	

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Reviewed by: Gavin Lynch - Staff Engineer — Date

ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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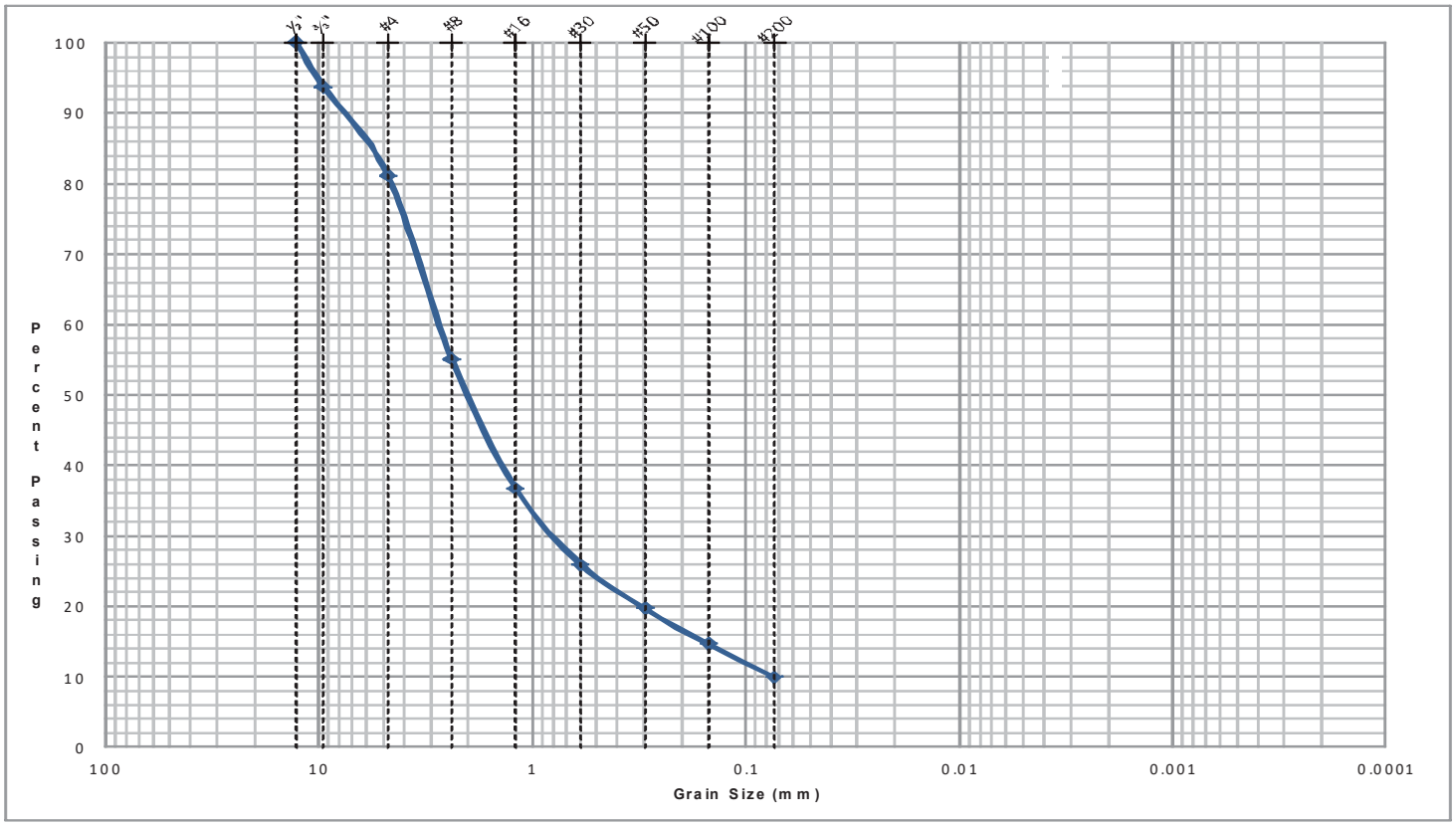
Sieve Analysis

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-3 (26-26.5')		pending
Project No.:	16600	**Sampled By:**	Andrew Poelvoorde, PE	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217725



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ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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Sieve Analysis

Project Name: Wastewater Colleciton System Improvements Geo Report
Place of Sampling: Boring WW-3 (55-55.3') pending

Project No.: 16600
Sampled By: Andrew Poelvoorde, PE
Report Date: 08/17/2020
Client: San Mateo County Parks Department
Date of Sampling: 08/10/2020
Lab Log No.: 217735

Material: Silty Sandstone
Source: Native
Test Performed By: CJ Michael Mahurin
Boring No.: WW-3
Specific Gravity: 2.7 Estimated
Max Particle Size: 3/8"
Date Tested: 08/14/2020

Sieve Designation	Sieve Size		Individual % Retained	Cumulative % Retained	Cumulative % Passing	Required
1/2 in	0.5 in	12.5 mm	0	0	100	
3/8 in	0.375 in	9.5 mm	2.4	2.4	98	
No. 4	0.187 in	4.75 mm	7.5	9.9	90	
No. 8	0.094 in	2.36 mm	17.3	27.2	73	
No. 16	0.047 in	1.18 mm	14.6	41.8	58	
No. 30	0.023 in	600.0 µm	10.0	51.8	48	
No. 50	0.012 in	300.0 µm	6.3	58.1	42	
No. 100	0.006 in	150.0 µm	5.5	63.6	36	
No. 200	0.003 in	75.0 µm	5.4	69.0	31	

Reviewed by: Gavin Lynch - Staff Engineer — 08/17/2020 Date

ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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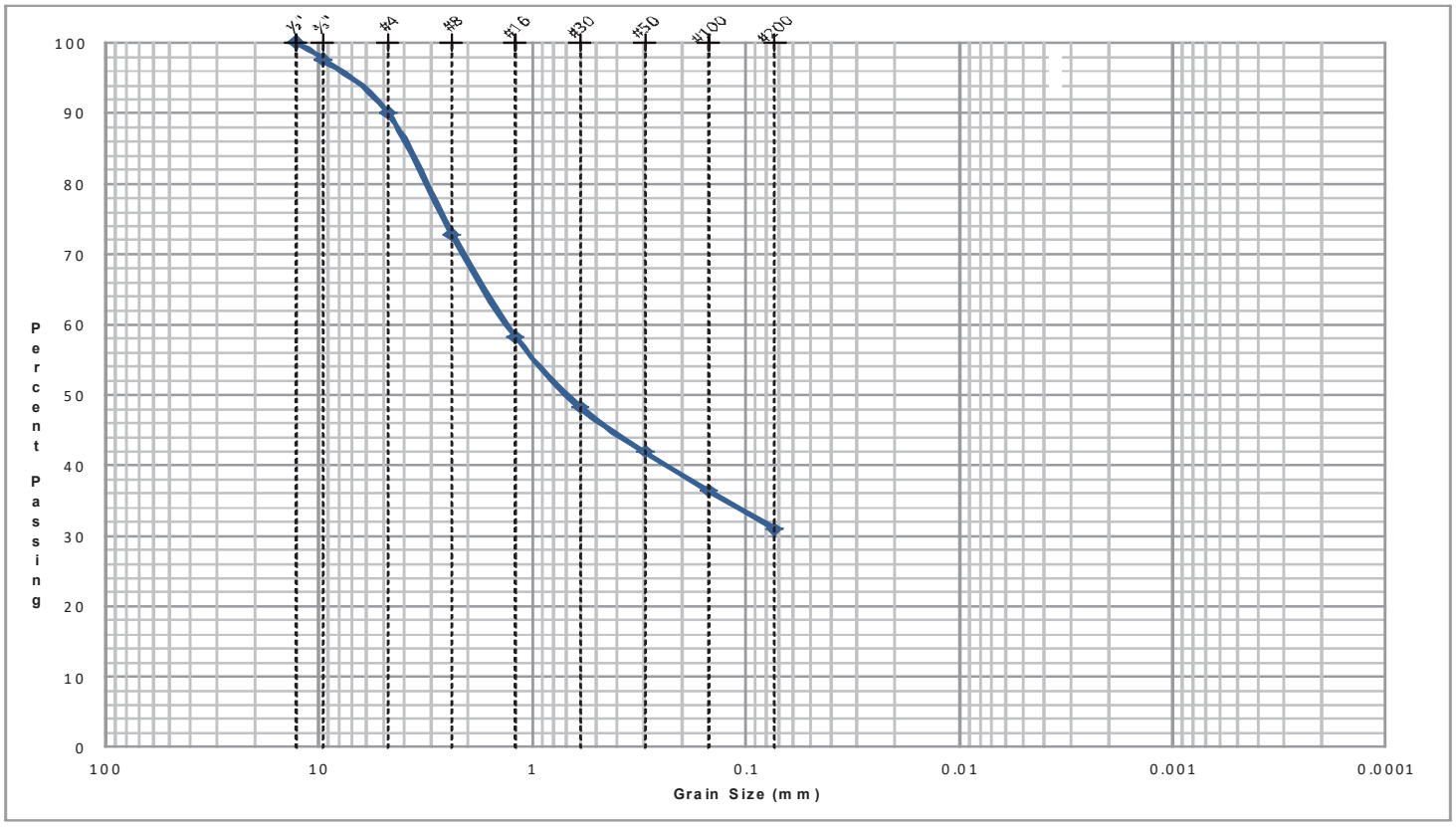
Sieve Analysis

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-3 (55-55.2')		pending
Project No.:	16600	**Sampled By:**	Andrew Poelvoorde, PE	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217735



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ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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Sieve Analysis

Project Name: Wastewater Colleciton System Improvements Geo Report
Place of Sampling: Boring WW-3 (70-70.2') pending

Project No.: 16600
Sampled By: Andrew Poelvoorde, PE
Report Date: 08/17/2020
Client: San Mateo County Parks Department
Date of Sampling: 08/10/2020
Lab Log No.: 217741

Material: Mudstone
Source: Native
Test Performed By: CJ Michael Mahurin
Boring No.: WW-3
Specific Gravity: 2.7 Estimated
Max Particle Size: #4
Date Tested: 08/14/2020

Sieve Designation	Sieve Size		Individual % Retained	Cumulative % Retained	Cumulative % Passing	Required
3/8 in	0.375 in	9.5 mm	0	0	100	
No. 4	0.187 in	4.75 mm	1.2	1.2	99	
No. 8	0.094 in	2.36 mm	2.0	3.2	97	
No. 16	0.047 in	1.18 mm	4.2	7.4	93	
No. 30	0.023 in	600.0 µm	4.0	11.3	89	
No. 50	0.012 in	300.0 µm	3.3	14.6	85	
No. 100	0.006 in	150.0 µm	1.4	16.0	84	
No. 200	0.003 in	75.0 µm	10.1	26.0	74	

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Reviewed by: Gavin Lynch - Staff Engineer — Date

ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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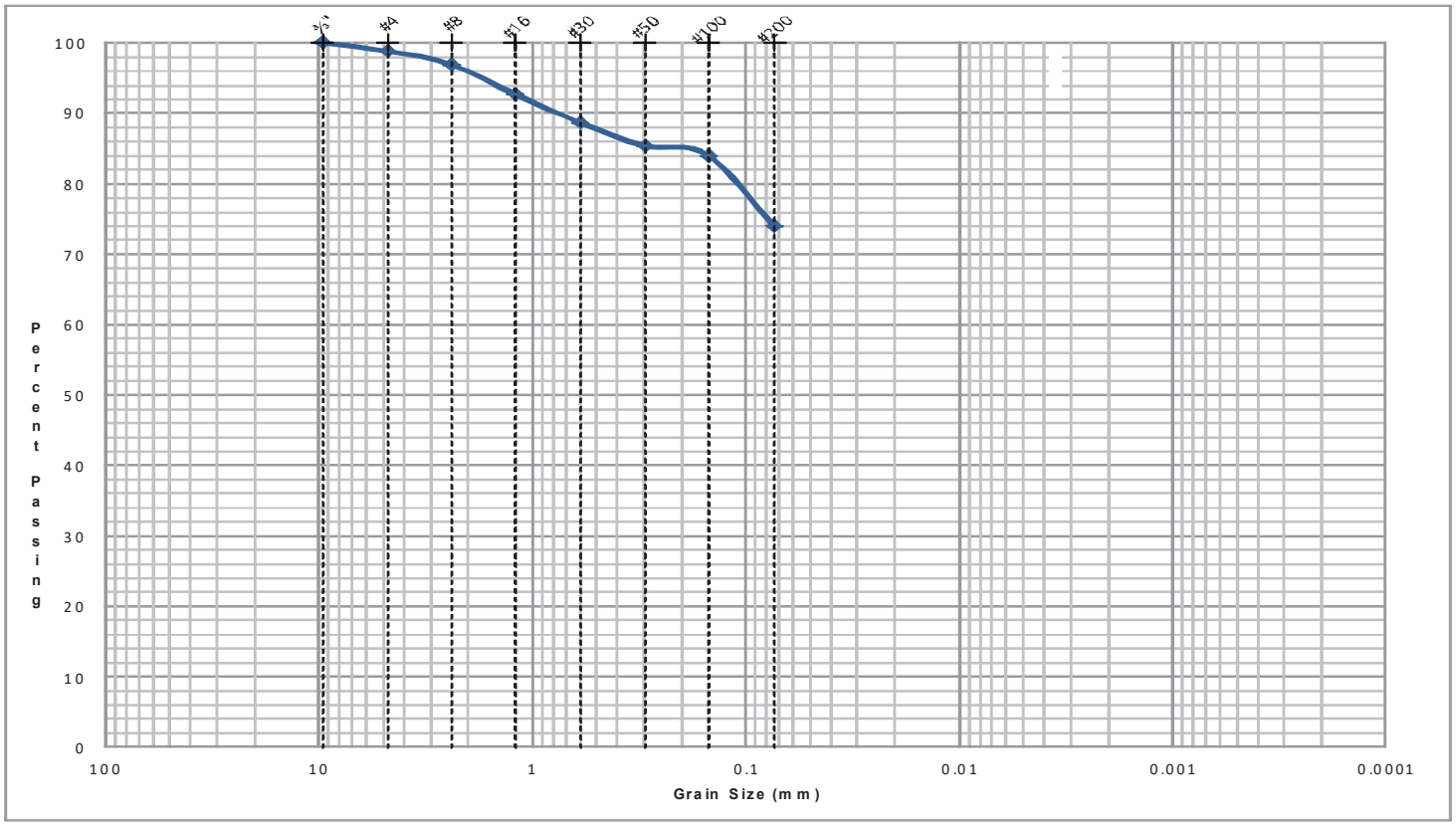
Sieve Analysis

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-3 (70-70.2')		pending
Project No.:	16600	**Sampled By:**	Andrew Poelvoorde, PE	**Report Date:**	08/17/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217741



08/17/2020

Reviewed by: Gavin Lynch - Staff Engineer — Date

ASTM Standards Used: ASTM C-136 or D-422 (if required D-226/11.1)

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Sieve Analysis

Project Name: Wastewater Colleciton System Improvements Geo Report

Place of Sampling: Boring WW-4 (21-21.5') pending

Project No.: 16600

Sampled By: Gavin Lynch

Report Date: 08/13/2020

Client: San Mateo County Parks Department

Date of Sampling: 08/10/2020

Lab Log No.: 217764

Material: Silty Sand

Source: Native

Test Performed By: CJ Michael Mahurin

Boring No.: WW-4

Specific Gravity: 2.7 Estimated

Max Particle Size: 3/8"

Date Tested: 08/13/2020

Sieve Designation	Sieve Size		Individual % Retained	Cumulative % Retained	Cumulative % Passing	Required
1/2 in	0.5 in	12.5 mm	0	0	100	
3/8 in	0.375 in	9.5 mm	0.2	0.2	100	
No. 4	0.187 in	4.75 mm	1.1	1.3	99	
No. 8	0.094 in	2.36 mm	1.5	2.7	97	
No. 16	0.047 in	1.18 mm	2.5	5.2	95	
No. 30	0.023 in	600.0 µm	9.5	14.7	85	
No. 50	0.012 in	300.0 µm	24.6	39.3	61	
No. 100	0.006 in	150.0 µm	25.4	64.7	35	
No. 200	0.003 in	75.0 µm	16.7	81.5	18.6	

08/13/2020

Reviewed by: Gavin Lynch - Staff Engineer — Date

ASTM Standards Used:

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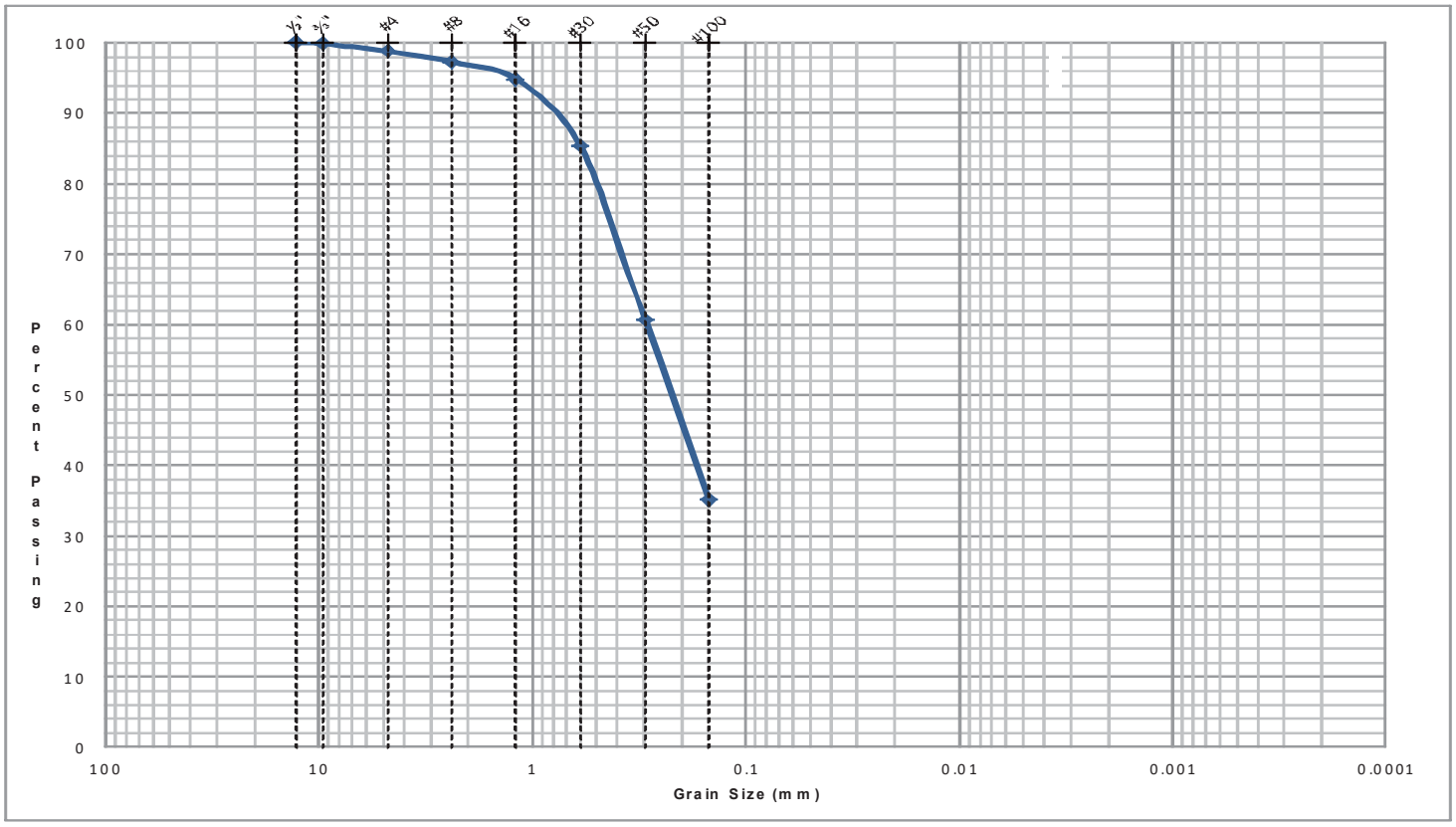
Sieve Analysis

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-4 (21-21.5')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/13/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217764



08/13/2020

Reviewed by: Gavin Lynch - Staff Engineer — Date

ASTM Standards Used:

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Sieve Analysis

Project Name: Wastewater Colleciton System Improvements Geo Report
Place of Sampling: Boring WW-4 (25.5-26') pending

Project No.: 16600
Sampled By: Gavin Lynch
Report Date: 08/13/2020
Client: San Mateo County Parks Department
Date of Sampling: 08/10/2020
Lab Log No.: 217745

Material: Mudstone
Source: Native
Test Performed By: CJ Michael Mahurin
Boring No.: WW-4
Specific Gravity: 2.7 Estimated
Max Particle Size: #4
Date Tested: 08/13/2020

Sieve Designation	Sieve Size		Individual % Retained	Cumulative % Retained	Cumulative % Passing	Required
3/8 in	0.375 in	9.5 mm	0	0	100	
No. 4	0.187 in	4.75 mm	0.1	0.1	100	
No. 8	0.094 in	2.36 mm	0.4	0.4	100	
No. 16	0.047 in	1.18 mm	1.4	1.8	98	
No. 30	0.023 in	600.0 µm	12.1	14.0	86	
No. 50	0.012 in	300.0 µm	14.1	28.0	72	
No. 100	0.006 in	150.0 µm	9.0	37.0	63	
No. 200	0.003 in	75.0 µm	9.7	46.7	53.3	

08/13/2020

Reviewed by: Gavin Lynch - Staff Engineer — Date

ASTM Standards Used:

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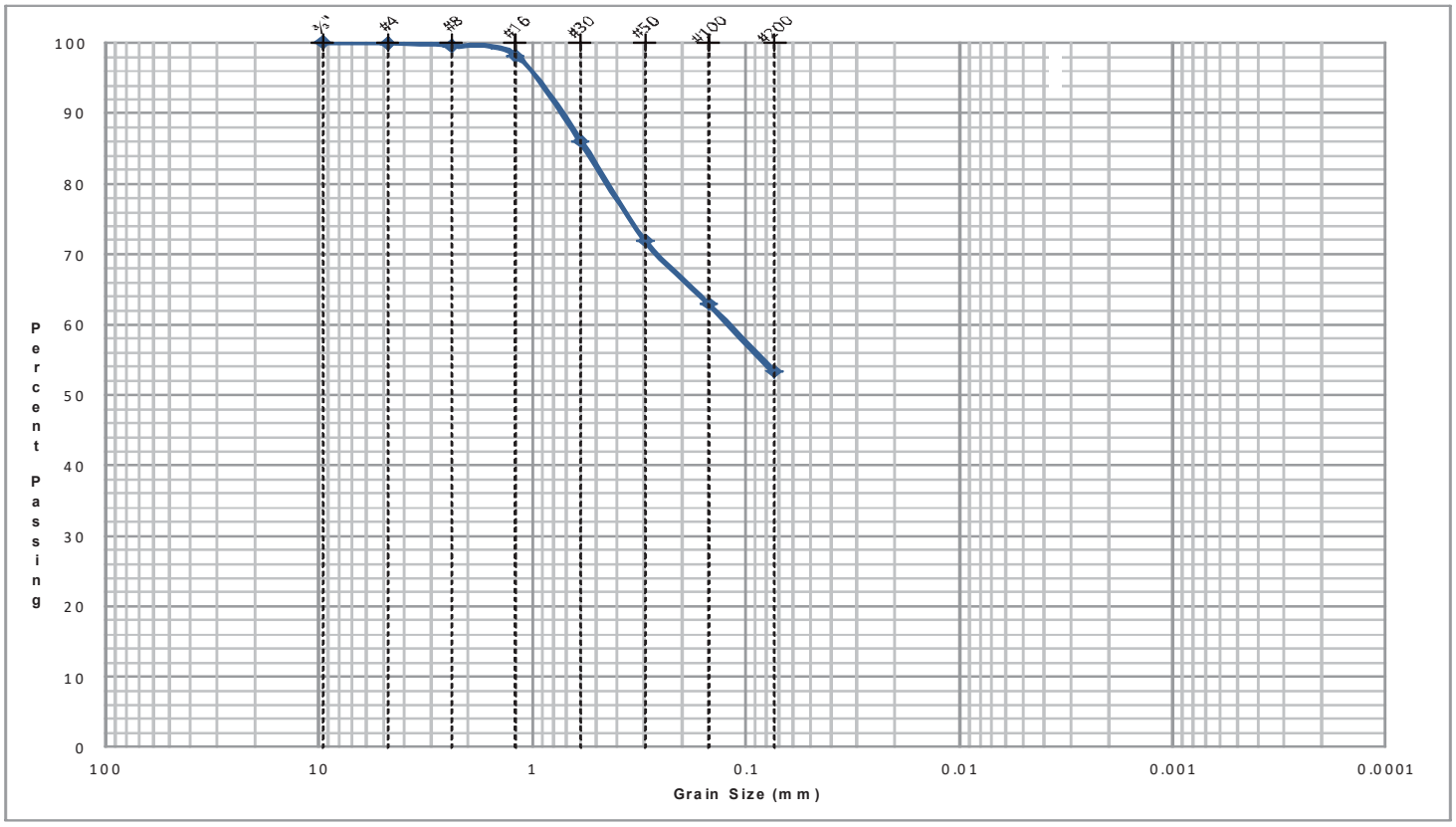
Sieve Analysis

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-4 (25.5-26')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/13/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217745



08/13/2020

Reviewed by: Gavin Lynch - Staff Engineer — Date

ASTM Standards Used:

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Sieve Analysis

Project Name: Wastewater Colleciton System Improvements Geo Report

Place of Sampling: Boring WW-4 (30.5-31') pending

Project No.: 16600

Sampled By: Gavin Lynch

Report Date: 08/13/2020

Client: San Mateo County Parks Department

Date of Sampling: 08/10/2020

Lab Log No.: 217747

Material: Mudstone

Source: Native

Test Performed By: CJ Michael Mahurin

Boring No.: WW-4

Specific Gravity: 2.7 Estimated

Max Particle Size: 3/8"

Date Tested: 08/13/2020

Sieve Designation	Sieve Size		Individual % Retained	Cumulative % Retained	Cumulative % Passing	Required
3/8 in	0.375 in	9.5 mm	0.4	0.4	100	
No. 4	0.187 in	4.75 mm	1.1	1.5	99	
No. 8	0.094 in	2.36 mm	1.6	3.1	97	
No. 16	0.047 in	1.18 mm	1.6	4.7	95	
No. 30	0.023 in	600.0 µm	2.4	7.0	93	
No. 50	0.012 in	300.0 µm	3.7	10.7	89	
No. 100	0.006 in	150.0 µm	5.5	16.2	84	
No. 200	0.003 in	75.0 µm	7.1	23.3	76.7	

08/13/2020

Reviewed by: Gavin Lynch - Staff Engineer — Date

ASTM Standards Used:

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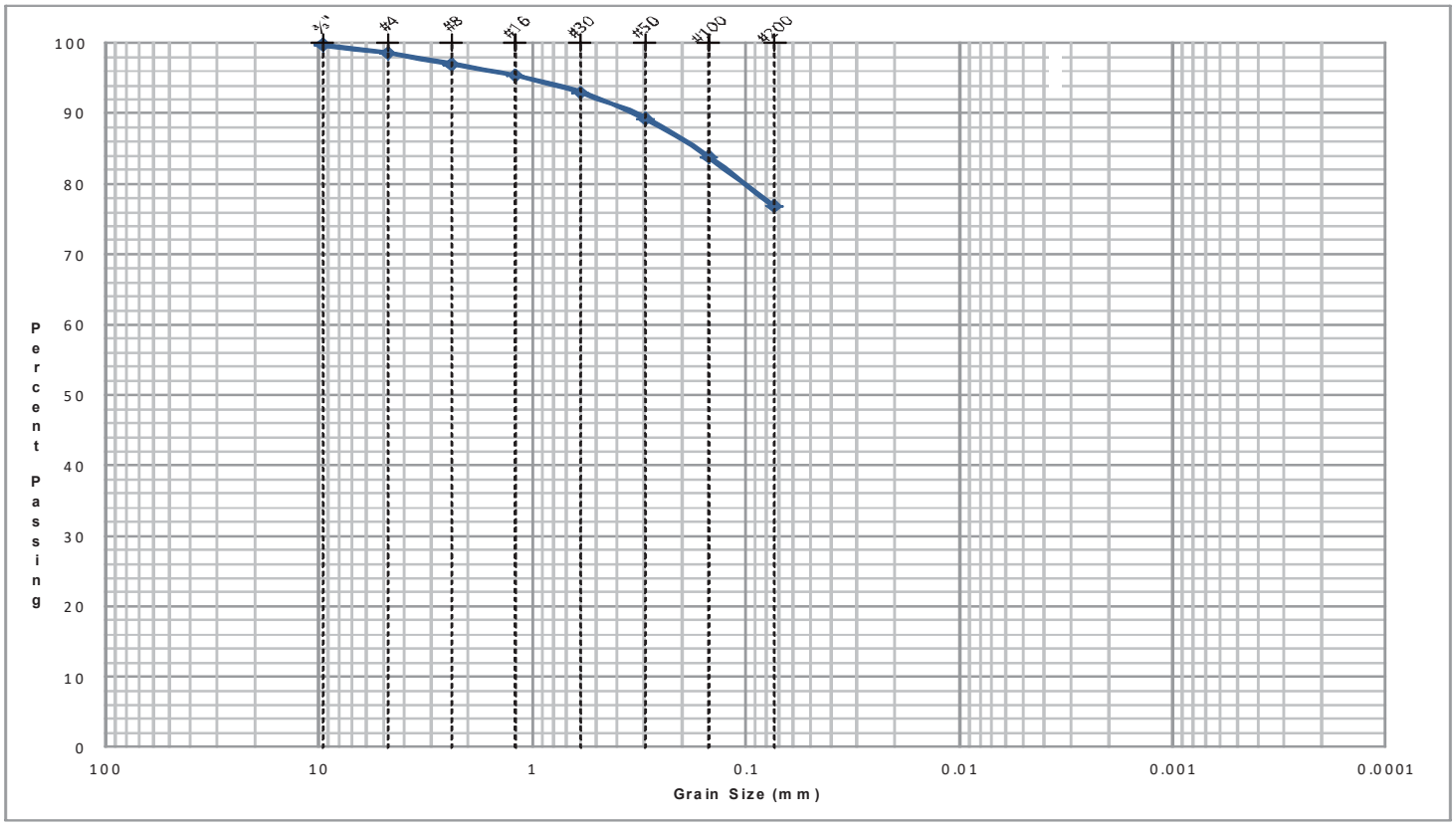
Sieve Analysis

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-4 (30.5-31')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/13/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217747



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Reviewed by: Gavin Lynch - Staff Engineer — Date

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Sieve Analysis

Project Name: Wastewater Colleciton System Improvements Geo Report
Place of Sampling: Boring WW-4 (35.5-36') pending

Project No.: 16600
Sampled By: Gavin Lynch
Report Date: 08/13/2020
Client: San Mateo County Parks Department
Date of Sampling: 08/10/2020
Lab Log No.: 217751

Material: Mudstone
Source: Native
Test Performed By: CJ Michael Mahurin
Boring No.: WW-4
Specific Gravity: 2.7 Estimated
Max Particle Size: #4
Date Tested: 08/13/2020

Sieve Designation	Sieve Size		Individual % Retained	Cumulative % Retained	Cumulative % Passing	Required
3/8 in	0.375 in	9.5 mm	0	0	100	
No. 4	0.187 in	4.75 mm	0.1	0.1	100	
No. 8	0.094 in	2.36 mm	0.2	0.3	100	
No. 16	0.047 in	1.18 mm	0.5	0.8	99	
No. 30	0.023 in	600.0 µm	2.3	3.1	97	
No. 50	0.012 in	300.0 µm	3.8	6.9	93	
No. 100	0.006 in	150.0 µm	4.7	11.6	88	
No. 200	0.003 in	75.0 µm	7.5	19.1	80.9	

08/13/2020
Reviewed by: Gavin Lynch - Staff Engineer — Date

ASTM Standards Used:

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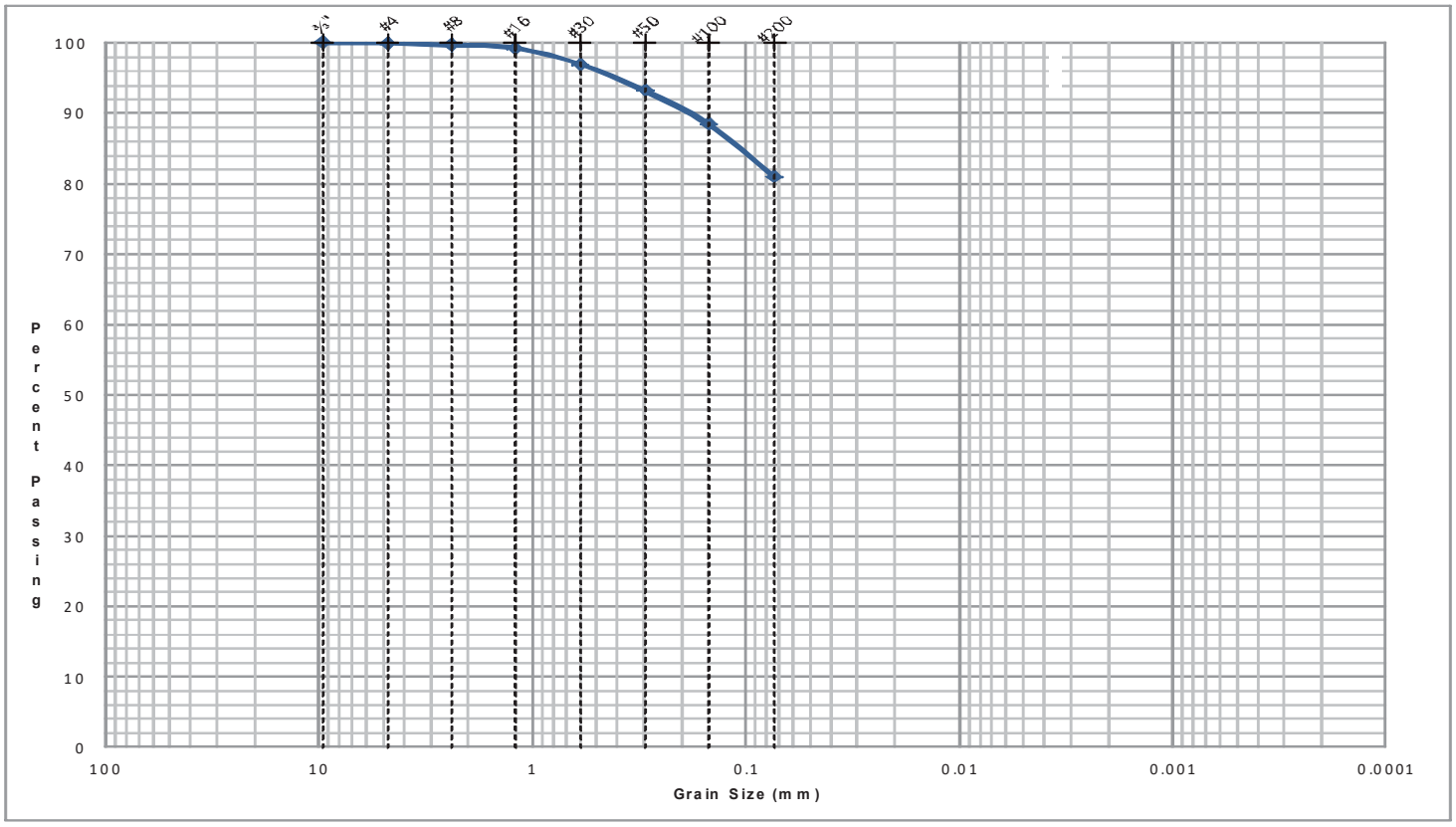
Sieve Analysis

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-4 (35.5-36')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/13/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217751



08/13/2020

Reviewed by: Gavin Lynch - Staff Engineer — Date

ASTM Standards Used:

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Sieve Analysis

Project Name: Wastewater Colleciton System Improvements Geo Report

Place of Sampling: Boring WW-4 (50-50.5')

pending

Project No.: 16600

Sampled By: Gavin Lynch

Report Date: 08/13/2020

Client: San Mateo County Parks Department

Date of Sampling: 08/10/2020

Lab Log No.: 217757

Material: Silty Sandstone

Specific Gravity: 2.7 Estimated

Source: Native

Max Particle Size: #8

Test Performed By: CJ Michael Mahurin

Date Tested: 08/13/2020

Boring No.: WW-4

Sieve Designation	Sieve Size		Individual % Retained	Cumulative % Retained	Cumulative % Passing	Required
No. 4	0.187 in	4.75 mm	0	0	100	
No. 8	0.094 in	2.36 mm	0.2	0.2	100	
No. 16	0.047 in	1.18 mm	9.9	10.0	90	
No. 30	0.023 in	600.0 µm	25.2	35.3	65	
No. 50	0.012 in	300.0 µm	12.3	47.6	52	
No. 100	0.006 in	150.0 µm	4.1	51.7	48	
No. 200	0.003 in	75.0 µm	6.8	58.6	41.4	

08/13/2020

Reviewed by: Gavin Lynch - Staff Engineer — Date

ASTM Standards Used:

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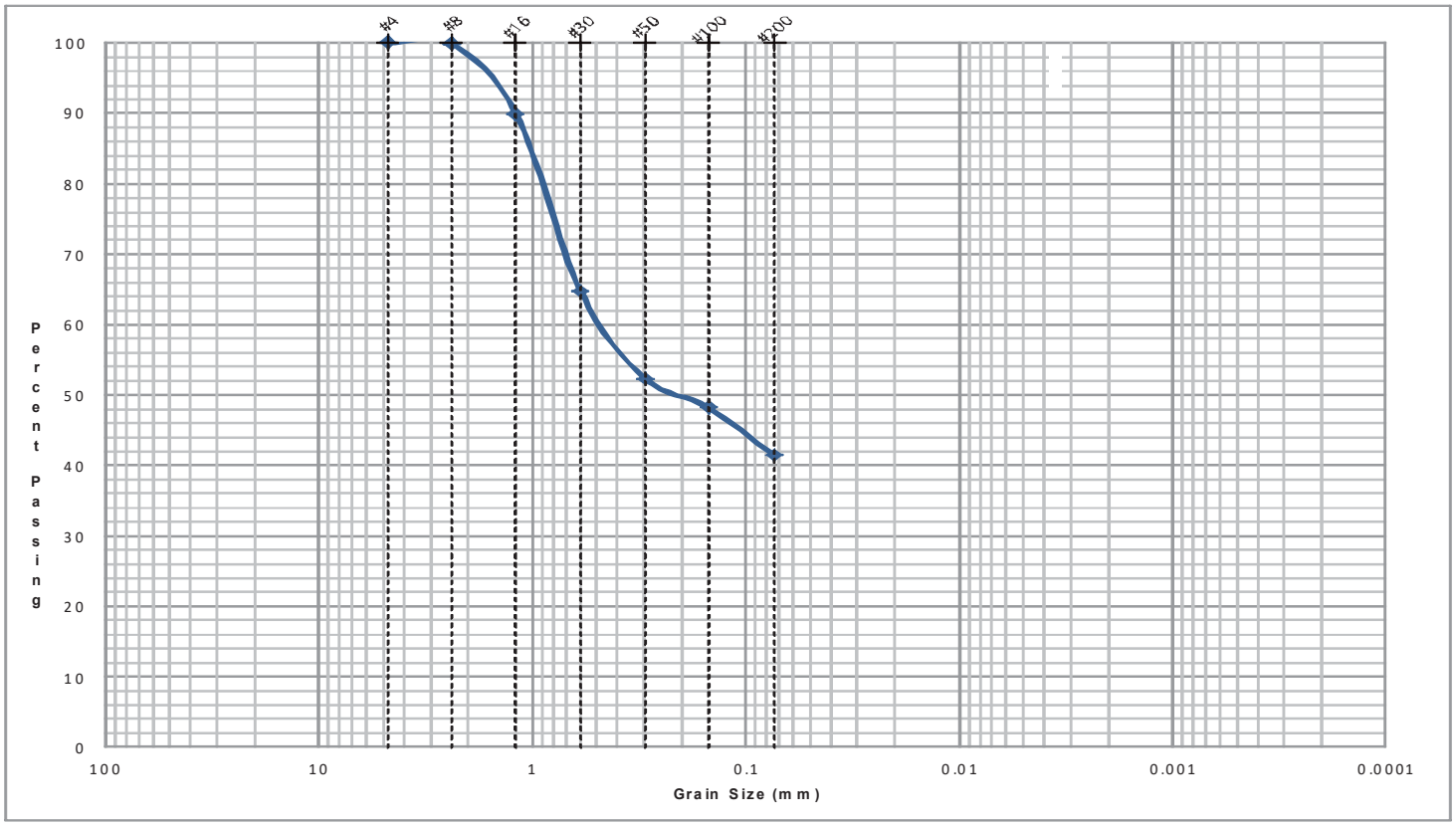
Sieve Analysis

Project Name:	Wastewater Colleciton System Improvements Geo Report	**Place of Sampling:**	Boring WW-4 (50-50.5')		pending
Project No.:	16600	**Sampled By:**	Gavin Lynch	**Report Date:**	08/13/2020
Client:	San Mateo County Parks Department	**Date of Sampling:**	08/10/2020	**Lab Log No.:**	217757



08/13/2020

Reviewed by: Gavin Lynch - Staff Engineer — Date

ASTM Standards Used:

CONSTRUCTION TESTING SERVICES

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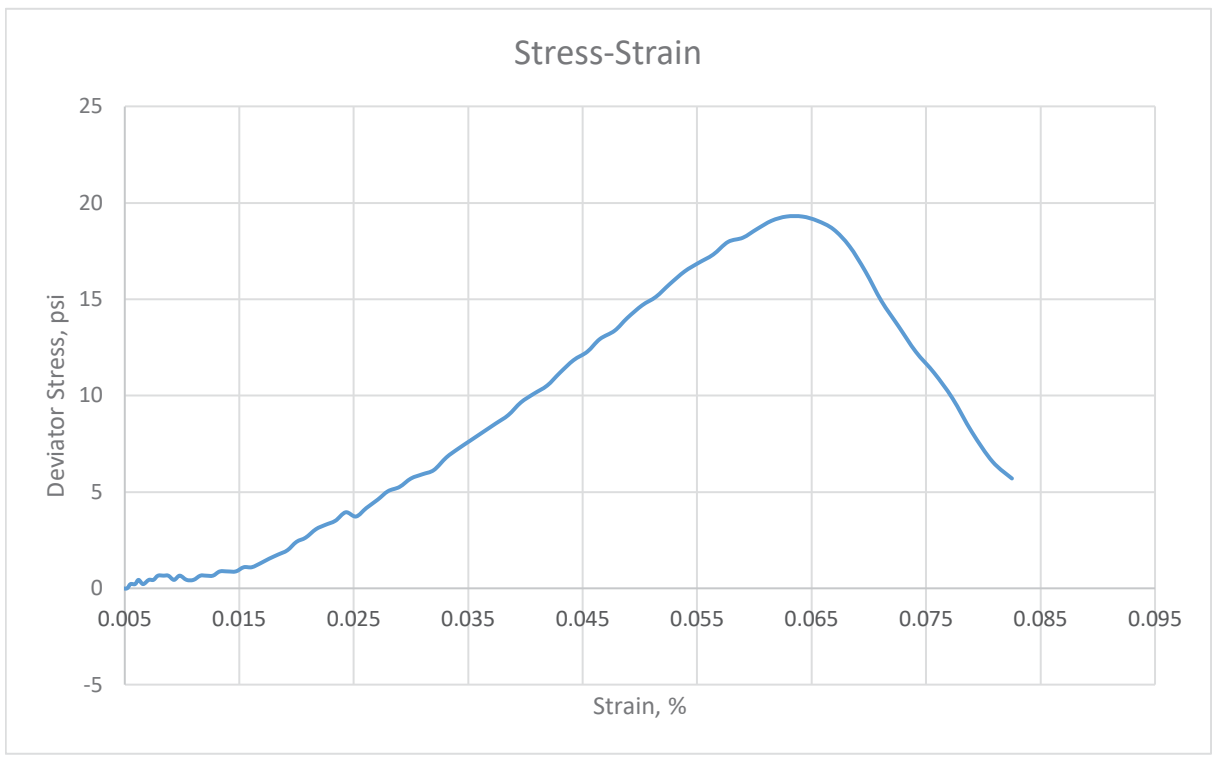
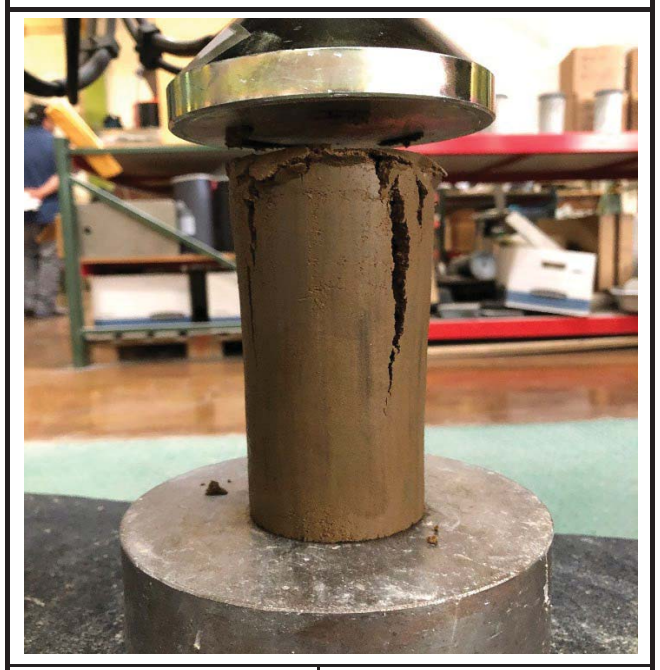
Unconfined Compressive Strength of Cohesive Soils by ASTM Method D2166

Project Name:	Memorial Park Wastewater	**CTS Job No. :**	16600
Sample Location:	Boring WW-1	**Client:**	County of San Mateo
Date Sampled:	8/6/20	**Report Date:**	8/13/20
Date Tested:	8/13/20	**Sampled by:**	Gavin Lynch
Lab Log:	217665		

Boring/ Sample Number: WW-1 **Sample Depth:** 16-16.5' **Material Description:** Clayey Sand



Failure Sketch



Type of Failure*:	Longitudinal Splitting

*Bulge, Diagonal Shear, or Longitudinal Splitting

Initial Conditions:		Shear Test Conditions	
Height (inches):	5.47	Strain= $(\Delta L/L_0)*100$:	100
Diameter (inches):	2.41	Strain Rate (%/min):	29869
L/D:	2.27	Major Principal Stress at Failure (psf):	2780
Moisture Content (%):	N/A	Strain at Failure (%):	0.08
Dry Density (pcf):	N/A		
Estimated Specific Gravity	2.7		

Test Results				
Unconfined Compressive Strength :	2780	psf---->	1.4	tsf
Shear Strength:	1390	psf---->	0.7	tsf

Test Equipment:	**INSTRON 1000HDX**

Remarks:

Reviewed by: James Peters Date: 8/13/2020

Title: Laboratory Manager

Items tested in accordance with ASTM 2166.
Referenced Documents: ASTM 1587 and D2488.

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CONSTRUCTION TESTING SERVICES

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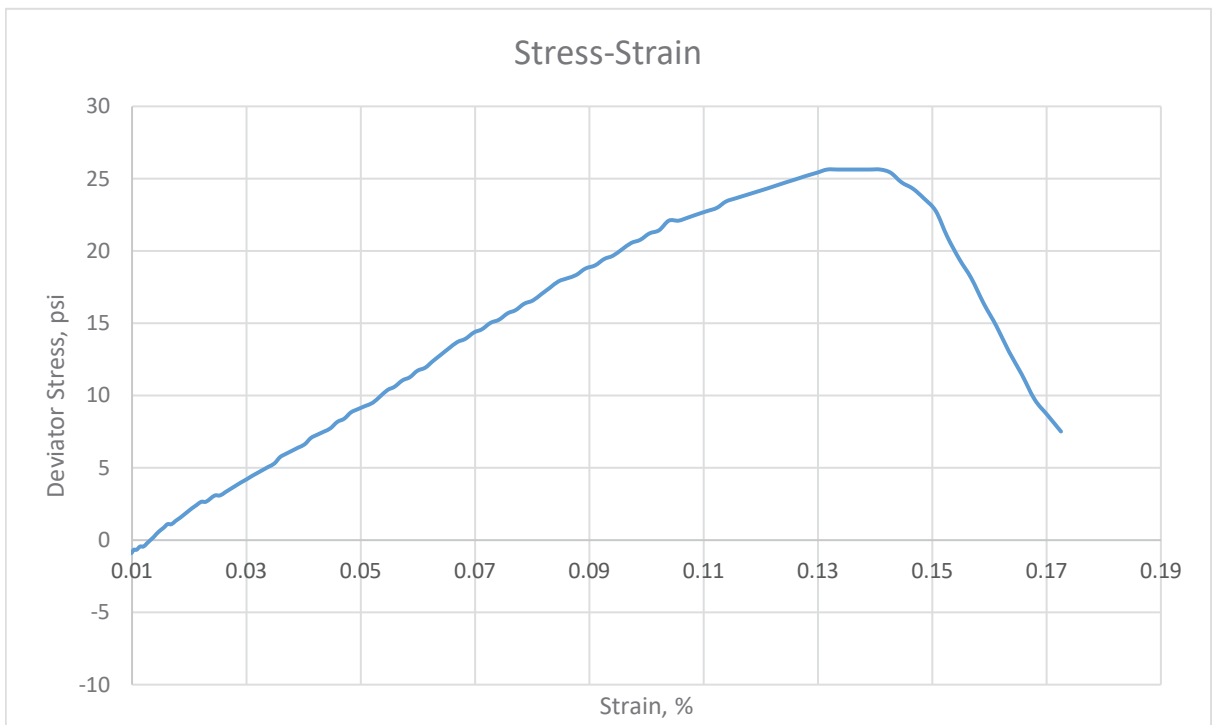
Unconfined Compressive Strength of Cohesive Soils by ASTM Method D2166

Project Name:	Memorial Park Wastewater	**CTS Job No. :**	16600
Sample Location:	Boring WW-2	**Client:**	County of San Mateo
Date Sampled:	8/6/20	**Report Date:**	8/13/20
Date Tested:	8/13/20	**Sampled by:**	Gavin Lynch
Lab Log:	217717		

Boring/ Sample Number: WW-2 **Sample Depth:** 8.5-9' **Material Description:** Sandy Lean Clay



Failure Sketch

Type of Failure*:	Bulge

*Bulge, Diagonal Shear, or Longitudinal Splitting

Initial Conditions:		Shear Test Conditions	
Height (inches):	5.51	Strain= ($\Delta L/L_0$)*100:	99
Diameter (inches):	2.4	Strain Rate (%/min):	22979
L/D:	2.30	Major Principal Stress at Failure (psf):	3690
Moisture Content (%):	N/A	Strain at Failure (%):	0.17
Dry Density (pcf):	N/A		
Estimated Specific Gravity	2.7		

Test Results				
Unconfined Compressive Strength :	3690	psf---->	1.8	tsf
Shear Strength:	1850	psf---->	0.9	tsf

Test Equipment:	**INSTRON 1000HDX**

Remarks:

Reviewed by: James Peters Date: 8/13/2020

Title: Laboratory Manager

Items tested in accordance with ASTM 2166.
Referenced Documents: ASTM 1587 and D2488.

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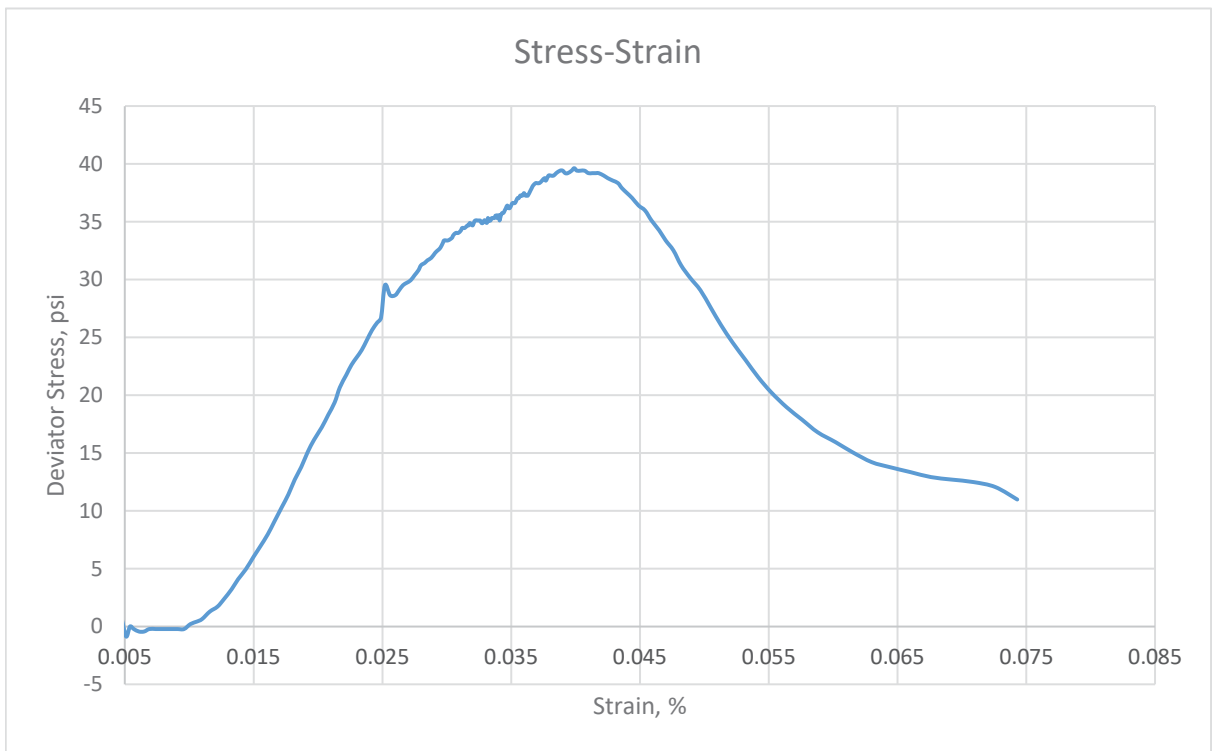
Unconfined Compressive Strength of Cohesive Soils by ASTM Method D2166

Project Name:	Memorial Park Wastewater	**CTS Job No. :**	16600
Sample Location:	Boring WW-2	**Client:**	San Mateo County
Date Sampled:	8/6/20	**Report Date:**	8/13/20
Date Tested:	8/13/20	**Sampled by:**	Gavin Lynch
Lab Log:	217720		

Boring/ Sample Number: WW-2 **Sample Depth:** 15-15.5' **Material Description:** Silty Sandstone



Failure Sketch

Type of Failure*:	Diagonal Shear

*Bulge, Diagonal Shear, or Longitudinal Splitting

Initial Conditions:		Shear Test Conditions	
Height (inches):	5.98	Strain= ($\Delta L/L_0$)*100:	100
Diameter (inches):	2.43	Strain Rate (%/min):	16214
L/D:	2.46	Major Principal Stress at Failure (psf):	5710
Moisture Content (%):	N/A	Strain at Failure (%):	0.07
Dry Density (pcf):	N/A		
Estimated Specific Gravity	2.7		

Test Results				
Unconfined Compressive Strength :	5710	psf---->	2.9	tsf
Shear Strength:	2860	psf---->	1.4	tsf

Test Equipment:	**INSTRON 1000HDX**

Remarks:

Reviewed by: James Peters Date: 8/13/2020

Title: Laboratory Manager

Items tested in accordance with ASTM 2166.
Referenced Documents: ASTM 1587 and D2488.

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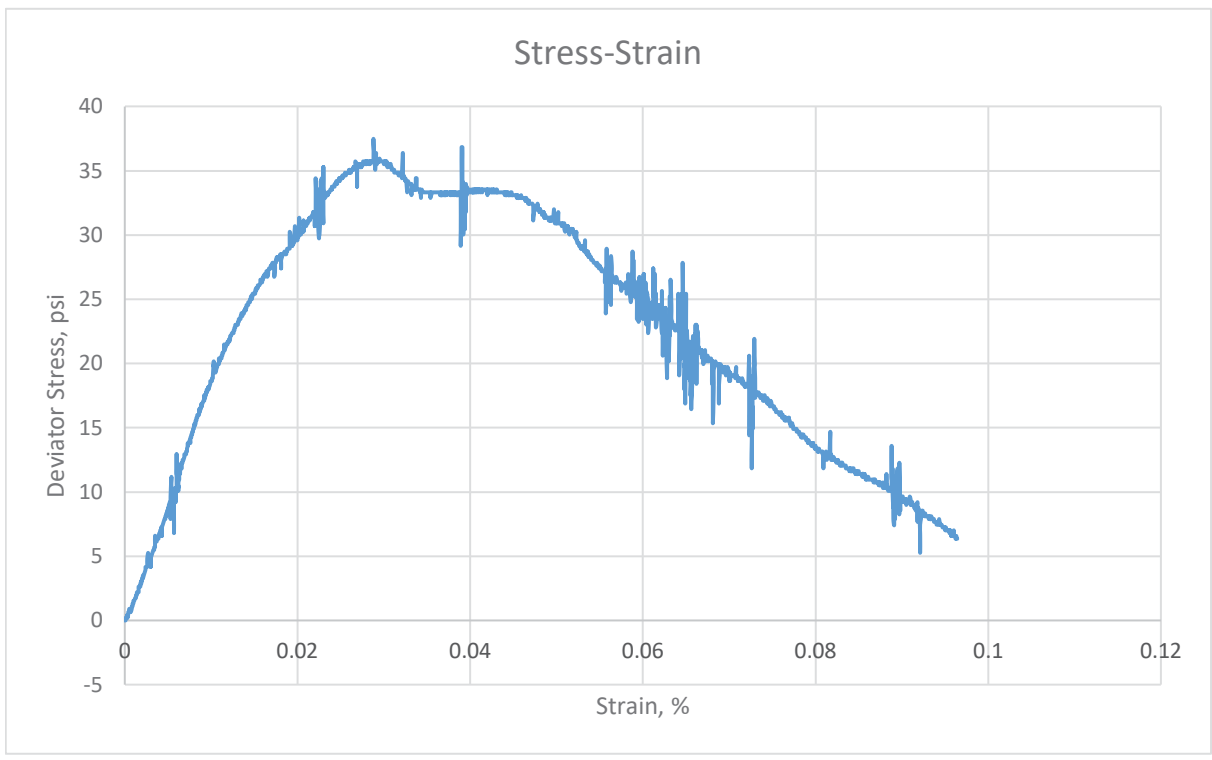
Unconfined Compressive Strength of Cohesive Soils by ASTM Method D2166

Project Name:	Memorial Park Wastewater	**CTS Job No. :**	16600
Sample Location:	Boring WW-3	**Client:**	San Mateo County
Date Sampled:	8/5/20	**Report Date:**	8/13/20
Date Tested:	8/13/20	**Sampled by:**	Andrew Poelvoorde
Lab Log:	217724		

Boring/ Sample Number:	WW-3	**Sample Depth:**	65-65.5'	**Material Description:**	Mudstone



Failure Sketch

Type of Failure*:	Diagonal Shear

*Bulge, Diagonal Shear, or Longitudinal Splitting

Initial Conditions:		**Shear Test Conditions**	
Height (inches):	5.76	Strain= ($\Delta L/L_0$)*100:	99
Diameter (inches):	2.41	Strain Rate (%/min):	964
L/D:	2.39	Major Principal Stress at Failure (psf):	5400
Moisture Content (%):	N/A	Strain at Failure (%):	0.10
Dry Density (pcf):	N/A		
Estimated Specific Gravity	2.7		

Test Results				
Unconfined Compressive Strength :	5400	psf---->	2.7	tsf
Shear Strength:	2700	psf---->	1.4	tsf

Test Equipment:	**INSTRON 1000HDX**

Remarks:

Reviewed by: James Peters Date: 8/13/2020

Title: Laboratory Manager

Items tested in accordance with ASTM 2166.
Referenced Documents: ASTM 1587 and D2488.

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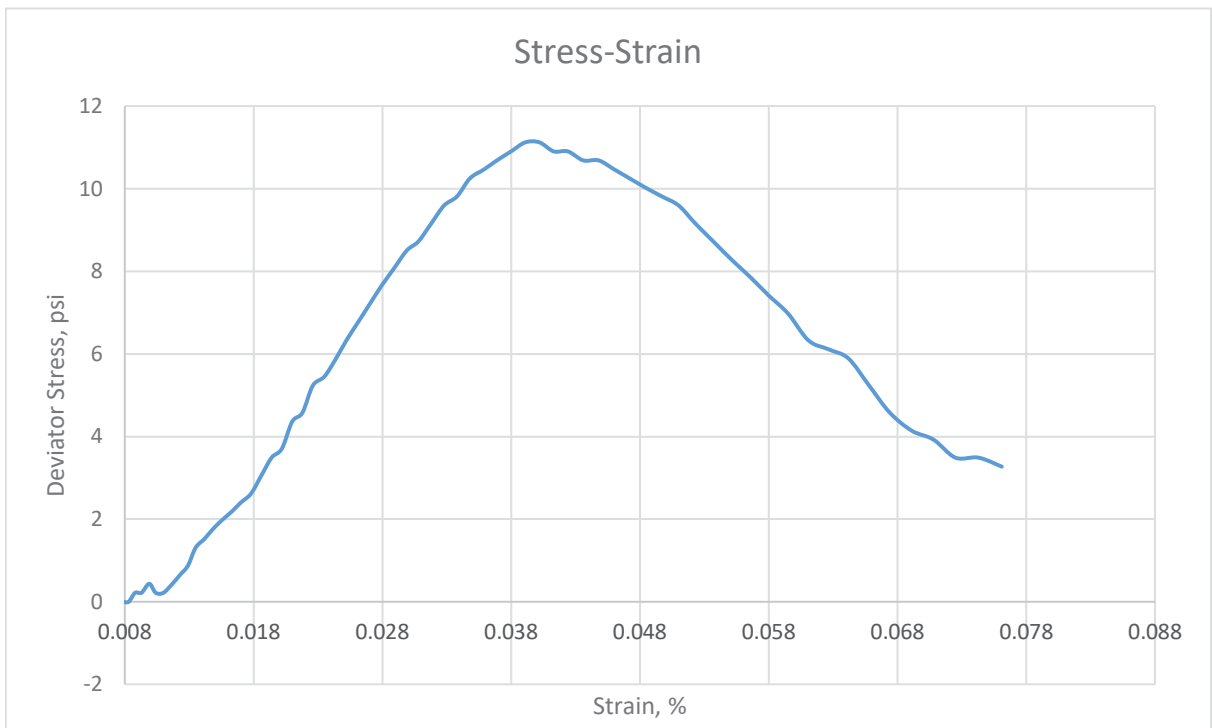
Unconfined Compressive Strength of Cohesive Soils by ASTM Method D2166

Project Name:	Memorial Park Wastewater	**CTS Job No. :**	16600
Sample Location:	Boring WW-4	**Client:**	San Mateo County
Date Sampled:	8/6/20	**Report Date:**	8/13/20
Date Tested:	8/13/20	**Sampled by:**	Gavin Lynch
Lab Log:	217743		

Boring/ Sample Number: WW-4 **Sample Depth:** 20.5-21' **Material Description:** Clayey Sand



Failure Sketch

Type of Failure*:	Diagonal Shear

*Bulge, Diagonal Shear, or Longitudinal Splitting

Initial Conditions:		Shear Test Conditions	
Height (inches):	5.66	Strain= $(\Delta L/L_0)*100$:	100
Diameter (inches):	2.42	Strain Rate (%/min):	32021
L/D:	2.34	Major Principal Stress at Failure (psf):	1600
Moisture Content (%):	N/A	Strain at Failure (%):	0.08
Dry Density (pcf):	N/A		
Estimated Specific Gravity	2.7		

Test Results				
Unconfined Compressive Strength :	1600	psf---->	0.8	tsf
Shear Strength:	800	psf---->	0.4	tsf

Test Equipment:	**INSTRON 1000HDX**

Remarks:

Reviewed by: James Peters Date: 8/13/2020

Title: Laboratory Manager

Items tested in accordance with ASTM 2166.
Referenced Documents: ASTM 1587 and D2488.

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2118 Rheem Drive ▪ Pleasanton, CA 94588 ▪ (925) 462-5151 office (925) 462-5183 fax

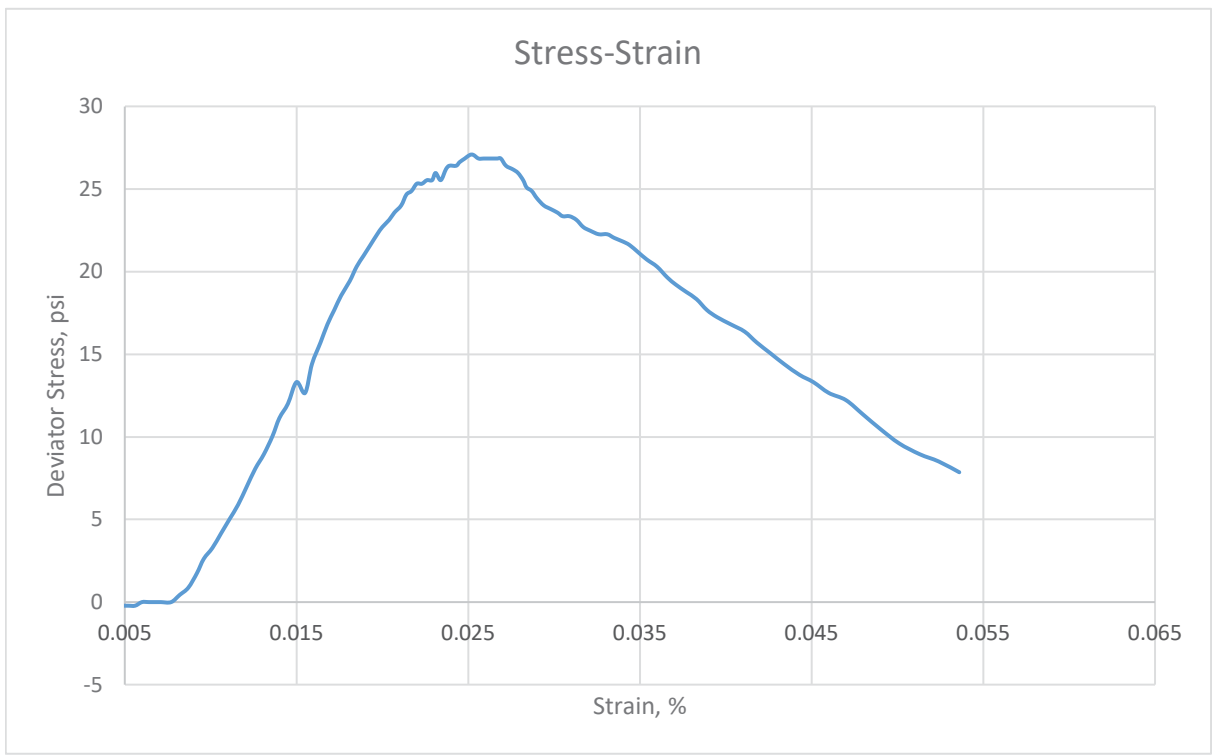
CONSTRUCTION TESTING SERVICES

TESTING
INSPECTION
ENGINEERING

Unconfined Compressive Strength of Cohesive Soils by ASTM Method D2166

Project Name:	Memorial Park Wastewater	**CTS Job No. :**	16600
Sample Location:	Boring WW-4	**Client:**	San Mateo County
Date Sampled:	8/6/20	**Report Date:**	8/13/20
Date Tested:	8/13/20	**Sampled by:**	Gavin Lynch
Lab Log:	217752		

Boring/ Sample Number: WW-4 **Sample Depth:** 36-36.5' **Material Description:** Mudstone



Failure Sketch

Type of Failure*:	Diagonal Shear

*Bulge, Diagonal Shear, or Longitudinal Splitting

Initial Conditions:		Shear Test Conditions	
Height (inches):	5.77	Strain= ($\Delta L/L_0$)*100:	100
Diameter (inches):	2.42	Strain Rate (%/min):	25812
L/D:	2.38	Major Principal Stress at Failure (psf):	3900
Moisture Content (%):	N/A	Strain at Failure (%):	0.05
Dry Density (pcf):	N/A		
Estimated Specific Gravity	2.7		

Test Results				
Unconfined Compressive Strength :	3900	psf---->	2.0	tsf
Shear Strength:	1950	psf---->	1.0	tsf

Test Equipment:	**INSTRON 1000HDX**

Remarks:

Reviewed by: James Peters Date: 8/13/2020

Title: Laboratory Manager

Items tested in accordance with ASTM 2166.
Referenced Documents: ASTM 1587 and D2488.

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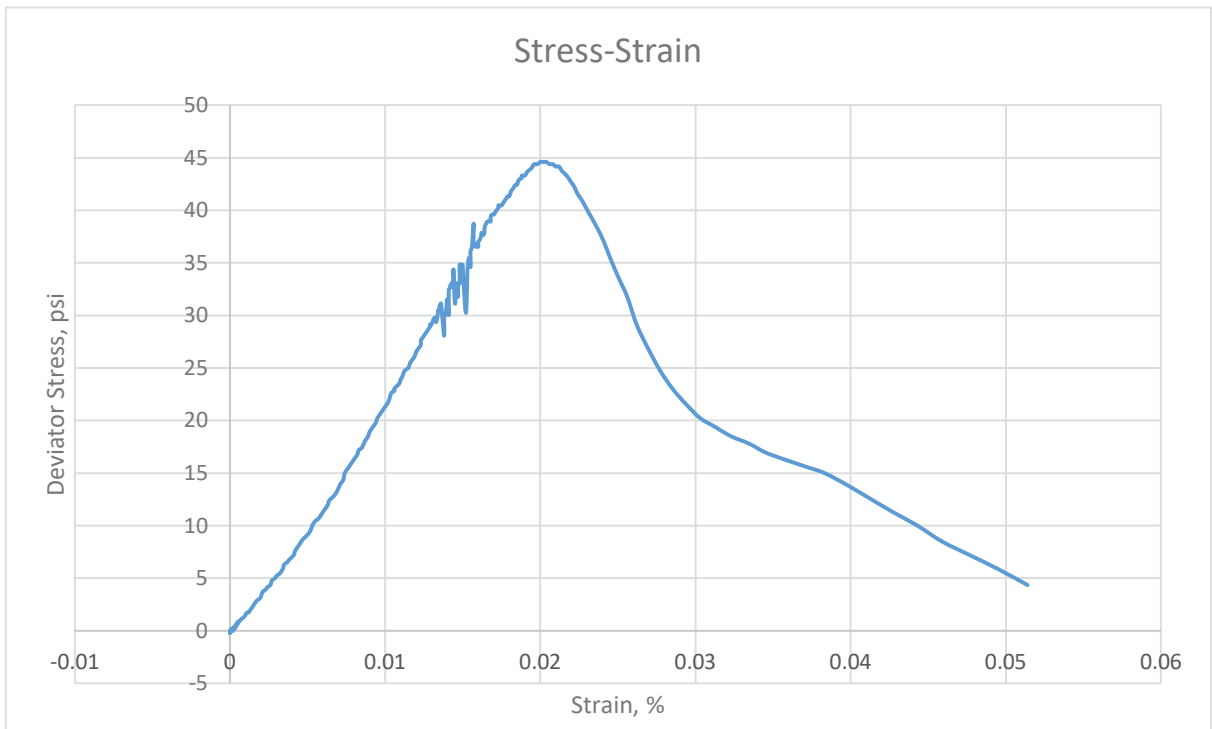
CONSTRUCTION TESTING SERVICES

TESTING
INSPECTION
ENGINEERING

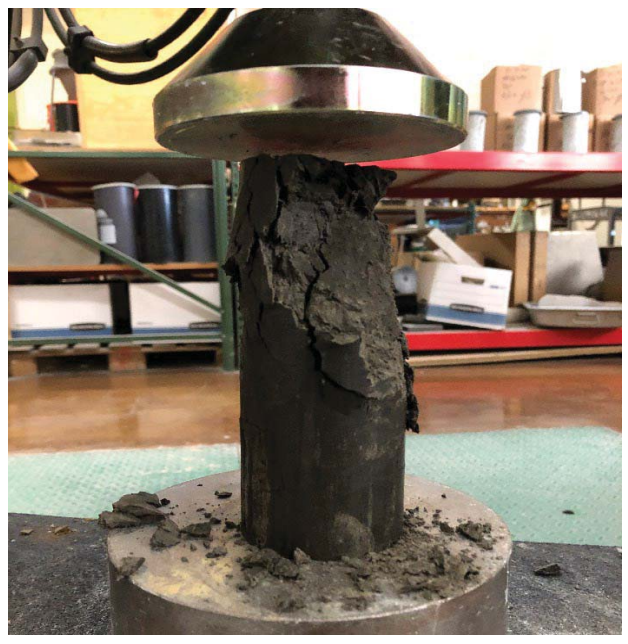
Unconfined Compressive Strength of Cohesive Soils by ASTM Method D2166

Project Name:	Memorial Park Wastewater	**CTS Job No. :**	16600
Sample Location:	Boring WW-4	**Client:**	San Mateo County
Date Sampled:	8/6/20	**Report Date:**	8/13/20
Date Tested:	8/13/20	**Sampled by:**	Gavin Lynch
Lab Log:	217753		

Boring/ Sample Number: WW-4 **Sample Depth:** 40.5-41' **Material Description:** Mudstone



Failure Sketch



Type of Failure*:	Diagonal Shear

*Bulge, Diagonal Shear, or Longitudinal Splitting

Initial Conditions:		Shear Test Conditions	
Height (inches):	5.85	Strain= ($\Delta L/L_0$)*100:	100
Diameter (inches):	2.42	Strain Rate (%/min):	15284
L/D:	2.42	Major Principal Stress at Failure (psf):	6420
Moisture Content (%):	N/A	Strain at Failure (%):	0.05
Dry Density (pcf):	N/A		
Estimated Specific Gravity	2.7		

Test Results				
Unconfined Compressive Strength :	6420	psf---->	3.2	tsf
Shear Strength:	3210	psf---->	1.6	tsf

Test Equipment:	**INSTRON 1000HDX**

Remarks:

Reviewed by: James Peters Date: 8/13/2020

Title: Laboratory Manager

Items tested in accordance with ASTM 2166.
Referenced Documents: ASTM 1587 and D2488.

4770 Duckhorn Drive ▪ Sacramento, CA 95834 ▪ (916) 419-4747 office (916) 419-4774 fax
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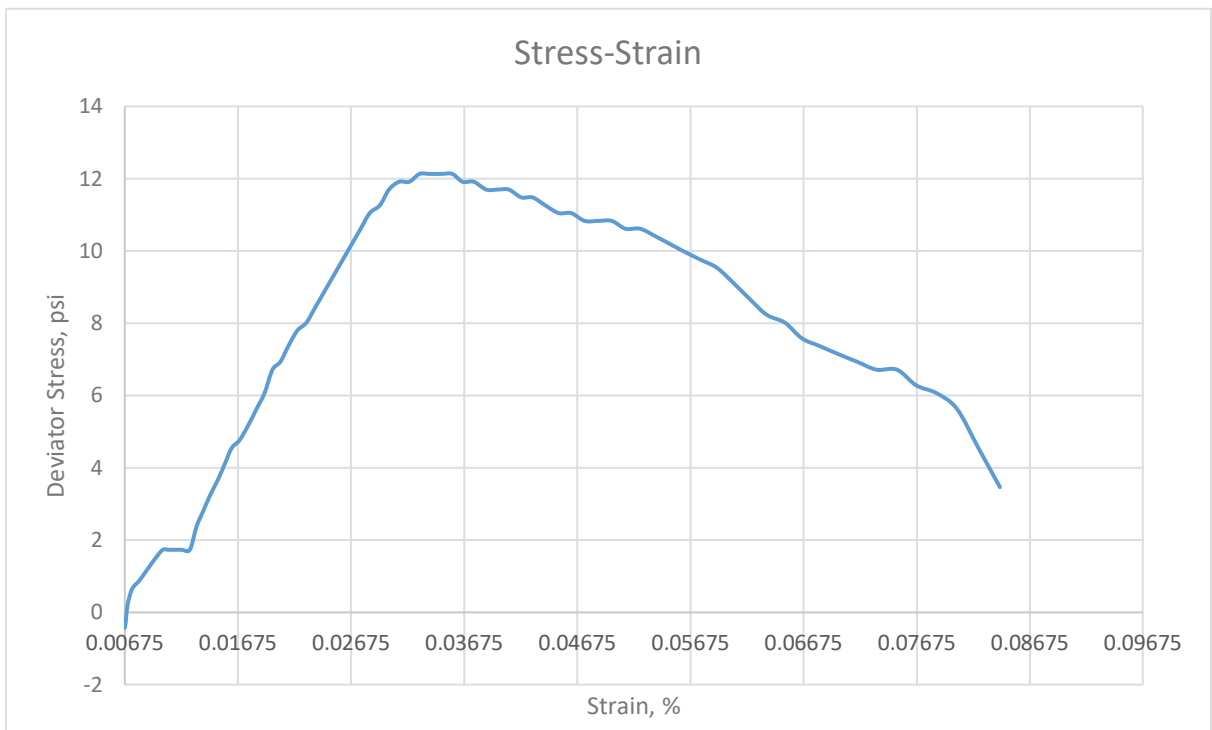
CONSTRUCTION TESTING SERVICES

TESTING
INSPECTION
ENGINEERING

Unconfined Compressive Strength of Cohesive Soils by ASTM Method D2166

Project Name:	Memorial Park Wastewater	**CTS Job No. :**	16600
Sample Location:	Boring WW-4	**Client:**	San Mateo County
Date Sampled:	8/6/20	**Report Date:**	8/13/20
Date Tested:	8/13/20	**Sampled by:**	Gavin Lynch
Lab Log:	217755		

Boring/ Sample Number: WW-4 **Sample Depth:** 45-45.5' **Material Description:** Mudstone



Failure Sketch

Type of Failure*:	Diagonal Shear

*Bulge, Diagonal Shear, or Longitudinal Splitting

Initial Conditions:		Shear Test Conditions	
Height (inches):	5.534	Strain= ($\Delta L/L_0$)*100:	100
Diameter (inches):	2.424	Strain Rate (%/min):	28680
L/D:	2.2830033	Major Principal Stress at Failure (psf):	1750
Moisture Content (%):	N/A	Strain at Failure (%):	0.08
Dry Density (pcf):	N/A		
Estimated Specific Gravity	2.7		

Test Results

Unconfined Compressive Strength :	1750	psf---->	0.9	tsf
Shear Strength:	880	psf---->	0.4	tsf

Test Equipment: **INSTRON 1000HDX**

Remarks:

Reviewed by: James Peters Date: 8/13/2020

Title: Laboratory Manager

Items tested in accordance with ASTM 2166.
Referenced Documents: ASTM 1587 and D2488.

4770 Duckhorn Drive ▪ Sacramento, CA 95834 ▪ (916) 419-4747 office (916) 419-4774 fax
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Corrosivity Test Summary

CTL # 568-143 **Date:** 8/14/2020 **Tested By:** PJ **Checked:** PJ
Client: CTS **Project:** Memorial Park- Wastewater Collection **Proj. No:** 16600
Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate		pH	ORP	Moisture	Soil Visual Description
Boring	Sample, No.	Depth, ft.	As Rec.	Minimum	Saturated	mg/kg	mg/kg	%		(Redox)	At Test	
						Dry Wt.	Dry Wt.	Dry Wt.		mv	%	
			ASTM G57	Cal 643	ASTM G57	Cal 422-mod.	Cal 417-mod.	Cal 417-mod.	Cal 643	SM 2580B	ASTM D2216	
WW-1	-	8.5-9	-	2951	-	4	31	0.0031	7.8	-	23.9	Dark Yellowish Brown Ssndy CLAY

Corrosivity Test Summary

CTL # 568-144 **Date:** 8/14/2020 **Tested By:** PJ **Checked:** PJ
Client: CTS **Project:** Memorial Park- Wastewater Collection **Proj. No:** 16600
Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate		pH	ORP	Moisture	Soil Visual Description
Boring	Sample, No.	Depth, ft.	As Rec.	Minimum	Saturated	mg/kg	mg/kg	%		(Redox)	At Test	
						Dry Wt.	Dry Wt.	Dry Wt.		mv	%	
			ASTM G57	Cal 643	ASTM G57	Cal 422-mod.	Cal 417-mod.	Cal 417-mod.	Cal 643	SM 2580B	ASTM D2216	
WW-2	-	11-11.5	-	2730	-	67	54	0.0054	7.7	-	28.8	Dark Yellowish Brown Silty SAND

Corrosivity Test Summary

CTL # 568-145 **Date:** 8/14/2020 **Tested By:** PJ **Checked:** PJ
Client: CTS **Project:** Memorial Park-Wastewater Collection **Proj. No:** 16600
Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate		pH	ORP	Moisture	Soil Visual Description
Boring	Sample, No.	Depth, ft.	As Rec.	Minimum	Saturated	mg/kg	mg/kg	%		(Redox)	At Test	
						Dry Wt.	Dry Wt.	Dry Wt.		mv	%	
			ASTM G57	Cal 643	ASTM G57	Cal 422-mod.	Cal 417-mod.	Cal 417-mod.	Cal 643	SM 2580B	ASTM D2216	
WW-3	-	11-11.5	-	1714	-	29	68	0.0068	7.8	-	35.9	Dark Olive Brown Clayey SAND

Corrosivity Test Summary

CTL # 568-146 **Date:** 8/14/2020 **Tested By:** PJ **Checked:** PJ
Client: CTS **Project:** Memorial Park- Wastewater Collection **Proj. No:** 16600
Remarks:

Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate		pH	ORP	Moisture	Soil Visual Description
Boring	Sample, No.	Depth, ft.	As Rec.	Minimum	Saturated	mg/kg	mg/kg	%		(Redox)	At Test	
						Dry Wt.	Dry Wt.	Dry Wt.		mv	%	
			ASTM G57	Cal 643	ASTM G57	Cal 422-mod.	Cal 417-mod.	Cal 417-mod.	Cal 643	SM 2580B	ASTM D2216	
WW-4	-	26-26.5	-	750	-	4	168	0.0168	8.4	-	27.9	Very Dark Greenish Gray CLAY

APPENDIX C

SEISMIC REFRACTION LINE RESULTS

Geophysical Report

Seismic Refraction Survey
Memorial County Park
Loma Mar, California

August 28, 2020
NORCAL JOB NO. NS205102

Prepared for:

CTS CONSTRUCTION TESTING SERVICES
2118 Rheem Drive
Pleasanton, California 94588

Prepared by:

NORCAL GEOPHYSICAL CONSULTANTS INC.
A Terracon COMPANY

NORCAL Geophysical Consultants, Inc. 321A Blodgett Street Cotati, California 94931
P (707) 796-7170 F (707) 796-7175 norcalgeophysical.com

August 28, 2020

CONSTRUCTION TESTING SERVICES

2118 Rheem Drive
Pleasanton, California 94588

Subject: Seismic Refraction Survey
Memorial County Park
Loma Mar, California

NORCAL Project No. NS205102

Attention: Mr. Tom Wipfli:

Dear Mr. Wipfli:

This report presents the findings of a seismic refraction (SR) survey performed by NORCAL Geophysical Consultants, Inc. for Construction Testing Services (CTS) at Memorial County Park in Loma Mar, California. We understand that this work will be used to assist in planning for future improvements to the wastewater system at the park. The project was authorized under a CTS Subconsultant Agreement, dated August 18, 2020. NORCAL Professional Geophysicist David T. Hagin (CA PGp No. 1033) and Staff Geophysicist J. Sage Wagner conducted the survey on August 4, 2020. Mr. Andrew Poelvoorde of CTS provided on-site and logistical support.

The scope of NORCAL's services for this project consisted of using geophysical methods to characterize the subsurface. The accuracy of our findings is subject to specific site conditions and limitations inherent to the techniques used. We performed our services in a manner consistent with the standard of care ordinarily exercised by members of the profession currently employing similar methods. No warranty, with respect to the performance of services or products delivered under this agreement, expressed or implied, is made by NORCAL.

We appreciate having the opportunity to provide our services for this project. If you have any questions or require additional geophysical services, please do not hesitate to call on us.

Sincerely,
NORCAL Geophysical Consultants, Inc.

David T. Hagin
California Professional Geophysicist
PGp 1033

Donald J. Kirker
California Professional Geophysicist
PGp No. 997

Geophysical Report
Seismic Refraction Survey
Memorial County Park
Loma Mar, California

August 28, 2020

1.0 INTRODUCTION

This report presents the results of a geophysical survey consisting of two seismic refraction (SR) lines. The survey was performed to provide information to aid in planning for future improvements to the wastewater system at Memorial County Park in Loma Mar, California. The purpose of the seismic refraction survey is to image subsurface variations in compressional P-wave velocities using the SR method. Variations in P-wave velocities can be used to characterize the thickness of overburden and the depth and hardness of the bedrock within the shallow subsurface.

Maps showing the site vicinity and the locations of the two SR lines are shown on **Plate 1 – Site Location Map - Seismic Refraction Survey**.

2.0 SITE CONDITIONS

The following description of site conditions is derived from our site visit and a review of publicly available geologic and topographic maps.

Item	Description
Site information	The Memorial County Park is a wooded parkland in rural Loma Mar. The approximate coordinates of the center of the study area are: (37.274912º N, 122.294881º W).
Existing improvements	The park has numerous campground areas and restrooms, trails and an amphitheater within an old growth redwood forest.
Current ground cover	The survey area is soil covered with asphalt paved roads providing access to the facility.
Existing topography	Based on maps provided by CTS, the survey area topography is gently sloping, with ground surface elevations ranging from about 197- to 267-ft above mean sea level (MSL).

Item	Description
Site geology	Available geologic maps (USGS, 2003; CGS 2010) indicate that the site geology consists of by Miocene sandstone, shale and siltstone overlain by Pliocene marine sandstone, siltstone and shale. The Butano Fault is mapped traversing the site, as shown on Plate 1.

Boring logs for Borings WW-3 and WW-4 were supplied by CTS. Boring WW-3 is located approximately 10-ft north of Line SR-1, and Boring WW-4 is approximately 8-ft west of Line SR-2, as shown on Plate 1. The logs indicate sands and silts with some clays within approximately the upper 25-ft, and indurated siltstone below about 25-ft.

3.0 SCOPE OF WORK

The scope of work includes collecting seismic refraction data along two transects (lines) as determined by CTS. The approximate positions of the SR lines, designated as Line SR-1 and Line SR-2, are shown on Plate 1. Our scope of work also consists of processing and interpreting the SR data, and presenting our findings in a written report.

4.0 SEISMIC REFRACTION SURVEY

4.1 DESCRIPTION

The SR method is designed to measure subsurface variations in the compressional (P-) wave velocities, which will be denoted herein as “Vp”. Vp is dependent on physical properties such as density, hardness, compaction and induration. However, other factors such as bedding, fracturing and saturation also affect Vp. In general, the Vp of weathered rock and consolidated or cemented sedimentary deposits are higher than those of unconsolidated sediments or fill material. Within rock, higher Vp values typically correspond with harder, less weathered and/or fractured rock.

The vertical and lateral variations of the Vp of subsurface materials can be used to produce a two-dimensional cross-section (profile) illustrating variations in Vp versus depth and distance beneath the respective seismic line. Interpretations can then be made to aid in determining the thickness of sedimentary and soil layers (overburden), and the character of the underlying bedrock.

Detailed descriptions of the SR methodology, the instrumentation we used, our data acquisition, analysis and interpretation procedures as well as the general limitations of the method are provided in **Appendix A – Seismic Refraction Survey**.

4.2 DATA ACQUISITION

We acquired SR data using arrays of 24 geophones with 5 shot points each. The geophones were distributed at 15-ft intervals for Line SR-1, yielding a 375-ft line and 10-ft intervals for Line SR-2, resulting in a 250-ft line. The maximum depth of exploration is approximately 20% of the line length, tapering to zero at the ends of the line. The shot-points were placed off each end of the geophone arrays as well as equally distributed within each array. Each SR line was comprised of a single array.

5.0 RESULTS

5.1 SEISMIC REFRACTION PROFILES

The results of the SR survey are illustrated by the color contoured seismic velocity cross-sections (profiles) shown on **Plate 2 – Seismic Refraction Profiles**. On each profile, the vertical axis represents elevation in feet (above mean sea level) and the horizontal axis represents survey stationing in feet. Seismic P-wave velocity (Vp) is represented by the labeled contours and the color shading between contours, and is presented in feet per second (ft/sec). The relationship between color and Vp is specified by the color scale shown below the profiles. The solid black line along the top of the contoured portion of the profiles represents the ground surface.

5.2 SEISMIC VELOCITY VALUES

The Vp measured by the seismic refraction survey range from approximately 1,000 ft/sec near the surface to greater than 6,000 ft/sec at depth. This velocity range can be differentiated into three sub-ranges which we define herein as low, moderate and high. Low Vp range from roughly 1,000 to 4,000 ft/sec and are represented by tan to yellow shading. Vp in this range typically represent surficial soils and poorly consolidated sedimentary deposits with relatively low moisture content. Moderate Vp range from 4,000 to 6,000 ft/sec and are represented by green to blue coloration. Vp in this range typically represent more consolidated, cemented or saturated sediments and/or highly weathered or fractured rock. High Vp are greater than 6,000 ft/sec. The maximum Vp measured are near 6,400 ft/sec on Line SR-2, as represented by shades of maroon. Velocities in this range typically represent bedrock in various degrees of weathering, where the degree of weathering and/or fracturing decreases with increased Vp.

6.0 DISCUSSION

The Vp values measured by the SR survey are generally low for rock. However, considering the proximity of the Butano Fault shown on Plate 1 (USGS, 2003; CGS 2010; USGS Professional Paper 1550-E), these lower seismic velocity values may be due to fault-related fracturing within

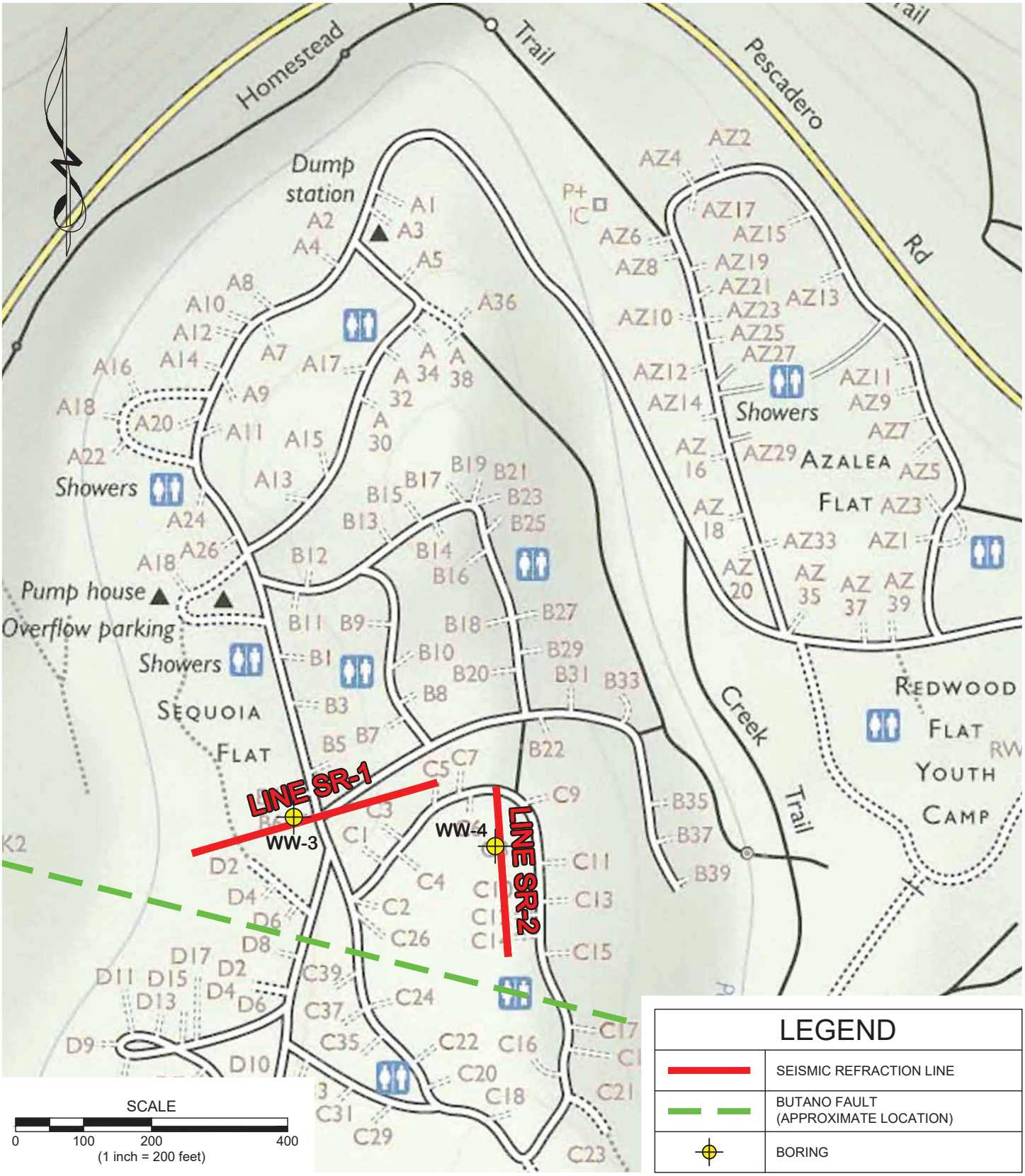
the bedrock. Borings WW-3 and WW-4 encountered strongly indurated siltstone at depths greater than 25-ft suggesting that Vp should be higher. However, since the sample area of a boring is essentially a point as compared to the length of the SR line, the lower velocities detected by the SR lines may reflect conditions not encountered by the boreholes. A discussion of Vp detected along Lines SR-1 and -2 are presented below.

6.1 Line SR-1

The Line SR-1 profile is characterized by a relatively uniform, surficial low Vp layer that indicates soils and/or poorly consolidated sedimentary deposits (tan to yellow) approximately 10- to 15-ft thick across the line. Beneath this surficial layer, the profile indicates moderate Vp that extend to the bottom of the profile. The relatively closely spaced contour lines between roughly 10- and 25-ft in depth indicates that the greatest amount of Vp change occurs within this depth range. The relatively low maximum values (less than 6,000 ft/sec) may be characteristic of the siltstone encountered in Borehole WW-3 as well as fault-related fracturing that may be present along the line.

6.2 Line SR-2

We note that the contour lines on Line SR-2 are much more widely spaced than those of SR-1. This indicates a more gradual transition from poorly consolidated materials to more indurated or cemented formations at greater depth. A thick surficial layer of low Vp ranging from 25- to 35-ft thick indicates an extensive layer of soils and/or unconsolidated alluvial deposits. Below this layer, moderate Vp values extend to depths of 40- to 50-ft. Again, these moderate Vp values may be characteristic of the siltstone encountered in Borehole WW-4 as well as fault-related fracturing that may be present along the line. Near the bottom of the profile, Vp increases to values greater than 6,000 ft/sec, and are somewhat shallower at the southeast end of the line. It is possible that these highest values at the bottom of the profile indicate the presence of less fractured or more indurated rock.



SCALE

0 100 200 400

(1 inch = 200 feet)

LEGEND

	SEISMIC REFRACTION LINE
	BUTANO FAULT (APPROXIMATE LOCATION)
	BORING

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A Terracon COMPANY

321A BLODGETT STREET
COTATI, CA 94931
PH. (707) 796-7170
FAX. (707) 796-7175
www.norcalgeophysical.com

PROFESSIONAL GEOPHYSICIST
DAVID T HAGIN
No. 1033
STATE OF CALIFORNIA

SITE LOCATION MAP
SEISMIC REFRACTION SURVEY
MEMORIAL COUNTY PARK

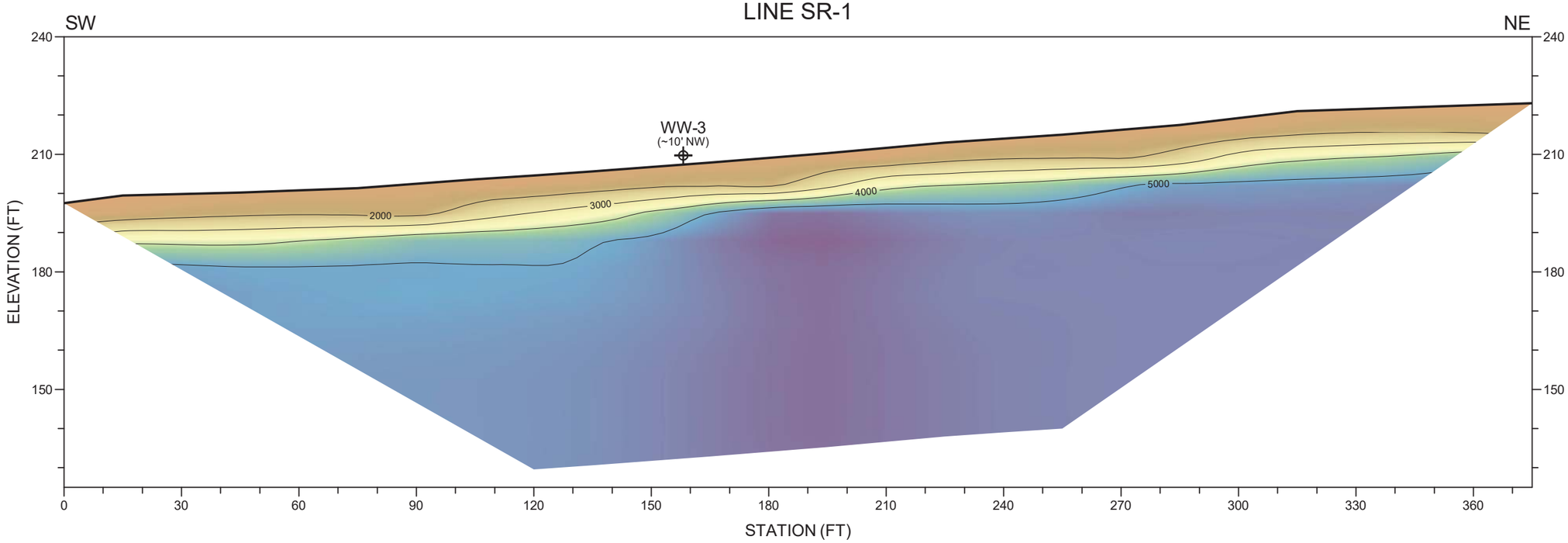
LOCATION: LOMA MAR, CALIFORNIA

CLIENT: CONSTRUCTION TESTING SERVICES

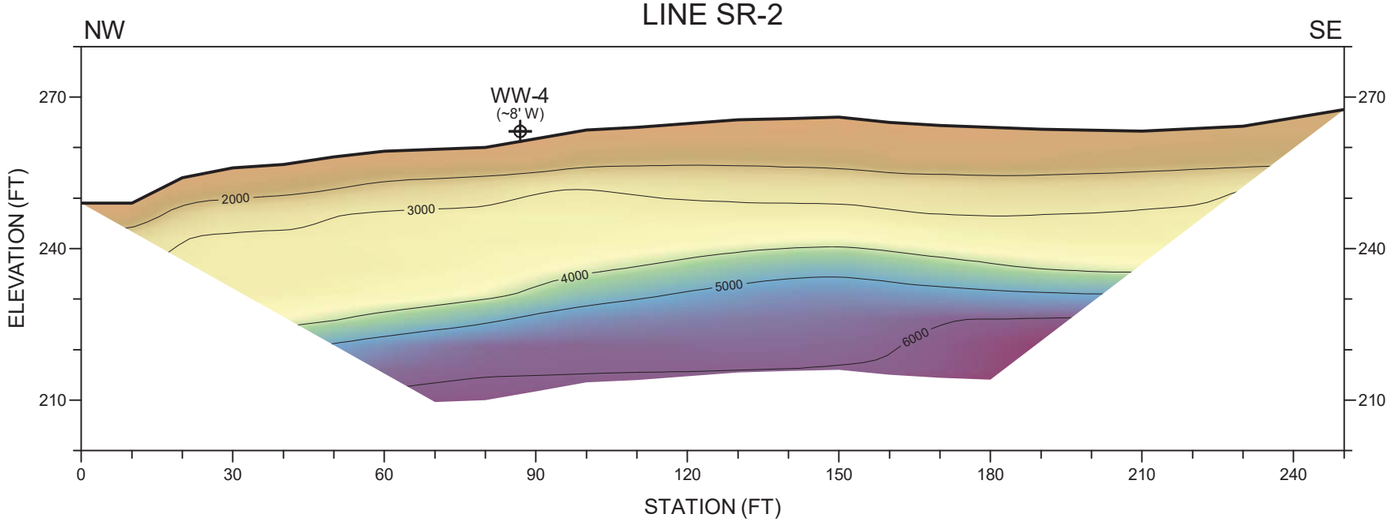
JOB #. NS205102	DATE: AUGUST 2020	PLATE 1
DRAWN BY: G.RANDALL	APPROVED BY: DTH	

David Hagin 8/28/2020

LINE SR-1



LINE SR-2



SCALE

0 30 60

(1 inch = 30 feet)

LEGEND	
⌖	BORING

SEISMIC VELOCITY (FT/SEC)

1000 2000 3000 4000 5000 6000

NORCAL GEOPHYSICAL CONSULTANTS INC.
A Terracon COMPANY

321A BLODGETT STREET
COTATI, CA 94931
PH. (707) 796-7170
FAX. (707) 796-7175
www.norcalgeophysical.com

PROFESSIONAL GEOPHYSICIST
DAVID T HAGIN
No. 1033
STATE OF CALIFORNIA

SEISMIC REFRACTION PROFILES
LINES SR-1 & SR-2
MEMORIAL COUNTY PARK

LOCATION: LOMA MAR, CALIFORNIA		
CLIENT: CONSTRUCTION TESTING SERVICES		
JOB #: NS205102	DATE: AUGUST 2020	PLATE 2
DRAWN BY: G.RANDALL	APPROVED BY: DTH	
David Hagin 8/28/2020		

APPENDIX A:

Seismic Refraction Survey

APPENDIX A:

Seismic Refraction Survey

1.0 METHODOLOGY

The seismic refraction method provides information regarding the seismic velocity structure of the subsurface. An impulsive (mechanical or explosive) source is used to produce compressional (P) wave seismic energy at the surface. The P-waves propagate into the earth and are refracted along interfaces caused by an increase in velocity. A portion of the P-wave energy is typically re-radiated back to the surface where it is detected by sensors (geophones) that are coupled to the ground surface in a collinear array (spread). The detected signals are recorded on a multi-channel seismograph and are analyzed to determine the shot point-to-geophone travel times. These data can be used along with the corresponding shot point-to-geophone distances and elevation data to determine the depth, thickness, and velocity of subsurface seismic layers.

2.0 DATA ACQUISITION

We collected SR data along two lines designated as Line SR-1 and Line SR-2, as shown on Plate 1. CTS personnel and site accessibility determined the location and orientation of each line. We acquired the SR data using arrays of 24 geophones and 5 shot points. Shot-points were placed off each end of the geophone arrays as well as equally distributed within the arrays. Both SR lines are comprised of a single array. The geometry specifications of the seismic lines are detailed in Table A, below.

Table A : *Seismic Line Geometry Specifications*

SEISMIC LINE	GEOPHONE SPACING (FT)	TOTAL GEOPHONE STATIONS	LINE LENGTH (FT)
SR-1	15	24	375
SR-2	10	24	250

3.0 INSTRUMENTATION

The seismic waveforms produced at each shot point were recorded using a Geometrics ***Geode*** 24-channel engineering distributed array seismograph, as pictured in Figure 1, and Oyo ***Geospace*** geophones with a natural frequency of 8 Hz. The geophones were coupled to the ground surface by a metal spike affixed to the bottom of each geophone case. Seismic energy

was produced at each shot point by multiple impacts with a 16-pound sledge hammer against a metal strike plate placed on the ground surface. The seismic waveforms were digitized, processed and amplified by the Geode, transmitted via a ruggedized Ethernet cable to a field computer and algebraically summed (stacked) until sufficient signal to noise ratio was achieved. The data were displayed on the computer's LCD screen in the form of seismograms, analyzed for quality assurance and archived for subsequent processing. These images were subsequently used to determine the time required for P-waves to travel from each shot point to each geophone in the array.

Figure 1: *Geometrics Geode 24-channel engineering distributed array seismograph.*

4.0 DATA ANALYSIS

The seismic refraction data were processed using the software package ***SeisImager,*** written by Oyo Corporation (Japan) and distributed by Geometrics Inc. This package consists of two programs titled ***Pickwin,*** Version 5.1.1.2 (2013) and ***Plotrefa*****,** Version 3.0.0.6 (2014). For each seismic line we used ***Pickwin*** to view the seismic records and identify first arriving P-wave energy at each geophone and to determine the shot point to geophone travel time associated with each arrival. We then used ***Plotrefa*** to assign elevations to each geophone and to plot the shot point to geophone travel times versus their distance (Station) along the line. A sample Time versus Depth (T-D) graph is shown in Figure 2. After examining the T-D graph we assigned velocity layers (1-3) to each travel time and then computed a 2D model using ***Plotrefa's*** time-term routine. This resulted in a 2D layered cross-section (profile) illustrating seismic velocity versus depth. A sample 2D time-term model is shown in Figure 3.

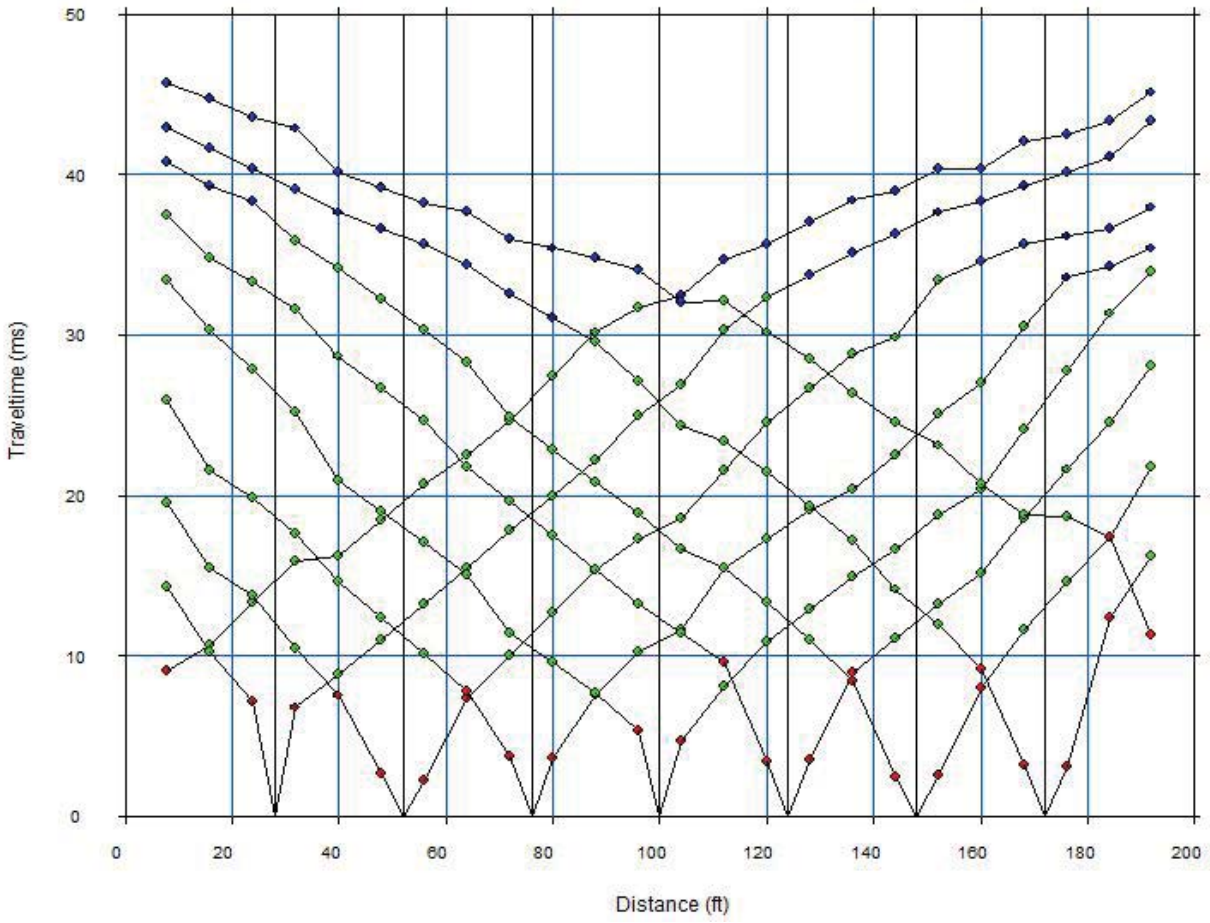


Figure 2: *Sample SR Time-Distance Graph. Red circles represent layer 1 (V1), green circles represent V2 and blue circles represent V3.*

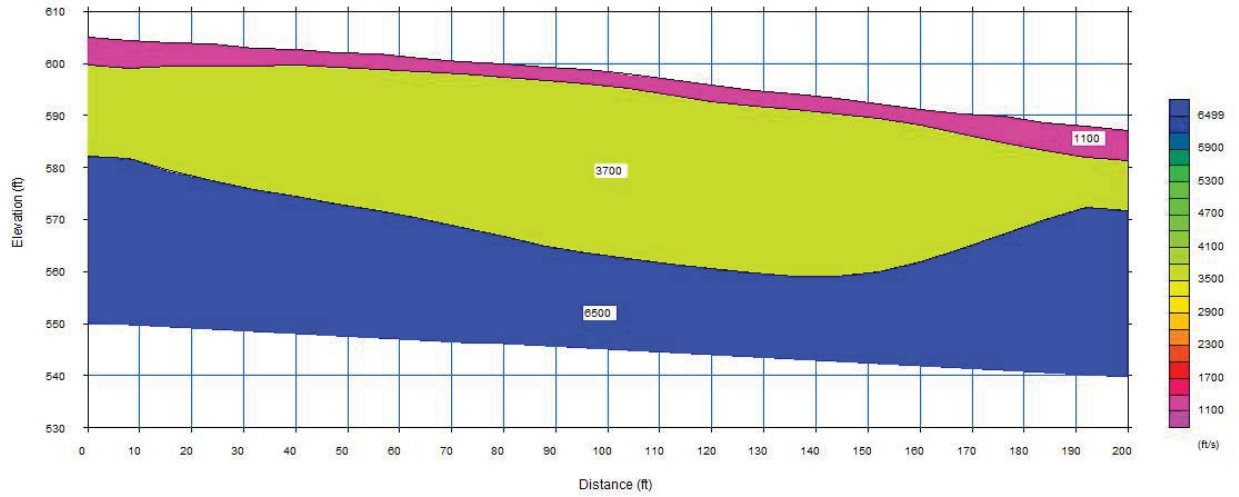


Figure 3: *Sample Time-Term Seismic Velocity Model. Velocities are labeled and indicated by the color bar on the right.*

Finally, we used the time term model as input to ***Plotrefa's*** tomographic routine. This routine divided the input model into cells according to the geophone spacing and depth range and assigned a velocity to each cell. It then used a ray tracing routine to compute synthetic travel times through the model from each shot point to every geophone. The synthetic travel times were compared with the observed travel times to determine the goodness of fit. If the fit was not within certain assigned parameters, the program then adjusted the velocity in each cell and reran the ray tracing. This procedure was repeated through as many as 20 iterations in order to achieve the optimum fit between observed and synthetic travel times. A sample tomographic model is shown in Figure 4.

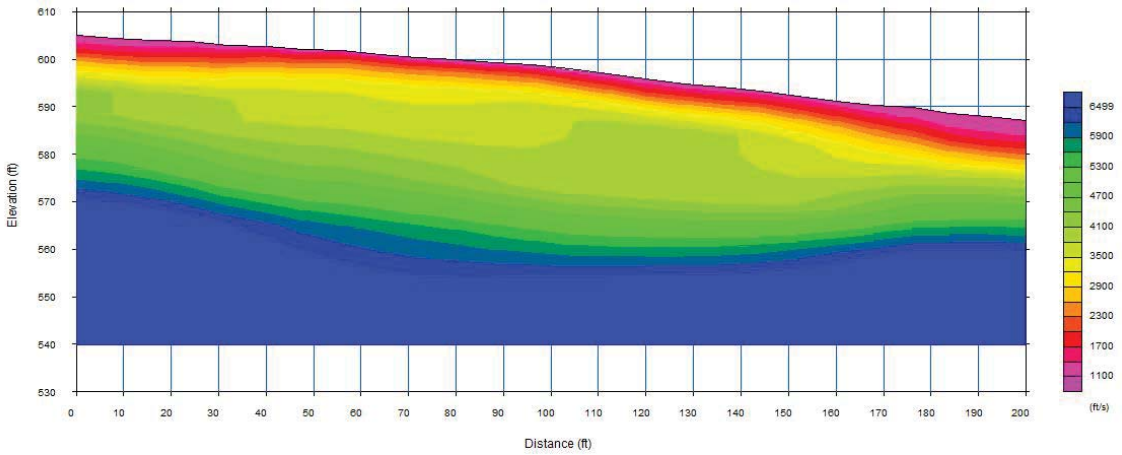


Figure 4: *Sample tomographic Inverted Seismic Velocity Model. Velocities indicated by color bar on right.*

Once the tomographic processing was complete, we used the computer program ***Surfer 13.0*** by Golden Software to construct a color contoured 2D cross-section (profile) illustrating the results for each seismic line.

5.0 INTERPRETATION

The SR profiles described above are models of the subsurface based on P-wave velocities. How these velocities and their subsurface distribution relate to geology is a matter of interpretation. This interpretation can be based on experience and a general knowledge of the local geology. However, the best results are achieved when the models can be correlated with subsurface information provided by other means such as onsite observations, borehole geological and/or geophysical logs, trench logs or projections based on mapped surface geology. This type of information is referred to as “ground truth”.

In any case, the resulting seismic velocity profile represents a model of the subsurface that must be interpreted by the best means available. Thus, the interpreted profile is conceptual in nature, and is not expected to represent an exact depiction of the subsurface.

6.0 LIMITATIONS

Based on the physical properties of refraction (Snell’s Law), in order for a seismic wave to be refracted back toward the surface the seismic velocity of the upper layer must be less than the velocity of the lower layer. When higher velocities overlie lower velocities, often referred to as a velocity inversion, the seismic energy will be refracted downward and the lower layer will not be detected at the surface. As a result, the calculated depths of any deeper higher velocity layers may be over-estimated. Furthermore, some layers may be truncated, or too thin to detect. These are referred to as “hidden layers”.

If the seismic source used for the survey does not produce sufficient energy to propagate through the entire spread at detectable levels, the first arriving P-waves at each geophone may not be visible on the seismic records. Additionally, extraneous seismic energy sources such as wind, traffic or nearby machinery may create “noise” on the recorded waveforms that may mask the first arrivals.

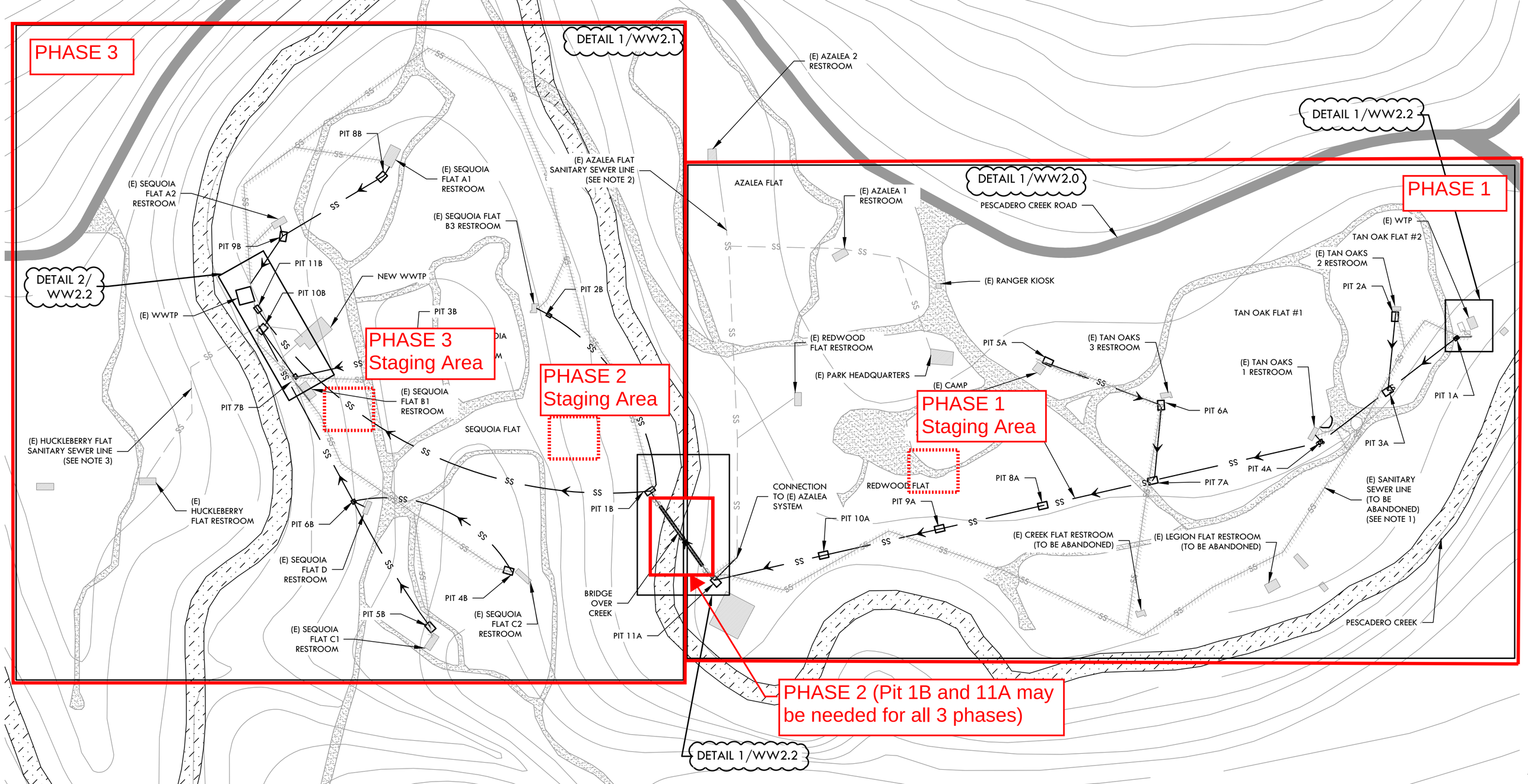
In noisy conditions many “stacks” may be necessary to achieve an acceptable signal to noise ratio. Stacking consists of superposition of waveforms such that the stacked shot energy builds with successive shots whereas the noise tends to cancel itself out due to its random nature.

Another common external noise source is overhead power lines. If the cable is laid out parallel to the lines electrical noise may be induced in the cable. Possible internal noise sources may be faulty geophone connections due to dirt or moisture, or use of an unsuppressed power supply.

Finally, seismic refraction processing algorithms are based on the assumption that the seismic velocity layers are isotropic. That is, that the velocity is uniform within the length and breadth of each layer. Another assumption is that the velocity distribution does not change in a direction transverse to the seismic line. In other words, that there is true 2D symmetry. If these conditions are not met, the actual subsurface conditions will vary from those represented by the seismic model.

Exhibit C – SITE LOGISTICAL AND PHASING PLAN

See Attached on Next Page


PHASE 3
DETAIL 1/WW2.1
(E) AZALEA 2 RESTROOM
DETAIL 1/WW2.2
PHASE 1
DETAIL 1/WW2.0
PIT 8B
(E) SEQUOIA FLAT A1 RESTROOM
(E) AZALEA FLAT SANITARY SEWER LINE (SEE NOTE 2)
AZALEA FLAT
(E) AZALEA 1 RESTROOM
PESCADERO CREEK ROAD
(E) WTP
TAN OAK FLAT #2
(E) SEQUOIA FLAT A2 RESTROOM
(E) SEQUOIA FLAT B3 RESTROOM
PIT 9B
PIT 11B
PIT 10B
NEW WWTP
PIT 2B
(E) RANGER KIOSK
(E) TAN OAKS 2 RESTROOM
PIT 2A
DETAIL 2/ WW2.2
(E) WWTP
PIT 3B
PHASE 3 Staging Area
PHASE 2 Staging Area
(E) REDWOOD FLAT RESTROOM
PIT 5A
TAN OAK FLAT #1
(E) TAN OAKS 3 RESTROOM
(E) TAN OAKS 1 RESTROOM
(E) PARK HEADQUARTERS
(E) CAMP
PHASE 1 Staging Area
PIT 6A
PIT 1A
PIT 7B
(E) SEQUOIA FLAT B1 RESTROOM
PIT 3A
(E) HUCKLEBERRY FLAT SANITARY SEWER LINE (SEE NOTE 3)
SEQUOIA FLAT
PIT 4A
PIT 8A
PIT 7A
CONNECTION TO (E) AZALEA SYSTEM
REDWOOD FLAT
PIT 9A
(E) SANITARY SEWER LINE (TO BE ABANDONED) (SEE NOTE 1)
PIT 1B
PIT 10A
(E) HUCKLEBERRY FLAT RESTROOM
PIT 6B
(E) CREEK FLAT RESTROOM (TO BE ABANDONED)
(E) LEGION FLAT RESTROOM (TO BE ABANDONED)
(E) SEQUOIA FLAT D RESTROOM
PIT 4B
BRIDGE OVER CREEK
PIT 5B
(E) SEQUOIA FLAT C2 RESTROOM
PESCADERO CREEK
(E) SEQUOIA FLAT C1 RESTROOM
PIT 11A
PHASE 2 (Pit 1B and 11A may be needed for all 3 phases)
DETAIL 1/WW2.2
SS

01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

A. General Conditions, including, without limitation, Site Access Conditions and Requirements;

B. 00700 – Scope of Work.

C. All specification sections, exhibits, and drawings.

1.02 SUMMARY OF WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of this Contract consists of the following:

- Field surveys, underground locating, and civil engineering of portions of system.
- Installation of temporary facilities including dewatering and weather protection.
- Installation of tree protection.
- Installation of MMRP's (Exhibit A) including erosion control measures.
- Clearing areas of work and access as required to accommodate equipment.
- Grading to accommodate new structures requirements.
- Installation of new HDPE sewer collection system lines by means of HDD.
- Horizontal Directional Drilling through rock as indicated in Exhibit B.
- Installation of new Manholes and Clean-outs.
- Abatement and removal of transite pipe sections as required for new connections.
- Connections to existing buildings and plant sewer lines.
- Backfill and compaction at new work, demolished items, and pits.
- Temporary connections to existing sewer lines to accommodate phased work.
- Modifications to existing manholes at bridge.
- Modifications to bridge at creek crossing to support new line at new elevations.

- Installation of new pipe supports at bridge.
- Dry rot repairs on existing bridge supports.
- Demolition of existing manholes and cleanouts.
- Decommissioning of old sewer lines.
- Flushing and testing of new lines, structures, and connections prior to backfill.
- Restoration of areas of work.

1.03 CONTRACTS

A. Perform the Work under a single, fixed-price Contract.

1.04 WORK BY OTHERS

A. Work on the Project that will be performed and completed prior to the start of the Work of this Contract:

(1) Completion of construction of the new Waste Water Treatment Plant (WWTP) and conversation of old WWTP into a lift station.

1.05 CODES, REGULATIONS, AND STANDARDS

A. The codes, regulations, and standards adopted by the state and federal agencies having jurisdiction shall govern minimum requirements for this Project. Where codes, regulations, and standards conflict with the Contract Documents, these conflicts shall be brought to the immediate attention of the County and the Engineer.

B. Codes, regulations, and standards shall be as published effective as of date of bid opening, unless otherwise specified or indicated.

1.06 PROJECT RECORD DOCUMENTS

A. Contractor shall maintain on Site one set of the following record documents; Contractor shall record actual revisions to the Work:

(1) Contract Drawings.

(2) Specifications.

(3) Addenda.

(4) Change Orders and other modifications to the Contract.

(5) Reviewed shop drawings, product data, and samples.

(6) Field test records.

(7) Inspection certificates.

(8) Manufacturer's certificates.

B. Contractor shall store Record Documents separate from documents used for construction. Provide files, racks, and secure storage for Record Documents and samples.

C. Contractor shall record information concurrent with construction progress.

D. Specifications: Contractor shall legibly mark and record at each product section of the Specifications the description of the actual product(s) installed, including the following:

(1) Manufacturer's name and product model and number.

(2) Product substitutions or alternates utilized.

(3) Changes made by Addenda and Change Orders and written directives.

1.07 EXAMINATION OF EXISTING CONDITIONS

A. Contractor shall be held to have examined the Project Site and acquainted itself with the conditions of the Site and of the streets or roads approaching the Site and within the Site.

B. Prior to commencement of Work, Contractor shall survey the Site and existing buildings structures, and improvements to observe existing damage and defects such as cracks, sags, broken, missing or damaged glazing, other building elements and Site improvements, and other damage.

C. Should Contractor observe cracks, sags, and other damage to and defects of the Site and adjacent buildings, paving, and other items not indicated in the Contract Documents, Contractor shall immediately report same to the Construction Manager.

1.08 CONTRACTOR'S USE OF PREMISES

A. If the space at the Project Site indicated on the Logistics Plan is not sufficient for Contractor's operations, storage, office facilities and/or parking, Contractor shall request additional areas as needed by Contractor and must obtain County approval prior to use of different areas.

B. Contractor shall not interfere with use of or access throughout the Site.

C. No one other than those directly involved in the demolition and construction, or specifically designated by the County or the Construction Manager shall be permitted in the areas of work during demolition and construction activities.

1.09 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

A. The Drawings show above-grade and below-grade structures, utility lines, and other installations that are known or believed to exist in the area of the Work. Contractor shall locate these existing installations before proceeding with excavation and other operations that could damage same; maintain them in service, where appropriate; and repair damage to them caused by the performance of the Work. Should damage occur to these existing installations, the costs of repair shall be at the Contractor's expense and made to the County's satisfaction.

B. Contractor shall be alert to the possibility of the existence of additional structures and utilities. If Contractor encounters additional structures and utilities, Contractor will

immediately report to the Construction Manager for disposition of same as indicated in the General Conditions.

1.10 UTILITY SHUTDOWNS AND INTERRUPTIONS

A. Contractor shall give the County a minimum of seven (7) days written notice in advance of all needed shut off of the existing sewer services. Work required to re-establish utility services shall be performed by the Contractor within five (5) days and will require temporary tie-ins between phases.

B. Contractor shall obtain County's written approval as indicated in the General Conditions in advance of deliveries of material or equipment or other activities that may conflict with County's use of the Site.

1.11 STRUCTURAL INTEGRITY

A. Contractor shall be responsible for and supervise each operation and work that could affect structural integrity of the existing bridge.

B. Contractor shall include all connections and fastenings as indicated or required for complete performance of the Work.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

01 21 00

ALLOWANCES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Non-specified work.

1.2 RELATED SECTIONS

A. Document 01 11 00 (Summary of Work)

B. Document 01 33 00 (Submittal Procedures)

1.3 ALLOWANCES

A. Included in the Bid Form and Contract are two Allowances:

1. General Allowance of one-hundred thousand dollars ($100,000) for Unforeseen Conditions and any County requested changes.
2. Specific Allowance of twenty-thousand dollars ($20,000) for dry rot repairs to bridge supports.

B. No Allowances can be utilized without written approval by the County.

C. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding and equipment rental in accordance with the General Conditions can be included in Proposed Change Order (PCO).

D. Funds will be drawn from Allowance only with County approval evidenced by an approved PCO.

E. At Contract closeout, funds remaining in Allowance will be credited to County by Change Order.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF DOCUMENT

01 31 19

COORDINATION AND MEETINGS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Coordination.

B. Preconstruction conference.

C. Progress meetings.

D. Preinstallation conferences.

E. Post construction dedication.

1.2 COORDINATION

A. Coordinate scheduling, submittals, and Work of the various Sections of Specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Prior to commencement of a particular type or kind of Work examine relevant information, Contract Documents, and subsequent data issued to the Project.

C. Verify that utility requirement characteristics of operating system are compatible with utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to and placing in service.

D. Coordinate completion and clean up of Work in preparation for completion and for portions of phased Work use.

1.3 PRECONSTRUCTION CONFERENCE

A. The Construction Manager or Project Engineer will schedule a conference immediately after receipt of fully executed Contract Documents prior to project mobilization.

B. Mandatory Attendance: Construction Manager, Project Engineer, County Parks, Contractor, Contractor's Project Manager, and Contractor's Job/Project Superintendent.

C. Optional Attendance: Engineer’s consultants, subcontractors, and utility company representatives.

D. Construction Manager will schedule and conduct meeting, and issue meeting notes. Engineer and Contractor will review and approve minutes.

E. Agenda:

1. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.

2. Designation of responsible personnel representing the parties.

3. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.

4. Scheduling.

1.4 PROGRESS MEETINGS

A. Construction Manager will schedule and administer meetings throughout progress of the Work at a minimum of once per week.

B. Construction Manager or Project Engineer will make arrangements for meetings, prepare agenda, preside at meetings, record minutes (Field Reports), and distribute copies.

C. Attendance Required: Job Superintendent, Construction Manager, Project Engineer, County Parks, and subcontractors and suppliers as appropriate to agenda topics for each meeting.

D. Agenda:

1. Review minutes of previous meetings. (Field Reports)

2. Review of Work progress.

3. Field observations, problems, and decisions.

4. Identification of problems, which impede planned progress.

5. Review of submittals schedule and status of submittals.

6. Review of off-site fabrication and delivery schedules.

7. Maintenance of construction schedule.

8. Corrective measures to regain projected schedules.

9. Planned progress during succeeding Work period.

10. Coordination of projected progress.

11. Maintenance of quality and Work standards.

12. Effect of proposed changes on progress schedule and coordination.

13. Other business relating to Work.

1.5 PREINSTALLATION CONFERENCES

A. When required in individual Specification Section, Contractor shall convene a preinstallation conference prior to commencing Work of the Section. Refer to individual Specification Section for timing requirements of conference.

B. Require attendance of parties directly affecting, or affected by, Work of the specific Section.

C. Notify Construction Manager at least seven (7) days in advance of meeting date.

D. Preinstallation conference to coincide with regularly scheduled progress meeting wherever possible.

E. Review Contract Documents, conditions of installation, preparation and installation procedures, and coordination with related Work and manufacturer's recommendations.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

01 33 00

SUBMITTAL PROCEDURES

PART 1- GENERAL

1.01 SECTION INCLUDES

Submittals procedures.
Proposed products list.
Shop drawings.
Product data.
Samples.
Manufacturers' instructions.
Manufacturers' certificates.
Substitutions.

1.02 SUBMITTAL PROCEDURES

A. All items being forwarded to the County / Construction Manager for review and acceptance shall be considered a submittal. All submittals to the Engineer shall be via the County / Construction Manager.

B. The Contractor shall review, approve, stamp and submit to the County / Construction Manager, Shop Drawings, Product Data, Samples and similar submittals required by the Contract.

C. Transmit each submittal with County standardized submittal form.

D. Sequentially number the submittal forms. Resubmittals shall retain original number with an alphabetic suffix.

E. Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate.

F. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.

G. Provide all submittals within 35 days from receipt of the Notice of Intent to Award. Provide critical path submittals sooner if necessary to accommodate schedule requirements.

H. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.

I. Provide space for Contractor and Engineer review stamps.

J. Revise and resubmit submittals as required, identify all changes made since previous submittal.

K. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

L. Clearly identify any proposed product that is not specifically referenced in the specifications as a Substitution and provide a side-by-side comparative analysis and product data for ease of review. Submit requests for Substitution on the standardized substitution request form.

M. Number of copies submitted by the Contractor:

Shop Drawings:

b. Electronic file copy in both CAD and PDF formats.

Product Data:

b. Electronic file copy in PDF format.

1.03 PROPOSED PRODUCTS LIST

A. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation and reference standards.

1.04 SHOP DRAWINGS

A. Contractor shall provide clear, easy to read, shop drawings showing all details of proposed construction.

B. All shop drawings to be professionally drawn with clear notes and dimensions. Include all calculated dimensions.

C. Any questions and requests for additional information or clarifications of contract requirements shall be made under a separate format, Request For Information (RFI), and not on the shop drawings. (Refer to General Conditions 00700.)

D. After review, reproduce and distribute as required to sub-contractors, suppliers and vendors.

Maintain copies of all shop drawings on site and be ready to provide such information upon request.

1.05 PRODUCT DATA

A. Mark each copy to identify applicable products, models, options, and other data. If necessary, supplement manufacturers' standard data to provide information unique to this Project. Clearly identify products being proposed for use.

B. Any questions and requests for additional information or clarifications of contract requirements shall be made under a separate format, Request For Information (RFI), and not on the submittal. (Refer to General Conditions 00700.).

C. Maintain a copy of all Submittals, Material and Safety Data Sheets on the job site at all times and be ready to provide such information upon request or have ready access due to emergency.

1.06 SAMPLES

A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

B. Submit samples of finishes from the full range of manufacturers' standard (or custom colors if specified) colors, textures and patterns for selection.

C. Include identification on each sample, with Project information. Reviewed samples which may be used in the Work are indicated in individual specification Sections. All other samples will not be returned.

1.07 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, in quantities specified for Product Data.

B. Identify any conflicts between manufacturers' instructions and Contract Documents.

1.08 MANUFACTURER'S CERTIFICATES

A. When specified in individual specification Sections, submit manufacturers' certificate to Engineer for review, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Engineer.

1.09 PRODUCT OPTIONS

A. Products specified by reference standards or by description only without listing a specific manufacture:

1. Contractor to provide submittal including all product data, shop drawings and certificates listed in the specification section and list the manufacture (s) and specific model (s) proposed for use that meets or exceeds to referenced standards or description.

B. Products Specified by Naming One or more Manufacturer and stating “or approved equal” and/or “substitutions per section 01 33 00”:

1. Contractor to provide submittal including all product data, shop drawings and certificates listed in the specification section and list the manufacture (s) and specific model (s) proposed that is one of the listed manufacturers. Or, if not one of the listed manufacturers, also include a completed and signed substitution request form.

C. Products Specified by Naming One Manufacturer and stating “No Substitutions Allowed”:

1. Contractor to provide submittal on the specified product. No substitutions will be permitted due to coordination with County assemblies and / or maintenance and operation requirements.

1.10 PRODUCT SUBSTITUTION PROCEDURES

A. Reference to any equipment, material, article, system or patented process, by trade, catalogue number, name brand product or product manufacturer is for information only and shall not be construed as limiting competition.

B. In those cases where the Specifications designate a material, product, or service by specific brand or trade name and there is only one brand or trade name listed, the item involved is:

Required to be used since it is a unique or novel product application, or
Used as a standard of quality which must be satisfied without compromise, or
The only brand or trade name known to the Engineer.

C. County will consider requests for Substitutions only within 7 days after date of Notice of Intent to Award.

D. Document each request to provide material other than specifically identified in specification section on Substitution Request Form with complete data substantiating compliance of proposed Substitution with Contract Documents. The burden of proof as to comparative quality, suitability and performance of offered material(s), article(s), system(s) or equipment shall be upon the Contractor. The Engineer will be the sole judge as to such matters.

E. A request constitutes a representation that the Contractor:
   - Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
   - Will provide the same warranty for the Substitution as for the specified product.
   - Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
   - Waives claims for additional costs or time extension which may subsequently become apparent.
   - Will reimburse Owner for review or redesign services associated with re-approval by authorities.

F. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

G. Substitutions will not be considered when acceptance would require revisions to the Contract Documents, Contract Time extensions or approvals by Authorities except as follows: When substitutions that have been accepted by the Engineer have structural or life safety implications, they shall be approved by County prior to fabrication and installation on the project.

H. Substitution Submittal Procedure:

   1. Submit seven copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
   2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence.
   3. The Engineer will notify Contractor, in writing, of decision to accept or reject request.
   4. Incomplete Substitution Request package will not be reviewed and will be returned to the Bidder. Bidder shall provide specified item.
   5. Only one request for substitution will be allowed. If proposed substitution is not accepted by Engineer, Contractor shall provide specified product.
   6. Use of approved substitutions shall in no way relieve the Contractor from responsibility for compliance with the Drawings and Specifications. The use of approved substitutions will assume that all extra costs caused by the use of such substitutions where they affect other work or trades shall be paid by the Contractor.

I. The Engineer shall evaluate the proposed “substitute” materials and if acceptable to the Engineer, will make a recommendation to the County to accept. To obtain approval requires the concurrence by the County of the recommendation from the Engineer.

J. The Engineer shall take into consider the environmental differences in determining equality of proposed alternate manufacture and products.

PART 2 - PRODUCTS - Not Used.

PART 3 - EXECUTION

3.01 PROCUREMENT OF MATERIALS AND EXECUTION OF WORK:

A. The Contractor shall perform no portion of the Work or procure materials requiring submittal and review of Shop Drawings, Product Data, Samples and other submittals until the respective submittal has been received, reviewed and accepted by the Engineer and returned by the County. Such work shall be accordance with approved submittals. The Contractor is solely responsible for delays or disruptions to the Work caused by inadequate, uncoordinated, incorrect or late submittals. All submittals shall be submitted within thirty five (35) days after Notice of Intent to Award and shall be phased to support the Project Schedule as well as to allow Engineer maximum review time. Contractor schedule must allow at a minimum of two (2) weeks for Engineer's review of submittals. More time shall be allowed for particularly complex submittals or if a Substitution will be submitted which may result in a re-submittal.

B. Where a shop drawing or sample is required by the Specifications, and related Work performed prior to the Engineer's review and approval of the pertinent submittal corrective work shall be at the sole expense and responsibility of the Contractor.

3.02 REVIEW OF SUBMITTALS PRIOR TO SUBMITTING

A. By approving and submitting Shop Drawings, Product Data, Samples and other submittals, the Contractor represents that it has determined and verified materials, field measurements and field criteria related thereto, and has checked and coordinated the information contained within such submittals for compliance with the contract documents and for coordination of the Work indicated in the submittal and with adjacent work.

3.03 REVIEW OF SUBMITTALS BY ENGINEER, CONSTRUCTION MANAGER AND COUNTY

A. The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Engineer's acceptance of Shop Drawings, Product Data, Samples and other submittals unless the Contractor has specifically informed the Engineer in writing attached to the submittal of such deviation at the time if submittal and the Engineer has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the County's approval thereof. Any deviation shall also be indicated on such Shop Drawing, Product Data, Sample or related submittal.

B. After review of submittals by the County, Construction Manager, Engineer and the Engineer's Consultants if applicable, submittals will be returned to the Contractor, indicating one of the following actions:
   - "Unreviewed" – If the submittal is not required or if it is not complete or if does not meet the form, format and number requirements specified, it may be returned unreviewed. If the submittal is not required, work may commence; if the submittal was returned due to form requirements, it shall be resubmitted and approval obtained prior to commencement of the work.
   - "Reviewed- No Exceptions Taken": No corrections or re-submissions required.
   - "Reviewed- Make Corrections Noted": No re-submission required. Fabrication may proceed on the basis that corrections noted are incorporated in the work. If the

Contractor cannot comply of disagree with the corrections noted, he shall revise the submittal as indicated.

- "Revise and Resubmit": Re-submission required. Fabrication shall not proceed. Revise in submittal as indicated.
- "Rejected": Re-submission required. Fabrication shall not proceed. Revised in accordance with the Contract Documents.

C. The County / Construction Manager will return the reproducible copy of each shop drawing, two each of copies of catalogue cuts, brochures, calculation, etc. (or as many additional copies submitted by the Contractor over the required seven (7) minimum and four (4) each of samples. The Contractor is responsible to obtain and pay for additional copies required for distribution to subcontractors, suppliers and the like. The Contractor shall transmit one copy of all submittals marked "Reviewed – No Exceptions Taken" and "Reviewed Make Corrections Noted" to the Contractors Field Office.

3.04 RESUBMITTALS

A. The Contractor shall direct specific attention, in writing, for resubmitted Shop Drawings, Product Data, Samples and other submittals, to revisions other than those requested by the Engineer on previous submittals.

END OF DOCUMENT

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1- GENERAL

1.01 WORK INCLUDED

A. Temporary Facilities and controls required for this Work include, but are not necessarily limited to:

1. Exhibit C – Site Logistic and Phase Plan
2. Temporary Utilities and Tie-Ins
3. Dewatering and Weather Protection
4. Parking and storage areas.
5. Site fencing and security.
6. Sanitary facilities.
7. Final and course of construction cleanup and removal of debris.

1.02 TEMPORARY UTILITIES AND TIEINS

A. Contractor shall be responsible for all temporary utilities as may be required to implement work.

B. Contractor shall be responsible for all temporary utility tie-ins to accommodate the project phase requirements.

1.03 DEWATERING AND WETHER PROTECTION

A. Contractor shall be responsible for all dewatering, tarping, tenting, additional shoring as may be required to implement work through the rainy season.

1.04 FIELD OFFICE/STORAGE CONTAINERS

A. Contractor may bring on site and set job site trailers and/or storage containers in the designated lay-down areas if desired.

1.05 PARKING OF VEHICLES

A. Contractor shall assume **all** responsibility for job site vehicle parking of his and his subcontractor's vehicles. Locations of parking shall be as directed by Construction Manager and County.

1.06 STORAGE AND LAYDOWN AREAS

A. The Construction Manager will coordinate use of available laydown areas.

B. Only areas designated by Owner’s Representative can be used by Contractors. Contractor is responsible for providing his own fenced storage facilities (trailers or cargo containers.)

1.07 TEMPORARY SITE FENCING AND SECURITY

A. Contractor shall provide and maintain temporary fencing surrounding the areas under construction and staging areas. Set-up/relocation of temporary fencing shall be included

for each phase of work as shown on the Preliminary Construction Schedule. Contractor is responsible for the security of all equipment, material, and completed construction items.

B. Barricades and/or steel plates to protect all open excavations areas of work.

1.08 SANITARY FACILITIES

A. Contractor shall provide sanitary toilet facilities for use of all Workers employed on Project, in accordance with State and Local health departments. Use of County toilet facilities will not be allowed.

B. In addition to the facilities provided for Contractor's workers, it is also required to provide the following portable toilet facilities for the Park Rangers and Public:
   a. (1) ADA Toilet, (1) standard Toilet, (1) Hand Wash Station at Main Entry.
   b. (1) ADA Toilet and (1) Hand Wash Station at Day Use Area.

1.09 CLEANUP AND REMOVAL OF DEBRIS

A. Contractor shall assume all responsibility for cleanup and removal of debris created by his Scope of Work on a daily basis. No community dumpsters will be provided. All debris must be lawfully disposed of be Contractor. If Contractor's clean-up is found to be deficient, the County may back-charge the Contractor for clean-up and/or withhold progress payments as determined appropriate by the County in accordance with General Conditions Section 00700.

1.10 TEMPORARY CONSTRUCTION, EQUIPMENT AND PROTECTION

A. Contractor shall provide, maintain and remove upon completion of Work, all temporary facilities, protection, or other devices necessary for safety of Workers and public property as required to complete the Work.

1. Safety:
   The contractor is responsible for the complete safety of County personnel and the general public at all times.

2. Access:
   The contractor is responsible to maintain access to through the site at all times.

3. Protection:
   Contractor must protect all Workers and equipment from power lines by maintaining safe distances and by providing protective devices where and as required by Industrial Safety Commission and CAL-OSHA.

4. Temporary construction and equipment:
   All temporary construction, shoring, barricades, and equipment shall conform to all regulations, ordinances, laws and other requirements of State and any other authorities having jurisdiction (including insurance companies), with regards to safety precautions, operations and fire hazards.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used.

END OF DOCUMENT

01 73 29

FIELD ENGINEERING & SURVEY CONTROLS

PART 1- GENERAL

1.01 SECTION INCLUDES

A. Contractor to provide and pay for engineering services required for the execution of Work, including, but not limited to:

1. Survey Work required in execution of Work.
2. Underground Locating Service in areas of Work.
3. Engineering design required in execution of Work,

1.02 QUALIFICATIONS OF SURVEYOR OR ENGINEER

A. Qualified California registered professional engineer or registered land surveyor, acceptable to Contractor and Owner's Representative.

B. Registered professional engineer of discipline required for specific service on Project, licensed in State of California.

1.03 SUBMITTALS

A. Submit name, address, and license of surveyor and professional engineer to Owner's Representative.

B. Submit proposed final design of areas where Lydar survey information was provided in the bid plans. Include listing of all differing site conditions.

1.04 ENGINEERING REQUIREMENTS

A. Control datum for survey is that established by County provided survey. Contractor shall locate and protect survey control and reference points.

B. Provide field engineering services. Establish grade, invert, and rim elevations, utilizing recognized engineering survey practices.

C. Provide proposed design of areas that the Lydar survey information was used to confirm design criteria was met and evaluate any differing site conditions.

D. Preserve and protect all on-site underground utilities lines and existing on-site improvements in the area of construction.

E. Replace dislocated survey control points based on original survey control.

F. Upon completion of Work, submit certificate, signed by the Land Surveyor, that elevations and locations of Work are in conformance with Contract Documents. Record deviations on Record Drawings.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF DOCUMENT

01 74 00

FINAL CLEANING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Cleaning at completion of the Work.

1.2 QUALITY CONTROL

A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and antipollution laws.

1.3 RELATED SECTIONS

A. 01 70 00 Contract Closeout

PART 2 - PRODUCTS

2.1 MATERIALS

A. Use only those cleaning materials which will neither create hazards to health or property nor damage surfaces.

B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.

C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed surfaces.

B. All scars, stains, paint marks, tags, and labels (except required labels) shall be removed.

C. Broom-clean and wash down exterior paved surfaces.

D. Immediately prior to final completion or County occupancy, conduct an inspection of sight-exposed surfaces and verify all work areas are clean and restored to conditions prior to Work.

END OF SECTION

SECTION 02 82 13

ASBESTOS ABATEMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Asbestos abatement.

B. Related Documents:

1. Drawings

1.02 SCOPE OF WORK

A. The work includes all removal, storage, transportation, and disposal of all asbestos-containing materials (ACM) and/or asbestos contaminated building materials, articles, and items as specified, shown or reasonably implied in the contract documents or discovered during work activities.

B. ACM known or assumed to be present at the site in areas where work may be performed for this project include: subsurface asbestos cement “Transite” (AC) piping.

C. The contractor is to review all contract documents and reports, and field verify quantities and locations of asbestos related work. Any discrepancies between the contractual bid set documentation and site visits must be submitted in writing to the Owner or Owner’s representative, prior to bidding.

D. The contractor shall make sure that asbestos does not contaminate areas outside the regulated work areas. If such contamination occurs, the contractor shall incur all costs associated with the decontamination of the areas. These costs include, but are not limited to, the Owner’s Environmental Consultant fees and analytical fees deemed necessary by the Owner.

E It is not the responsibility of the Owner’s Environmental Consultant to supervise the Contractor; nor to direct the Contractor’s work effort; nor to assume the management of, or responsibility for, the Contractor’s health and/or safety practices, nor its waste management, nor its regulatory compliance. At all times, the Contractor shall be solely responsible for the quality and execution of all phases and aspects of the work.

1.03 REFERENCES

A. The following references are not an exhaustive list of all applicable federal, state, and local regulations, standards, laws, ordinances, and codes applicable to asbestos abatement work. The contractor shall perform all asbestos related work in accordance with the most recent edition of all applicable federal, state, and local regulations, standards, laws, ordinances, and codes and, where conflicts occur, the most stringent requirements shall be adhered to.

1. Code of Federal Regulations (CFR);

a. 29 CFR 1910.12 - Construction Work

b. 29 CFR 1910.134 – Respiratory Protection

c. 29 CFR 1910.145 - Specifications for Accident Prevention Signs and Tags

d. 29 CFR 1910.1001 - Asbestos – General Industry

e. 29 CFR 1910.1020 - Access to Employee Exposure and Medical Records

f. 29 CFR 1926.1101 - Asbestos – Construction Industry

g. 29 CFR 1910.1200 - Hazard Communication

h. 40 CFR 61 - Subpart A and Subpart M, USEPA, National Emission Standards for Hazardous Air Pollutants (NESHAPS)

i. 40 CFR Part 763 - Subpart E, Asbestos Containing Materials in Schools (AHERA)

2. California Code of Regulations (CCR);

a. Title 8, Chapter 3.2, Subchapter 2, Article 2.5 - Registration Asbestos-Related Work Sections 341.6 through 341.14

b. Title 8, Section 1500-1938 – Construction Safety Orders

c. Title 8, Section 1529 - Asbestos in the Construction Industry

d. Title 8, Section 3204 - Access to Employee Exposure and Medical Records

e. Title 8, Section 5144 - Respiratory Protective Equipment

f. Title 8, Section 5194 - Hazard Communication

g. Title 8, Section 5208 - General Industry Safety Orders, Asbestos Regulations

h. Title 17, Section 93105 - Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations

i. Title 22, Division 4.5 – Environmental Health Standards for Management of Hazardous Waste

3. National Institute for Occupation Safety and Health (NIOSH);

a. Manual of Analytical Methods, 4th Ed., Vol. 1 - Method 7400 Asbestos and other Fibers by PCM

4. Bay Area Air Quality Management District (BAAQMD)

a. Regulation 11, Hazardous Pollutants, Rule 2, Asbestos Demolition, Renovation and Manufacturing

1.04 DEFINITIONS

A. Definitions Specific to Work of this Section:

1. Abatement: Procedures to control fiber release from asbestos containing building materials. Includes removal, repair, encapsulation, and enclosure.

2. Air Filtration Equipment: A portable air recirculation system equipped with HEPA filtration and used to cleanse air of particulate matter within an abatement area. Air filtration equipment is essentially the same as differential pressure equipment except it recirculates air instead of exhausting it.

3. Airlock: A system for permitting ingress and egress with minimum air movement between a contaminated area and an uncontaminated area.

4. Air Monitoring: The process of measuring the fiber content of a specific volume of air in a stated period of time.

5. Air Sampling Professional: The professional contracted or employed to conduct air monitoring and analysis schemes. This individual is also responsible for recognition of technical deficiencies in worker protection equipment and procedures during both planning and on-site phases of an abatement project.

6. Amended Water: Water to which a surfactant has been added.

7. Area Monitoring: Sampling of asbestos fiber concentrations within the asbestos Work Area and outside the asbestos Work Area that is representative of the airborne concentrations of asbestos fibers, which may reach the breathing zone.

8. Asbestos: The term asbestos includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

9. Asbestos-Containing Construction Material (ACCM): Any manufactured construction material that contains more than one tenth of one (>0.1%) percent asbestos by weight.

10. Asbestos Fibers: This expression refers to asbestos fibers longer than 5 micrometers with an aspect ratio of 3:1 or larger under PCM analytical procedures.

11. Asbestos Structure: The type of asbestos morphology that is counted during an analysis. The four types of asbestos structures are: Fiber, Bundle, Matrix, and Cluster.

12. Authorized Visitor: The Owner, Owner's Representative, or a person of any regulatory or other agency having jurisdiction over the project.

13. Category I Non-Friable Asbestos Containing Material: Asbestos-containing packings, gaskets, resilient floor coverings, and asphalt roofing products.

14. Category II Non-Friable Asbestos Containing Material: Asbestos-containing material, excluding Category I non-friable asbestos-containing material, that, when dry, and in its present form, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

15. Class I Asbestos Work: Activities involving the removal of thermal system insulation and surfacing asbestos-containing materials.

16. Class II Asbestos Work: Activities involving the removal of ACM, which is not thermal system insulation, or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

17. Clean Room: An uncontaminated area or room, which is a part of the Worker decontamination enclosure with provisions for storage of Workers' street clothes and personal protective equipment.

18. Critical Barrier: A temporary air tight and impermeable barrier that separates an asbestos work area from an adjacent potentially occupied area.

19. Decontamination Enclosure System: A series of connected rooms with airlocks between any two adjacent rooms for the decontamination of Workers, materials, and equipment. A decontamination enclosure system always contains at least one chamber.

20. Differential Pressure Equipment: A portable local exhaust system equipped with HEPA filtration and capable of maintaining constant, low velocity airflow into contaminated areas from adjacent uncontaminated areas.

21. Encapsulant (sealant): A liquid material which can be applied to asbestos containing material and which controls the possible release of asbestos fiber from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).

22. Encapsulation: Procedures necessary to apply an encapsulant to asbestos containing building materials to control the possible release of asbestos fibers into the ambient air.

23. Enclosure: Procedures necessary to enclose completely asbestos containing material behind airtight, impermeable, permanent barriers.

24. Equipment Room: A contaminated area or room, which is part of the Worker Decontamination Enclosure with provisions for storage of contaminated clothing and equipment.

25. Equipment Decontamination Enclosure: That portion of a decontamination enclosure system designed for controlled transfer of materials and equipment typically consisting of an equipment room, a washroom, and a holding area.

26. Excursion Limit: A limit of 1.0 f/cc over a 30-minute sampling period to which employees may not be exposed in excess of.

27. Friable Asbestos-Containing Material: Material that contains more than one percent asbestos by weight and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.

28. Fixed Louver: A non-operable type louver equipped with a HEPA filter and mounted in the rigid doors or walls of a decontamination enclosure system.

29. Fixed Object: A unit of equipment or furniture in the Work Area, which cannot be removed from the Work Area.

30. HEPA Filter: A filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.

31. HEPA Vacuum Equipment: Vacuuming equipment with a HEPA filter system.

32. Holding Area: A chamber in the equipment decontamination enclosure located between the washroom and an uncontaminated area. The holding area includes an airlock.

33. Movable Object: A unit of equipment or furniture in the Work Area, which can be removed from the Work Area.

34. Naturally-Occurring Asbestos - Asbestos that has not been processed in an asbestos mill.

35. Non-Friable Asbestos-Containing Material: Material that contains asbestos in which the fibers have been locked in by a bonding agent, coating, binder, or other material so that the asbestos is well bound and will not release fibers in excess of the asbestos control limit during any appropriate use, handling, demolition, storage, transportation, processing or disposal.

36. Permissible Exposure Limit: An exposure of airborne concentrations of asbestos fibers in excess of 0.10 fibers per cubic centimeter of air as calculated over an 8-hour TWA.

37. Personnel Monitoring: Sampling of airborne asbestos fiber concentrations within the breathing zone of an asbestos worker.

38. Plasticize: To cover building surfaces with plastic sheeting as herein specified.

39. Regulated Asbestos-Containing Material (RACM): Friable asbestos-containing material; or, Category I nonfriable asbestos-containing material that has or will become friable, or subjected to sanding, drilling, grinding, cutting, or abrading; or Category II nonfriable asbestos-containing material that has a high probability of becoming crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation.

40. Removal: Procedures necessary to remove asbestos-containing materials from designated areas and to dispose of these materials at an acceptable waste disposal site or treatment facility.

41. Rigid Doorway: A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms. A rigid doorway typically consists of a solid panel door, gasketed to prevent air leakage, attached by hinges to a rigid doorframe. A lockset is required to secure door in the closed position.

42. Shower Room: A room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold running water adjustable by the Worker and suitably arranged for complete

showering during decontamination. The shower room includes an airlock between contaminated and clean areas.

43. Surfactant: A chemical wetting agent added to water to improve penetration and improve control of airborne fiber concentration.

44. Washroom: A room between the Work Area and the holding area in the equipment decontamination enclosure system. The washroom comprises an airlock.

45. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and by afterwards disposing of these cleaning tools as asbestos-contaminated waste.

46. Work Area: Designated rooms, spaces, or areas of the project in which asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained Work Area is a Work Area, which has been sealed and equipped with a decontamination enclosure system. A non-contained Work Area is an isolated or controlled-access Work Area, which has not been sealed nor equipped with a decontamination enclosure system.

47. Worker Decontamination Enclosure System: That portion of a decontamination enclosure system designed for controlled passage of Workers, other personnel, and authorized visitors. It typically consists of a clean room, a shower room, and an equipment room.

48. Work Shift: A crew or crews at a contiguous contained or contiguous demarcated work site performing work items for a continuous period of time excluding work breaks.

1.05 SUBMITTALS

A. Requirements are as set forth in Division 1 Specification Sections for items required to be submitted under this section.

B. Product data shall include manufacturer's product data, specifications, samples and application instructions and other pertinent information as necessary.

C. Quality Assurance Submittals: Refer to Article 1.06.

D. Alternatives: Product substitution submittal shall be in accordance with the Division 0 and 1.

E. A detailed site specific work plan based on scope of work. Include diagrams showing containment set-up, decontamination unit(s), location of negative air machine(s), and exhaust placement as applicable.

1.06 QUALITY ASSURANCE

A. Qualification: In order to meet with the Contract Time set forth in Division 1, submit the following documents.

1. Registration: Submit copy of the registration for Asbestos-Related Work from the Division of Occupational Safety and Health in accordance with Title 8, Chapter 3.2, Subchapter 2, Article 2.5 of the California Code of Regulations. This qualification would not apply if the contractor’s work includes the installation, repair, maintenance, or **nondestructive** removal of asbestos cement pipe used outside of buildings if the work operations do not result in employee exposures to asbestos in excess of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time-weighted average and the employees and supervisors involved in the work operations are trained and certified by an asbestos cement pipe training program which is approved by the Cal/OSHA.

2. License: Submit copy of State of California, Contractors State License Board license with C-22 and ASB classifications.

3. Personnel Training for Abatement Superintendent and Foreman: Submit copy of current certificates which verifies that each superintendent and foreman has successfully completed an EPA approved Asbestos Abatement Contractor/Supervisor Course.

4. Personnel Training for Abatement Workers: Submit copy of the asbestos abatement employee training program, and current certificates which verify that each employee has successfully completed an EPA approved Asbestos Abatement Worker Course.

5. Personnel Training for Asbestos Cement Pipe Training Program Workers and Supervisors: Submit copy of the asbestos employee training program, and current certificates which verify that each employee has successfully completed a Cal/OSHA approved Asbestos Cement Pipe Training Course

6. Personnel Training for all Non-Abatement Trades: Submit copy of the asbestos abatement employee training program, and current certificates which verify that each employee has successfully completed an Asbestos Awareness Course meeting the requirements of 8 CCR 1529 and 8 CCR 5208.

7. Respirators: Submit a written standard operating procedure governing selection, fit-testing, and use of respirators in accordance with Title 8, Section 5144 and Section 1529. Also submit manufacturer's certification that the respirators to be used in this project comply with these regulatory requirements.

8. Medical Examination: Submit proof that personnel who will be entering contaminated areas have had medical examinations, and furnish the results of said exam to the Owner and signed by the medical examiner. Comply with Title 8, Section 3204 for access to employee exposure and medical records, and make such records available to the Owner upon request.

9. Before exposure to airborne asbestos, provide each employee with a comprehensive medical exam meeting the requirements of 8 CCR 1529 and 8 CCR 5144.

10. Submit an employee roster to the Owner for each Work Shift.

11. Transportation of Friable and Non-Friable Asbestos Containing Materials: Submit proof that the Contractor or subcontractor is a registered hazardous waste transporter with the State of California and Department of Toxic Substances Control.

12. Waste Sites: Submit for approval the name, class, address, EPA I.D. number and telephone number of hazardous and non-hazardous waste site(s) to be utilized for disposal.

13. Waste Profiles: Submit all waste profiles.

14. Copies of all transport manifests, trip tickets and disposal receipts for all waste materials removed from the work area within 48 hours of the transport, to the Owner or Owner’s Representative.

B. Notifications, Communications and Postings: Subcontractor shall notify the Owner at the same time each notification is issued; properly identify each notification for the Owner.

1. Submit copies of notifications to all appropriate government agencies, including the following:

   a. Division of Occupational Safety and Health - Occupational Carcinogen Control Unit: Notification shall be in accordance with Section 341.9 of Title 8 of the California Code of Regulations.

   b. BAAQMD (If Applicable)

   c. Copies of government agency correspondence shall be included in the submittals.

   d. Secure approval of local police and fire departments having jurisdiction of the proposed security and safety plans for the work prior to submittal to the Owner. Contact both departments for the requirements of the approval process.

2. Safety Compliance: In addition to detailed requirements of this Specification, comply with laws, ordinances, rules, and regulations of federal, state, regional, and local authorities regarding handling, storing,

transporting, and disposing of asbestos waste materials. Comply with applicable requirements of the current issue of 29 CFR 1910.1001, and 40 CFR 61, Subparts A, & M, 40 CFR 61.152, and Title 8, Section 1529. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting Work. Where requirements of this Specification and reference documents vary, the most stringent requirement shall apply.

3. The Contractor shall have at least one copy each of 29 CFR 1910, Subpart I, 29 CFR.1910.1001; 40 CFR Part 61, Sub-parts A & M; and Title 8 , Section 1529, at his office and also at the job site.

4. Before the commencement of any Work at the site, post bilingual EPA and CAL/OSHA danger signs in and around the Work Area to comply with EPA and OSHA regulations.

C. Field Air Sampling: Personnel monitoring and other monitoring which is required by law or considered necessary by the Contractor for Worker protection shall be the responsibility of the Contractor and performed by the Contractor's Air Sampling Professional. The Contractor shall disclose any interest they may have in the firm or laboratory performing the Field Air Sampling or analysis.

D. Certifications:

1. Equipment Certification: Submit manufacturer's certification that vacuums, differential pressure equipment filters, and other local exhaust ventilation equipment conform to ANSI Z9.2-2006.

2. Rental Equipment: When rental equipment is to be used in removal areas or to transport waste materials, a copy of the written notification provided to the rental company informing them of the nature of use of the rented equipment shall be submitted to the Owner’s Construction Supervisor and signed by the rental company.

3. Land Disposal Restrictions: Submit a copy of the completed Notice and Certification with each Hazardous Waste Manifest for wastes intended for land disposal pursuant to Title 22, Section 67740, to the Owner’s Construction Supervisor and signed by the generator.

1.07 EMERGENCY PLANNING

A. Emergency planning and procedures shall be developed by Contractor prior to abatement initiation.

B. Emergency procedures shall be in written form and prominently posted. Contractor shall ensure that all persons entering the work area read these procedures and understand the Project site layout, location of emergency exits and emergency procedures.

C. Emergency planning shall include considerations of fire, explosion, electrical hazards, slips, trips and falls, confined spaces, earthquakes and heat related injury. Written procedures shall be developed and employee training in procedures shall be provided by Contractor.

D. Employees shall be trained in evacuation procedures in the event of work place emergencies.

1. For non-life threatening situations, employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers, if necessary, before exiting the work place to obtain proper medical treatment.

2. For life threatening injury or illness, worker decontamination shall take least priority. After measures to stabilize the injured worker, remove him from the work place and secure proper medical treatment.

a. Telephone numbers of all emergency response personnel shall be prominently posted in the clean and equipment rooms.

1.08 FIRE PROTECTION

A. All plastic, spray-on strippable coatings, and structural materials used in the asbestos abatement process shall be UL-approved and certified as fire retardant or noncombustible.

B. Wood shall be pressure impregnable and certified as fire retardant.

C. Safety Data Sheets (SDS) for fire retardant materials shall be made available upon request.

D. All combustible rubbish and debris, including properly bagged asbestos shall be properly disposed of at the end of each working day.

E. A minimum of one (1) 4A/60BC dry-chemical extinguisher shall be maintained at each of the following locations:

1. At each corner of the work area. Where no clear corners exist, four (4) extinguishers shall be placed around the exterior wall of the work area so that they are approximately 25 percent of the total distance apart.

a. Exception: Where total contained work area is less than 1,000 square feet, two (2) 4A/60BC extinguishers shall be pro-vided. All extinguishers shall be clearly identified with red tape.

2. Contractor shall ensure that on site personnel are aware of the location and proper use of all extinguishers and other fire/life safety equipment.

F. All existing fire detection, alarm systems, connections and standpipes shall remain in place, active and unobstructed. Any alteration must be approved by Owner.

PART 2 – PRODUCTS

2.01 GENERAL

A. Submit manufacturer's product data, including Safety Data Sheets (SDS) for all the items listed under Part 2 – Products.

2.02 PROTECTIVE COVERING (PLASTIC)

A. Fire retardant polyethylene sheets 6 mil and 4 mil in sizes to minimize frequency of joints, approved and listed by the State Fire Marshal per appropriate sections of the California Health and Safety Code.

2.03 TAPE, ADHESIVE, SEALANTS

A. Duct tape 2 inches or wider, or equal, capable of sealing joints of adjacent sheets of plastic sheets and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions.

B. Spray adhesive for sealing polyethylene to polyethylene shall contain no methylene chloride compounds.

2.04 PROTECTIVE PACKAGING

A. Appropriately labeled 6 mil (or double 3 mil) sealable polyethylene bags as a minimum.

B. Bilingual labels (English and Spanish) on containment glove bags, waste packages, contaminated material packages and other containers shall be in accordance with EPA or OSHA standards.

2.05 WARNING LABELS AND SIGNS

A. As required by Title 8, Section 1529, Title 8, Section 5194 and BAAQMD Regulation 11, Hazardous Pollutants, Rule 2, Asbestos Demolition, Renovation and Manufacturing.

2.06 REMOVAL AND ENCAPSULATION

A. Surfactant (wetting agent) shall be a 50/50 mixture of polyoxyethylene ether and polyoxyethylene ester, or equivalent, mixed in proportion of 1 fluid once to 5 gallons.

B. Encapsulating agent shall not be flammable and should not be solvent-based or utilize a vehicle (the liquid in which the solid parts of the encapsulant are suspended) consisting of hydrocarbon.

2.07 PERSONAL PROTECTIVE EQUIPMENT

A. Personal Protective Equipment shall comply with the requirements of Title 8, 1529.

B. Work clothes shall consist of fire retardant, disposable, full-body coveralls, head covers, foot wear, and gloves, in accordance with Title 8, Section 1529, and ASTM standards. Sleeves at wrists and cuffs at ankles shall be secure.

C. Eye protection and hard hats shall be available as required by applicable safety regulations and shall conform to ANSI Z87.1-2003 and Z89.1-1986.

D. Provide authorized visitors with suitable protective clothing, headgear, eye protection, and footwear whenever they are required to enter Work Area.

2.08 RESPIRATORS

A. Provide all workers, foremen, superintendents, authorized visitors, and inspectors personally issued and marked respiratory equipment jointly approved by NIOSH/MSHA. When respirators are employed, provide sufficient filters for replacement as recommended by manufacturers or this specification. Selection of respirators shall be made according to the guidance of Title 8, Section 1529, Title 8, Section 5144; and Table I of this section.

B. The minimum respiratory protection required for this project is as follows (See also Table I of this section):

1. Use either full face or half face negative pressured air purifying respirators for the following tasks:

a. Pre-construction sealing of openings and penetrations to the work areas with plastic sheeting,

b. Decontamination of tools and other removable items,

c. Loading asbestos-containing drums on truck for transportation and unloading bags at approved landfill,

d. During final wipe down of workspace; and

e. Owner or their environmental consultant will consider alternate respiratory protection systems proposed by the Contractor. The Contractor must provide documentation that asbestos levels during previous, comparable jobs were within the protection factors of the respirators to be used as outlined in Table I. The use of the following type of respirators is contingent upon approval by Owner and their environmental consultant.

TABLE I		
Maximum Airborne Fiber Concentration Outside Respirator*	Protection Factor	Minimum Acceptable Respirator**
0.1 fiber/cc	10	Half-mask air purifying respirator, other than a disposable respirator, equipped with high efficiency filters
0.5 fibers/cc	50	Full face piece air-purifying respirator equipped with high efficiency filters or Type "C" supplied air respirators, full face piece, demand mode
10.0 fibers/cc	1,000	Full face piece powered air-purifying respirator equipped with high efficiency filters or Type "C" supplied air respirators, full face piece, pressure demand mode.
Over 10.0 fibers/cc	10,000	Self-contained breathing apparatus (SCBA), full face piece, pressure demand mode

Disposable single use respirators are not to be worn for protection against asbestos.

*Must demonstrate that the fiber levels will not exceed 0.01 f/cc inside the respirator using the respirator protection factor formula.

**Greater respiratory protection is always acceptable regardless of asbestos concentrations.

2. Use high efficiency powered air-purifying respirators (PAPR) for the following provided maximum airborne fiber concentration outside the respirator is at or below 1.0 fibers/cc:

   a. All Class 1 work.

3. Alternate respiratory protection systems proposed by the Contractor will be considered by the Owner's Environmental Consultant. Documentation must be provided by the Contractor that asbestos levels during previous, comparable jobs within the prior 12 months were within the protection factors of the respirators to be used as outlined in Table I. The use of the alternate respiratory protection systems is contingent upon approval by the Owner's Environmental Consultant.

4. Provide workers with approved, permanent, personally-issued and marked respirators with replaceable filters. Provide sufficient quantity of filters approved by NIOSH for use in asbestos environments so that workers can change filters as required by manufacturer during the workday. Filters shall not be used any longer than one workday. New, unused, and factory sealed, respirator filters shall be stored at the job site in the Clean Room and shall be totally protected from exposure to asbestos prior to their use.

2.09 VENTILATION EQUIPMENT

A. Provide differential pressure equipment. This equipment shall have intact and properly installed HEPA filtration systems in compliance with ANSI Z9.2-2006, local exhaust ventilation. No air movement system or air filtering equipment shall discharge unfiltered air outside the Work Area. A minimum of negative 0.02 column inches of water pressure differential, relative to the outside pressure, shall be maintained inside the work area, during abatement, as evidenced by manometric measurements. Replace HEPA and preliminary filters when filters become clogged with particulate matter. Ventilation of the Work Area is to move contaminated air away from the breathing zone of employees and toward a filtration or collection device equipped with a HEPA filter. Provide enough air filtration devices within the Work Area to maintain fiber levels within the protection factors of workers' respirators and to provide at least 4 air changes per hour.

PART 3 – EXECUTION

3.01 PROJECT PROCEDURES:

A. Abatement Procedure Plans: Submit a detailed site specific plan of the work procedures for abatement and painting of asbestos-containing materials. Include, at a minimum, the following:

1. Methods of removal and phasing of abatement.
2. Schedule of abatement.
3. Procedures for protecting workers, visitors, and employees and protection of spaces outside Work Area from contamination.
4. Plans for decontamination facilities.
5. Personnel monitoring procedures in accordance with Title 8, Section 1529.
6. Warning Sign locations as per Title 8, Section 1529.

B. Emergency Precautions and Procedures

1. Establish emergency and fire exits from the Work Area.
2. The Contractor shall be prepared to administer first aid to injured personnel after decontamination. Seriously injured personnel shall be treated immediately or evacuated without delay for decontamination. When an injury occurs, the Contractor shall stop Work and implement fiber reduction techniques (e.g., water spraying) until the injured person has been removed from the Work Area.

C. Worker Protection Procedures (Bilingual: English and Spanish) -- To Be Posted in Clean Room.

1. Each Worker and authorized visitor shall, upon entering the job site: Remove street clothes in the Clean-Change Room and put on a respirator and clean protective clothing before entering the Equipment Room or the Work Area.
2. Workers shall, each time they leave the Work Area: Remove gross contamination from clothing before leaving the Work Area; proceed to the Equipment Room and remove clothing except respirators; still wearing the respirator, proceed to the showers; clean the outside of the respirator with soap and water; remove the respirator; thoroughly wash themselves.
3. Contaminated work footwear shall be stored in the Equipment Room when not in use in the Work Area. Upon completion of asbestos abatement, dispose of footwear as contaminated waste or double bag and transport to next regulated work area.
4. Workers shall not eat, drink, smoke, or chew gum or tobacco while in the Work Area.
5. Workers and Authorized visitors with beards shall not enter the Work Area unless equipped with respirators approved for use with beards.

3.02 PREPARATION

A. Work Areas (General):

1. Isolate, effectively protect, or de-energize electrical power to Work Area. Electrical circuits shall be deactivated if they do not include ground fault circuit interrupters.
2. Provide temporary power and lighting and ensure safe installation of temporary power sources and equipment per applicable electrical code requirements and provide ground fault interrupter circuits with power source for electrical equipment to be used.

3. Provide temporary supply of water adequate for wet removal, cleaning, decontamination and operation of employee shower system (where required).

4. Cordon off all other accesses to interior Work Areas with barrier tape and warning signage.

5. Establish a worker decontamination area at the point of worker entry and egress. Stage with cleaning materials, handwashing facility, HEPA vacuum, waste bags or containers at minimum.

B. Preparation for Class II Asbestos Work

1. In addition to general preparation requirements (above):

a. For Class II removal of Category I or Category II Non-Friable ACM ensure at minimum a Regulated Area is established with barrier tape, signage, and 6 mil plastic drop sheet secure below the work and extending out at least 5 feet in each direction from removal.

b. Establish a Worker Decon Area with cleaning materials and waste bags inside the Regulated Area.

3.03 ASBESTOS REMOVAL AND DISTURBANCE PROCEDURES:

A. Prohibitions. The following methods shall not be used to remove or clean up asbestos:

1. Use of high speed abrasive disc saws without effective HEPA filtered attachments;

2. Compressed air to remove or clean-up asbestos;

3. Dry sweeping or shoveling of asbestos containing dust or debris;

4. Aggressive removal methods where non-aggressive methods are feasible. Where aggressive methods are required, they must include special containment and control procedures acceptable to regulatory agencies and approved by the Observation Service in advance.

3.04 CLASS II ASBESTOS REMOVAL OPERATIONS

A. Prepare Work Area as indicated above for Class II Operations

B. Asbestos Cement (AC) Pipe Excavation, Cutting, & Removal

1. Carefully machine excavate to expose AC piping as necessary. Once exposed, manually excavate areas to prevent breakage where cuts, breaks, or taps are to be made;

2. Establish a Regulated Area surrounding the location of cutting, tapping, and, or removal using barrier tape and signage at minimum;

3. Place plastic sheeting below area to be cut or altered to catch any resulting ACM chips, dust or debris;

4. Use methods and procedures to cut AC pipe without causing it to shatter, crumble, be pulverized or release visible dust into the air;

5. Keep AC pipe and conduit wetted during all cutting and tapping work;

6. Use only industry recommended practices for cutting, splicing, and tapping AC pipe. At minimum:

a. Cutting is to be completed by special carbide tipped blade cutters that are frame adjustable to the circumference of the pipe and that have self-tracking rollers or “snap cutters” that operate with cutting wheels on a chain wrapper around the pipe barrow;

b. Do not blow out with compressed air or dry sweep. Do not vacuum without a HEPA filtered vacuum, and;

c. All cutting must be conducted wet and all resulting AC dust and debris must be cleaned up and disposed of as ACM contaminated waste.

7. Piping sections to be demolished shall be carefully cut into manageable sections, wrapped and sealed in two layers of plastic sheeting, labeled, and carefully placed in labeled and lined securable asbestos waste disposal bin. All labels on bags and containers shall be in accordance with Title 8, Section 1529;

8. All intact AC pipe waste and debris shall be disposed of as non-hazardous asbestos waste transported by non-hazardous asbestos waste manifest to a permitted asbestos disposal site.

C. Clean all exposed surfaces in the Work Area containment by wet wiping and HEPA vacuuming.

D. At the completion of this cleaning phase, the Work Area shall be free of all unnecessary equipment/materials and waste containers.

E. The Contractor's Competent Person/Supervisor shall perform a complete visual inspection of the Work Area under adequate lighting to ensure that the Work Area is free of visible asbestos material, debris, and dust.

F. Notify the Owner's Observation Service at least 48 hours in advance of the day and time when the Work Area will be ready for Final Inspection and Clearance.

G. After written notification to proceed from the Observation Service, encapsulate all exposed (cut or tapped) AC pipe surfaces.

H. All excavated and exposed AC pipe shall have Cal/OSHA asbestos warning labels adhered to them.

I. Locations of the remaining intact AC pipe at the project site shall be recorded in the project drawings and other appropriate project close-out documentation.

3.05 DISPOSAL

A. Waste Transportation: Submit the method of transport of hazardous and non-hazardous waste including name, address, EPA I.D. number (If applicable) and telephone number of transporter.

B. Waste Sites: Submit for approval the name, class, address, EPA I.D. number and telephone number of hazardous and non-hazardous waste site(s) to be utilized for disposal.

C. Waste Profiles: Abatement contractor is responsible for profiling all waste streams at the start of the project. Waste streams shall be segregated for required disposal testing. Contractor is responsible to test said materials in accordance with all Federal, State and local laws. Contractor must separate non-hazardous waste from hazardous waste. Contractor is to test all wastewater prior to release into the sanitary sewer drain in accordance with local and State water standards.

D. Waste Manifests: Submit for approval at the pre-construction meeting a filled out hazardous and/or non-hazardous waste manifest form(s). Obtain necessary information for this purpose from the Owner. Give a copy of the Waste Manifest and the weight ticket from the landfill to the Owner's Environmental Consultant for each required shipment.

E. Notify the Owner and the Owner's Observation Service in writing 48 hours in advance of the time when contaminated materials are to be removed from the site.

F. The Contractor shall be responsible for safe handling and transportation of hazardous waste generated by this Contract to the designated Waste Site.

G. The Contractor shall hold the Owner and Owner's Environmental Service harmless for claims, damages, losses, and expenses against them, including attorney's fees arising out of or resulting from asbestos spills on the site or spills en route to the disposal site.

3.06 AIR MONITORING

A. Area Air Monitoring:

1. Throughout the abatement process area air monitoring may be performed by the Owner's Environmental Consultant to ensure Work is done in conformance with fiber concentration limits of this section.

2. If area air monitoring results analyzed by Phase Contrast Microscopy, NIOSH 7400 Methodology, outside the Work Area are in excess of 0.01 fibers per cubic centimeters (f/cc) of air, the Contractor shall make changes in work procedures to assure compliance with these minimum standards.

B. Personnel Air Monitoring:

1. The Contractor shall submit written reports to the Owner's Environmental Consultant of the Contractor's personnel air monitoring within twenty-four hours of the end of the previous day's shift. Personnel air monitoring shall not exceed the levels recommended for the type of respiratory protection in use.

3.07 CLEAN UP

A. Maintain a clean project site during and upon completion of Work of this Section. Cleaning shall be in accordance with the General Requirements and Conditions.

END OF SECTION

SECTION 31 13 11

TREE PROTECTION

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Extent: Furnish all labor, material, equipment, tools, and incidentals necessary for the installation of Tree Protection measures as specified in this Section.

1. The work includes pruning of vegetation to be protected that are affected by temporary or permanent construction.

1.2 DEFINITIONS

A. Vegetation: Shrubs, groundcovers, grass, and other plants.

B. Plant Protection Zone: Area surrounding individual trees, groups of trees, and other vegetation to be temporarily protected during construction with fencing.

C. Root zone: The root zone diameter of a tree is determined to be that area located out a distance 15 times the trunk diameter in all directions or the drip line, whichever is greater.

D. Tree Protection Zone: temporary tree protection shall extend till the edge of the root zone, unless otherwise noted and shall be fenced. At no time shall the fencing be located closer than 3-feet away from the approved foundation, retaining wall, or grade cut, whichever provides the greater distance from the tree trunk.

1.3 TREE PRUNING SCHEDULE

A. Submit written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.

1. Species and size of tree.
2. Location on site plan. Include unique identifier for each.
3. Reason for pruning.
4. Description of pruning to be performed.
5. Description of maintenance following pruning.

B. Reviews: Prior to proceeding with any tree removal or pruning, the Contractor shall notify the County 72 hours in advance for a review by the County Arborist.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Fencing: New or re-used chain-link, plywood, wood, or plastic, as approved by the county, minimum 4’ high. Fence material shall be mounted on 2” diameter galvanized iron poles, maximum spacing 10’ between poles.

B. Warning Sign: Laminated card, rigid plastic or metal sheet, minimum 8.5”x11”, with attachment holes, legibly printed with non-fading letters.

1. Sign shall clearly state “WARNING – Tree Protection Zone”

C. Topsoil: The top layer of existing soil below the grass root zone, containing minerals and organic materials including humus. Depth of topsoil shall be taken to be 2-4 inches deep or as determined by the County at the time of construction.

PART 3 – EXECUTION

3.1 PRE-CONSTRUCTION

A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross plant protection zones.

B. Existing Conditions: Review existing trees and vegetation indicated to remain on site, and document preconstruction conditions that might be misconstrued as damage caused by construction activities.

C. Documentation: Prepare written report if necessary, endorsed by arborist, listing conditions detrimental to the protection of trees and vegetation.

D. Preconstruction Meeting: Review methods and procedures related to temporary plant protection including, but not limited to:

1. Construction schedule. Verify availability of materials, personnel, and equipment needed to make progress and avoid delays.
2. Enforcing requirements for protection zones.
3. Field maintenance and quality control.

E. Install all protection fencing for tree and plant protection zones prior to any site preparation, demolition, or grading work.

F. Identification: Trees to be preserved shall be marked with a spot of paint. The marking is required to notify designated Inspectors that the subject tree or tree(s) are to be fenced at all times during construction.

G. Verification: Verify in writing that all preconstruction conditions noted herein have been met and are in place. Submit verification to the Architect for approval prior to any site preparation, demolition, or grading work.

3.2 PROTECTION ZONES

A. Tree and plant protection zones shall be maintained in a natural condition and not compacted. The following practices are prohibited within tree and plant protection zones:

1. Storage of construction materials, debris, or excavated materials.
2. Dumping of chemicals or garbage.
3. Parking vehicles or equipment.
4. Foot traffic.
5. Erection of sheds or structures.
6. Impoundment of water.
7. Excavation or other digging unless otherwise indicated.
8. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

B. Prohibit heat sources, flames, ignition sources, and smoking within or near tree and plant protection zones and mulch.

C. Signage: Install warning signs in visibly prominent locations in a manner approved by the Architect or Project Arborist - in enough quantity so as to be visible from all visible sides.

D. Fencing:

1. Fencing shall be located at the edge of the tree protection zone, unless otherwise noted on the Drawings or as approved by the Architect or Project Arborist.
2. Fencing shall be rigidly supported and maintained during all construction periods until Final Inspection.
3. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the tree protection zone.
4. Temporary access is permitted subject to preapproval in writing by Project Arborist if a root buffer effective against soil compaction is constructed as directed by Project Arborist. Maintain root buffer so long as access is permitted.
5. Removal of fencing shall be approved by County Arborist.

3.3 EXCAVATION

A. All cut, fill and/or foundations shall be located a minimum of three (3) times the diameter of the tree away from the outside edge of the trunk of all trees scheduled for preservation. However, the minimum distance permitted shall be 6-feet away from the outside edge of the trunk for all trees of a trunk diameter less the 2-feet. The diameter of a tree shall be measured at 4-feet and 6-inches above the surrounding grade (diameter at breast height, (DBH). Where Drawings conflict with this, immediately contact the County Project Manager.

B. Utility and Drain lines: Shall be located outside the root zone of all trees scheduled for preservation. In cases where alternative routes are not available, utility conduit, pipe, wire and drain lines shall be tunneled under major roots. Major roots are determined to be those that exceed two (2) inches in diameter. In no case shall utility lines be permitted within six (6) feet of the trunk. Immediately contact the Architect if the Drawings conflict with this.

C. All approved construction work within the root zone of trees scheduled for preservation shall observe the following minimum tree protection:

    1. Hand trench at point or line of grade cuts closest to the trunk to expose major roots 2- inches in diameter or larger. In cases where rock or unusually dense soil prevents hand trenching, mechanical equipment may be approved by the Architect, provided that work inside the drip-line is closely supervised by the Arborist to prevent tearing or other damage to major roots.

D. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3-inches back from new construction and as required for root pruning.

E. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

3.4 PRUNING

A. All tree pruning and tree damage repair shall only be performed by a qualified tree care specialist, or certified tree worker. Verify all pruning with County Arborist prior to start of pruning work.

    1. Trees shall be pruned to reduce hazards and develop a strong, safe framework of branches. Trees may also be pruned for ‘crown cleaning’ as defined by the

International Society of Arboriculture Pruning Guidelines. Any pruning beyond these activities must be authorized by the County Arborist.

3.5 REPAIR & REPLACEMENT

A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect.

1. Perform repairs within 24 hours.
2. Replace vegetation that cannot be repaired and restored to full-growth pattern, as determined by Project Arborist.
3. Replacement planting shall conform to Specification Section Landscape Planting, and soil amendments shall conform to Specification Section Soil Preparation.

B. Soil Aeration: Where directed by County Arborist, aerate surface soil compacted during construction. Aerate 10 feet beyond drip line and no closer than 36 inches to tree trunk. Drill 2-inch diameter holes a minimum of 12 inches deep at 24 inches o.c. Backfill holes with an equal mix of augured soil and sand.

3.6 REGRADING

A. Lowering and raising grades: Where new finish grade is indicated below or above existing grade around trees, maintain existing grades within the Tree Protection Zone, and slope grade beyond the Tree Protection Zone.

B. Lowering grade within Tree Protection Zone: slope grade away from trees as recommended by County Arborist.

C. Minor Fill within Tree Protection Zone: Where existing grade is 2 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

END OF SECTION