SPECIFICATIONS AND CONTRACT DOCUMENTS

FOR

SAN LORENZO RIVER PARKWAY PHASE III/TRESTLE TRAIL PROJECT

City Project No. c401807

CITY OF SANTA CRUZ

MAYOR, DAVID TERRAZAS

MARTINE WATKINS	CHRIS KROHN
SANDY BROWN	CYNTHIA MATHEWS
CYNTHIA CHASE	RICHELLE NOROYAN

MARTIN BERNAL, CITY MANAGER

BONNIE BUSH, CITY CLERK ADMINISTRATOR

ANTHONY P. CONDOTTI, CITY ATTORNEY

MARK R. DETTLE, DIRECTOR OF PUBLIC WORKS

CHRISTOPHE J. SCHNEITER,
ASSISTANT DIRECTOR OF PUBLIC WORKS/CITY ENGINEER

DEPARTMENT OF PUBLIC WORKS

CITY OF SANTA CRUZ

BID OPENING: NOVEMBER 1, 2018, 2:00 P.M.

Closing time to receive bids will be verified by the on-line clock maintained by the U.S. Naval Observatory, found at: http://tycho.usno.navy.mil/simpletime.html.

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NOTICE INVITING SEALED PROPOSALS OR BIDS

Notice is hereby given that the City Council of the City of Santa Cruz, County of Santa Cruz, State of California, hereby invites sealed proposals or bids for the following work, all as more particularly and in detail set forth in those certain plans, specifications and contract documents adopted therefore for the following project, to wit:

SAN LORENZO RIVER PARKWAY PHASE III/TRESTLE TRAIL PROJECT
City Project No. c401807

On file with the City Clerk of said City of Santa Cruz, County of Santa Cruz, State of California.

The plans, and specifications and contract documents may be examined and copies secured from the Public Works Department, 809 Center Street, Room 201, Santa Cruz, for a non-refundable fee of **$100.00 (hundred dollars) per set** or downloaded free of charge from the City of Santa Cruz Public Works webpage (www.cityofsantacruz.com) or from e-bid board.

A non-mandatory pre-bid site visit is scheduled for Tuesday, October 16, 2018 at 9:00 am at the western terminus of the existing trestle bridge walkway.

Please note that this is an active rail line, however no trains are expected to be running at this time.

Please note that this project is subject to enforcement by California Department of Industrial Relations (DIR) with regard, specifically, to the following two items:

- Pursuant to Section 1773 of the Labor Code, the general prevailing wage rates in the county, or counties, in which the work is to be done have been determined by the DIR. These wages are available from the DIR web site at http://www.dir.ca.gov. The effective general prevailing wage rates, which have been determined and are on file with the DIR are referenced but not printed in the contract documents.

- Pursuant to **Sections 1725.5, 1771.1 and 1771.4 of the Labor Code**, no contractor or subcontractor may be listed on a bid proposal, or awarded a contract, for public work on a public works project unless registered with the DIR.

Bidders are hereby notified that, pursuant to the provisions of Chapter 3.10 of the Santa Cruz City Municipal Code, the Contractor and all Subcontractors must make good faith efforts to hire qualified individuals who are local residents of Santa Cruz County as workers on City public works projects valued at greater than $100,000. Additionally, at least one of the individuals hired pursuant to Chapter 3.10 above shall be an approved apprentice.

No sealed proposal or bid will be accepted from a contractor who has not been licensed in accordance with the provisions of Chapter 9, Division III of the Business and Professions Code, as amended.

Notice is also hereby given that all bidders may submit, with their proposals or bids, a sworn statement of their financial responsibility, technical ability and experience. Such sworn statement may be required to be furnished before award is made to any particular bidders.

Each sealed proposal or bid shall be accompanied by a certified check, cashier's check or bidder's bond made payable to the order of the City of Santa Cruz, for an amount not less than 10 percent of the amount of the proposal.

The above-mentioned bid deposit shall be given as a guarantee that the bidder will enter into a contract, if awarded, and will be declared forfeited if the successful bidder refuses, or fails, to enter into said contract, and furnish required bonds within the time specified after being notified to do so by the City of Santa Cruz.

All proposals for the above mentioned work will be received by the City Council of the City of Santa Cruz, County of Santa Cruz, State of California until **2:00 p.m. on November 1, 2018** at the Public Works Department office, City Hall, 809 Center Street, Room 201 Santa Cruz, California, in a sealed envelope plainly endorsed with the name of the project:

SAN LORENZO RIVER PARKWAY PHASE III/TRESTLE TRAIL PROJECT
City Project No. c401807

and will be opened publicly and read aloud.

The successful bidder for each project will be required to furnish a Labor and Material Bond in the amount equal to 100 percent of the contract price, and a Faithful Performance Bond in an amount equal to 100 percent of the contract price, said bonds to be issued by a corporate surety company in the form approved by the City Attorney.

The contractor will be allowed ten calendar days after she/he has received written notice that the contract has been awarded to him/her by the City Council within which to deliver the agreement with his/her signature affixed thereto, together with the completed aforementioned bonds and insurance certificates, to the City Manager of the City of Santa Cruz.

The City of Santa Cruz reserves the right to reject any and all bids and waive any irregularity or minor defects in any proposal received.

Unless otherwise required by law, no bidder may withdraw his/her bid for a period of sixty days after the date set for the opening thereof. Where possible, bids will be compared on the basis of the Engineer's estimate of the quantities of work to be performed.

Christophe Schneiter
Assistant Director / City Engineer
October 12, 2018

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SIGNATURE SHEET

The Special Provisions contained herein have been prepared by or under the direction of the following registered persons:

STRUCTURES

Dale Hendsbee 10-11-18

Dale Hendsbee, S.E. Date

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SECTION 1

DEFINITIONS AND TERMS

Whenever in these specifications and other contract documents, the following abbreviations and terms or pronouns in place of them are used the intent and meaning shall be interpreted as follows:

ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
AAN	American Association of Nurserymen
ACI	American Concrete Institute
ADA	Americans with Disabilities Act
AGMA	American Gear Manufacturers Association
AIEE	American Institute of Electrical Engineers
AISI	American Iron and Steel Institute
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
AREA	American Railway Engineering Association
ASA	American Standards Association (United States of America Standards Instruction)
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditions Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing Materials
AWS	American Welding Society
AWPA	American Wood-Preservers' Association
AWWA	American Water Works Association
FS	Federal Specification
IEEE	Institute of Electrical and Electronic Engineers
MUTCD	Manual on Uniform Traffic Control Devices
NBFU	National Board of Fire Underwriters
NEMA	National Electrical Manufacturers Association
SAE	Society of Automotive Engineers
SSPWC	Standard Specifications for Public Works Construction
UL	Underwriters Laboratories

All references to the specifications, standards, or other publications of any of the above are understood to refer to the current issue as revised or amended at the date of receipt of bids.

Acceptance - The formal written acceptance by the City Council of the Contract which has been completed in all respects in accordance with the Drawings and Specifications and any modifications thereof previously approved.

Addendum - A change in the Specifications or Drawings issued prior to the opening of Proposals.

Approved, Directed, Ordered, or Required - Whenever these words or their derivatives are used, it is the intent, unless otherwise clearly stated, that approval or direction by the Engineer is indicated.

Bidder - Any individual, firm, partnership, corporation, or combination thereof, submitting a proposal for the work contemplated, acting directly or through a duly authorized representative.

City - the City of Santa Cruz.

Contract - The written agreement covering the performance of the work and the furnishing of labor, materials, tools, and equipment in the construction of the work. The Contract shall include the Notice of Contractors, Proposal, Drawings, Specification, Addenda, and Contract Bonds; also, any and all written supplemental agreements amending or extending the work in a substantial and acceptable manner. Supplemental agreements are written agreements covering alterations, amendments, or extensions to the Contract and include Contract change orders.

Contractor - The person or persons, firm, partnership, corporation, or combination thereof, private or municipal, who have entered into a contract with the City.

Council, City Council - The City Council of the City of Santa Cruz.

Days - Working days, unless otherwise designated.

Director - The Director of Public Works of the City of Santa Cruz.

Drawings - The official drawings, working drawings, detail drawings, and supplemental drawings, or reproductions thereof, which show the location, character, dimensions, and details of the work to be done, and which are to be considered as part of the Contract.

Engineer - The Director of Water Department or Public Works Department acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties delegated to them.

Liquidated Damages - The amount prescribed in the Specifications, pursuant to the authority of government code Section 14376, to be paid to the City or to be deducted from any payments due or to become due the Contractor for each day's delay in

completing the whole or any specified portions of the work beyond the time allowed in the Specifications.

Plans, Construction Plans - The drawings which are part of the Contract.

Proposal - The offer of the Bidder for the work when made out and submitted on the prescribed Proposal Form, properly signed and guaranteed.

State Standard Specifications - Wherever in these Specifications reference is made to the "State Standard Specifications," reference shall be to specifications entitled **"State of California, Department of Transportation, Standard Specifications," 2010 edition, including Revised Standard Specifications dated May 15, 2015**, and which are incorporated herein and made a part hereof by reference. Where the terms "State" or the "Engineer" are used in the State Standard Specifications, they shall be considered as meaning the "City" or "Director" as defined hereinabove.

Subcontractor - The person or persons, firm, partnership, corporation, or combination thereof, private or municipal who will perform work for the Contractor.

Technical Specifications - The technical specifications are specific clauses setting forth conditions or requirements peculiar to the work and supplementary to the Standard Specifications.

Work - All the work specified, indicated, shown, or contemplated in the Contract to construct the improvements, including all alterations, amendments, or extensions thereto made by supplemental agreements or written orders of the Director.

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SECTION 2
PROPOSAL REQUIREMENTS AND CONDITIONS

2.01 GENERAL

Please note that the following construction documents apply to this project:

SAN LORENZO RIVER
PARKWAY PHASE III/TRESTLE TRAIL PROJECT
City Project No. c401807

The award of the above project will be to a responsible and responsive bidder who produces the lowest cost proposal for the project.

The bidder's attention is directed to the provisions in Section 2, BIDDING, of the State Standard Specifications and these special provisions for the requirements and conditions which the bidder must observe in the preparation of the proposal form and the submission of the bid.

The Bidder's Bond form mentioned in the last paragraph in Section 2 1.34, BIDDER'S SECURITY, of the State Standard Specifications will be found following the signature page of the Proposal.

In conformance with Public Contract Code Section 7106, a Noncollusion Affidavit is included in the Proposal. Signing the Proposal shall also constitute signature of the Noncollusion Affidavit.

Please note that this project is subject to enforcement by California Department of Industrial Relations (DIR) with regard, specifically, to the following two items:

- Pursuant to Section 1773 of the Labor Code, the general prevailing wage rates in the county, or counties, in which the work is to be done have been determined by the DIR. These wages are available from the DIR web site at http://www.dir.ca.gov. The effective general prevailing wage rates, which have been determined and are on file with the DIR are referenced but not printed in the contract documents.
- Pursuant to **Sections 1725.5, 1771.1 and 1771.4** of the Labor Code, no contractor or subcontractor may be listed on a bid proposal, or awarded a contract, for public work on a public works project unless registered with the DIR.

The contractor, sub recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of Title 49 CFR (Code of Federal Regulations) part 26 in the award and administration of US DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the recipient deems appropriate. Each subcontract signed by the bidder must include this assurance.

Failure of the bidder to fulfill the requirements of the Special Provisions for submittals required to be furnished after bid opening, including but not limited to escrowed bid documents, where applicable, may subject the bidder to a determination of the bidder's responsibility in the event it is the apparent low bidder on a future public works contracts.

2.02 OBTAINING PLANS AND SPECIFICATIONS

City Standard Specifications and Plans may be obtained at the office of the City Engineer, City Hall Annex, 809 Center Street, Room 201, Santa Cruz, California 95060 for a **$100.00 non-refundable fee**. These documents may also be accessed and downloaded electronically for no-fee from the Public Works Page of the City of Santa Cruz website: www.cityofsantacruz.com.

2.03 CONTENTS OF PROPOSAL FORMS (Sections 2.20 through 2.31, inclusive)

Prospective bidders will be furnished proposal forms which describe the contemplated construction and, where appropriate, show the approximate estimate of the quantities of the various kinds of work to be performed or materials to be furnished, with a schedule of items for which bid prices are asked.

The unit prices or lump sum amounts bid shall include full compensation for furnishing all labor, materials, tools, and equipment and doing all work complete in place as shown on the Drawings or stipulated in the Specifications for that particular item of work.

The proposal form furnished by the City, when filled out by the bidder and executed, shall be submitted as his/her Proposal. All Proposals should give the prices proposed, both in writing and in figures in the respective spaces provided, and shall be signed by the bidder, who should fill out all blanks in the Proposal form as therein required. In the event of a discrepancy between writing and figures, the writing shall prevail over the figures.

A signed copy of each addendum to the Specifications or Drawings shall be attached securely to the Specifications containing the Proposal (refer to Section 2.13).

2.04 ESTIMATED QUANTITIES

The quantities given in the Proposal are approximate only, being given as a basis for the comparison of Proposals, and the City does not, expressly or by implication, agree that the actual amount of work will correspond therewith, but reserves the right to increase or decrease the amount of any class or portion of the work, or to omit portions of the work, as may be deemed necessary or advisable by the Director. No allowance will be made for anticipated profit on work that is deleted or decreased.

2.05 EXAMINATION OF DRAWINGS, SPECIFICATIONS, AND SITE OF WORK

The Bidder shall examine carefully the site of the work contemplated and the Proposal, Drawings, and Specifications therefor. The submission of a Proposal will be conclusive evidence that the bidder has investigated and is fully aware of the conditions and difficulties to be encountered, of the character, quality, and quantities or work to be performed and materials to be furnished, and of the requirements of the Proposal, Drawings, and Specifications; as to the nature and location of the work, the general and local conditions, particularly those bearing upon transportation, disposal, handling and storage of material, availability of labor, water, electric power, roads, and uncertainties of weather, or similar physical conditions at the site; and the conformation and condition of the ground, the character and quality and quantity of surface and subsurface materials, including groundwater, to be encountered; the character of equipment and facilities needed preliminary to and during the prosecution of the work; and all other matters which can in any way affect the work or the cost thereof under this Contract. Any failure by the Contractor to acquaint himself/herself with all the available information concerning these conditions will not relieve him/her from responsibility for estimating properly the difficulty or cost of successfully performing the work.

If there is any doubt as to the true meaning of any part of the Plans, Specifications, or the Contract documents, or if discrepancies in or omissions from the Drawings or Specifications are found, a request should be made to the Director for an interpretation or correction thereof, which will be given in the form of addenda to all bidders, if time permits. Otherwise, in figuring the work, bidders shall consider that any discrepancies or conflict between Drawings and Specifications shall be governed by Section 5.23 of these Specifications.

No payment shall subsequently be made to the Contractor because of error on his/her part or of negligence or failure to acquaint himself/herself with the existing conditions, limitations, or features of the site or requirements of the Contract documents; or by reason of any estimate, tests, or representations of any officer, employee, or agent of the City.

Where investigation of subsurface conditions has been made by the City in respect to foundation or other design, bidders may inspect the records of the City as to such investigation, including examination of samples and drill cores, if any. When logs of test boring showing a record of the data obtained by the City's investigation of subsurface conditions are made available, said logs represent only the opinion of the City as to the character of materials encountered by it in its test borings and are made available only for the convenience of bidders.

Investigations of subsurface conditions are made for the purpose of design, and the City assumes no responsibility whatever in respect to the sufficiency of test borings or accuracy of the log of test borings, or other preliminary investigations, or of the interpretation thereof. There is no guarantee expressed or implied that the conditions indicated are

representative of those existing throughout the work, or any part of it, or that unforeseen developments may not occur.

Making such information available to bidders is not to be construed in any way as a waiver of the provisions of the first paragraph of this Section and bidders must satisfy themselves through their own investigations as to conditions to be encountered.

No information derived from such inspection of records of preliminary investigation made by the City, or from the Director, or from his/her assistants, or from the maps, Specifications, profiles, or Drawings will in any way relieve the Contractor from any risk or from properly fulfilling all the terms of the Contract. Records of such preliminary investigations as may have been made by the City may be inspected at the office of the Director, City Hall, Santa Cruz, California, 95060, or at such other locations as may be stated in the Notice to Contractors.

2.06 QUERIES ON BIDDING

Questions regarding the Specifications or Drawings or any other portion of the Contract or any addenda thereto shall be directed to the City Engineer, care of **James Burr, Transportation Manager, at City Hall, 809 Center Street, Room 201 Santa Cruz, California, 95060, in writing. Questions may be submitted by e-mail to jburr@cityofsantacruz.com. Please copy Christophe Schneiter at cschneiter@cityofsantacruz.com. No questions will be accepted after October 25, 2018, or five (5) business days** before bid opening if that date is moved by addendum. No interpretation of the meaning of the Specifications, Drawings, or other pre-bid documents will be made to any bidder orally.

2.07 REJECTION OF PROPOSALS

Proposals may be rejected if they show any alterations of form, additions not called for, conditional bids, incomplete bids, erasures, or irregularities of any kind. Proposals in which the prices, in the opinion of the City, are unbalanced, may be rejected.

When Proposals are signed by an agent, other than the officer or officers of a corporation authorized to sign contracts on its behalf, or a member of a partnership, a written authorization or Power of Attorney should be on file with the City prior to opening Proposals or submitted with the Proposal; otherwise, the Proposal may be rejected as irregular and unauthorized.

2.08 PROPOSAL GUARANTEE

All Proposals shall be presented under sealed cover and accompanied by one of the following forms of bidder's security: cash, a cashier's check, certified check, or a bidder's bond executed by an admitted surety, made payable to the City of Santa Cruz. The security shall be in an amount equal to at least 10 percent of the total Contract price in the Proposal.

A Proposal will not be considered unless one such form of bidder's security is enclosed with it.

A bidder's bond will not be accepted unless it substantially conforms to the bond form included with the Proposal form and is properly filled out and executed. If desired, the bond form included therein, properly filled out as directed, may be executed and used as the bidder's bond. Blanks conforming to this form may be obtained by request from the City.

2.09 WITHDRAWAL OF PROPOSALS

Any Proposal may be withdrawn at any time prior to the time fixed in the Notice to Contractors for the opening of Proposals only by written request for the withdrawal of the Proposal filed with the Public Works Department. The request shall be executed by the bidder or his/her duly authorized representative. The withdrawal of a Proposal does not prejudice the right of the bidder to file a new Proposal. This Section does not authorize the withdrawal of any Proposal after the time fixed in the Notice to Contractors for the opening of Proposals.

2.10 PUBLIC OPENING OF PROPOSALS

Proposals will be opened and read publicly at the time and place indicated in the Notice to Contractors.

2.11 JOINT PROPOSALS

If two or more bidders desire to bid jointly on a single project or desire to combine their assets for so doing, they shall file an affidavit of joint venture with the City in the form approved by the City Attorney and such affidavit of joint venture will be valid only for the specified project for which it is filed. If such affidavit of joint venture is not filed as aforesaid and approved by the City prior to the time for opening Proposals on the specified project for which it is submitted, a joint proposal submitted by the same bidders may be disregarded.

2.12 DISQUALIFICATION OF BIDDERS

More than one Proposal form from an individual, firm, partnership, corporation, or a combination thereof under the same or different names will not be considered. If there is reason for believing that collusion exists among the bidders, none of the participants in such collusion will be considered for award of this Contract.

2.13 ADDENDA

Addenda may be issued prior to opening of Proposals and shall become a part of the original Specifications and Drawings. The additions or changes contained in such addenda shall be considered by the Bidder in preparation of his/her Proposal. These addenda will

be sent to each prospective bidder at the address, either physical or electronic, indicated in his/her application for a Proposal form. A signed copy of each addendum so issued shall be attached to the Specifications containing the Proposal submitted by the bidder to the Public Works Department.

2.14 LIST OF SUBCONTRACTORS

The Contractor shall perform with his/her own organization and with workers under his/her immediate supervision work of a value not less than thirty percent (30%) of the value of all work embraced in the Contract, except when certain items may be exempted by the Special Provisions.

In accordance with Chapter 2, Division 5, Title I of the Government Code of the State of California, Subletting and Subcontracting Fair Practices Act, each Proposal shall have listed on the form provided with the Proposal, (a) the name and the location of the place of business of each subcontractor who will perform work or labor or render service to the general contractor in or about the construction of the work or improvement in an amount in excess of one-half of one percent (0.5%) of the general contractor's total bid or $10,000.00, whichever is greater, and, (b) the portion of the work which will be done by each such subcontractor.

In addition, pursuant to Section 1725.5 of the Labor Code, no contractor or subcontractor may be listed on a bid proposal, or awarded a contract, for public work on a public works project unless registered with the DIR.

If a Contractor fails to specify a subcontractor for any portion of the work to be performed under this Contract is excess of one-half of one percent of the total bid, he/she agrees to perform that portion himself/herself.

2.15 COMPETENCY OF BIDDER

The bidder shall be licensed under the provisions of Chapter 9, Division 3, of the Business and Professions Code of the State of California to do the type of work contemplated in the project, and shall be skilled and regularly engaged in the general class or type of work called for under this Contract.

It is the intention to award a Contract only to a bidder who furnishes satisfactory evidence that he/she has the requisite experience and ability and that he/she has sufficient capital, facilities, and plant to enable him/her to prosecute the work successfully and promptly, and to complete it within the time stated in the Contract.

To determine the degree of responsibility to be credited to a bidder, any relevant evidence will be considered that the bidder, or personnel guaranteed to be employed in responsible charge of the work, has satisfactorily performed other contracts of like nature and magnitude or comparable difficulty at similar rates of progress.

2.16 RELIEF OF BIDDERS

Attention is directed to the provisions of Government Code Section 14350 to 14353, inclusive, (Subletting and Subcontracting Fair Practices Act), which sections are incorporated herein by this reference, concerning relief of bidders and in particular to the requirement therein that if the bidder claims a mistake was made in his/her bid, the bidder shall give the City written notice within five (5) days after the opening of the bids of the alleged mistake, specifying in the notice in detail how the mistake occurred.

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2.20 PROPOSAL

Santa Cruz, California

To: The City Council of the City of Santa Cruz

Proposal of:

_____

_____

_____ _____
Business Address Phone

_____

_____

_____
Residence Address

To furnish and deliver all materials and to do and perform all work in accordance with the plans and contract documents of the City of Santa Cruz for the following project:

SAN LORENZO RIVER PARKWAY PHASE III/TRESTLE TRAIL PROJECT

and referred to the "Notice Inviting Sealed Proposals of Bids" **dated October 12, 2018**, and also the site of work, and will provide all necessary machinery, tools, apparatus, and other means of construction and do all work and furnish all materials required by said specifications, general conditions, special conditions, and drawings in the manner prescribed therein said contract.

The undersigned bidder understands that any quantities of work shown herein are approximate only and are subject to increase or decrease, and offers to do the work whether the quantities are increased or decreased at the unit prices, if required, as stated in the following tabulation. The undersigned bidder agrees to take in full payment for the work, including all applicable State and local taxes, the amount shown on the bid sheet. The bid sheet for the project is included.

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PROPOSAL
BID SCHEDULE

Item No.	ITEM DESCRIPTION	UNIT	QTY	Unit Price	Item Total
1	Mobilization	LS	1		
2	Water Pollution Control	LS	1		
3	Traffic Control and Construction Area Signs	LS	1		
4	Hazardous Material Remediation	LS	1		
5	Structure Removal	SF	1,550		
6	Existing Waterline Reconfiguration & Supports	LS	1		
7	Earthwork	LS	1		
8	Cast-In-Place Concrete **(Final Pay)**	CY	25		
9	Drill and Bond Dowels	LS	1		
10	Fiber Reinforced Polymer Deck System	SF	3,500		
11	Structural Steel **(Final Pay)**	LB	90,000		
12	Guardrail	FT	700		
13	4" (Inch) Subdrain	FT	10		
14	Minor Concrete (Sidewalk and Gutter)	SF	100		
15	Lighting Electrical	LS	1		
16	Salvage and Relocate River Level Transducer	LS	1		
				BASE-BID:	
				10% CONTINGENCY:	
				GRAND TOTAL (BASE-BID PLUS CONTINGENCY):	

Grand Total in words:_____

The contingency is reserved for unforeseen project tasks. No payment will be made to the Contractor for any portion of the contingency unless a contract change order is approved by the City.

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The undersigned also agrees as follows:

IT IS UNDERSTOOD THAT THIS BID IS BASED UPON COMPLETION OF THE WORK AS SPECIFIED IN THE SPECIAL PROVISIONS, WITHIN **110 WORKING DAYS**.

If awarded the contract, the undersigned hereby agrees to execute said contract, with necessary bonds and insurance certificates, of which this Proposal and Notice Inviting Bids, Standard Specifications, Plans and Special Provisions and any and all other Contract Documents shall be a part, within 10 calendar days after receipt of notice of the award of said contract, and to begin work within 5 working days after receiving notice to proceed of the contract.

THE UNDERSIGNED BIDDER HAS CAREFULLY EXAMINED THE FORM OF CONTRACT, THE STANDARD SPECIFICATIONS, THE SPECIAL CONDITIONS AND THE DRAWINGS FOR THE CONSTRUCTION OF THE IMPROVEMENT HEREINBEFORE DESCRIBED AND REFERRED TO IN THE "INVITATION TO BIDDERS" INVITING PROPOSALS FOR SUCH WORK, DATED **OCTOBER 12, 2018** AND ALSO THE SITE OF THE WORK, AND WILL PROVIDE ALL NECESSARY MACHINERY, TOOLS, APPARATUS AND OTHER MEANS OF CONSTRUCTION AND DO ALL THE WORK AND FURNISH ALL MATERIALS REQUIRED BY SAID SPECIFICATIONS, SPECIAL CONDITIONS, AND DRAWINGS IN THE MANNER DESCRIBED THEREIN AND IN SAID CONTRACT.

No bid will be considered for less than all items of this schedule and one contract will be awarded for the entire project.

The undersigned has carefully checked the bid prices, and all computations involved in the preparation of this bid, and understands that the City of Santa Cruz will not be responsible for any errors or omission on the part of the undersigned in making up this bid.

This proposal is made with a full knowledge of the kind, quantities and quality of the work and of the materials, equipment and plans required. This proposal is also made after a complete, careful and independent examination and investigation of the site of the work, local conditions affecting the same, and materials to be encountered.

The bidder furthermore agrees that in case of his/her default in executing said contract with necessary bonds and insurance certificates, the check or bond accompanying this Proposal and money payable shall become and remain the property of the City of Santa Cruz.

Enclosed is bidder's bond, certified check or cashier's check no. _____
of the _____Bank for $_____ which is not less than 10 percent of the bid submitted by the undersigned, payable to the City of Santa Cruz, California, and which is given as a guarantee that the undersigned will enter into the contract if awarded the work.

The City Council will award one contract to the lowest responsible bidder for any combination of bid schedules; however, it is understood and agreed that the City may reject any or all proposals, or waive any informalities or minor defects in proposals received.

It is agreed that this bid may not be withdrawn over a period of 60 days from the opening thereof.

NOTE: Bidders should not add any conditions of qualifying statement to this bid as otherwise the bid may be declared irregular as being not responsive to the Advertisement for Bids.

Dated _____

Firm
Name_____

Official
Address_____

By_____

Title_____

Phone_____

State Contractor's License

No._____

Public Works Contractor (PWC) Registration (DIR)

No._____

_____
Signature of Bidder

2.21 LIST OF SUBCONTRACTORS

In conformance with Section 5-1.13 SUBCONTRACTING of the State Standard Specifications the Bidder shall list the name and address of each subcontractor to whom the Bidder proposes to subcontract portions of the work. **All subcontractors listed must be registered with the DIR**.

Name and Address	CA DIR (PWC) #	Description of Portion of Work Subcontracted	Proportion of Contract

2.22 CONTRACTOR REFERENCE INFORMATION

To complete this proposal, contractors shall list previous similar work performed, the agency for which work was performed, and the contact person.

Project Title	Company	Contact Person/Phone Number

2.221 CONTRACTOR QUALIFICATION QUESTIONNAIRE

The bidder agrees to complete, sign and return this Contractor Qualification Questionnaire, including all required supporting documentation, with the bid. If bidder fails or refuses to complete the Contractor Qualification Questionnaire, furnish all required attachments, sign the Contractor Qualification Questionnaire, and return it to the City of Santa Cruz with the bid, bidder will not be considered for award of the contract, and further, bidder agrees that the City of Santa Cruz may award the work to another bidder or call for new bids. In such event, the bidder shall be liable to the City of Santa Cruz for the difference between the amount of the disqualified bid and the larger amount for which the City of Santa Cruz procures the work plus all of the City of Santa Cruz's costs, damages, expenses and liabilities.

Bidder shall fully and completely answer each question set forth below. If necessary attach additional sheets. Print or type each response. If your response to any question is "no" or "none," you must state "no" or "none." "Not applicable" or other similar response will not be accepted.

1. State the full legal name of the bidder.

2. State the nature of the bidder's business entity. (Sole proprietorship, joint venture, partnership, corporation, or other [describe]).

3. State the name and address of each person or other legal entity, which has a legal or equitable ownership of ten percent (10%) or more of the bidder. For each such person or legal entity, state that person or entity's ownership interest, title and responsibilities, if any.

4. Has any person or legal entity holding a legal or equitable ownership of ten percent (10%) or more of the bidder, ever been accused of a civil violation of California Government Code Section 12650, et seq., (False Claims Act)? If so, describe in detail all facts, circumstances and the outcome.

5. Has any person or legal entity holding a legal or equitable ownership of ten percent (10%) or more of the bidder, ever been determined by a public agency to not be a responsible bidder? If so, state the name, address and telephone number of the public agency, including the name of the agency’s contact person.

6. State the bidder's contractor's license number.

7. State the date bidder first began business.

8. State any other names that bidder has used or done business under in the past five (5) years.

9. Describe in general, bidder's experience.

10. Has bidder ever failed to complete a construction contract?

11. Has bidder's control over a work of improvement ever been terminated?

12. For each public works project involving steel bridge construction, over water construction and rail road coordination that bidder has furnished labor, services, materials or equipment in the past five years, state: the name of each project; the contract amount for each project; the name, address and telephone number of the owner and owner's representative, for each project; and a general description of the work performed by bidder on each project.

13. (Blank).

14. For every public work of improvement upon which bidder has furnished labor, services, materials or equipment in the past five years, whether completed or not, for which the bidder's original contract was greater than **$1,000,000** but not more than **$5,000,000**, state the name, address and telephone number of the owner and principal designer (architect or engineer).

15. For every lawsuit or arbitration between bidder and the owner of any work of improvement, limited to such lawsuits or arbitrations initiated or completed within the past five (5) years, state the name and address of the tribunal, the matter number, the parties, a general description of the nature of the dispute, and the outcome, if any.

16. Has bidder ever been charged with a felony? If so, describe in detail all facts, circumstances and the outcome, furnishing the name and address of the court in which the charge(s) were filed, including the matter name and case number.

17. Has bidder ever been accused of a civil violation of California Government Code Section 12650, et seq. (False Claims Act)? If so, describe in detail all facts, circumstances and the outcome.

18. Has bidder ever been accused of presenting false claims to a public agency or public owner, as such claims are defined in California Government Code Section 12650, et seq., or 31 United States Code Section 3729, et seq.? If so, describe in detail all facts, circumstances and the outcome

19. Has any public agency ever determined or ruled that bidder is not a responsible bidder? If so, state the name, address and telephone number of the public agency, including the name of the agency's contact person.

20. Within the past five (5) years, has bidder ever failed to complete a public works construction project, within the time allowed by the contract, plus written agreed upon contract time extensions? If so, state the name, address and telephone number of the owner of such public works construction project including the name of the agencies' contact person, and further, describe in detail the nature of the work of improvement.

21. Has any surety of bidder ever paid or satisfied any claim on behalf of bidder? If so, state all facts and circumstances, including the name, address and telephone number of surety and all claimants.

22. Has any surety of bidder ever been called upon to complete a project of bidder? If so, state all facts and circumstances, including the name, address and telephone number of surety

and all claimants.

23. For each project or work of improvement that bidder is either (a) currently furnishing labor, services, materials or goods, or (b) under contract to furnish labor, services, materials or goods, state: A general description of the project; the current status of the project and bidder's work thereon; the owner's name, address and telephone number; the amount of bidder's contract on such project.

24. State bidder's annual gross sales for each of the last five fiscal years.

25. Have bidder’s accounts receivable or right to payment been assigned to a third party? If so, state the name of the third party and whether the third party has a secured or unsecured interest. Attach a copy of the assignment agreement to this questionnaire.

The following certification must be signed by an owner, general partner, or officer of bidder.

I DECLARE UNDER PENALTY OF PERJURY UNDER THE LAWS OF THE STATE OF CALIFORNIA, AND DO PERSONALLY CERTIFY AND ATTEST THAT: I HAVE THOROUGHLY REVIEWED THE ATTACHED CONTRACTOR QUALIFICATION QUESTIONNAIRE AND ATTACHMENTS, IF ANY, AND KNOW ITS CONTENTS, AND SAID CONTRACTOR QUALIFICATION QUESTIONNAIRE AND ATTACHMENTS, IF ANY, ARE TRUTHFUL, COMPLETE AND ACCURATE; AND THAT CITY OF SANTA CRUZ MAY REASONABLY RELY UPON THE CONTENTS AS BEING COMPLETE AND ACCURATE; AND, FURTHER, THAT I AM FAMILIAR WITH CALIFORNIA PENAL CODE SECTION 72 AND CALIFORNIA GOVERNMENT CODE SECTION 12650, ET SEQ, PERTAINING TO FALSE CLAIMS, AND FURTHER KNOW AND UNDERSTAND THAT SUBMISSION OR CERTIFICATION OF A FALSE CLAIM MAY LEAD TO FINES, IMPRISONMENT AND/OR OTHER SEVERE LEGAL CONSEQUENCES.

Executed on the date indicated below, at the location indicated below.

Date: _____

Location: _____

Bidder: _____
(Company Name)

By: _____
(Signature)

_____
(Printed name)

_____
(Title)

(THE BIDDER'S EXECUTION ON THE SIGNATURE PORTION OF THIS PROPOSAL SHALL ALSO CONSTITUTE AN ENDORSEMENT AND EXECUTION OF THOSE CERTIFICATIONS WHICH ARE A PART OF THIS PROPOSAL)

CERTIFICATION WITH REGARD TO THE PERFORMANCE OF PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE EQUAL OPPORTUNITY CLAUSE AND THE FILING OF REQUIRED REPORTS

The bidder _____, proposed subcontractor _____ _____, hereby certifies that s/he has____, has not____, participated in a previous contract or subcontract subject to the equal opportunity clause, as required by Executive Orders 10925, 11114, or 11246, and that s/he has____, has not____, filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

Company _____

By_____

Title _____

Date_____

NOTE: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7(b) (1)), and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts, which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of $10,000 or under are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders of their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract, subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7(b) (1) prevents the award of contracts and subcontracts unless such subcontractors submits a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U. S. Department of Labor.

Note: This page intentionally left blank.

2.24 PUBLIC CONTRACT CODE
Public Contract Code Section 10285.1 Statement

In conformance with Public Contract Code Section 10285.1 (Chapter 376, Stats. 1985), the bidder hereby declares under penalty of perjury under the laws of the State of California that the bidder has ___, has not ___ been convicted

within the preceding three years of any offenses referred to in that section, including any charge of fraud, bribery, collusion, conspiracy, or any other act in violation of any state or Federal antitrust law in connection with the bidding upon, award of, or performance of, any public works contract, as defined in Public Contract Code Section 1101, with any public entity, as defined in Public Contract Code Section 1100, including the Regents of the University of California or the Trustees of the California State University. The term "bidder" is understood to include any partner, member, officer, director, responsible managing officer, or responsible managing employee thereof, as referred to in Section 10285.1.

Note: The bidder must place a check mark after "has" or "has not" in one of the blank spaces provided. The above Statement is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Statement. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

2.25 Public Contract Code Section 10162 Questionnaire

In conformance with Public Contract Code Section 10162, the Bidder shall complete, under penalty of perjury, the following questionnaire:

Has the bidder, any officer of the bidder, or any employee of the bidder who has a proprietary interest in the bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or a safety regulation?

Yes _____ No _____

If the answer is yes, explain the circumstances in the following space.

2.26 Public Contract Code 10232 Statement

In conformance with Public Contract Code Section 10232, the Contractor, hereby states under penalty of perjury, that no more than one final unappealable finding of contempt of court by a federal court has been issued against the Contractor within the immediately preceding two year period because of the Contractor's failure to comply with an order of a federal court which orders the Contractor to comply with an order of the National Labor Relations Board.

Note: The above Statement and Questionnaire are part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Statement and Questionnaire.
Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

2.27 NON COLLUSION AFFIDAVIT

(Title 23 United States Code Section 112 and
Public Contract Code Section 7106)

To the CITY of SANTA CRUZ DEPARTMENT OF PUBLIC WORKS.

In conformance with Title 23 United States Code Section 112 and Public Contract Code 7106 the bidder declares 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 the bid price of the bidder or any other bidder, or 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 contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her 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 or agent thereof to effectuate a collusive or sham bid.

Note: The above Non-collusion Affidavit is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Non-collusion Affidavit. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

Note: This page intentionally left blank.

2.28 BIDDER'S BOND

KNOW ALL MEN BY THESE PRESENT:

THAT WE,_____

AS PRINCIPAL, AND_____

AS SURETY, are held and firmly bound unto the City of Santa Cruz in the penal sum of 10 PERCENT OF THE TOTAL AMOUNT OF THE BID of the Principal above named, submitted by said Principal to the City of Santa Cruz for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made to the City of Santa Cruz to which said bid was submitted, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents. In no case shall the liability of the surety hereunder exceed the sum of $_____.

THE CONDITION OF THIS OBLIGATION IS SUCH

THAT, WHEREAS, the Principal has submitted the above-mentioned bid to the City of Santa Cruz, aforesaid, for certain construction specifically described as follows, for which bids are to be opened at City Hall, 809 Center Street, Santa Cruz, CA 95060, on **November 1, 2018.**

SAN LORENZO RIVERPARKWAY PHASE III/TRESTLE TRAIL PROJECT
City Project No. c401807

NOW, THEREFORE, if the aforesaid Principal is awarded the contract and, within the time and manner required under the specifications, after the prescribed forms are presented to him/her for signature enters into a written contract. In the prescribed form, in accordance with the bid, and files the certificate of insurance and two bonds with the City, one to guarantee faithful performance, and the other to guarantee payment for labor and materials as required by law, then this obligation shall be null and void; otherwise, it shall be and remain in full force and virtue.

IN WITNESS WHEREOF, we have hereunto set our hands and seals on this _____ day of _____, 2018.

_____(Seal)_____(Seal)

_____(Seal)_____(Seal)
Principal Surety

Address_____Address_____

Note: Signatures of those executing for the surety must be properly acknowledged.

2.29 BLANK

2.30 BLANK

SECTION 2.31 SAMPLE AGREEMENT

THIS AGREEMENT, made and entered into this ___day of _____, 2018, by and between the CITY OF SANTA CRUZ, a municipal corporation, hereinafter called "City," and _____, hereinafter called "Contractor;"

WITNESSETH, that the parties hereto do mutually agree as follows:

ARTICLE I

That for and in consideration of the covenants and agreements herein contained and the payments at the prices stated in the bid proposal attached hereto, and by this reference made a part hereof, the Contractor hereby covenants and agrees to furnish any and all required supervision, labor, equipment, material, services, and transportation, as set forth in the "Standard Specifications" and "Particular Specifications" as hereinafter defined, and will bear any and all other expense necessary or incidental to the performance of certain work hereinafter specified, and to build, construct, reconstruct, pave or repave and complete improvements for the following:

SAN LORENZO RIVER PARKWAY PHASE III/TRESTLE TRAIL PROJECT

In strict conformity and compliance with the "Standard Specifications" and "Particular Specifications," and to do everything required by this agreement, and by said Standard Specifications and Particular Specifications as hereinafter defined.

ARTICLE II

It is expressly agreed and understood by the Contractor that "Standard Specifications" consists of the document on file at the Office of the Clerk of the City of Santa Cruz, which document consists of ten (10) sections and is entitled:

> City of Santa Cruz Department of Public Works, Department of Parks and Recreation, and Water Department 2002 Standard Specifications (including amendments prior to date of contract).

It is expressly agreed and understood by the Contractor that "Particular Specifications" consists of the documents, and all matter incorporated by reference into said documents, including the special provisions, technical specifications, construction plans, which are filed in the Office of the City Clerk of the City and which are identified as:

SAN LORENZO RIVER PARKWAY PHASE III/TRESTLE TRAIL PROJECT

It is expressly agreed and understood by the Contractor that the "Bid Proposal" consists of the offer made by the Contractor for the following:

SAN LORENZO RIVER PARKWAY PHASE III/TRESTLE TRAIL PROJECT

submitted on the prescribed Proposal Form, which is attached hereto, and by this reference made a part hereof.

ARTICLE III

It is expressly agreed and understood by each and every party to this agreement that the Notice Inviting Bids, the Standard Specifications, the Particular Specifications, the Bid Proposal, and this agreement form the contract. The parties to this agreement do hereby expressly acknowledge that they have read, understand, and promise to comply with each and every provision of the Notice Inviting Bids, the Standard Specifications, the Particular Specifications, the Bid Proposal, and this agreement.

ARTICLE IV

Contractor shall conform to all laws and regulations of the United States and the State of California, as well as laws of Santa Cruz, as may be applicable to the project. In addition the City Council of the City of Santa Cruz endorses the Macbride Principles and the Peace Charter and encourages all companies doing business in Northern Ireland to abide by the MacBride Principles.

ARTICLE V

The City hereby contracts to pay said Contractor the prices provided for in the Bid Proposal in the manner, to the extent, and at the times set forth in the Standard Specifications and the Particular Specifications.

ARTICLE VI

It is agreed by the parties hereto that the acceptance of the Contractor's performance will be made only by an affirmative action of the City of Santa Cruz City Council in session, evidenced by resolution, and upon the filing by the Contractor of a Release of all Claims of every nature on account of work done under this contract, together with an affidavit that all claims have been fully paid. The acceptance by the Contractor of said final payment shall constitute a waiver of all claims against the City arising out of or in connection with this contract.

IN WITNESS WHEREOF, this contract is executed by the City Manager of the City of Santa Cruz, under and pursuant to a resolution of the City Council authorizing such execution, and the Contractor has affixed his/her signature hereto the day and year first hereinabove written.

THE CITY OF SANTA CRUZ
A Municipal Corporation

By_____
City Manager

CONTRACTOR

By_____

I hereby approved the form
of the foregoing contract

_____
City Attorney

Note: This page intentionally left blank.

2.32 FAITHFUL PERFORMANCE BOND

WHEREAS, the City Council of the City of Santa Cruz, a municipal corporation, in the County of Santa Cruz, State of California, has awarded to _____, hereinafter designated as the "Principal," a contract for constructing the work or improvement described in the contract documents entitled:

SAN LORENZO RIVER PARKWAY PHASE III/TRESTLE TRAIL PROJECT

that will be adopted by the City Council of the City of Santa Cruz on November 13, 2018; and

WHEREAS, said Principal is about to enter into the annexed contract with the City of Santa Cruz:

NOW, THEREFORE, we, the Principal, and _____ a corporation organized and existing under and by virtue of the laws of the State of California, as surety, are held and firmly bound unto the City of Santa Cruz, a municipal corporation in the County of Santa Cruz, State of California, in the sum of _____dollars ($_____) being not less than one hundred percent (100%) of the estimated contract costs of the work, to be paid to the City of Santa Cruz, for the payment of which sum, well and truly to be paid, we hereby jointly and severally bind ourselves, our heirs, administrators, executors, successors and assigns;

NOW, THEREFORE THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal, his/her heirs, executors, administrators, successors, or assigns shall in all things abide by and well and truly keep and perform the covenants, conditions and agreements in the said contract and any alteration thereof made as herein provided, on his/her or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to the true intent and meaning, and shall indemnify and save harmless the City of Santa Cruz, its officers and agents as therein stipulated, that this obligation shall be discharged, otherwise it shall be and remain in full force and effect.

As a condition precedent to the satisfactory completion of the said contract, the above obligation in the amount of dollars _____dollars ($_____), being not less than 10 percent of the estimated contract cost, shall remain in force for a period of one (1) year after the completion and acceptance of the said work, during which time if the Principal, his/her or its heirs, executors, administrators, successors or assigns shall fail to make full, complete and satisfactory repairs and replacements or totally protect the City of Santa Cruz from loss or damage made evident during said period of one (1) year from the date of official acceptance of said work and resulting from or caused by defective materials or faulty workmanship in the prosecution of the work done, the above obligation in the sum of _____dol lars ($_____), shall remain in full force and effect, otherwise the obligation shall be discharged. However, notwithstanding any other provisions of this paragraph, the obligation of the surety hereunder shall continue so long as any obligation of the Principal remains.

The surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the contract or to the work to be performed thereunder or the specifications shall in any way effect its obligation on this bond, and it does hereby waive notice of any such changes, extensions of time, alterations, or additions to the terms of the contract or to the work or to the specifications, and the surety does hereby waive its rights under California Civil Code Section 2819.

IN WITNESS whereof, the parties have executed this instrument under their seals, this____day of_____, 2018, by its undersigned representative, pursuant to the authority of its governing body, the day and year first hereinabove written.

_____
PRINCIPAL

_____
SURETY

I hereby approved the form
of the within bond

_____
CITY ATTORNEY

2.33 LABOR AND MATERIAL BOND

WHEREAS, the City Council of the City of Santa Cruz, a municipal corporation in the County of Santa Cruz, State of California, has awarded to _____, hereinafter designated as the "Principal," a contract for constructing the work or improvement described in the contract documents entitled:

SAN LORENZO RIVER PARKWAY PHASE III/TRESTLE TRAIL PROJECT

that will be adopted by the City Council of the City of Santa Cruz on November 13, 2018; and

WHEREAS, said Principal is required under the terms of said contract to furnish a Labor and Material Bond, the surety of this bond will pay the same to the extent hereinafter set forth; and

WHEREAS, the said Principal is about to enter into the annexed contract with the City of Santa Cruz to complete the work or improvement referred to above for the City of Santa Cruz, County of Santa Cruz, State of California, all as more particularly and in detail as shown upon the Standard Specifications and Particular Specifications filed in the Office of the City Clerk of the City of Santa Cruz;

NOW, THEREFORE, we the Principal, and_____
a corporation organized and existing under and by virtue of the laws of the State of California, as surety, are held and firmly bound unto the City of Santa Cruz in the sum of _____
dollars ($_____) such sum being not less than one hundred percent (100%) of the estimated contract cost of the work, lawful money of the United States of America, to be paid to the City of Santa Cruz, for the payment of which sum, well and truly to be made, we hereby bind ourselves, our heirs, administrators, executors, successors and assign jointly and severally.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if said Principal or its heirs, executors, administrators, successors or assigns, shall fail to pay for any materials, provisions, vendor supplies, or equipment as provided in the contract documents, upon, for, or about the performance of the work contracted to be done, or for any work or waiver thereon of any kind, or for amounts due under the Unemployment Insurance Code with respect to work or labor performed by any such claimant, or fails to pay any of the persons named in Civil Code Section 3181, or fails to pay for any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board for the wages of employees of the contractor or his/her subcontractor pursuant to Section 18806 of the Revenue and Taxation Code, with respect to such work and labor that the surety or sureties will pay for the same, in an amount not exceeding the sum specified in this bond, and also, in case suit is brought upon the bond, a reasonable attorney's fee, to be fixed by the Court.

The condition of this obligation is such that its terms inure to the benefit of any of the persons named in Civil Code Section 3181 so as to give a right of action to such persons or their assigns in any suit brought upon the bond.

The surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the contract or to the work to be performed thereunder shall in any manner affect its obligation upon this bond, and it does hereby explicitly waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder, and further explicitly hereby waives its rights under Civil Code Section 2819.

IN WITNESS WHEREOF, the above parties have executed this instrument under their seals this_____day of_____, 2018, and duly signed by its undersigned representation, pursuant to authority of its governing body.

_____
PRINCIPAL

_____
SURETY

I hereby approved the form
of the within bond

_____
CITY ATTORNEY

2.34 CONTRACTOR'S CERTIFICATE RELATING TO WORKERS' COMPENSATION INSURANCE PURSUANT TO LABOR CODE SECTION 3800

I, THE UNDERSIGNED, HEREBY CERTIFY that at all times during the performance of any work under contract or agreement with the City of Santa Cruz (check one of the following):

____I will have in full force and effect Workers' Compensation Insurance pursuant to the attached Certificate of Worker's Compensation Insurance issued by an admitted insurer. Said certificate shall state that there is in existence a valid policy for Workers' Compensation Insurance in a form approved by the California Insurance Commissioner. The certificate shall show the expiration date of the policy, that the full deposit premium on the policy has been paid and that the insurer will give City at least ten (10) days advance notice of the cancellation of the policy (an exact copy or duplicate of the Certificate of Workers' Compensation Insurance certified by the Director of Industrial Relations or the insurer may be attached).

____I have in full force and effect and have attached hereto a Certificate of Consent to Self-Insure issued by the Director of Industrial Relations (an exact copy or duplicate of the Certificate of Workers' Compensation Insurance certified by the Director of Industrial Relations or the insurer may be attached).

I declare under penalty of perjury that the foregoing is true and correct and executed on _____ at Santa Cruz, California.

By:_____

_____
Official Title

On behalf of: _____

NOTE: YOUR CERTIFICATE OF WORKERS' COMPENSATION INSURANCE MUST BE ATTACHED AND MUST MEET THE REQUIREMENTS SET FORTH ABOVE.

PLEASE NOTE THAT IF YOU HAVE ANYONE WORKING FOR OR WITH YOU, YOU MAY BE REQUIRED TO HAVE WORKERS' COMPENSATION INSURANCE. FOR FURTHER INFORMATION, CONTACT THE OFFICE OF THE DIRECTOR OF INDUSTRIAL RELATIONS, 888 NORTH FIRST STREET, SAN JOSE, CALIFORNIA, TELEPHONE (408) 277-2365.

2.35 CERTIFICATE OF WORKERS' COMPENSATION INSURANCE FOR THE CITY OF SANTA CRUZ

In accordance with the provisions of Section 3800 of the of the Labor Code of the State of California, the undersigned insurance company hereby certifies to the City of Santa Cruz, that it is an admitted Workers compensation Insurer and that it has issued a policy of Workers' Compensation bearing policy number _____ to _____. Said policy is a valid policy of Workers' Compensation Insurance issued in a form approved by the California Insurance Commissioner and is now in full force and effect. The full deposit on said policy is the _____ day of _____, 2018. The undersigned insurer will give said City of Santa Cruz at least ten (10) days advance notice of the cancellation of said policy.

Dated: _____

Insurance Company

Address

_____
Authorized Representative (Signature)

_____
Authorized Representative (Type Name)

I declare under penalty of perjury that the foregoing is true and correct. Executed at Santa Cruz, California, on this _____ day of _____, 2018.

_____
Authorized Representative (Signature)

_____
Authorized Representative (Type Name)

2.36 CERTIFICATE OF STATE CONTRACTOR'S LICENSE

MY/OUR STATE CONTRACTOR'S LICENSE FOR CLASSIFICATION IS NO. _____ EXPIRES _____.

THIS PROPOSAL MUST BE NOTARIZED BELOW.

Subscribed and sworn to before me, this _____ day of _____, 2018.

_____

(Notary Seal)

Notary Public in and for the

County of _____

State of _____

The aforesigned, as Bidder, declares that he has carefully examined the location of the proposed work, the annexed proposed form of Agreement, and the Plans and Specifications therein referred to; that be proposes, and agrees if this Proposal is accepted, that he will contract with the City of Santa Cruz, in the form of the copy of the Agreement annexed hereto, to provide all necessary machinery, tools, apparatus and other means of construction and to do all the work and furnish all the materials specified in the Contract, in the manner and time therein prescribed and according to the requirements of the Engineer an therein set forth, and that he will accept in full payment therefor the following unit prices, to wit:

The City reserves the right to increase or decrease quantities by 25% as described in Section 4-1.03B "Increase or Decrease of Quantities" of the State Specifications.

2.37 APPRENTICESHIP STANDARDS

Information relative to apprenticeship standards and administration of the apprenticeship program may be obtained from the Director of Industrial Relations, San Francisco, California, or from the Division of Apprenticeship Standards and its branch office.

"I am aware of the provisions of Sections 1777.5 and 1777.6 of the Labor Code concerning the employment of apprentices by the contractor any subcontractor under him. I comply with the requirements of said sections in the employment of apprentices, as evidenced by my signature below."

Signed by:_____

Official Title:_____

Notice also is hereby given that in accordance with Section 1773.2 of the Labor Code of the State of California, copies of the general prevailing rate of per diem wages in the locality in which the public work is to be performed for each craft classification, or type of workman, and for holiday and overtime work, as determined by the Director of the Department of Industrial Relations, are on file in the Office of the Director of Public Works/City Engineer and are available to any interested party, upon request. It shall be mandatory upon the Contractor to whom the contract is awarded, and upon all subcontractors under him, to pay not less than the highest of the applicable rates set forth in either the federal or municipal schedules or prevailing wage rates.

Employer payments other than those itemized therein, as defined in Section 1773.1 of the Labor Code, are to be paid in accordance with the terms of the collective bargaining agreement applicable to the type of classification of the workmen employed on the program, including overtime, Sunday and Holiday pay.

Pursuant to the provisions of Government Code S4590, and at the request and expense of the Contractor, securities equivalent to the amount withheld by City to ensure performance, under a contract shall be deposited with City and with a State or Federally-chartered bank as escrow agent who shall pay such moneys to the Contractor upon satisfactory completion of the contract. Eligible securities shall include those listed in Government Code S16430 or bank or savings and loan certificates for deposit. The Contractor shall be the beneficial owner of and security and shall receive any interest thereon.

SECTION 3
AWARD AND EXECUTION OF CONTRACT

3.01 GENERAL

The bidder's attention is directed to the provisions in Section 3, "Award and Execution of Contract," of the Standard Specifications and these special provisions for the requirements and conditions concerning award and execution of contract.

Bid protests are to be delivered to the following address: City of Santa Cruz Department of Public Works, 809 Center Street, Room 201, Santa Cruz, CA 95060.

The award of contract, if it be awarded, will be to the lowest responsive and responsible bidder whose proposal complies with all the requirements prescribed.

3.02 CONSIDERATION OF PROPOSALS

After the Proposals have been opened and read, they will be checked for accuracy and compliance with these Specifications. If the unit price and total amount named for any item do not agree, the unit price will be considered as representing the Bidder's intention.

The right is reserved to reject any or all Proposals; to waive an irregularity in a bid or bidding procedures; and to accept one schedule of a Proposal and reject another, unless the bidder specifically stipulates to the contrary.

3.03 AWARD OF CONTRACT

The award of the Contract, if it is awarded, will be to the lowest responsible bidder whose Proposal complies with the requirements prescribed and who is licensed in accordance with the law. Such award, if made, will be made within 30 days after the opening of the Proposals. If the lowest responsible bidder refuses or fails to execute the Contract, the City Council may award the Contract to the second lowest responsible bidder. Such award, if made, will be made within 45 days after the opening of the Proposals. If the second lowest responsible bidder refuses or fails to execute the Contract, the City Council may award the Contract to the third lowest responsible bidder. Such award, if made, will be made within 60 days after the opening of the Proposals. The periods of time specified above within which the award of Contract may be made shall be subject to extension for such further period as may be agreed upon in writing between the City and the Bidder concerned.

All proposals will be compared on the basis of the City's estimate of the quantities of work to be done.

3.04 RETURN OF PROPOSAL GUARANTEES

Within ten days after the award of the Contract to the lowest responsible bidder, the City will return the proposal guarantees, other than bidder's bonds, accompanying such of the Proposals as are not to be further considered in making the award. Retained proposal guarantees will be held until the Contract has been finally executed after which all proposal guarantees, except bidder's bonds and any guarantees which have been forfeited, will be returned to the bidders whose Proposals they accompany.

3.05 CONTRACT BONDS

Prior to the execution of the Contract, the Contractor shall file with the City one or more surety bonds in the amounts and for the purpose noted below, duly executed by a solvent surety company satisfactory to the City, and he/she shall pay all premiums and costs thereof and incidental thereto. The bonds shall contain a provision that the surety thereon waives the provisions of Section 2819 of the Civil Code of the State of California.

Each bond must be signed by both the Contractor and the Sureties.

The "Bond for Labor and Material" shall be in an amount of 100 percent of the Contract price as determined from the prices in the Proposal form, and shall insure to the benefit of persons performing labor or furnishing materials in connection with the work of the proposed Contract. This bond shall be maintained in full force and effect until all work under the Contract is completed and accepted by the City, and until all claims for materials and labor have been paid.

The "Bond for Faithful Performance" shall be in an amount of 100 percent of the Contract price as determined from the prices in the Proposal form, and shall be so conditioned as to insure the faithful performance by the Contractor of all work under the Contract. It shall also insure the replacing of, or making acceptable, any defective materials or faulty workmanship.

The Faithful Performance Surety Bond shall remain in effect to guarantee the repair and replacement of defective equipment, materials, and workmanship, discovered within one (1) year after final payment has been accepted by the Contractor and the payment to the City of all damages sustained by it on account of such defects, discovered within one (12) year, or in lieu thereof, a bond equal to ten (10) percent of the full amount of the Contract, may be substituted for the faithful performance bond upon completing and final acceptance and final payment for the work performed under the Contract, which shall remain in effect for a period of one (1) year to guarantee the repair and replacement and payment of damage. In all respects, the substitute bond shall satisfy the requirements and conditions of the original Faithful Performance Bond.

Should any surety or sureties be deemed unsatisfactory at any time by the City, notice will be given to the Contractor to that effect, and he/she shall forthwith substitute a new surety or sureties satisfactory to the City. No further payment shall be deemed due or will be made under this Contract until the new sureties shall qualify and be accepted by the City.

All alterations, extensions of time, extra and additional work, and other changes authorized by these Specifications or any part of the Contract may be made without securing the consent of the surety or sureties on the contract bonds.

3.06 EXECUTION OF CONTRACT

The Contract shall be signed by the successful bidder and returned, together with the contract bonds, within ten days, including Sundays and legal holidays, after the bidder has received the Contract for execution. Failure to do so shall be just cause for forfeiture of the proposal guaranty. The executed contract documents shall be delivered to the following address:

City of Santa Cruz / Department of Public Works
Attn: James Burr
809 Center Street, Room 201
Santa Cruz, CA 95060

3.07 FAILURE TO EXECUTE CONTRACT

Failure of the lowest responsible bidder, the second lowest responsible bidder, or the third lowest responsible bidder to execute the Contract and file acceptable bonds as provided herein within ten days, including Sundays and legal holidays, after such bidder has received the Contract for execution shall be just cause for the annulment of the award and the forfeiture of the proposed guarantee.

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SECTION 4
BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES

4.01 BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES

Attention is directed to the provisions in Section 8-1.04, START OF JOB SITE ACTIVITIES, in Section 8-1.05, TIME, and in Section 8-1.10, LIQUIDATED DAMAGES, of the State Standard Specifications and these special provisions.

The Contractor shall begin work within 5 calendar days after the date of the notice to proceed, and shall diligently prosecute said work to completion no longer than **110 WORKING DAYS** following that date.

If the City determines that an extension of time for the project is warranted, such an extension will be accomplished through a change order.

The Contractor shall pay to the City of Santa Cruz the sum of **$17,000.00** per day, for each and every calendar day's delay in finishing the work in excess of the number of working days prescribed above.

4.02 PRE-CONSTRUCTION CONFERENCE

Prior to the issuance of the Notice to Proceed, a preconstruction conference will be held at the office of the City Engineer for the purpose of discussing with the Contractor the scope of work, Contract drawings, Specifications existing conditions, materials to be ordered, equipment to used, and all essential matters pertaining to the prosecution of and the satisfactory completion of the project as required. The Contractor's representative at this conference shall include all major superintendents for the work and may include major sub-contractors.

4.03 ARCHAELOGICAL DISCOVERIES

All articles of archaeological interest which may be uncovered by the Contractor during the progress of the work shall be reported immediately to the Engineer. The further operations of the Contractor with respect to the find will be decided under the direction of the Engineer.

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SECTION 5
GENERAL CONDITIONS

5.01 WORK TO BE DONE

The work to be done consists of furnishing all labor, methods or processes, implements, tools, machinery, construction equipment, materials of any kind, and installed manufactured equipment, except as otherwise specified herein to be furnished by the City or from sources provided by the City, which are required to construct in a good workmanlike manner all the work herein provided for.

5.02 MAINTENANCE AND CLEAN-UP

Throughout the construction period and on a daily basis, the Contractor shall keep the site of the work in a neat and clean condition, shall dispose of any surplus materials in an approved manner off the site, keep debris out of drainage ditches, and maintain proper housekeeping practices to the satisfaction of the Engineer.

When any material is to be disposed of outside of the easement or street or highway right-of-way, the Contractor shall first obtain written permission from the owner on whose property the disposal is to be made. Disposal must conform to grading ordinance of the jurisdiction in which the work is performed. Location of disposal sites shall be submitted to the Engineer for review and subject to his/her approval.

Upon completion of the work, and prior to requesting final inspection, the Contractor shall thoroughly clean the site of the work of all rubbish, excess materials, falsework, temporary structures, and equipment, and all portions of the work shall be left in a neat and orderly condition. The final inspection, acceptance, and final payment will not be made until this has been accomplished.

5.03 CHANGES

The City may increase or decrease quantities of work to be done under the Contract, make revisions to the Drawings or Specifications, or require the performance of extra work and furnishing of materials therefore by the Contractor as the City requires for the proper completion or construction of the whole work contemplated. The City, at its option, may furnish said materials.

The changes will be set forth in written Contract Change Orders which specify the work to be done in connection with the changes, the basis of compensation for the work, and any adjustments of Contract time. Such Change Orders shall be approved by the Engineer.

Upon receipt of an approved Contract Change Order, or of written authorization from the Engineer setting forth a description of the change and agreed upon changes in Contract price, the Contractor shall proceed with the work so ordered.

In the absence of an approved Contract Change Order or written authorization, the Contractor shall not be entitled to payment for any changed or extra work or any adjustment of Contract time.

When the changes increase or decrease the cost of the work, an adjustment of the Contract price will be made as set forth in the Change Order. At the option of the City, the work which is changed may be paid for on the basis of force account.

New and unforeseen items of work will be classed as extra work when the item cannot be covered by any of the various items or combination of items for which there is a bid price. The Contractor shall do such work and furnish such materials and equipment as may be required in writing by the Director, and in the absence of such written order, he/she shall not be entitled to payment for such extra work. All bills for extra work done in any month shall be filed in writing with the Director before the fifteenth of the following month. For such extra work, the Contractor shall receive compensation at the prices previously agreed upon in writing, or upon a failure to agree upon prices, he/she shall be paid on force account. If the work is done on force account, compensation shall be in accordance with Section 5.73 of these Specifications. The city reserves the right to furnish any material deemed expedient and the Contractor shall have no claim for profit on the cost of such materials. All extra work shall be adjusted daily upon report sheets furnished to the Director by the Contractor and signed by both parties, which daily reports shall thereafter be considered the true record of extra work done.

5.04 PROTESTS

If the Contractor considers any work demanded of him/her to be outside of the requirements of the Contract, or considers any record or ruling or act or omissions of the Engineer to be unfair, he/she shall immediately, upon such work being demanded, or such record or ruling being made, ask in writing for written instructions or decision, whereupon he/she shall proceed without delay to perform the work or to conform to the record or ruling, and within 30 days after the date of receipt of the written instruction or decision, he/she shall file a written protest with the Engineer stating clearly and in detail the basis of his/her protest. Except for such protests as are made of record in the manner herein specified and within the time limit stated, the records, rulings, instructions, decision, and acts or omissions of the director shall be final and conclusive. Instructions and decisions of the Engineer contained in letters transmitting Drawings to the Contractor shall be considered as written instructions and decisions subject to protest in the manner herein described.

5.05 CONTRACTOR'S INSURANCE

5.05.01 General - Contractor shall procure and maintain for the duration of the contract 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, his agents, representatives, employees or subcontractors.

5.05.02 Minimum Scope of Insurance - Coverage shall be at least as broad as:

1. Insurance Services Office Commercial General Liability coverage (occurrence Form CG 0001).
2. Insurance Services Office Form (G0009 11 88 Owners and Contractors Protective Liability Coverage Form - Coverage for Operations of Designated Contractor).
3. Insurance Services Office Form Number CA 0001 covering Automobile Liability, Code 1 (any auto).
4. Workers' Compensation insurance as required by the State of California and Employer's Liability Insurance.
5. Course of Construction insurance covering all risks of loss.

5.05.03 Minimum Limits of Insurance - Contractor shall maintain limits no less than:

1.	General Liability: (Including products other aggregate limit is separately limit shall be	**$5,000,000** per occurrence for bodily injury, operations, personal injury and property damage. If and Commercial General Liability Insurance or completed operations)form with a general used, either the general aggregate limit shall apply to this project/location or the general aggregate twice the required occurrence limit.
2.	Automobile Liability:	**$1,000,000** per accident for bodily injury and property damage.
3.	Employer's Liability:	**$1,000,000** per accident for bodily injury or disease.
4.	Course of Construction:	Completed value of the project with no coinsurance penalty provisions.

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

5.05.05 Other Insurance Provisions - The general liability and automobile liability policies are to contain, or be endorsed to contain, the following provisions:

1. The City of Santa Cruz, its officers, officials, employees, and volunteers are to be covered as additional insureds with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of the

contractor; and 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 such work or operations. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance, or as a separate owner's policy.

2. For any claims related to this project, the Contractor's insurance coverage shall be primary insurance as respects the City, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the City, its officers, officials, employees, or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.
3. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be canceled by either party, except after thirty (30) days' prior written notice has been given to the City.
4. Coverage shall not extend to any indemnity coverage for the active negligence of the additional insured in any case where an agreement to indemnify the additional insured would be invalid under Subdivision (b) of Section 2782 of the Civil Code.

Course of construction policies shall contain the following provisions:

1. The City shall be named as loss payee.
2. The insurer shall waive all rights of subrogation against the City.

5.05.06 Acceptability of Insurers - Insurance is to be placed with insurers with a current A.M.Best's rating of no less than A:VII.

5.05.07 Verification of Coverage - Contractor shall furnish the City with original certificates and amendatory endorsements effecting coverage required by this clause. All certificates and endorsements are to be received and approved by the City before work commences. The City reserves the right to require complete, certified copies of all required insurance policies, including endorsements effecting the coverage required by these specifications at any time.

5.05.08 Subcontractors - Contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.

5.05.09 Insurance Coverage on Joint Project - In the event the work called for in this contract is to be performed as a joint Project with the State of California, or a county, or any city within a county, or other agency, or is to be performed on lands under the jurisdiction of the State of California, or county or any city within a county, the policy of insurance required by paragraph entitled "Type of Coverage" shall name the State of California, that county, and/or that city or other agency in addition to naming city and the statement contained in paragraph entitled "Insurance Provisions," shall be modified accordingly.

5.05.10 Indemnification - Section 3.07.03 of the City of Santa Cruz Standard Specifications is amended to read as follows: The insurance provided by the above insurance policy shall name as additional insured the City of Santa Cruz, its officers, agents, and employees and shall be primary insurance to the full limits of liability stated

above to said additional insured. If said additional insured have other insurance against the loss covered by said policy, that other insurance shall be excess insurance only. The comprehensive general liability shall be endorsed to provide insurance to said additional insured with respect to omissions and supervisory acts or omissions, including passive negligence with respect to said work, and shall not be subject to reduction or cancellation without thirty (30) days prior written notice to the City of Santa Cruz. Nothing contained in this section shall be construed to require any such insurer, which has named the City as additional insured to indemnify the City for losses attributable to the active negligence of the City of Santa Cruz, its officers, agents, or employees.

The last sentence of the second paragraph of Section 7.18 of the City of Santa Cruz Standard Specifications is amended to read as follows: Except as provided in Section 3.07, this provision shall not be deemed to require the Contractor to indemnify the City against liability for damages arising from the active negligence or willful misconduct of the City or its agents, servants, or independent contractors who are directly responsible to the City.

5.06 BLANK

5.07 AUTHORITY OF ENGINEER

The Engineer shall decide all questions which may arise as to the quality or acceptability of materials furnished and work performed and as to the manner of performance and rate or progress of the work; all questions which may arise as to the interpretation of the Drawings and Specifications; and all questions as to the acceptable fulfillment of the Contract on the part of the Contractor. His/her decision shall be final and he/she shall have authority to enforce and make effective such decisions and orders which the Contractor fails to carry out promptly.

5.08 BLANK

5.09 BLANK

5.10 CONFORMITY WITH DRAWINGS AND ALLOWABLE DEVIATIONS

Finished work in all cases shall conform with the lines, grades, cross sections, and dimensions shown on the approved Drawings furnished by the City. Deviations from the Drawings as may be required by the exigencies of construction will be determined by the Engineer.

5.11 BLANK

5.12 SUPERINTENDENCE

The Contractor shall designate in writing before starting work, an authorized representative who shall have complete authority to represent and act for the Contractor. Where the Contractor is comprised of two or more persons, partnerships or corporations,

functioning on a joint venture basis, said Contractor shall designate in writing to the Engineer the name of their authorized representative who shall have full authority to direct the work and to whom orders will be given by the Engineer, to be received and obeyed by the Contractor. Said authorized representative of the Contractor shall normally be present at the site of the work at all times while work is prosecuted. Arrangements acceptable to the Engineer shall be made for any emergency work which may be required.

Whenever the Contractor or his/her authorized representative is not present on any part of the work where it may be desired to give direction, orders will be given by the Engineer, which shall be received and obeyed by the Superintendent or foreman or authorized representative who may have charge of the particular work in reference to which the orders are given. Any order given by the Engineer, not otherwise required by the Specifications to be in writing, will, on request of the Contractor, be given or confirmed by the Engineer in writing.

5.13 LAYOUT OF WORK AND SURVEYS

All work shall be constructed to the lines and elevations shown on the Contract drawings.

It is the Contractor's responsibility to perform construction surveys, place temporary survey markers and layout the project in conformance with the Contract drawings. The Contractor shall also be responsible for removal of any temporary survey markers at the conclusion of the project.

5.14 INSPECTION

The Engineer and his/her representatives shall at all times have access to the work during its construction, and shall be furnished with every reasonable facility for ascertaining that the materials and the workmanship are in accordance with the requirements and intentions of the Drawings and Specifications. All work done and all materials furnished shall be subject to his/her inspection and approval.

The inspection of the work or materials shall not relieve the Contractor of any of his obligations to fulfill his contract as prescribed. Work and materials not meeting such requirements shall be made good and unsuitable work or materials may be rejected, notwithstanding that such work or materials have been previously inspected by the Engineer or payment therefor has been included in a progress estimate.

The day-to-day inspection performed by the various inspectors employed by the City shall not constitute approval or ratification of work improperly done by the Contractor. The Engineer is the only person authorized to recommend acceptance or rejection of work and materials.

The presence or absence of an inspector during performance of the work shall not relieve the Contractor of any of his/her obligations to fulfill his/her Contract as prescribed. It

shall be the duty of the Contractor to see that the provisions of these Specifications are complied with in detail, irrespective of the inspection given the work during its progress by the Engineer or his/her representatives. Any plan or method suggested to the Contractor by the Engineer or an inspector, but not specified or required, if adopted or followed in whole or in part, shall be used at the risk and responsibility of the Contractor, and the City and the Engineer will assume no responsibility therefor.

Projects financed in whole or part with Federal or State funds shall be subject to inspection at all times by the Federal or State agency involved.

5.15 TESTING BY CONTRACTOR

The Contractor shall be responsible for controlling the quality of the material entering the work and of the work performed, and shall perform testing as necessary to ensure such control. The test methods used for such quality control testing shall be as determined by the Contractor. The results of such testing shall be made available to the Engineer upon request. Such tests are for the Contractor's use in controlling the work and will not be accepted for use as acceptance tests.

Full compensation for performing such tests and making the results available to the Engineer shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefor.

5.16 REMOVAL OF DEFECTIVE AND UNAUTHORIZED WORKS

All work that has been rejected shall be remedied, or removed and replaced by the Contractor in an acceptable manner at no additional cost to the City.

Any work done beyond the lines and grades shown on the Drawings or established by the City, or any extra work done without written authority, will be considered as unauthorized and will not be paid for. Work so done may be ordered remedied, removed, or replaced. If the Contractor should fail to comply promptly with any order of the Engineer made under the provisions of this Section, the Engineer may cause rejected or unauthorized work to be remedied, removed, or replaced, and the costs thereof to be deducted from any moneys due or to become due the Contractor.

If any portion of the work done or materials furnished under the Contract shall prove defective or not in accordance with the Specifications and Contract drawings, and if the imperfection in the same shall not be of sufficient magnitude or importance to make the work dangerous or undesirable, or if the removal of such work is impracticable or will create conditions which are dangerous or undesirable, the director shall have the right and authority to retain the work instead of requiring it to be removed and reconstructed, but he/she shall make such deductions therefor in the payment due or to become due the Contractor as may be just and reasonable.

5.17 CONSTRUCTION EQUIPMENT AND PLANT

Only equipment and plant suited to produce the quality of work required will be permitted to operate the work.

Plants shall be designed and constructed in accordance with general practice for such equipment and shall be of sufficient capacity and of such character to ensure the production of sufficient material to carry the work to completion within the time limit.

The Contractor shall provide adequate and suitable equipment and plant to meet the above requirements; and, when ordered by the Engineer, shall remove unsuitable equipment from the work and discontinue the operation of unsatisfactory plant.

Each machine or unit of equipment shall be operated by a man experienced in handling the particular make of machine or unit of equipment in use, and shall not be operated at a speed or rate of production in excess of that recommended by the manufacturer.

The Contractor shall identify each piece of his/her equipment other than hand tools, be means of an identifying number plainly stenciled or stamped on the equipment at a conspicuous location. In addition, the make, model number, and empty gross weight of each unit of compacting equipment shall be plainly stamped or stenciled in a conspicuous place on the unit. The gross weight shall be either the manufacturer's rated weight or the scale weight.

5.18 BLANK

5.19 USE OF COMPLETED PORTIONS

The City shall have the right at any time during the progress of the work, to take over and place in service any completed or partially completed portions of the work, notwithstanding the fact that time for completion of the entire work or such portions may not have expired; but such taking possessions thereof shall not be deemed an acceptance of any other portions of the work, nor work on those portions not completed in accordance with the Contract documents.

5.20 LEGAL ADDRESS OF THE CONTRACTOR

Both the address given in the Proposal and Contractor's office in the vicinity of the work are hereby designated as places to either of which drawings, letters, notices, or other articles of communications to the Contractor may be mailed or delivered. The mailing or delivery at either of these places shall be deemed sufficient notice thereof upon the

Contractor. Nothing herein contained shall be deemed to preclude the service of any drawing, letter, notice, article, or communication to or upon the Contractor or his/her representative personally. The address named in the Proposal may be changed at any time by written notice, from the Contractor to the City.

5.21 FINAL INSPECTION

When the work authorized by the Contract has been completed, the Engineer will make the final inspection. Projects financed in whole or part with Federal or State funds shall be subject to inspection at all times, including final inspection, by the Federal or State agency involved.

5.22 ACCEPTANCE OF CONTRACT

When the Engineer has made the final inspection in accordance with these Specifications and determines that the Contract has been completed in all respects in accordance with the drawings and Specifications, he/she will recommend that the City Council formally accept the Work of Improvement. Immediately upon such acceptance by the City, the Contractor will be relieved of the responsibility imposed upon him/her by Section 6.18 from that date on.

5.23 COORDINATION OF SPECIFICATIONS & DRAWINGS

The State Standard Specifications, Standard Provisions, Technical Special Provisions, Drawings, Contract Change Orders, and all supplementary documents are essential parts of the Contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of conflict, the following shall be the rules of interpretation:

Drawings shall govern over the Standard Provisions; the Special Provisions shall govern over both the Standard Provisions and the Drawings.

Detail Drawings shall govern over General Drawings. Figures written on Drawings shall govern over the Drawings themselves.

5.24 INTERPRETATION OF SPECIFICATIONS & DRAWINGS

The work herein provided for is to be done in accordance with the Specifications and Drawings on file in the office of the City Clerk and the Public Works Department. All corrections of readily apparent errors or omissions in Specifications or Drawings may be made by the Director when such corrections are necessary for the proper fulfillment of their intention as construed by him. The misplacement, addition, or omission of any

work, letter, figure, or punctuation mark which has no substantive legal effect will in no way change the due spirit, intent, or meaning of these Specifications.

Any part of the work which is not mentioned in these Specifications but is shown on the Drawings, or any part of the work not shown on the Drawings but described in these Specifications, or any part not shown on the Drawings or described in these Specifications but which is reasonably or ordinarily implied by either, shall be furnished and installed by the Contractor as if fully described in these Specifications and shown upon the Drawings.

Should it appear that the work to be done or any of the matters relative thereto are not sufficiently detailed or explained in the Specifications or on the Drawings, or if the Contractor discovers any discrepancies during the course of the work between the Contract Drawings and conditions in the field, or any errors or omissions in the Contract Drawings, the Specifications, or in the layout given by stakes, points, or instructions, the bidder or Contractor shall apply in writing to the Director for such further explanations as may be necessary and shall conform to them as part of the Contract. In the event of any doubt or questions arising respecting the true meaning of the Specifications or Drawings, reference shall be made in writing to the Director, whose decision thereon shall be final. Any work done after such discovery until authorized by the Director, will be done at the Contractor's risk.

5.25 STATE SPECIFICATIONS

Where specifically required, the work set forth in these Specifications shall be accomplished in accordance with appropriate provisions of the **2010 State of California Standard Specifications**, Section 1 to Section 99 inclusive, insofar as they apply. Said Specifications are herein referred to as the State Standard Specifications and are by reference made a part of these Specifications the same as though set out in full. In the event of conflict between the State Standard Specifications and the Standard, Special, or Technical Provisions of these Specifications or the Drawings, these Specifications and Drawings shall apply.

5.26 REASONABLENESS OF INTERPRETATIONS

All interpretations of these Specifications and the Drawings by the City and decisions made thereon by the Director will not be arbitrary, capricious, or unreasonable.

5.27 LAWS TO BE OBSERVED

The Contractor shall keep himself/herself fully informed of all existing and future State and Federal laws and County and Municipal ordinances and regulations which in any manner affect those engaged or employed in the work, or the materials used in the work,

or which in any way affect the conduct of the work, and of all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the same. He/she shall at time observe and comply with, and shall cause all his/her agents and employees to observe and comply with, all such applicable existing and future laws, ordinances, regulations, orders and decrees of bodies or tribunals having any jurisdiction of authority over the work; and shall protect and indemnify the City, the City Council, the Director and Consulting Engineer, and all of its and their officers and agents and servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself/herself or his/her employees. If any discrepancy or inconsistency is discovered in the Drawings, Specifications, or Contract for the work in relation to any such law, ordinance, regulation, order or decree, the Contractor shall forthwith report the same to the director in writing.

5.28 LABOR NONDISCRIMINATION

Attention is directed to the following Notice that is required by Chapter 5 of Division 4 of Title 2, California Code of Regulations.

NOTICE OF REQUIREMENT FOR NONDISCRIMINATION PROGRAM
(GOV. CODE, SECTION 12990)

Your attention is called to the "Nondiscrimination Clause", set forth in Section 7-1.02I(2), "Nondiscrimination," of the Standard Specifications, which is applicable to all nonexempt state contracts and subcontracts, and to the "Standard California Nondiscrimination Construction Contract Specifications" set forth therein. The Specifications are applicable to all nonexempt state construction contracts and subcontracts of $5,000 or more.

5.29 PREVAILING WAGES

Attention is directed to Section 7-1.02K(2), “Wages”, of the State Standard Specifications. The general prevailing wage rates determined by the Director of Industrial Relations, for the county or counties in which the work to be done, are available on the State of California website for the Department of Industrial Relations (http://www.dir.ca.gov/dlsr/pwd/).

In accordance with provisions of Section 1773 of the Labor Code, the City has ascertained the general prevailing rate of wages applicable to the particular craft, classification, or type of workers employed on the work. These rates are set forth in the Notice to Contractors.

The Contractor shall forfeit as a penalty to the City, $25 for each day, or portion thereof, for each worker paid less than the stipulated prevailing rates for any public work done under the Contract by him/her or by any subcontractor under him/her, in violation of the provisions of the Labor Code, particularly, Section 1770 through 1780 inclusive.

The work of installing, assembling, repairing or reconditioning, or other work of any nature on machinery, equipment, or tools used in or upon the work shall be considered a part of the work to be performed under the Contract any laborers, workers, or mechanics working on such machinery, equipment, or tools, shall be subject to all of the requirements relating to labor set forth in the Contract.

The construction, erection, and operation of material production, proportioning, or mixing plants from which material is used wholly on the Contract or on Contracts under the supervision of the City, shall be considered a part of the work to be performed under the Contract and any laborers, workers, or mechanics working on such plants shall be subject to all of the requirements relating to labor set forth in the Contract.

5.30 HOURS OF LABOR

Eight hours' labor constitutes a legal day's work. The Contractor shall forfeit as a penalty to the city $200 for each worker employed in the execution of the Contract by the Contractor or by any subcontractor for each day during which such worker is required or permitted to labor more than eight hours in violation of Labor Code Sections 1810 to 1815, inclusive, except as provided for under Labor Code Section 1815.

5.31 APPRENTICES

The Contractor's attention is directed to the provisions in Section 1777.5, (Chapter 1411, Statutes of 1968) and 1777.6 of the Labor Code concerning the employment of apprentices by the Contractor or any subcontractor under him.

Section 1777.5, as amended, requires the Contractor or subcontractor employing tradesmen in any apprenticeable occupation to apply to the joint apprenticeship committee nearest the site of the public works project and which administers the apprenticeship program in that trade for a certificate of approval. The certificate will also fix the ratio of apprentices to journeymen that will be used on the performance of the Contract. The ratio of apprentices to journeymen in such cases shall not be less than one to five except:

A. When unemployment in the area of coverage by the Joint Apprenticeship Committee has exceeded an average of 15 percent in the 90 days prior to the request for certificate, or

B. When the number of apprentices in training in the area, exceeds a ratio of one to five, or

C. When the trade can show that it is replacing at least 1/30 of its membership through apprenticeship training on an annual basis statewide or locally, or

D. When the Contractor provides evidence that he/she employs registered apprentices on all of his/her contracts on an annual average of not less than one apprentice to eight journeymen.

The Contractor is required to make contributions to funds established for the administration of apprenticeship programs if he/she employs registered apprentices or journeymen in any apprenticeable trade on such contracts and if other contractors on the public works site are making such contributions.

The Contractor and any subcontractor under him/her shall comply with the requirements of Sections 1777.5 and 1777.6 in the employment of apprentices.

Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the director of Industrial Relations, ex-officio the Administrator of Apprenticeship, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

5.32 PERMITS AND LICENSES

The Contractor shall procure all permits and licenses, pay all charges and fees, and give all notices necessary and incidental to the due and lawful prosecution of the work, except as provided in the Special Provisions. **Contractor shall apply for a Right of Entry Permit from Progressive Rail, Inc. The permit fee will be waived.**

5.33 PATENTS & COPYRIGHTS

The Contractor shall assume all costs arising from the use of, and shall hold and save the City and the Council, its offices, agents, and employees, harmless from liability of any nature and kind, including costs and expenses, for or on account of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, article, equipment, device, or appliance manufactured, furnished, or used by his/her in the performance of the Contract, including their use by the City, unless otherwise specifically stipulated in the Specifications.

5.34 SANITARY FACILITIES

The Contractor shall conform to the rules and regulations pertaining to sanitary provisions as established by the State of California and the County of Santa Cruz as may be applicable.

5.35 PUBLIC SAFETY

The Contractor shall, at his/her own expense, furnish, erect and maintain such fences, barriers, lights, bridges, and signs and provide such flagmen and guards as are necessary in the opinion of the Director of public agency having jurisdiction to give adequate warning to the public of the construction and of any dangerous condition to be encountered as a result thereof.

No material or equipment shall be stored where it will interfere with the safe passage of public traffic, and at the end of each day's work and at other times when construction operations are suspended for any reason, the Contractor shall remove all equipment and other obstructions from that portion of the roadway open for use by public traffic. Spillage resulting from hauling operations along or across any public traveled way shall be removed promptly.

Whenever the Contractor's operations require one-way traffic or create a condition hazardous to public traffic, he/she shall provide and station competent flagmen whose sole duties shall consist of directing the movement of public traffic through or around the work.

5.36 ACCIDENT PREVENTION

The Contractor shall comply with all pertinent safety orders of the State of California, Department of Industrial Relations, Division of Industrial Safety, and U.S. Department of Labor, OSHA, and will also take or cause to be taken such additional measures as may be necessary for the prevention of accidents.
Prior to commencement of work, the Contractor shall (1) submit in writing his/her proposals for effectuating his/her provisions for accident prevention, and (2) meet in conference with the Director to discuss and develop mutual understandings relative to administration of an overall safety program.

During the performance of work under the Contract, the Contractor shall institute controls and procedures for the control and safety of persons visiting the job site.

The Contractor shall maintain an accurate record of, and shall report to the Director in writing, exposure data and all accidents resulting in death, traumatic injury, occupational disease, or damage to property, materials, supplies, or equipment incident to work performed under the Contract.

The Director will notify the Contractor of any noncompliance with the foregoing provisions. The Contractor shall after receipt of such notice, immediately take corrective action. If the Contractor fails or refuses to comply immediately, the matter will be referred to proper authority. No part of the time lost due to any stop order issued by

proper authority shall be made the subject or claim for extension of time or for extra costs or damages by the Contractor.

Compliance with the provisions of this Section by subcontractors will be the responsibility of the Contractor.

No direct payment will be made by reason of the provisions of this Section and all costs in connection therewith shall be included in the prices paid for various Contract items of work.

5.37 EXPLOSIVES

Explosives are not permitted.

5.38 FIRES

Fires are not permitted.

5.39 INTERFERENCE WITH FIRE HYDRANTS, HIGHWAYS, AND FENCES

The Contractor shall so conduct his/her operations as not to close or obstruct any portion of any highway, road, or street, or prevent in any way free access to fire hydrants until he/she has obtained permits therefor from the proper authorities. If any highway required to be kept open shall be rendered unsafe by the Contractor's operation he/she shall make such repairs or provide such temporary guards as shall be acceptable to the authorities having jurisdiction and to the Engineer. Any highway or street maintenance or repair work required by local authorities in connection with necessary operations under the Contract shall be performed by the Contractor at his/her own cost and expense. Fences subject to interference shall be maintained as effective barriers consistent with the original intent, but upon approval of the Engineer, they may be moved or rearranged to facilitate prosecution of the work until the work is finished, after which they shall be restored to their original or better condition.

5.40 PRESERVATION OF PROPERTY

Due care shall be exercised to avoid damage to existing improvements, utility facilities, and adjacent property. The fact that any pipe or underground facility is not shown on the drawings shall not relieve the Contractor of his/her responsibility of ascertaining the existence of any underground improvements or facilities, which may be subject to damage by reason of his/her operation.

Any obstructions along the line of work, such as mail or paper boxes, posts, fences, culverts, improvements, etc., which interfere with the Contractor's operation shall be carefully removed and replaced by the Contractor as soon as possible in a satisfactory condition. Trees and shrubbery that are not to be removed, and pole lines, fences, signs, survey markers and monuments, buildings, and structures, conduits, under or above ground pipelines, and any other improvements and facilities adjacent to the work shall be protected from injury or damage and, if ordered by the Engineer, the Contractor shall provide and install suitable safeguards to protect such objects from injury or damage.

If such objects are injured or damaged by reason of the Contractor's operations, they shall be replaced or restored at the Contractor's expense. The facilities shall be replaced or restored to a condition as good as when the Contractor entered upon the work, or as good as required by the Specifications accompanying the work being performed under the Contract. When it becomes necessary for the Contractor to remove an existing fence as an obstruction to the work, the Contractor shall provide the necessary temporary fencing to be functionally as effective as the original for protection of livestock, equipment, or property.

Only those trees specifically designated for removal on the Contract drawings shall be removed, except with specific approval of the Engineer. Tree branches that extend over the work and must be removed shall be cut off at the bole in a workmanlike manner. The Contractor shall then remove other branches so that the tree will present a balanced appearance. Scars resulting from the removal of branches shall be treated with a heavy coat of an approved tree seal. The Engineer may make or cause to be made such temporary repairs as are necessary to restore to service any damaged facility. The cost of such repairs shall be borne by the Contractor and may be deducted from any moneys due or to become due the Contractor under the Contract.

No direct payment will be made by reason of the provisions of this Section and all costs in connection therewith shall be included in the prices paid for the various Contract items of work.

The Contractor, and his/her employees and agents, shall at all times observe and comply with all conditions imposed by any instrument granting the right to enter upon property for the purpose of performing the work provided for herein, including, but not limited to, all conditions relative to the prevention and suppression of fires.

5.41 PUBLIC CONVENIENCE

Contractor's attention is directed to Section 7-1.03, PUBLIC CONVENIENCE of the State Standard Specifications.

Unless otherwise provided in the special provisions, all public traffic shall be permitted to pass through the work, and the Contractor shall so conduct his/her operations as to offer the least possible obstruction and inconvenience to the public. He/she shall have under

construction no greater length or amount of work than can be prosecuted properly with due regard to the rights of the public, and the Engineer shall be the sole judge of the length or amount of work which will afford proper convenience to the public. In addition to the requirements for furnishing facilities for public safety as specified in Section 5.34, the Contractor shall erect such warning and directional signs as may be necessary, in the opinion of the Director, for expediting the passage of public traffic through or around the work and the approaches thereto. All such signs and traffic maintenance shall be subject to the approval of the Engineer, and he/she shall be notified 24 hours in advance of any disturbance of existing traffic patterns. No changes shall be made until approved by the Engineer.

Traffic signs, existing within the limits of the project, such as STOP signs, shall be placed in a bucket of sand, or otherwise maintained in an upright position, and located so as to properly control traffic, whenever it is necessary to remove them from their permanent location due to construction of the work, and shall be reinstalled in their permanent location at the earliest possible time.

Where pipelines to be installed under the Contract cross certain designated streets or highways, as noted on the plans, the Contractor will only be permitted to open the trench one-half the width of the pavement at any one time so that one-way traffic can be maintained.

Construction operations shall also be conducted in such a manner as to cause as little inconvenience as possible to abutting property owners. Water or dust palliative shall be applied if ordered by the Engineer for the alleviation or prevention of dust nuisance caused by the Contractor's operations. Convenient access to driveways, houses, and buildings along the line of work shall be maintained fully by the Contractor, and temporary approaches to crossing or intersecting roads or streets shall be provided and kept in good condition.

When traffic control signals are shut down as provided in Section 8601.05 of the State Standard Specifications, the Contractor shall control traffic by use of flagmen, as directed by the Engineer, at those locations set forth in the Special Provisions. No STOP signs will be permitted at these locations. The flagmen required for this operation shall be paid for by the Contractor.

All of the foregoing requirements shall apply on weekends and holidays, if considered necessary by the Engineer. The Engineer may take action as necessary to provide for public convenience and charge the cost thereof to the Contractor if no representative of the Contractor is available to do same.

5.42 CONTRACTOR'S RESPONSIBILITY FOR WORK

Until the formal acceptance of the work, the Contractor shall have the charge and care of the work and of the materials to be used therein, and shall bear the risk of injury, loss, or

damage, to any part thereof by the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The materials to be used in the work include both those furnished by the City and those furnished by the Contractor, including materials for which the Contractor has received partial payment as provided in Section 5.77.

5.43 RESPONSIBILITY FOR DAMAGES

The City, the City Council, the Engineer, and all officers and employees of the City shall not be answerable or accountable in any manner, for any loss or damage that may occur to the work or any part thereof; or for any of the materials or other things used or employed in performing the work; or for injury to any person or persons, either workers or the public; for damage to property from any cause which might have been prevented by the Contractor or his/her workers, or anyone employed by his/her; against all of which injuries or damages to persons and property the Contractor having control over such work must properly guard.

The Contractor shall be responsible for any damage to any person or property resulting from defects or obstructions or from any cause whatsoever during the progress of work or at any time before its completion and final acceptance and during the period of the project guarantee. The Contractor shall assume the defense and indemnify and save harmless the City, or Director, and their officers and employees, from every expense, liability or payment by reason of injury (including death) to persons or damage to property suffered through any act or omission, including passive and/or active negligence, of the Contractor or any of his/her subcontractors, or anyone directly or indirectly employed by either of them, or from the condition of the premises while in the control of the Contractor or any of his/her subcontractors, or anyone directly or indirectly employed by either of them, or arising in any way from the work called for by this Contract. Except as provided in Section 5.05, this provision shall not be deemed to require the Contractor to indemnify the City against liability for damages arising from the sole active negligence or willful misconduct of the City or its agents, servants, or independent Contractors who are directly responsible to the City.

5.44 PAYMENT OF TAXES

The Contract prices paid for the work shall include full compensation for all taxes which the Contractor is required to pay, whether imposed by the Federal, State, or local government.

5.45 PROPERTY RIGHTS IN MATERIALS

Nothing in the Contract shall be construed as vesting in the Contractor any right of property in the materials used after they have been attached or affixed to the work or the

soil, or after payment has been made for 80 percent of the value of materials delivered to the site of the work, whether or not they have been so attached or affixed. All such materials shall become the property of the City upon being so attached or affixed upon payment of such 80 percent of the value of materials delivered by the Contractor on the ground and not used, as provided in Section 5.77.

5.46 RIGHTS IN LAND & IMPROVEMENTS

Nothing in these Specifications shall be construed as allowing the Contractor to make any arrangements with any person to permit occupancy or use of any land, structure, or building within the limits of the Contract for any purpose whatsoever, either with or without compensation, in conflict with any agreement between the City and any owner, former owner, or tenant of such land, structure, or building.

5.47 TITLE TO MATERIALS FOUND ON THE WORK

The title to all water and to the right to the use of all water, to all soil, stone, gravel, sand, minerals, and all other materials developed or obtained in the excavation or other operations by the Contractor or any subcontractor, or any of their employees, and the right to use or dispose of the same, are hereby expressly reserved in the City and neither the Contractor, nor any subcontractor, nor any of their employees shall have any right, title, or interest in or to any part thereof; neither shall they, nor any of them, assert or make any claim thereto. The Contractor may be permitted to use in the work without charge any such materials that meet the requirements of these Specifications.

5.48 PERSONAL LIABILITY

Neither the members of the City Council, the Director, the Consulting Engineer, nor any other officer or employee of the City shall be personally responsible for any liability arising under the Contract.

5.49 TRESPASS

The Contractor shall be responsible for all damage or injury which may be caused on any property by trespass by the Contractor, any subcontractor or their employees in the course of their employment, whether the said trespass was committed with or without the consent or knowledge of the Contractor.

5.50 SUBCONTRACTING

No subcontract releases the Contractor from the contract or relieves the Contractor of

their responsibility for a subcontractor's work.

If the Contractor violates Pub Cont Code § 4100 et seq., the City of Santa Cruz may exercise the remedies provided under Pub Cont Code § 4110. The City of Santa Cruz may refer the violation to the Contractors State License Board as provided under Pub Cont Code § 4111.

The Contractor shall perform work equaling at least **30 percent** of the value of the original total bid with the Contractor's own employees and equipment, owned or rented, with or without operators.

Each subcontract must comply with the contract.

Each subcontractor must have an active and valid State contractor's license with a classification appropriate for the work to be performed (Bus & Prof Code, § 7000 et seq.).

Pursuant to Section 1725.5 of the Labor Code, no contractor or subcontractor may be listed on a bid proposal, or awarded a contract, for public work on a public works project unless registered with the DIR.

Submit copies of subcontracts upon request by the Engineer.

Before subcontracted work starts, submit a Subcontracting Request form.

The Contractor shall not use a debarred contractor; a current list of debarred contractors is available at the Department of Industrial Relations web site at:
http://www.dir.ca.gov/dlse/debar.html

Upon request by the Engineer, immediately remove and not again use a subcontractor who fails to prosecute the work satisfactorily.

5.51 PERFORMANCE OF SUBCONTRACTORS

The subcontractors listed by the contractor in the proposal shall list therein the name and address of each subcontractor to whom the bidder proposes to subcontract portions of the work in an amount in excess of one-half of one percent of the total bid or $10,000, whichever is greater, in accordance with the Subletting and Subcontracting Fair Practices Act, commencing with Section 4100 of the Public Contract Code. The bidder's attention is invited to other provisions of the Act related to the imposition of penalties for a failure to observe its provisions by using unauthorized subcontractors or by making unauthorized substitutions.

5.520 PROMPT PROGRESS PAYMENT TO SUBCONTRACTORS

A prime contractor or subcontractor shall pay any subcontractor not later than 10 days of

receipt of each progress payment in accordance with the provision in Section 7108.5 of the California Business and Professions Code concerning prompt payment to subcontractors. The 10 days is applicable unless a longer period is agreed to in writing. Any delay or postponement of payment over 30 days may take place only for good cause and with the agency's prior written approval. Any violation of Section 7108.5 shall subject the violating contractor or subcontractor to the penalties, sanctions and other remedies of that section. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the prime contractor, deficient subcontract performance, or noncompliance by a subcontractor.

5.521 PROMPT PAYMENT OF FUNDS WITHHELD TO SUBCONTRACTORS

The agency shall hold retainage from the prime contractor and shall make prompt and regular incremental acceptances of portions, as determined by the agency, of the contract work, and pay retainage to the prime contractor based on these acceptances. The prime contractor, or subcontractor, shall return all monies withheld in retention from a subcontractor within 30 days after receiving payment for work satisfactorily completed and accepted including incremental acceptances of portions of the contract work by the agency. Federal law (49CFR26.29) requires that any delay or postponement of payment over 30 days may take place only for good cause and with the agency's prior written approval. Any violation of this provision shall subject the violating prime contractor or subcontractor to the penalties, sanctions and other remedies specified in Section 7108.5 of the Business and Professions Code. These requirements shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the prime contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the prime contractor, deficient subcontract performance, or noncompliance by a subcontractor. This provision applies to both DBE and non-DBE prime contractors and subcontractors.

5.53 PROTECTION OF PUBLIC UTILITIES

Attention is directed to Section 4215, Chapter 3.1 to Division 5 of Title I of the Government code concerning the protection of public utilities on public contracts.

The Contractor will be required to work around public utility facilities that are to remain in place within the construction area or that are to be relocated and relocation operations have not been completed, and he/she will be held liable to the owners of such facilities for any damage or interference with service resulting from his/her operations.

The exact locations of underground facilities and improvements within the construction area shall be ascertained by the Contractor before using equipment that may damage or interfere with service resulting from his/her operations. It shall be the Contractor's

responsibility to notify public utilities that he/she is working in the vicinity of their facilities.

The Contractor shall notify the appropriate regional notification center for operators of subsurface installations at least 2 working days, but not more than 14 calendar days, prior to commencing any excavation or any underground construction. The regional notification centers include but are not limited to the following:

Notification Center	Phone #
Underground Service Alert – Northern California	800-227-2600
Underground Service Alert – Southern California	800-422-4133
Western Utilities Underground Alert, Inc.	800-541-3447

Other forces may be engaged in moving or reconstructing utility facilities or maintaining service of utility facilities, and the Contractor shall cooperate with such forces and conduct his/her operations in such a manner as to avoid unnecessary delay or hindrance to the work being performed by such other forces.

The City owns, operates, and maintains its own water and sewer distribution and collection systems and will cooperate with the Contractor insofar as it is reasonable and practicable. Water, as required for City projects, may be obtained at City-owned fire hydrants provided that application is made to the Water Department and permission obtained with provision for payment.

Full compensation for conforming to the requirements of this Section, not otherwise provided for, shall be considered as included in the prices paid for the various contract items of work and no additional allowance will be made therefor.

5.54 PUBLICATIONS

The Contractor shall submit and obtain written approval from the Engineer prior to the publication of any technical articles, descriptions, or news releases, concerning this project. Approval shall be granted providing that the City is properly acknowledged, technical innovations are properly acknowledged, and such publication is in the best interest of the City.

5.55 LANDS & RIGHTS-OF-WAY

The City shall provide the lands, rights-of-way and easements upon which the work under this Contract is to be done, and such other lands as may be designated on the Contract Drawings for the use of the Contractor and the Contractor shall confine his/her operations to within these limits.

The Contractor shall provide at his/her own expense any additional land and access thereto that may be required for temporary construction facilities or for storage of materials.

5.56 ASSIGNMENT

The performance of the Contract may not be assigned except upon the written consent of the City Council. Consent will not be given to any proposed assignment which would relieve the original Contractor or his/her surety of their responsibilities under the Contract.

The Contract may assign moneys due or to become due him/her under the Contract and such assignment will be recognized by the City, if given proper notice thereof, to the extent permitted by law, but any assignment of moneys shall be subject to all proper setoffs in favor of the City and to all deductions provided for in the Contract and particularly all money withheld, whether assigned or not, shall be subject to being used by the City for the completion of the work in the event that the Contractor should be in default therein.

5.57 COMMENCEMENT OF WORK

The Contractor shall not begin work until he/she has received notice to proceed from the City, and shall upon receiving notice, begin work within the time specified in the notice. After receipt of said notice, the Contractor shall diligently prosecute the work to completion. The Contractor shall provide written notice to the Engineer of the Contractor's intention to start work, specifying the date on which he/she intends to start at least 24 hours in advance.

5.58 WORK PROGRESS SCHEDULE

The Contractor shall, prior to beginning work, submit to the Engineer for approval a practicable work schedule as specified in these special provisions.

5.59 TEMPORARY SUSPENSION OF WORK

The Engineer shall have the authority to suspend the work wholly or in part, for such period as he/she may deem necessary when work is being performed in unsuitable weather, or when any other conditions are considered unfavorable for the proper prosecution of the work. The Engineer shall also have authority to suspend the work wholly or in part because of failure on the part of the Contractor to carry out orders given or to perform any provisions of the Contract. The Contractor shall immediately comply with the written order of the Engineer to suspend the work wholly or in part. Work

suspended wholly or in part shall be resumed by the Contractor on written order of the Engineer when conditions are favorable and methods corrected.

5.60 TEMPORARY SUSPENSION OF WORK FOR THE CONVENIENCE & BENEFIT OF THE CITY

The Engineer may order the Contractor in writing to temporarily suspend all or any part of the work for such period of time as may be determined by the Engineer to be necessary or desirable for the convenience and benefit of the City. Where such suspension has been ordered in writing as above provided and where such suspension unreasonably delays the progress of the work, the City shall make an equitable adjustment in the Contract price and Contract time.

5.61 SUSPENSION OF WORK BECAUSE OF CONDITIONS BEYOND CONTROL OF CITY OR CONTRACTOR

Should the work of this Contract be suspended for a period of over one (1) year due to war conditions, labor conditions, legal actions, or for any other reason beyond the control of either the City or the Contractor, the work may be terminated by mutual agreement subject to the following conditions. The City shall be responsible for payment for the actual work accomplished only, based on bid prices. The pro-rated cost of such work, where not fully covered by unit costs or bid items, shall be determined by an evaluation of the work done and the bid costs. Such determination shall be by an Evaluation Board consisting of one member appointed by the City and serving as Chairman, one member appointed by the Contractor, and a third member appointed by joint action of the Contractor and the City as a mutually acceptable, uninterested, neutral, qualified member of the Evaluation Board. The Contractor and the City shall be bound by the decision of the Evaluation Board.

5.62 TERMINATION OF UNSATISFACTORY SUBCONTRACTS

When any portion of the work which has been subcontracted by the Contractor is not being prosecuted in a satisfactory manner, the subcontract for such work shall be terminated immediately by the Contractor upon written notice from the Engineer, and the subcontractor shall not again be employed on the type of work in which his/her performance was unsatisfactory.

5.63 CHARACTER OF WORKERS

If any subcontractor or person employed by the Contractor or subcontractor shall fail or refuse to carry out the directions of the Engineer or shall appear to the Engineer to be incompetent or to act in a disorderly or improper manner, he/she shall be removed from

the work immediately on the request of the Engineer, and such persons shall not again be employed on the work.

5.64 TERMINATION OF CONTRACT

If the Contractor should fail to supply sufficient men, material, supplies, and equipment, the City shall give written notice to the Contractor, which notice shall require that the Contractor supply sufficient men, supplies, materials, and equipment to diligently prosecute the project. If the Contractor fails to resume diligent prosecution of the work within 48 hours after such notice is delivered, the City may eject the Contractor from the job, take over all supplies, equipment, and material of the Contractor on the jobsite, and may either obtain another contractor to finish the project or the City may finish the project with its own forces. In such event, the Contractor shall be liable to the City for damages including but not limited to the full cost of completing the project.

5.65 RIGHT-OF-WAY DELAYS

If performance of the Contractor's work is delayed as the result of the failure of the City to acquire or provide right-of-way, an extension of time will be granted pursuant to provisions of Section 4.01.

5.66 CONTRACTOR'S COST DATA

The City, or any of its duly authorized representatives shall, until the expiration of three years after final payment under this Contract or any subcontract under it, have access to and the right to examine any of the Contractor's or subcontractor's payrolls, records of personnel, invoices of materials, records of plant and equipment costs, and any and all other directly pertinent books, documents, papers, and records of such Contractor or subcontractors, involving transactions related to said Contract or subcontracts. In the event State or Federal funds are involved in the financing of the project, the State or Federal Government shall have the same rights of inspection as the City.

5.67 COORDINATION WITH UTILITIES

The Contractor shall be required to coordinate the work with the removal or relocation of any utility facility by any utility company or public agency where the utility facility is shown on the plans or specified in the Special Provisions to be removed or relocated by such company or agency. It shall be the Contractor's sole responsibility to effect said coordination, and it shall be deemed, upon his/her submission of a Proposal and Schedule to do Work, that the Contractor has reviewed his/her working plans with and coordinated any utility facility removal or relocation with all appropriate utility companies and public agencies.

In general, the locations of existing utility facilities as shown on the drawings are approximate. This information has been obtained from utility maps furnished by the various agencies involved, and the City does not guarantee either the correctness of locations or the extent of such location. Minor lines such as house water, gas, and sewer facilities are not shown. It shall be the responsibility of the Contractor to ascertain the exact location of the utility facilities, and no additional compensation may be claimed for additional work involved because the actual location is different than that shown on the plans.

In the event that a utility facility is encountered which is neither shown on the plans nor specified in the Special Provisions, the Contractor shall immediately notify the City in writing. The City will either have the appropriate utility company or public agency relocate the facility, or the City will direct the Contractor to relocate the facility under the Force Account provisions of these Specifications. No additional compensation may be claimed because of the delays due to utilities encountered along the line of the work. The Contractor will not be assessed liquidated damages for delay in completion of the project, when such delay is caused by the failure of the City of the owner of the utility facility to provide for removal or relocation of existing utility facilities.

Unless otherwise indicated on the Drawings or specified in the Special Provisions, the Contractor shall maintain in service all drainage, water, gas and sewer lines, including house services, power, lighting and telephone conduits, and any other surface or subsurface structure or facility of any nature that may be affected by the work; provided, however, that the Contractor for his/her convenience may arrange with the owner to temporarily disconnect house service lines or other facilities along the line of the work. The cost of disconnecting and restoring such utilities shall be borne by the Contractor.

The Contractor is responsible for the protection of and for any damage to any utility facility encountered on the project during the prosecution of the work. Any such damage to a utility facility shall be repaired to the satisfaction of the utility owning the same. The City reserves the right, if so requested by the owner, to permit the owner to repair such damage. All expenses of whatever nature arising from such damage shall be borne by the Contractor.

5.68 RESPONSIBILITY FOR ACCURACY

The Contractor shall obtain all necessary measurements for and from the work, and shall check dimensions, elevations, and grades for all layout and construction work and shall supervise such work, for the accuracy of all of which he/she shall be responsible. Each subcontractor shall adjust, correct, and coordinate his/her work with the work of others so that no discrepancies will result in the whole work.

Contractor shall notify the Engineer immediately of any discrepancies in the lines, levels, or grades established by the Engineer.

Unless authorized by the Engineer, any work done with known discrepancies or without lines, levels, or grades established by the Engineer shall be done at the Contractor's risk.

5.69 TEMPORARY FACILITIES & SERVICES

The Contractor shall be responsible for providing and maintaining the necessary storage places, field office, temporary roads, fences, watchmen, etc., and required utilities, such as telephone, electric, and water service, at his/her expense. No water shall be withdrawn from fire hydrants for construction purposes until the Contractor gets approval of the owner for such a connection.

5.70 UNFAVORABLE WEATHER & OTHER CONDITIONS

During unfavorable weather and other conditions, the Contractor shall pursue only such portions of the work as will not be damaged thereby. No portions of the work of which the satisfactory quality or efficiency will be affected by any unfavorable conditions shall be constructed while these conditions remain, unless by special means of precautions approved by the Engineer the Contractor shall be able to overcome them.

5.71 WEEKEND, HOLIDAY, AND NIGHT WORK

No work shall be done between the hours of 4 PM and 8 AM, nor on Saturdays, Sundays or legal holidays except with the permission of the Engineer, except in case of an emergency.

It is understood, however, that two or three shift operations may be established as a regular procedure by the Contractor if he/she first obtains written permission from the Engineer. Such permission may be revoked by the Engineer at any time if the Contractor fails to maintain adequate force and equipment for reasonable prosecution and to justify inspection of the work or fails to provide sufficient artificial light to permit the work to be carried on properly and to permit proper inspection.

The Director has the authority to allow a 7 am start to reduce traffic congestion and improve public convenience. The Contractor shall give the Engineer 48 hours prior notice of any work to be done on a Saturday, with the location and type of work to be done specified; and any work done without such notice and without the presence of an inspector may be ordered removed and replaced at the Contractor's expense.

5.72 WORK TO BE DONE WITHOUT DIRECT PAYMENT

Whenever it is specified that the Contractor is to do work or furnish materials of any class for which no price is fixed in the Proposal, it shall be understood that he/she is to do such

work or furnish such materials without extra charge or allowance or direct payment of any kind. The cost of doing such work or furnishing such materials is to be included in the price bid for such other items of work as he/she may consider appropriate, unless it is expressly specified in the special Provisions that such work or materials is to be paid for as extra work.

5.73 MEASUREMENT OF QUANTITIES

Payment for all work bid at a price per unit of measurement will be based upon the actual quantities of work as measured upon completion. The City does not expressly or by implication agree that the actual amount of work or materials of any class will correspond to the estimated quantities given in the Proposal. The Contractor shall make no claim for anticipated profits, for loss of profit, for damages, or for any extra payment whatever because of any difference between the amount of work actually done or materials furnished and the estimated amount.

Items bid on a "Lump Sum" or "Job" basis shall result in a complete structure, operating plant, or system in satisfactory working condition in respect to the functional purposes of the installation, and no extra compensation will be allowed for anything omitted but fairly implied.

5.74 CHANGE ORDERS

When alterations in quantities of work for which unit prices are shown in the Proposal are ordered and performed, the adjustment in the Contract amount shall be determined on the basis of such unit prices for the actual quantities of work done.

Adjustments, if any, in the amount to be paid the Contractor by reason of any other modifications of the work as set forth in a Contract Change Order, shall be determine by one or more of the following methods:

a. Lump Sum Price. By an acceptable lump-sum Proposal from the Contractor.

b. Unit Prices. By unit prices fixed by agreement between the City and the Contractor.

c. Force Account. By ordering the Contractor to proceed with the work and to keep and present in such form as the Engineer may order, a correct account of the cost of the change, together with all vouchers therefor.

5.75 FORCE ACCOUNT WORK

Shall comply with the provisions in Section 9-1.04, FORCE ACCOUNT of the State Standard Specifications.

5.76 DEDUCTIONS FROM PAYMENTS

The City may at its option and at any time, retain out of any amounts due the Contractor, sums sufficient to cover claims filed pursuant to Section 1181 et seq., of the code of Civil Procedure.

5.77 PARTIAL PAYMENT

At monthly intervals, as fixed by the City, the Contractor will prepare an estimate in writing of the total amount of work done and the acceptable materials furnished and delivered by the Contractor on the ground and not used, to the time of such estimate, and the value thereof. Acceptable materials shall be those materials which will become a part of the finished construction work. The basis for partial payments of lump sum or other unit Contract items will be determined by agreement between the Director and the Contractor. The City shall retain 5 percent of such estimated value of work done and 20 percent of the value of the materials so estimated to have been furnished and delivered and unused as aforesaid and shall pay at the established monthly intervals to the Contractor, while carrying on the work, the balance not retained as aforesaid, after deducting therefrom all previous payments and all sums to be kept or retained under the provisions of the Contract. However, at any time after 50 percent of the work has been completed, if the City finds that satisfactory progress is being made, the City may make any of the remaining progress payments in full for actual work completed, or may withhold any amount up to 10 percent thereof, as the City may find appropriate based on the Contractor's progress. No such estimate or payment shall be required to be made when, in the judgment of the Director, the work is not proceeding in accordance with the provisions of the Contract, or when, in his/her judgment, the total value of the work done since the last estimate amounts to less than $500. No such estimate or payment shall be considered to be an acceptance of any defective work or improper materials. All progress estimates and payments shall be subject to correction in the final estimate.

5.78 FINAL PAYMENT

As soon as practicable after completion of the work, the Engineer will prepare in writing and furnish to the Contractor the final estimate of the quantities of work done and all payments due under the Contract, which estimate will show deductions for prior payments and any other amounts to be retained under Section 5.77. The amount determined due less the amount retained will be paid. This retained amount will not be due or payable until 35 days after the completion of the work and the filing of Notice of

Completion and Acceptance in the manner provided by law and until after the Contractor has furnished the City a release by all claims by the Contractor against the City arising by virtue of this Contract except such claims in definite amounts as the Contractor may specifically exempt from the operation of the release.

At the earliest practicable time after having filed a claim, either during the performance of the work or after its completion as specified in the foregoing paragraph, it shall be the responsibility of the Contractor to submit in writing the basis for each claim, reference to applicable provisions of the Specifications, the method of computation of the amount claimed due, and all other factual data pertaining thereto. Failure to submit such information and details within the 90 days after filing said claims will be sufficient cause for denying the claims. No claim will be considered where there has been a failure to comply with the requirements of Section 5.04.

5.79 SCOPE OF PAYMENT

Payment for all items of work at the unit or lump sum price shall be considered as full compensation for furnishing all labor, materials, tools, equipment, and incidentals necessary to complete the item of work, and no additional allowance will be made therefor.

5.80 GUARANTEE

Should any failure of the work occur within a period of one year after acceptance of the project by the City, which can be attributed to faulty materials, poor workmanship, or defective equipment, or should discovery be made within this period of any non-compliance with the Plans and Specifications, the Contractor shall promptly make the needed repairs, replacement, or installation at his/her expense.

The City is hereby authorized to make such repairs if the Contractor fails to make or undertake with due diligence the aforesaid repairs within ten days after he/she is given written notice of such failure; provided however, that in case of emergency where, in the opinion of the Engineer, delay would cause serious loss or damages, or a serious hazard to the public, the repairs may be made or lights, signs, and barricades erected without prior notice to the Contractor, and the Contractor shall pay the entire costs thereof.

Unless otherwise set forth in the Special Provisions, as a condition precedent to the acceptance of the Contract, the Contractor shall furnish a corporate surety bond, of an acceptable surety company authorized to do business in the State of California, to protect the City against the results of such faulty materials, poor workmanship, or defective equipment and to guarantee the Contractor's responsibility as outlines above, for a period of one year after completion and acceptance of the project by the City. Said bond shall be in a sum not less than ten percent (10%) of the Contract amount.

5.81 TEMPORARY CONSTRUCTION EASEMENT

The use of temporary construction easements by the Contractor shall be limited to the construction of improvements as shown on the plans and as specified in these specifications, and shall not be used to store materials or equipment, except as approved in writing by the Engineer.

5.82 VALUE ENGINEERING

Attention is directed to the provisions in Section 4-1.07, VALUE ENGINEERING and Section 4-1.07B VALUE ENGINEERING CHANGE PROPOSAL, of the State Standard Specifications and these Special Provisions.

The Contractor may submit a Value Engineering Change Proposal for city's consideration.

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SECTION 8
CONTROL OF MATERIALS AND INSTALLED EQUIPMENT

8.01 FURNISHING AND QUALITY OF MATERIALS AND EQUIPMENT

The Contractor shall furnish all materials and equipment required to complete the work, except materials or equipment that are designated in these specifications to be furnished by the City.

Notwithstanding any prior inspection or approval, only materials and equipment conforming to the requirements of the specifications shall be incorporated in the work.

The materials and equipment furnished and used shall be new and unused and of the highest commercial quality currently available. The materials and equipment shall be manufactured, handled, and used in a workmanlike manner to ensure completed work in accordance with the Drawings and Specifications.

The Contractor shall be required to furnish a written guaranty covering certain items of material and equipment for varying periods of time from the date of acceptance of the Work of Improvement. The material and equipment to be guaranteed, the form of guaranty, and time limit of the guaranty are as specified in Section 5.80. Said guaranty shall be signed and delivered to the Engineer before Acceptance of the Work of Improvement. Upon completion of the Work of Improvement, the amounts of the Contract bonds required in Section 3.05 may be reduced to conform to the total amount of the Contract bid prices for the items to be guaranteed and this amount shall continue in full force and effect for the duration of the guaranty period.

8.02 SOURCE OF MATERIAL AND EQUIPMENT

The Contractor shall furnish a list of his/her sources of materials and equipment to the Engineer. The list shall be furnished on a City form and shall be furnished to the director in sufficient time to permit proper inspection and testing of materials and equipment to be furnished from such listed sources in advance of their use. The Contractor shall furnish without charge such samples as may be required. Inspection and tests will be made and reports rendered, but it is understood that such inspection and tests shall not be considered as a guarantee of acceptance of any material or equipment or materials which, after approval, have in any way become unfit for use shall be used in the work.

The Contractor shall submit five copies of approval data for the mechanical and electrical materials and equipment proposed for installation. The data shall be submitted in the same routine as prescribed for working drawings in Section 10-1.03. Approval data shall consist of complete material and equipment lists accompanied by catalog data sheets, cuts, performance curves, diagrams, or similar descriptive material. Material and equipment lists shall give in each case the name of the manufacturer, trade name, catalog reference, size, finish, and all other pertinent data. It is intended that approval data

should not include such materials as small pipe and small pipe fittings, conduit and conduit fittings, or tubing. Data submitted as specified herein for each major subdivision of mechanical and electrical work shall be bound together under a hard cover, provided with a complete index, and properly identified on the cover. Individual sheets shall be easily removable without tearing or other damage. The Contractor shall furnish operation and maintenance manuals or instructions if required by the Special Provisions.

At the option of the Engineer, the source of supply of each of the materials shall be approved by him/her before the delivery is started. All materials proposed for use may be inspected or tested at any time during their preparation and use. After trial, if it is found that sources of supply which appeared satisfactory do not furnish a uniform product, or if the product from any source proves unacceptable at any time, the Contractor shall furnish approved material from other sources.

8.03 STORAGE OF MATERIALS AND EQUIPMENT

Materials and equipment shall be stored in a staging area provided by the Contractor and shall be so stored as to ensure the preservation of their quality and fitness for the work. They shall be placed under cover when directed and shall be sorted in a manner that will facilitate prompt inspection.

8.04 DEFECTIVE MATERIALS

All materials not conforming to the requirements of the Specifications and Drawings shall be considered as defective and all such materials shall be rejected, whether in place or not. They shall be removed immediately from the site of the work, unless other wise permitted by the Engineer. No rejected material, the defects of which have been subsequently corrected, shall be used unless approval in writing has been given by the Engineer. If the Contractor should fail to comply promptly with any order of the Engineer made under the provisions of this Section, the Engineer may cause defective materials to be removed and replaced, and the costs thereof to be deducted from any moneys due or to become due the Contractor.

8.05 TRADE NAMES AND ALTERNATIVES

For convenience in designation on the Drawings or in the Specifications, certain equipment or materials to be incorporated in the work may be designated under a trade name or the name of a manufacturer in his/her catalog information. The use of alternative equipment or material which is of equal quality and of the required characteristics for the purpose intended will be permitted, subject to the following requirements:

The burden of proof as to the comparative quality and suitability of alternative equipment or materials shall be upon the Contractor and he/she shall furnish, at his/her own expense, six copies of complete description, information, and performance data showing the quality of the materials or equipment offered to those specified, and such other necessary or related information as may be required by the Engineer. The Engineer will be the sole judge as to the comparative quality and suitability of alternative equipment or materials and his/her decision shall be final.

The Contractor, pursuant to Government Code, Section 4380, shall have at least 35 days after award of the Contract for submission of data substantiating a request for a substitution of "or equal" item.

8.06 TESTING MATERIALS

Unless otherwise specified in the special provisions called for on the Drawings, all tests of materials and work for determining compliance with requirements shall be performed in accordance with the methods in use by the laboratory of the State Department of Transportation or by nationally recognized testing organizations, at a laboratory approved by the Engineer.

Whenever a reference is made to a specification or test method either of the American Society of Testing Materials, the American Water Works Association, or any other authority, and the number accompanying the specification or test method representing the year of its acceptance is omitted, the reference shall mean the specification or test method in effect on the date of the Notice to Contractors.

Whenever a specification or test method of the American Society for Testing Materials, the American Water Works Association, or any other authority, includes a test procedure or test requirement, the Contractor shall submit two copies of certified test results, unless the requirement therefor is waived. No material will be accepted until these data have been passed upon by the Engineer and accepted.

Samples of all materials entering into the work shall be furnished by the Contractor without charge, when requested by the Engineer.

Materials may be tested at any time during progress of the work.

8.07 PLANT INSPECTION

Materials and equipment which become a part of the completed work will be subject to inspection at the place of production or manufacture, at the shipping point, or at the site of the work. Materials and equipment requiring inspection at the place of production or manufacture will be designated by the Engineer. Where plant inspection is so designated, the Engineer shall be given 14 days advance notice of the start of manufacture or

production. The Contractor's purchase orders for materials and equipment for which plant inspection has been designated by the Engineer shall bear a suitable notation advising suppliers and subcontractors of inspection requirements.

The Engineer or his/her authorized representative shall have free entry at all times to such parts of the plant as concerns the manufacture or production of materials and equipment for the City. Adequate facilities shall be furnished free of charge to make the necessary inspection.

The City assumes no obligation to inspect material or equipment at the place of manufacture or production, or at the shipping point.

SECTION 9
DESCRIPTION OF WORK

9.01 WORK TO BE PERFORMED

In general, the work to be done consists of the replacement of the existing 4-foot-wide wooden walkway, located on the San Lorenzo River Trestle Bridge, with a 10-foot-wide multi- use trail. The work involves demolition of the existing wooden walkway and eastern concrete landing, construction of two abutments, construction of a steel bents at each existing bridge pier and intermediate outriggers, construction of steel floor beams and fiber reinforced polymer deck, construction of guardrails and integral path lighting. Removal of lead based paint and testing for contaminated soils is also required.

The contractor shall provide all labor, materials, tools, equipment, services required for the complete and proper completion of all the work as shown on the plans and/or outlined in these specifications. This project will also include all other work not mentioned above that is required by the plans, City Standard Specifications, State Standard Specification, the special provisions to be performed, placed, constructed or installed, and items necessary to make a complete working installation of all systems shown or described herein.

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SECTION 10
TECHNICAL SPECIAL PROVISIONS

10-1.01 MOBILIZATION

Mobilization shall conform to the provisions in Section 9-1.16D, MOBILIZATION of the State Standard Specifications.

Mobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies and incidentals to the project site; for the establishment of all offices, buildings and other facilities necessary for work on the project; and for all other work and operations which must be performed or costs incurred prior to beginning work on the various contract items on the project site.

Full compensation for **MOBILIZATION** shall be the contract **LUMP SUM** price bid and no additional compensation will be allowed therefor.

10-1.02 ORDER OF WORK

When required by the special provisions or plans, the Contractor shall follow the sequence of operations as set forth therein.

Full compensation for conforming to those requirements will be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

Attention is directed to “Project Funding Sign”, “Public Safety”, “Public Convenience”, and “Access,” of these special provisions.

Attention is directed to "Water Pollution Control" of these special provisions regarding the submittal and approval of the Water Pollution Control Program prior to performing work having potential to cause water pollution.

Attention is directed to “California Coastal Commission Required Construction Plan” as specified in the notes of the plans regarding the submittal of a Construction Plan.

Attention is directed to Detour Plan Sheet DT1.0 “Traffic Control Plan Notes” and “Detour Plan Notes” as specified in the notes of the plans regarding implementation of traffic control and detour measures.

All work shall be performed in conformance with the construction schedule and traffic control plan and construction plan submitted by the contractor and approved by the Engineer. Full compensation for conforming to those requirements will be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

10-1.03 SUBMITTALS

Submittals shall conform to the provisions in Section 5-1.23, SUBMITTALS of the State Standard Specifications and these special provisions.

The Contractor shall provide submittals for all materials, product data, working/shop drawings, diagrams, schedules, or other data prepared by the Contractor in accordance to the Contract requirements. The submittals shall not modify any Contract requirement.

Electronic copies of all submittals are required. Hard copies (paper copies) of submittals are not required. The format of submittals shall conform to the State Standard Specifications.

Shop drawing shall be drawn to scale. Deviations from the Construction drawings shall be noted. Project plans shall not be used as shop drawings.

All submittals shall be reviewed and checked by the Contractor prior to submittal to the Engineer. Contractor shall affix his signature to each submittal indicating the Contractor has reviewed, checked and approved the submittal for compliance with all the requirements of the plans and specifications.

The Contractor shall provide Certificates of Compliance from its material suppliers, in advance of the work, certifying that all materials to be used on the project conform to the requirements of these specifications. The Contractor shall also furnish to the City in triplicate, certified copies of all factory and mill test reports when required by the Engineer. The Certificates shall be signed by the manufacturers of the materials. The City reserves the right to refuse to permit the use of material based on a Certificate of Compliance alone.

The list of technical submittals shall include, but not be limited to the following:

(a) Schedules of Work
(b) Construction Plan (The Plan)
(c) Traffic Control Plan
(d) Public Notice of Roadwork
(e) Storm Water Pollution Prevention Plan
(f) Waste Management Plan
(g) Utility Location Reference List
(h) FRP Deck System and Engineering Design
(i) Steel Shop Drawings, Material Certification, WPS
(j) Welder's Qualifications
(k) Concrete Mix Designs
(l) Rebar Shop Drawings
(m) Bearing Shop Drawings and Bearing Design Calculations
(n) Cable Rail System
(o) Contaminated Soil Plan
(p) Lead and Asbestos Compliance Plan
(q) Existing Waterline Reconfiguration and Supports Shop Drawings
(r) Temporary Structure Details and Design Calculations

Submittals shall be shown on the schedule and shall not be critical path items of work.

All required submittals, except as noted, shall be reviewed by the Engineer and returned to the Contractor within 10 working days from the date of receipt by the Engineer. In addition, the Contractor shall allow the City equivalent time periods to review re-submittals for any previously rejected submittals.

The Engineer's review of Contractor shop drawing submittals shall not relieve the Contractor of the entire responsibility for the correctness of details and dimension. The Contractor shall assume all responsibility and risk for any non-conformity with the plans and specifications due to any errors in Contractor submittals. The Contractor shall be responsible for the dimensions and the design of adequate connections and details. Acceptance by the Engineer of a substitute item proposed by the Contractor shall not relieve the Contractor of the responsibility for full compliance with the Contract Documents and for adequacy of the substitute item.

Full compensation for preparing submittals shall be included in the various bid items and no additional compensation will be allowed therefor.

10-1.04 PROGRESS SCHEDULES

Progress schedules will be required for this contract. Within five (5) working days of the notice of contract award, or at the preconstruction meeting (whichever comes first), the Contractor shall submit to the Engineer a baseline progress schedule. Contractor will not be allowed to begin work until the progress schedule has been approved by the Engineer. Work performed without an approved schedule will be considered to be unauthorized work as specified in Section 5-1.30, NONCOMPLIANT AND UNAUTHORIZED WORK of the State Standard Specifications.

The Contractor shall provide weekly 'look ahead' schedules at the weekly construction meeting, or as determined by the Engineer, which detail the following week's construction activities.

Full compensation for Progress Schedules shall be included in the various bid items and no additional compensation will be allowed therefore.

10-1.05 WATER POLLUTION CONTROL

Water pollution control work shall conform to the provisions in Section 13, WATER POLLUTION CONTROL of the State Standard Specifications and these specifications.

This project shall conform to the requirements of General Construction Activity Storm Water Permit No. CAS000002, Order No. 99-08-DWG, and Caltrans Statewide Storm Water Permit No. CAS000003, Order No. 99-06-DWG, issued by the State Water Resources Control Board. These permits, hereafter referred to as the "Permit," regulates storm water discharges associated with construction activities.

Water pollution control work shall conform to the requirements in the latest editions of the Caltrans Construction Manual and applicable Caltrans Storm Water Handbooks, and addenda thereto issued up to, and including, the date of advertisement of the project, hereafter referred to as the "Handbook." Copies of the Handbook and the Permit may be obtained from the Department of

Transportation, Material Operations Branch, Publication Distribution Unit, 1900 Royal Oaks Drive, Sacramento, California 95815, Telephone: (916) 445-3520 or from the Caltrans website (www.dot.ca.gov).

Full compensation for **WATER POLLUTION CONTROL** including the preparation of a Construction Plan (Coastal Commission Required Construction Plan) shall be included in the **LUMP SUM** price bid and no additional compensation will be allowed therefor.

10-1.06 BEST MANAGEMENT PRACTICE

The Contractor's work shall conform to the requirements of the Construction Work - Best Management Practices (Chapter 4 of the Best Management Practices Manual for the City's Storm Water Management Program) published in July, 2004 and Erosion and Sediment Control Field Manual published by California Regional Water Quality Control Board, August 2002 edition, and addenda thereto issued up to, and including, the date of advertisement of the project. Copies of the Best Management Practices may be obtained from the Public Works Department, 809 Center Street, Santa Cruz, California 95060 or from the City website (www.cityofsantacruz.com).

Full compensation for conforming to the most recent requirements for implementing construction best management practices shall be included in the various bid items and no additional compensation will be allowed therefor.

10-1.07 CONSTRUCTION AREA SIGNS

Construction area signs shall be furnished, installed, maintained, and removed when no longer required in accordance with the provisions in Section 12, "Temporary Traffic Control," of the State Standard Specifications and these special provisions. Changeable message signs per section 10-1.101 for required resurfacing work shall be provided 2 weeks of advance warning before the resurfacing work.

Full compensation for furnishing, placing, maintaining, and removing the construction area signs shall be considered as included in the contract **LUMP SUM** price paid for **TRAFFIC CONTROL AND CONSTRUCTION AREA SIGNS** and no additional compensation will be allowed therefor.

10-1.08 MAINTAINING TRAFFIC

Attention is directed to Sections 7-1.03, PUBLIC CONVENIENCE, 7-1.04, PUBLIC SAFETY and 12, TEMPORARY TRAFFIC CONTROL of the State Standard Specifications and to the Section entitled "Public Safety" elsewhere in these special provisions, and these special provisions. Nothing in these special provisions shall be construed as relieving the Contractor from the responsibilities specified in Section 7-1.04.

The Contractor's attention is directed to Article 7-16 of the City of Santa Cruz Department of Public Works Standard Specifications. For construction within the City owned right of way provisions shall be made for the safe passage of public traffic through the necessary portions of work at all times with

as little inconvenience to the public as possible. The Contractor shall also make provisions for the safe passage of pedestrians/bicyclists around the area of work at all times. The "Community Traffic Safety Coalition, Recommended Guidelines to protect the Safety of Bicycle, Pedestrians and Disabled Travelers during Road Construction" is appended to these specifications.

The Contractor shall comply with the current State of California, Department of Transportation Manual of Traffic Controls for Construction and Maintenance work Zones for all items related to traffic within the job site.

The Contractor shall furnish and place temporary construction area signs required for foot or bike traffic around the work during construction.

During construction operations, the Contractor shall also meet the following conditions:

1. Personal vehicles of the Contractor's employees shall not be parked within the construction area, on the traveled way or shoulders, including any section closed to public traffic.

2. Access for emergency vehicles to adjoining properties shall be maintained at all times during construction.

3. The Contractor is prohibited from storage of materials or equipment in any location that would interfere with the free and safe passage of pedestrian, bike and vehicular traffic.

4. The Contractor shall notify and update fire, police, ambulance and transit services of anticipated closures and traffic flow disruptions at least 24 hours prior to construction work that affects traffic.

5. The Contractor shall notify local authorities of the Contractor's intent to begin work at least **5 calendar days** before work is begun. The Contractor shall cooperate with local authorities relative to handling traffic through the area and shall make all arrangements relative to keeping the working area clear of parked vehicles.

Full compensation for maintaining traffic shall be considered as included in the contract **LUMP SUM** price paid for **TRAFFIC CONTROL AND CONSTRUCTION AREA SIGNS** and no additional compensation will be allowed therefor.

10-1.09 TRAFFIC CONTROL PLAN

At least 5 calendar days prior to commencing construction which will affect existing traffic, the Contractor shall submit for review and approval by the Engineer a Traffic Control Plan which contains only information specifically related to work zone traffic control. No work will proceed until the Traffic Control Plan has been approved.

The content of the Traffic Control Plan shall include but is not limited to, the following:

1. Show location and limits of the work zone.

2. Give dimensions of lanes affected by traffic control that will be open to traffic

3. Indicate signing, cone placement, and other methods of delineation and reference to appropriate City or Caltrans Standard.

4. Dimension location of signs and cone tapers.

5. Identify side streets and driveways affected by construction and show how they will be handled.
6. Show City designated truck routes.

7. Show how pedestrian and bicycle traffic will be handled through the construction site during all hours.

Implementation of the Traffic Control Plan shall consist of closing traffic lanes and providing lights, signs, barricades, portable delineators, traffic cones, temporary striping, pavement delineation, markers and pavement markings, steel plates, flaggers or other necessary devices in conformance with the details shown on the plans, the provisions of Section 12, TEMPORARY TRAFFIC CONTROL of the State Standard Specifications, the provisions under "Maintaining Traffic" and "Construction Area Signs" elsewhere in these specifications.

Pavement delineation and markings shall conform to the provisions in Section 10-1.10, “Temporary Pavement Delineation,” of these specifications.

Daytime lane closures shall not commence before 7:00 a.m. and shall cease at 3:30 p.m. No work that interferes with public traffic shall be done outside these hours except for work required under sections 7-1.03 PUBLIC CONVENIENCE and Section 7-1.04, PUBLIC SAFETY of the State Standard Specifications. All lanes shall be open at 4:00 p.m.

The Contractor shall be responsible for coordinating his activities to avoid any conflicts on streets which have garbage or recycled material pickups scheduled for the same day. The Contractor shall contact the City Refuse and Recycling Division at 420-5545.

The provisions in this section will not relieve the Contractor from the responsibility to provide additional devices or take the measures as may be necessary to comply with the provisions in Section 7-1.04, PUBLIC SAFETY of the State Standard Specifications.

If any component in the traffic control system is displaced, or ceases to operate or function as specified, from any cause, during the progress of the work, the Contractor shall immediately repair the component to its original condition or replace the component and shall restore the component to its original location.

When lane closures are made for work periods only, at the end of each work period, all components of the traffic control system, except portable delineators placed along open trenches or excavation adjacent to the traveled way, shall be removed from the traveled way and shoulder. If the Contractor so elects, the components may be stored at selected central locations, approved by the Engineer, within the limits of the street right of way.

Conforming to these provisions shall be included in the contract **LUMP SUM** price paid for **TRAFFIC CONTROL AND CONSTRUCTION AREA SIGNS** and shall include full

compensation for furnishing all labor (including flagging costs), materials (including signs), tools, equipment and incidentals, and for doing all the work involved in placing, removing, storing, maintaining, moving to new locations, replacing and disposing of the components of the traffic control system, including flagging, construction area signs, temporary pavement delineation, barricades, traffic cones and traffic delineators, as specified in the State Standard Specifications and these special provisions, and as directed by the Engineer.

The adjustment will be made as provided in Section 5.03, "Changes," of these specifications for increased work, and estimated on the same basis in the case of decreased work.

Traffic control system required by work which is classified as extra work, as provided in Section 5.03 of these special provisions, will be paid for as a part of the extra work.

10-1.10 PROJECT FUNDING SIGNS

The Contractor shall install and maintain the project funding sign furnished by the City at those locations shown on their plans or where designated by the Engineer for the duration of the project.

Full compensation for furnishing all labor materials, tools, equipment and incidentals for doing all work involved with project funding signs in accordance with the plans, specifications and these Construction Details shall be considered as included in the contract **LUMP SUM** price paid for the **TRAFFIC CONTROL AND CONSTRUCTION AREA SIGNS** and no additional compensation will be allowed therefor.

10-1.11 MAINTAINING PUBLIC ACCESS

Contractor's attention is directed to "Maintaining Traffic" of these Specifications.

Access to private property and access ramps must be maintained during construction. Vehicular access shall be maintained to driveways with compacted base rock, steel plates or other methods as approved by the Engineer. Pedestrian access shall be maintained to side streets within the work areas as described in "Maintaining Traffic" of these special provisions. Emergency access shall be maintained at all times within the construction zone.

The Contractor shall provide access for pedestrians and people with disabilities. When, for reasons of construction, it is necessary to close the sidewalk, advance warning signs shall be placed at legal pedestrian crossings of advising of the closure and directing a detour. At the end of the workday, the Contractor shall remove the pedestrian detour and reopen the sidewalk. During construction the Contractor shall escort people with disabilities through the construction zone. The Contractor shall escort pedestrians requiring access to buildings in sidewalk closure areas to the buildings.

Full compensation for conforming to these requirements shall be included in the various bid items and no additional compensation will be allowed therefor.

10-1.12 NOTIFICATION OF CONSTRUCTION

The Contractor shall notify the Engineer at least **five (5) calendar days** prior to commencing work.

The Contractor shall keep the City Police, and City Fire Department, and Seaside Company informed of obstructions to either public or private roads caused by reason of the Contractor's operations.

Advance notice signs for the proposed work shall be furnished and installed on barricades by the Contractor at least **ten (10) calendar days** prior to any construction activity, advising residents and businesses of the scheduled dates for the proposed work.

No Parking Signs mounted on barricades must also be placed along each roadway at least **72 hours** in advance in order for parking restrictions to be enforced by the Police Department. No Parking Signs may be purchased from the City, or the Contractor may elect to provide their own No Parking Signs. If the Contractor provides their own signs, the intended sign must be approved by the Engineer prior to its use.

Businesses/residents should be advised as soon as possible of any changes in proposed work schedules to minimize any unnecessary inconvenience and/or moving of parked cars.

Full compensation for conforming to these requirements shall be included in the various bid items and no additional compensation will be allowed therefor.

10-1.13 CLEARING, GRUBBING AND ENVIRONMENTAL PROTECTION

Clearing, Grubbing and Environmental Protection shall conform to the provisions of Section 16, CLEARING AND GRUBBING of the State Standard Specifications and these Contract Specifications. Clearing, Grubbing and Environmental Protection shall consist of thoroughly sweeping and cleaning surfaces prior to resurfacing, removal and disposal of raised pavement markers, existing weeds, brush, or other objectionable material in or along the edge of areas to receive work.

The Contractor shall keep sidewalks and streets free from dirt and debris at all times. The Contractor shall be prepared to sweep surfaces immediately at the request of the Engineer should he deem it necessary for public safety and to avoid damage to properties. If streets are not satisfactorily cleaned within 12 hours from verbal notice by City personnel, the City will hire an independent sweeping company and deduct the cost for such work from payments due to the Contractor.

The Contractor shall trim overhanging and encroaching limbs and foliage that may be in conflict with paving and other construction activities. Tree, roots, and bush pruning shall be performed by a certified arborist and in accordance with "Pruning Standards," published by the Western Chapter of the International Society of Arboriculture. The certified arborist shall be approved in advance by the Engineer, and all pruning shall be done in the presence of the Engineer. Tree limbs damaged by the Contractor's activities shall be trimmed by a certified arborist as described above.

The Contractor shall remove existing landscaping (hard and soft) which is in conflict with the new improvements.

Attention is directed to Section 13, WATER POLLUTION CONTROL of the State Standard

Specifications, and Section 10-1.05 of these Special Provisions. Contractor to implement measures necessary to keep all substances used in or resulting from his work out of the gutters, storm drains and creeks, including but not limited to: employee and sub-contractor training and instruction, dry cleanup of spills, wet-vacuum of saw cutting slurry, proper disposal of cement and paint, proper handling of hazardous materials and hazardous waste, blocking of storm drains, shoveling dirt and debris from gutters, covering materials stored outside, sweeping pavements and approach streets, and erosion controls (straw bales, silt fences, detention basins, etc.) at grading sites. It shall be the Contractor's responsibility to monitor and maintain all such measures on a daily or more frequent basis, including on non-work days and during storms. In addition, all catch basins at the project site, and which are determined by the City Engineer to have been affected by the construction, shall be cleaned out by the Contractor at the end of the project.

Full compensation for complying with the above provisions shall be considered as included in the contract prices paid for the various items of work and no separate payment will be made therefor.

10-1.14 DUST CONTROL

Dust control shall conform to the provisions in Section 14-9.03, DUST CONTROL of the State Standard Specifications and these special provisions.

During the progress of work, and on a daily basis, the Contractor shall keep the entire job site in a clean and orderly condition. Spillage resulting from hauling operations along or across streets, roads, paths or lawns shall be removed immediately by the Contractor. All gutters shall be kept clean and free from obstruction. Any deviation from this practice must have written approval from the Engineer.

Before final acceptance of the work, the Contractor shall carefully clean up the work area and premises, remove all surplus construction materials and rubbish of all kinds from the grounds that he has occupied and leave all in a neat condition.

Full payment for dust control shall be included in the contract unit prices bid for various items of work and no additional allowance or direct payment will be made therefor.

10-1.15 SOUND CONTROL

Sound control shall conform to these Contract Specifications. No construction is permitted outside the hours stated in Section 4-1.07 of these Contract Specifications, or on New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. Exception to this provision shall be "Emergency construction and repair that is necessary for protection of life and property" and "Operation to construct and maintain facilities within the public right-of-way as deemed necessary by the Engineer".

No engines of construction equipment shall be started prior to 8:00 A.M. unless specifically permitted by the Engineer in writing. All equipment on the job or related to the job, including but not limited to trucks, transit mixers or transient equipment that may or may not be owned by

the Contractor shall be properly maintained. Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine will be allowed to operate on the job without the muffler. The use of loud sound signals shall be avoided in favor of light warnings except those required by safety laws or regulations for the protection of personnel.

Full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

10-1.16 HAZARDOUS MATERIAL REMEDIATION

Hazardous Material Remediation shall conform to the provisions in Section 14-11, HAZARDOUS WASTE AND CONTAMINATTION of the State Standard Specifications and notes on the plans and these special provisions.

Contractor's attention is directed to notes on the plans entitled "Hazardous Materials" on sheet EC1.1.

CONTAMINATED SOIL

No soil characterization report is available for the soil within the project area. Excavated soil may contain residues of agricultural chemicals such as arsenic and organochlorine pesticides, hydrocarbons and heavy metals. Contractor must sample and analyze soil; either in-situ or stockpiled, within the project area for contaminants and classify as required by Title 22 CCR. After soil has been appropriately characterized, and if excavated soil is determined to be contaminated, manage and dispose of contaminated soil in compliance with laws and regulations. The handling and disposal work for contaminated soil will be subjected to contract change order except for any removal of asbestos or hazardous substance that, under Health & Safety Code section 25914.2 must be performed under separate contract.

The Contractor shall submit a plan for testing for contaminants and handling excavated soil. Allow 10 days for Engineers' review.

Contaminated Soil Plan must include:

1. Title sheet
2. Table of contents
3. Waste classification including sampling, reporting, quality assurance and quality control
4. Disposal alternatives
5. Health and safety plan
6. Transportation plan

DISTURBANCE OF EXISTING PAINT SYSTEM ON RAIL ROAD TRESTLE

Contractor's attention is directed to the provisions of 14-11.13, DISTURBANCE OF EXISTING PAINT SYSTEMS ON BRIDGES of the Standard Specifications.

Pre-construction hazardous material survey has been completed and the reports are included in these special provisions. Asbestos and lead based paint survey completed and samples taken indicate asbestos and lead are present in the areas of work.

Removal and disposal of asbestos containing materials (ACM) must be performed in accordance with Monterey Bay Unified Air pollution Control District (MBUAPCD) and Cal/OSHA notification and work practice requirements. If the ACM is to be removed or disturbed, such activities must be conducted by a licensed asbestos abatement contractor.

Based upon the lead sample results, worker protection regarding lead-based paint is required. Bulk sampling of the lead painted components for the purpose of waste stream characterization prior to demolition shall be conducted.

Regulations containing specific Cal/OSHA requirements when working with lead include 8 CA Code of Regs § 1532.1.

The Contractor shall submit a lead compliance plan:

1. That documents your compliance program to prevent or minimize worker exposure to lead
2. Including the items listed in 8 CA Code of Regs § 1532.1(e)(2)(B)
3. Sealed and signed by a CIH (Certified Industrial Hygienist)

Submit copies of air monitoring or job site inspection reports made by or under the direction of the CIH under 8 CA Code of Regs § 1532.1 within 10 days after the date of monitoring or inspection.

Supply personal protective equipment, training, and washing facilities.

The contract **LUMP SUM** price paid for **HAZARDOUS MATERIAL REMEDIATION** shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved and complying with all rules, regulations, ordinances, and statutes that apply to work performed relating to hazardous waste and contamination under the Contract and no additional compensation will be allowed therefor.

10-1.17 EXISTING FACILITIES

Existing facilities shown on the plans or marked in the field to be removed shall be removed in accordance with the provisions of Section 15, “Existing Highway Facilities”, of the State Standard Specifications, the contract drawings, these Contract Specifications, and as directed by the Engineer. The Contractor shall coordinate with the respective utility companies (e.g. PG&E, AT&T) to arrange for the adjustments of their facilities. The arrangements with the utility companies that are required to adjust their own facilities shall be made so that the overall project schedule is not affected.

Full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefor.

10-1.18 STRUCTURE REMOVAL

Structure removal shall conform to the provisions in Section 60-2, STRUCTURE REMOVAL of the State Standard Specifications.

The contract price paid per **SQUARE FOOT** for **STRUCTURE REMOVAL** shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in demolition and disposal of the existing trestle walkway and walkway supports, existing concrete ramp at east conform and existing guardrail and no additional compensation will be allowed therefor.

10-1.19 EXISTING WATERLINE RECONFIGURATION AND SUPPORTS

The work includes temporary support and protecting the existing 10" ductile iron waterline in place during demolition and construction of the new trail, adjusting the horizontal and vertical position of the existing waterline which interferes with new framing, securing the existing pipline on new roller channel u-clamp supports and shall conform with City of Santa Cruz Department of Public Works Standard Specifications (2002) and City of Santa Cruz Water Department Water System Standard Specifications (December 2009 Revision).

All materials shall be new. New pipe, fittings and accessories used in reconfiguration of the existing waterline shall conform with City of Santa Cruz Water Department Water System Standard Specifications.

The contractor shall submit for review and approval by the Engineer plans which clearly show how the waterline will be supported and protected in place during demolition and construction, the portions of the existing waterline to remain, the portions of the waterline to be replaced and all fittings, appurtenances, their material, class and diameter and shall include cut sheets and specifications for all proposed materials.

The Contractors attention is directed to the provisions for TEMPORARY STRUCTURES provided elsewhere in these special provisions.. Work performed by the Contractor required by this section shall be paid for under this bid item.

The contract **LUMP SUM** price paid for **EXISTING WATERLINE RECONFIGURATION AND SUPPORTS** shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved and no additional compensation will be allowed therefor.

10-1.20 EARTHWORK

Earthwork shall conform to the provisions of Section 19, "Earthwork," of the Caltrans Standard Specifications and these special provisions.

All earthwork at Abutment #1 shall be done in accordance to the geotechnical investigation – "San Lorenzo River Bicycle Ramp Project – West Abutment" prepared by Haro, Kasunich and

Associates, Inc. Project No. SC10558, dated January 2014. All earthwork operations shall be performed in accordance with the geotechnical investigation.

1. The Contractor is alerted to difficult subsurface conditions identified in the geotechnical investigation, including buried rip rap quarry stones up to 3 tons and high groundwater, present at the location of Abutment #1.
2. The Contractor is also alerted to the shoring indicated on the plans due to the depth of the excavation required to construct Abutment #1 footing and the vicinity of this footing to both the existing rail road trestle abutment and concrete bicycle ramp.

The Contractors attention is directed to the provisions for TEMPORARY STRUCTURES provided elsewhere in these special provisions.. Work performed by the Contractor required by this section shall be paid for under this bid item.

All earthwork at Abutment #4 shall be done in accordance to the geotechnical investigation – "Proposed Pedestrian Walkway, MBSST (Rail Trail) Segment #8 - San Lorenzo River Railroad Trestle Bridge Widening" prepared by Dees and Associates, Inc. Project No. SCR-1200, dated March 2018. All earthwork operations shall be performed in accordance with the geotechnical investigation.

1. The Contractor is alerted to difficult subsurface conditions identified in the geotechnical investigation which consist of purisima sandstone bedrock. Expect difficult excavation due to condition listed above.

The Contractors attention is directed to Section 19-3, STRUCTURE EXCAVATION AND BACKFILL of the State Standard Specifications. Work performed by the Contractor required by this section shall be paid for under this bid item.

Areas to receive new footings or supporting other improvements shall be cleared of all obstructions including loose fill, trees, roots and other unsuitable material. Removal of unsuitable material shall also include removal of all rip rap rock conflicting with the construction of Abutment #1. Rip rap rock shall be placed at location designated by the City.

Existing depressions or voids created during site clearing and earthwork shall be backfilled with engineered fill.

Contractor may request to use controlled low-strength material as backfill. The controlled low strength material must comply with section 19-3.02F and have a 28 day compressive strength of 50 to 100 psi.
Surplus excavated material, except for large rip rap rock, shall become the property of the Contractor and shall be disposed of at a legal disposal site meeting the approval of the Engineer or may be disposed of at the Municipal Landfill. Properly sorted Portland cement concrete spoils may be disposed at the Municipal Landfill.

All earthwork, grading and foundation excavations shall be observed and tested by the Project Geotechnical Engineer, Dees and Associates, Inc.

The contract **LUMP SUM** unit price paid for **EARTHWORK** shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, including temporary shoring during structure excavation and backfill, as shown on the plans, as specified in the Standard Specifications and these special provisions and no additional compensation will be allowed therefor.

10-1.21 TEMPORARY STRUCTURES

Temporary Structures shall conform to the notes on the plans and these special provisions.

The temporary structures shall allow safe and expeditious construction of the permanent structures and shall be designed to carry the loads imposed upon it, including earth pressures, railroad loading, equipment and construction loads, without movement or settlement of adjacent structures, utilities, or tracks.

The Contractor shall be responsible for the temporary shoring and temporary structure systems design, furnish and install the temporary structures. Submit details and design calculations by a licensed professional engineer to the City of Santa Cruz prior to construction.

Full compensation for conforming to these requirements shall be included in the various bid items and no additional compensation will be allowed therefor.

10-1.22 CAST-IN-PLACE CONCRETE

Cast-in-place concrete required for this Work as indicated on the drawings and includes, but not necessarily limited to: foundations, slabs, abutments, and walls. The work shall consist of placing forms, placing reinforcing steel, furnishing, placing, and finishing all concrete work and special inspection in accordance with the details shown on the plans and shall conform to the provisions in Section 51, "Concrete Structures," of the Standard Specifications and these special provisions.

SUBMITTALS FOR REVIEW

Submit to the Engineer, the proposed concrete mix designs stamped by a structural or civil engineer currently licensed in the State of California. The submittal should include a history of uses and test reports and product data sheets. All materials, source of materials, admixtures and their proportions. Shrinkage limits of mix design. Whether mix is appropriate for pumping and pump or hose size required to deliver concrete.

Submit curing method for review by the Engineer.

Submit schedule of concrete placement operations before commencing work. Show on one or more plans and/or elevations, locations of construction, contraction and expansion joints.

Submit coordination drawings, indicating all embedded items, penetrations, openings, and other coordination items related to the finished concrete work.

SUBMITTALS AT PROJECT CLOSEOUT

Accurately record actual locations of embedded items, utilities, and components which are

concealed from view. Submit to the owner at project closeout.

All test and inspection reports. All transit mix delivery slips.

QUALITY ASSURANCE

Perform Work in accordance with ACI 301.

Maintain one copy of latest construction documents on site, including design drawings, approved shop drawings and permit drawings.

Acquire cement and aggregate from same source for all work.

Special Inspections: The following special inspections, as required by Section 1705 of the California Building Code, shall be provided during construction on the following types of work. The contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner. The owner shall bear costs of tests and/or inspections. Re-testing due to defective materials or workmanship will be back charged to the Contractor.

(a) Concrete, per Section 1705.3; Inspection of concrete placement and compression tests.
(b) Reinforcing Steel, per Section 1705.3, during placement of reinforcing.

CONCRETE MATERIALS

Cement: ASTM C150, Type II, and shall be provided by one manufacturer.

Pozzolan: ASTM C618, Class F Fly Ash

Aggregates:

Coarse shall conform to ASTM C33 size 57 or 67, or 7.
Fine shall conform to ASTM C33.
Pea Gravel or smooth aggregate shall not be used.

Water: Clean, potable, and not detrimental to concrete.

ADMIXTURES

No additional admixtures shall be allowed without written acceptance by the Structural Engineer. Admixtures that have a negative impact on concrete finish shall not be used. When more than one admixture is used, admixtures shall be compatible. Provide letter from admixture manufacturer that it is appropriate for proposed mix design.

Shrinkage reducing admixture shall be provided.

A calcium nitrite based corrosion inhibitor shall be added to the mix at a minimum dosage of two gallons per cubic yard.

ACCESSORIES

Premolded expansion joint material.

Caulk and backer-rod for joints.

CONCRETE MIX

Mix and deliver concrete in accordance with ASTM C94.

Addition of water to the mix after leaving the plant is not permitted.

Provide concrete to the following criteria:

(a) Compressive Strength (28 day): 4000 psi.
(b) Normal Weight Aggregate.
(c) Water/Cementitious Material Ratio (maximum): 40 percent by weight.
(d) 20% of total cementitious material shall be Fly-Ash (class F).
(e) Aggregate Size (maximum): 1 inch.
(f) Slump: 4 inches.
(g) Drying Shrinkage Limit: 0.04 percent. Drying shrinkage limit is percentage of change in length after 21 days of drying when tested per ASTM C157.

EXAMINATION

Verify requirements for concrete cover over reinforcement.

Verify that anchors, seats, plates, water stops, sleeves, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

FORMS
Forms and Formwork shall conform to the requirements of Section 51-1.03C(2) of the State Standard Specifications.

PREPARATION

Prepare joints in previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.

Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

PLACING CONCRETE

Place concrete in accordance with ACI 301.

Notify Engineer and Special Inspector minimum 48 hours prior to commencement of operations. Do not place concrete until forms and reinforcement as well as other required inspections have

occurred and the Special Inspector is present to perform observations and testing during placement.

Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints are not disturbed during concrete placement.

Separate slabs on grade from vertical surfaces with 1/2 inch thick joint filler, unless noted otherwise on plans or details. Place joint filler to required elevations. Secure to resist movement by wet concrete.

Extend joint filler from bottom of slab to within 1/8 inch of finished slab surface.

Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

Place concrete continuously between predetermined construction joints.

Do not interrupt successive placement; do not permit cold joints to occur.

Screed slabs on grades shown, maintaining surface to tolerance of 1/4 inch maximum in 10 feet.

CONCRETE FINISHING

Finishing concrete shall conform to the requirements of Section 51-1.03F of the State Standard Specifications and these special provisions.

Form inside corners so that no concrete is placed against panel edges.

Seal panel joints and penetrations with gaskets and/or sealant to make watertight.

Strike off exposed surfaces of consolidated concrete to the lines and grades shown.

Provide a uniform surface texture having the specified finish without undulations or irregularities and meeting the following requirements:

(a) Provide formed vertical concrete surfaces to be left exposed with a Class 1 Surface finish, unless noted otherwise.
(b) Provide formed vertical concrete surfaces which are concealed or are to be buried underground with an Ordinary Surface Finish, unless noted otherwise.
(c) Provide as-cast finish for vertical faces of footings cast against undisturbed native material.

Provide a non-slip surface for concrete slab-on-grade and horizontal surfaces, unless noted otherwise.

Provide a ¾” chamfer on all exposed concrete edges to 12" below finished grade, unless noted otherwise.

CURING AND PROTECTION

Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

Spraying: Spray water over floor slab areas and maintain wet for 7 days.

FIELD QUALITY CONTROL

Provide free access to Work and cooperate with Owner, Architect and Structural Engineer.

Submit proposed mix design of each class of concrete to special inspection and testing firm for review prior to commencement of Work.

Tests of cement and aggregates may be performed to ensure conformance with specified requirements.

One additional test cylinder will be taken during cold weather concreting, cured on job site under same conditions as concrete it represents.

At a minimum one slump test will be taken for each set of test cylinders taken.

PATCHING

Allow Architect or Engineer to inspect concrete surfaces immediately upon removal of forms if defects are present.

Excessive honeycomb, cracking or embedded debris in concrete is not acceptable. Notify Engineer upon discovery. Engineer shall determine if concrete is defective.

Patch imperfections in accordance with ACI 301 or as directed by Engineer.

DEFECTIVE CONCRETE

Defective Concrete: Concrete not conforming to required lines, quality standards, details, dimensions, tolerances, crack widths greater than 0.015”, excessive voids or honeycombs or specified requirements.

Repair or replacement of defective concrete will be determined by the Engineer.

Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Engineer for each individual area.

Methods of placing of concrete, pour sequence, and locations of construction joints shall be at

the discretion of the contractor unless noted otherwise. Any surface cracks greater than 0.015" in the cured concrete will be repaired by the Contractor using pressure epoxy injection methods in strict conformance with the epoxy manufacturer's recommendations. The repairs will be performed to the satisfaction of the Engineer and at no additional cost to the Owner.

No additional compensation will be allowed for repair of defective concrete.

PAYMENT

Full compensation for Cast-In-Place Concrete (Complete-In-Place) including placing forms, placing reinforcing steel, furnishing, placing, and finishing and special inspection shall be considered as included in contract price paid **PER CUBIC YARD** of **CAST-IN-PLACE CONCRETE (Complete-In-Place)**, and no additional compensation will be allowed therefor.

10-1.23 REINFORCEMENT

Bar reinforcing steel shall conform to the provisions of Section 52, REINFORCEMENT of the State Standard Specifications and these special provisions.

Submit to the Engineer rebar shop drawings.

Reinforcing bars shall be deformed bars for concrete reinforcement and must comply with ASTM A615 Grade 60, or ASTM A706 Grade 60.

Full compensation for furnishing all labor, material, tools, equipment and incidentals and for doing all the work of installing **REINFORCEMENT** in the various components of the project shall be considered to be included with the various items of work using reinforcing steel and no separate payment will be made therefor.

10-1.24 DRILL AND BOND DOWELS

Drill and bond dowels shall conform to these special provisions and manufacturer's written installation instructions and environmental. The work shall consist of drilling holes in existing concrete surfaces and placing deformed reinforcing bar or threaded rod dowels in hardened concrete using a two-component epoxy adhesive.

Epoxy Grout: Two-part epoxy adhesive product that conforms to the requirements of Simpson SET-3G High Strength Epoxy (ICC-ES-ESR-4057) by Simpson Strong Tie or equal product with prior written approval of the Engineer. Installation shall be in strict conformance with the manufacturer's recommendations.

Dowels: Material for dowels, nuts and washers shall conform with the following requirements:

(a) Unheaded (Epoxy Grouted) Anchor Rods: ASTM F1554 Grade 55 unless noted otherwise

(b) Nuts: ASTM A563 Heavy Hex Grade DH
(c) Washers: ASTM F436 Type 1
(d) Finish: Hot-dip zinc-coating, ASTM A153

Material requirements for steel reinforcement shall conform to the provisions for "REINFORCEMENT" listed elsewhere in these special provisions.

Installation shall be in strict conformance with manufacturer's recommendations.

Holes may be cut by either percussive or rotary drilling and shall be cleaned with a nylon brush and vacuumed to remove residue. Holes shall not be blown out.

If reinforcement is encountered during drilling before the specified depth is attained, notify the Engineer. Unless coring through the reinforcement is authorized, drill a new hole adjacent to the rejected hole to the depth shown. **Note:** Steel base plates should be fabricated based on template created from field measurements of installed anchor rods.

Each drilled hole must be clean and dry when placing the bonding material and dowel. The bonding material and dowel must completely fill the drilled hole. The surface temperature must be at least 50 degrees F when epoxy grout is placed.

The drilled hole diameter must comply with the ICC-ES evaluation report for the size of dowel being installed unless otherwise shown.

Drill the holes without damaging the adjacent concrete or stone.

Immediately after inserting the dowels into the chemical adhesive, support the dowels as necessary to prevent movement until the epoxy has cured the minimum time specified by the manufacturer.

SPECIAL INSPECTIONS AND TESTING

Special inspections - general, as required by Section 1705 of the California Building Code, shall be provided during construction on the work. The contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner. The owner shall bear costs of tests and/or inspections. Re-testing due to defective materials or workmanship will be back charged to the Contractor.

Continuous Special Inspection: A copy of the Manufacturer's written installation instructions shall be kept on the jobsite at all times and shall be provided to the Special Inspector. All installation procedures shall be in accordance with the Manufacturer's written installation instructions. The special inspector must be on the jobsite continuously during anchor installation to verify hole drilling method, hole location, hole diameter and depth, hole cleaning procedures , anchor type, anchor diameter and length, adhesive identification and expiration date, adhesive installation, edge distances(s), anchor spacing(s), concrete type, concrete compressive strength, concrete thickness and tightening torque. The special inspector shall submit copies of reports to Engineer.

Testing - All epoxy grouted tension anchor rods shall be proof tested.

Proof loading should be performed only after the minimum cure time specified in the manufacturer's literature for ambient temperature conditions has elapsed. Proof loads shall be maintained long enough to enable a determination of no anchor movement.

Anchors tested with a hydraulic jack or spring loaded devices shall maintain the test load for a minimum of 15 seconds and shall exhibit no discernible movement during the tension test, e.g., as evidenced by loosening of the washer under the nut or by continuous loss of jacking pressure.

The testing loads shall be determined by one of the following methods:

Twice the maximum allowable tension load or one and a quarter ($1^1/_4$) times the maximum design strength of anchors as provided in approved ICC-ES evaluation report using criteria adopted in the building code or determined in accordance with Chapter 17 of ACI 318.

Tension test load need not exceed 80 percent of the nominal yield strength of the anchor element ($= 0.8\ A_{se}\ f_{ya}$).

The contract **LUMP SUM** price paid for **DRILL AND BOND DOWELS** shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved and no additional compensation will be allowed therefor.

10-1.25 FIBER REINFORCED POLYMER DECK SYSTEM

This Section includes the requirements for furnishing Fiber Reinforced Polymer (FRP) decking including materials, design criteria, testing, transportation and installation support. This work includes the fabrication and finishing of the FRP decking as well as installation support of the decking in accordance with this special provision and the project plans. The work includes but is not limited to the following:

(a) Supply and installation of FRP decking.

(b) Verify in the field all dimensions, elevations and materials required for the installation of the FRP decking and report to the engineer any discrepancy with the contract drawings prior to release of the FRP pedestrian deck fabrication.

(c) Determine quantities of FRP decking to complete the work.

(d) Other appurtenances or related work, as specified herein, directed by the Engineer, or as shown on the contract drawings.

SUBMITTALS FOR REVIEW

Submit proof of manufacturer's qualifications. The manufacturer of the FRP deck panels shall

have an established acceptable performance history with FRP bridge decks of a minimum of 5 years on a minimum of 5 separate installations. Information shall also be submitted on the proposed FRP system, showing it has been in service a minimum of 5 years on a minimum of 5 separate installations.

Submit technical data or drawing that details the manufacture of FRP decking. At a minimum, the submittal shall include the following:

(a) Provide details on fiber and resin materials such as fiber architecture, and mechanical properties to be used in the FRP manufacturing process.

(b) Provide assembly details for both shop- and field-assembled components. This includes details of the connection to the bridge superstructure and joint seals.

(c) Provide manufacturer's technical data and installation instructions for wearing surface.

(d) Cross sectional and overall dimensions of all FRP components, including details regarding FRP connections.

(e) Recommended lifting method and locations.

(f) Instructions and recommendations for panel delivery, storage and installation.

(g) Structural design calculations.

(h) Calculation of weight (pounds per square foot) of FRP bridge deck assembly with wearing surface.

Design calculations prepared and stamped by a professional civil or structural engineer registered in the State of California.

Submit one (1) - 12" by 12" square sample of the wearing surface system applied to a fiberglass substrate. The samples shall include the proposed Light Rose color and surface texture.

QUALITY ASSURANCE

Comply with governing codes and regulations.

Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

Provide specific quality assurance testing and measurements to assure finished FRP decking meet the functional and performance requirement for the intended application. This also includes mechanical testing to verify material and structural properties as well as post-manufacturing dimensional measurements.

Label the FRP decking with identification numbers consistent with the numbering system shown on the shop drawings. Each deck panel shall have a unique identifier to facilitate traceability of materials and processes.

Project Engineer shall field verify installation of FRP decking.

Assemble and maintain project documentation for the FRP decking project as follows:

(a) Design data and calculations

(b) Shop drawings

(c) Manufacturing quality control records including material traceability and dimensional results

(d) Installation instructions

The manufacturer shall clearly mark each FRP deck panel to indicate the serial number and nominal weight. The identification shall not be visible in the final installation.

MATERIALS

Exposed edges/surfaces of FRP decking shall have a two part polyurethane system that is designed for high UV exposure.

If required in the plans, the deck panels shall be manufactured with a crown or cross slope in order to facilitate drainage of water. The crown or cross slope shall be incorporated in the deck panel fabrication. Build-up of the wear surface to form a crown or cross slope will not be acceptable.

The deck panels shall be manufactured with embedded steel elements that are chemically interfaced to the FRP skins for connecting the deck to the support beams.

The color of all exposed FRP shall be uniform and shall be Grey.

Environmental protection: All exposed FRP surfaces shall be protected against weathering and ultraviolet damage.

Overlay shall be a non-skid, with quartz aggregate that is shop applied to the top surface of the FRP.

The color of the overlay shall be uniform and shall be Light Rose.

The texture of the overlay shall be appropriate for pedestrian and bicycle traffic.

FRP decking shall be connected to the support beams with stainless steel clips that capture the support beams. If applicable, the deck panels shall be set to the proper slope using shims prior to the final connection of the bolts and clips.

Dimensions & Tolerances – See table below.

Dimensional Tolerances

Measurement	Tolerance
Overall Depth	± 1/16”
Straightness (bow)	± 1/8” per 10’
Panel Length/Width	± 1/4”
Weight per sf	10 lbs +/- 10%

Design Criteria -

(a) Loading Criteria: FRP deck panels shall be designed as a non-composite, simple span to resist the following three load cases. These load cases are not to be combined.

(b) Uniform live loading of 90 psf.

(c) Uplift load of 30 psf.

(d) Deflection criteria: FRP deck panels shall be designed to limit deflection under pedestrian live load to a maximum of L/500 with the span (L) measured from the center-to-center of deck support beams. Deflections shall be calculated assuming simple spans with no continuity over the deck floor beams.

(e) Flexure Criteria: Unless otherwise approved by the Engineer, the maximum allowable bending strain in the FRP deck panels shall be limited to 20% of strain to failure under service loads.

(f) Shear Criteria: Unless otherwise approved by the Engineer, the maximum allowable shear strain in the FRP deck panels shall be limited to 20% of strain to failure under service loads.

(g) Crushing: Unless otherwise approved by the Engineer, the minimum crushing strength of the FRP deck panels shall be 150 psi.

(h) FRP Decking shall have Class II fire resistance per ASTM E-84.

CONSTRUCTION

Comply with local building codes, environmental regulations, manufacturer's instructions and specifications.

Secure field measurements required for proper and adequate fabrication and installation of the work.

FRP decking shall be delivered by truck or rail.

Supplier shall provide a qualified technical representative for up to three days to facilitate the installation procedure as an advisor. Installation of the FRP decking is not within the scope of the manufacturer or manufacturer’s representative.

Perform site handling and erection with conventional equipment and methods in accordance with

the manufacturer's recommendations.

FRP decking manufacturer shall issue a twelve (12) month warranty against defects in workmanship and materials from the date of final acceptance of FRP decking. Contractor shall provide warranty and any other required documentation from this section to the owner or owner's agent.

PAYMENT

Full compensation for FRP Decking shall be considered as included in contract price paid per **SQUARE FOOT** of **FRP DECKING**, and no additional compensation will be allowed therefor. Prices and payment will be full compensation for the work specified in this Section including all material, storage costs, disposal of unused materials and waste, transportation costs, labor, equipment, fasteners, and other necessary items required for completing the work. No separate payment will be made for plates, bolts or other hardware necessary to complete the work.

10-1.26 STRUCTURAL STEEL

The work shall consist of fabrication, furnishing and installation of structural steel beams, girders, diaphragms, brackets and bracing; cleaning and preparing portions of the existing steel trestle for welding, welding of steel plates and special inspection in accordance with the details shown on the plans and shall conform to the provisions in Section 55, "Steel Structures," of the Standard Specifications and these special provisions.

SUBMITTALS FOR REVIEW

Submit to the Structural Engineer detailed shop drawings. Shop drawing shall be drawn to scale. Deviations from the Construction drawings shall be noted. Project plans shall not be used as shop drawings. Structural steel shall not be fabricated or erected before the Structural Engineer has reviewed the shop drawings.

1. Certified material test reports (mill test) for all structural steel.

2. Manufacturer's Certifications and product data sheets for all welding filler metal (electrodes).

3. Manufacturer's Certifications and product data sheets for all bolts, anchor rods, nuts, and washers to ensure the components to be used are identifiable and conform with the applicable ASTM Specifications.

4. Welding Procedure Specifications (WPS).

5. Bearing pad design

SUBMITTALS AT PROJECT CLOSEOUT

All test and inspection reports.

QUALITY ASSURANCE

Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

Visual inspection of welding shall be the primary method to confirm that the procedures, materials, and workmanship incorporated in construction are those that have been specified and approved for the project. Visual inspection shall be conducted by qualified personnel, in accordance with a written practice. Nondestructive testing of welds in conformance with AWS D1.1 shall serve as a backup, but shall not serve to replace visual inspection. All complete and partial penetration welds shall be tested using approved nondestructive methods conforming to AWS D1.1. When welds of the continuity plate to the “k-area” of the column occur, the “k-area” adjacent to the welds shall be inspected using approved non-destructive methods.

Special Inspections: The following special inspections, as required by Section 1705 of the California Building Code, shall be provided during construction on the following types of work. The contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner. The owner shall bear costs of tests and/or inspections. Re-testing due to defective materials or workmanship will be back charged to the Contractor.

A. Steel construction per Section 1705.2 and 1705.2.1 of the California Building Code (CBC).

B. All high strength bolting.

C. All field welding.

D. Visual inspection of shop welding performed by approved Fabricator using certified Welders with appropriate documentation.

E. Non-destructive testing of complete joint penetration groove welds per AISC 360 Chapter N.

All welding inspectors shall be trained, certified by the Building Official and thoroughly experienced in inspecting welding operations, and qualified in accordance with AWS D1.1.

MATERIALS

SHAPES AND PLATES

(a) Wide Flange Sections: ASTM A992, Grade 50.

(b) Wide Flange Column Base plates and Continuity plates: ASTM A572, Grade 50.

(c) Other Shapes and Plates: ASTM A709 Grade 50.

(d) Pipe Columns: t < .625" ASTM A500

(e) t > .625" ASTM 53 Type E or S

(f) Steel tubing: ASTM A500 grade B.

HIGH STRENGTH NUTS BOLTS AND WASHERS

(a) 1-1/2" diameter bolts and smaller: ASTM A325 Type 1
(b) Bolts greater than 1-1/2" diameter: ASTM A449
(c) Nuts: ASTM A563 Heavy Hex Grade DH
(d) Washers: ASTM F436 Type 1
(e) Finish: Hot-dip zinc-coating, ASTM A153

ANCHOR RODS NUTS AND WASHERS

(e) Unheaded (Epoxy Grouted) Anchor Rods: ASTM F1554 Grade 55 unless noted otherwise
(f) Unheaded Anchor Rods Cast-in-Place at New Abutments: ASTM F1554 Grade 105 unless indicated otherwise on the plans.
(g) Nuts: ASTM A563 Heavy Hex Grade DH
(h) Washers: ASTM F436 Type 1
(i) Finish: Hot-dip galvanizing, ASTM A153

Welding: AWS D1.1. FEMA 350.

Complete joint penetration groove welds shall be made with a filler metal that has a minimum Charpy V-notch toughness of 20 ft-lbs at minus 20 degrees Fahrenheit, as determined by AWS classification or manufacturer certification.

FINISH

Finish for all structural steel shall be hot dipped galvanized coating in accordance with ASTM A123.

Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds and repair painting galvanized steel, with dry film containing not less than 93 percent zinc dust by weight, and complying with DOD-P 21035A or SSPC-Paint 20

Non-Shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,400 psi in 48 hours and 7,000 psi in 28 days. SIKAGrout 212 or approved equal.

CONSTRUCTION

Comply with AISC codes and specifications, and with AWS "Structural Welding Code".

Welding shall conform to Section 55-1.02B(7), “Welding,” of the Standard Specifications and the current edition of the California Building Code. Special inspection is required for all welding operations. The welding work shall be overseen and inspected by a certified welding inspector.

Secure field measurements required for proper and adequate fabrication and installation of the work.

When fabricating beams, place natural camber up.

All bolted connections shall have a minimum of two bolts, unless shown otherwise.

Minimum size of bolts for structural steel connections shall be 5/8" diameter except when otherwise shown or noted.

Provide beveled washers on all connection to sloping flanges of I sections and channels.

Where minimum AISC fillet weld thickness requirement exceeds welds shown on details, provide minimum AISC weld.

After fabrication, all steel shall be cleaned free of rust, loose mill, scale and oil.

The Contractor shall be responsible for the control of all erection procedures and sequences including but not limited to temperature differentials and weld shrinkage.

Structural elements having fabrication or erection errors or which do not satisfy tolerance limits shall be repaired at no additional expense to owner. Submit drawings showing reasons for, and details of, proposed corrective work for approval by the Engineer prior to performing corrective work.

There shall be no field cutting of structural steel members without prior approval of the Engineer.

Touch-up field welds and abraded areas with galvanizing repair paint.

BOLTS, GENERAL

1. Bolts shall be of a length that will extend entirely through but not more than ¼-inch beyond the nuts unless otherwise shown on the Drawings.
2. Washers shall be used on Bolts. Use beveled washers where bolts bear on sloping surface.
3. Bolts shall be installed such that no threads occur in the shear plane.
4. Manufacturer’s symbol and grade markings shall appear on all bolts and nuts.
5. Product containers must be marked so that correspondence with mill reports can be established.

6. Slotted holes shall be as per AISC Table J3.3 unless noted otherwise on the drawings.

HIGH STRENGTH BOLTS

1. High strength bolts shall be installed in accordance with the "Specification for Structural Joints Using High Strength Bolts" by the Research Council on Structural Connections.
2. Unless noted otherwise on the plans, all connections are "snug tightened" type joints. "Slip critical" type joint connections are designated on the plans.
3. Faying surface(s) of slip critical joints shall be Class C (Hot-dipped galvanized roughened by wire brush after galvanizing). Requirements for faying surface condition do not apply to snug tightened joints.
4. Slip critical joints shall be pretensioned using "Turn-of-Nut" pretensioning method. Match marking of nuts during installation of bolts is required.
5. Galvanized high strength bolts must be treated as a fastener assembly. The supplier must supply nuts that have been lubricated and tested with the supplied high strength bolts. All threaded components of the fastener assembly must be galvanized by the same process (ASTM A153).

PAYMENT

Full compensation for Furnish Structural Steel (Complete-In-Place) including furnishing, welding, bolting, erection and special inspection shall be considered as included in contract price paid per **POUND** for **STRUCTURAL STEEL (Complete-In-Place)**, and no additional compensation will be allowed therefor.

10-1.27 BEARING PADS

Bearing Pads shall conform to the provisions of Section 51-3, BEARINGS of the Standard Specifications and these special provisions.

10-1.27A GENERAL

Bearings shall consist of an upper element welded to superstructure framing and a lower element supported on the abutment(s). The lower element shall consist of an elastomeric bearing pad with polytetrafluoroethylene (PTFE) surfacing bonded to a steel setting plate. The upper element consists of a polished stainless steel plate bonded to the steel bearing plate welded to the superstructure.

Setting plates shall bear on 1-inch thick non-shrink non-metallic grout pads. Setting plates shall be temporarily supported at the correct level by means of adjustment nuts on anchor rods.

The Contractor must submit shop drawings and bearing design calculations for bearings to the Engineer for review. Shop drawings must be 11 by 17 inches and each drawing and calculation sheet (may be 8½ by 11 inches) must include the name of the structure as shown on the contract plans and contract number.

Shop drawings must be submitted sufficiently in advance of the start of the affected work to allow time for review by the Engineer and correction by the Contractor of the drawings without

delaying the work. The time will be proportional to the complexity of the work but in no case will the time be less than 30 working days after complete drawings and all support data are submitted and accepted by the Engineer as complete.

Each bearing must have a unique bearing number and match marks on plate edges to insure correct assembly at the job site. The location of match marks on plate edges must be shown on the shop drawings.

The manufacturer must furnish Certificates of Compliance in conformance with the provisions in section 6-3.05E, "Certificates of Compliance," of the State Standard Specifications for all material used in the PTFE bearings.

10-1.27B BEARINGS

Bearings must be designed in accordance with Method A of the AASHTO bridge specification and comply with section 51-3 of the State Standard Specifications.

Elastomeric bearing pads must be designed for 150 percent of the calculated rotation occurring at the bearing due to full dead load and pedestrian live loads.

Neoprene must be the only polymer in the elastomeric compound and must be not less than 60 percent by volume of the total compound. The elastomer must comply with ASTM D4014, Type CR, Grade 3, with a shear modulus of 110±10 psi.

The bearing assembly must limit movement to the longitudinal direction only.

The PTFE sheet bonded to the bearing pad must be made from unfilled PTFE resin and must comply with the following requirements:

Test	Test Method	Requirements
Tensile strength (Minimum)	ASTM D 4894 or D 4895	2800 psi
Elongation (Minimum)	ASTM D 4894 or D 4895	200 %

The PTFE resin must be virgin material (not reprocessed) meeting the requirements of ASTM Designation: D 4894 or D 4895, with a minimum thickness of 1/4-inch. Specific gravity must be between 2.13 and 2.19. Melting point must be 623 ± 2 degrees F.

The PTFE sliding surface must be provided with lubricant dimples with a maximum diameter of 0.32-inch, a minimum depth of 0.08-inch, and a maximum depth of one half of the PTFE sheet thickness. The dimples must be uniformly distributed within the area 1/4-inch from the edges of the PTFE sheet and occupy between 20 and 30 percent of the PTFE sheet area.

The PTFE sheet must be adhesive bonded in the recess of the steel plate under controlled factory conditions. The adhesive material must be an epoxy resin that complies with Federal Specification MMM-A-134.

Contact surfaces of PTFE sheet and steel plate to be bonded must be uniformly roughened to a minimum roughness height value of 250 micro inches.

The side of the PTFE sheet to be bonded must be factory treated by the sodium naphthalene or sodium ammonia process, after the contact surface is roughened.

After completion of the bonding operation the PTFE surface must be smooth and free from bubbles. The PTFE sheet must show no signs of delamination and must be fully bonded within the recess.

Stainless steel plates must comply with ASTM A240, Type 316, and be at least 1/8-inch thick. Welding must comply with AWS D1.1 except welding of stainless steel must comply with AWS D1.6. The stainless steel plate must be attached by perimeter welding using stainless electrodes. After completion of the weld operation, the stainless steel plate must be smooth and free from waves.

Surfaces of stainless steel that mate with PTFE surfacing must have a minimum no. 8 mirror finish as determined according to ANSI Standard B46.1. The sliding element of the bearings must have a first movement static coefficient of friction not exceeding the value shown on the shop drawings when tested without the coating of silicone grease.

The flatness of the bearing elements must be controlled such that upon completion of the bearing assembly, the PTFE/stainless steel sliding interface must be in full bearing.

Damaged bearings and bearings with scratched mating surfaces must be returned to the factory for replacement or resurfacing.

PTFE and stainless steel surfaces must be protected from contamination and weather damage.

10-1.27C CONSTRUCTION

Apply a uniform film of silicone grease to the upper surface of the neoprene strip before placing the sheet metal.

Notify the Engineer of the type of bearing pad to be used before constructing the bearing seats. The bearing seat elevation must correspond to the selected bearing thickness.

Before superstructure installation on elastomeric bearing pads, lubricate the upper surface of the elastomeric bearing pad with a uniform film of silicone grease before placing the sheet metal cover.

Before superstructure installation on PTFE bearings, lubricate with 1/16-inch thick coating of silicone grease applied to the entire PTFE surface and the bearing reassembled without damage to the mating sliding surfaces. Silicone grease must comply with Military Specification MIL-S-8660.

Do not allow grout or concrete seepage into the sliding surface during concrete placement.

10-1.27D ANCHOR RODS

Material requirements for anchor rods cast-in-place at new abutments shall conform to the

provisions for "STRUCTURAL STEEL" listed elsewhere in these special provisions.

Double nuts shall be installed against the bearing plate and shall consist of a heavy hex nut on top and a hex nut beneath. Hardened steel washers shall be installed under the hex nut. In addition, a plate washer shall be installed at slotted holes at expansion bearings or wherever holes are oversized.

A leveling nut shall also be installed to temporarily support the setting plate before grouting with non-shrink non-metallic grout.

Each anchor rod must have 2 threads stick out above the top nut. These threads must be peened or struck very hard at a minimum of 3 approximately equal radial locations to prevent removal with hand tools.

Bolts and anchors shall be preset by the use of templates or such other methods as may be required to locate the anchors and anchor bolts accurately.

Full compensation for furnishing all labor, material, tools, equipment and incidentals and for doing all the work of fabricating and installing bearing components shall be considered as included in the contract price paid per **POUND** for **STRUCTURAL STEEL** and no additional compensation will be allowed therefor.

10-1.28 GUARDRAIL

Guardrail shall consist of furnishing and erection of cable railing system accordance with the details shown on the plans and these special provisions. Guardrail includes but is not necessarily limited to railing posts, brackets, flanges and anchors for railing posts, diagonal bracing, cable, cable clamps, eye bolts, thimbles and all other required fittings.

Attention is directed to the Path Lighting Plan for components of the lighting system which are integral with the Guardrail.

SUBMITTALS FOR REVIEW

Submit the cable infill manufacturer's plan that details the infill cable railing components. At a minimum, the plans shall include the following:

Provide assembly details for both shop- and field-assembled components. This includes details of the interaction with guardrail posts.

Provide manufacturer's technical data and installation instructions for infill cable railing components.

Cable Infill design calculations prepared and stamped by a professional civil or structural engineer registered in the State of California. The design of cable infill shall be based on the following Design Criteria: Cable Infill shall withstand a concentrated horizontal load of 250 lb applied to 1 square foot at any point in the system.

Submit shop fabrication drawings of the guardrail with cable infill for review and approval. The following information shall be included as a minimum:

Show all locations, markings, quantities, materials and shapes and indicate all methods of connecting, anchoring, fastening, bracing and attaching to the work of other trades. Show overall dimensions of all guardrail with cable infill components, including details of connections.

Submit instructions and recommendations for delivery, storage and installation.

QUALITY ASSURANCE

Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

Welding performed under this section shall be in conformance with the requirements for "STRUCTURAL STEEL" provided elsewhere in these special provisions.

Use only certified welders for all welding performed in connection with this Section. Make all joints and intersections of metal tightly fitting and securely fastening. Make all work square, plumb, straight and true.

Perform cutting drilling, and fitting required for installation. Set the work accurately in location, alignment and elevation; plumb, level, true, and free of rack, measured from established lines and levels.

Use all means necessary to protect guardrail before, during and after installation, and to protect the installed work and materials of other trades.

Provide specific quality assurance testing and measurements to assure finished guardrail with infill cable meets the functional and performance requirement for the intended application. This also includes mechanical testing to verify material and structural properties as well as post-manufacturing dimensional measurements.

Project Engineer shall field verify installation of guardrail with infill cable.

MATERIALS

All steel shall be new, free from rust, and shall conform to the requirements of "STRUCTURAL STEEL" provided elsewhere in these special provisions.

The horizontal cable infill and cable infill components shall be Type 316 stainless steel. Cables shall consist of 1x19, type 316 stainless steel strand, minimum diameter and spacing as indicated on Drawings. Use swageless hardware wherever practical. Use hardware substantially concealed inside end posts wherever practical.

All guardrail post, top rail, outrigger & plate components shall be hot-dipped galvanized after fabrication.

CONSTRUCTION

Secure field measurements required for proper and adequate fabrication and installation of the work.

Drill or punch all holes required for the attachment of work of other trades and for bolted connections. Burned holes are not acceptable.

Provide brackets, flanges, and anchors for railing posts. Furnish inserts and sleeves as required

for anchorage to concrete work.

Cable infill manufacturer shall provide a qualified technical representative for up to three days to facilitate the installation procedure as an advisor.

Perform site handling and erection with conventional equipment and methods in accordance with the manufacturer's recommendations.

Cable infill manufacturer shall issue a twelve (12) month warranty against defects in workmanship and materials from the date of acceptance of guardrail with cable infill. Contractor shall provide warranty and any other required documentation from this section to the owner or owner's agent.

PAYMENT

Full compensation for Guardrail shall be considered as included in contract price paid per **LINEAL FOOT** of **GUARDRAIL**, and no additional compensation will be allowed therefor. The quantity of Guardrail to be paid for will be measured along the trail installed in accordance with the Contract documents. Prices and payment will be full compensation for the work specified in this Section including all material, storage costs, disposal of unused materials and waste, transportation costs, labor, equipment, fasteners, and other necessary items required for completing the work. No separate payment will be made for plates, bolts or other hardware necessary to complete the work.

10-1.29 4" (INCH) SUBDRAIN

Retaining wall subdrains shall conform to the provisions of Section 68, "Subsurface Drains," of the Standard Specifications and these special provisions. Subdrains shall consist of perforated pipe surrounded by permeable material wrapped in filter fabric plus associated cleanout with cover and discharge pipe.

Attention is directed to the section "Filter Fabrics," and "Permeable Material", elsewhere in these special provisions.

Pipe assembly shall be fabricated of the same material and shall consist of perforated underdrain, non-perforated discharge pipe, and pipe riser with cover. Cover for the pipe riser shall be bolted or welded to the pipe depending on the type of pipe used. The type of material for the pipe assembly shall be as shown on the plans.

The contract price paid **PER LINEAL FOOT** for **4" SUBDRAIN** shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing 4" retaining wall subdrain complete in place including filter fabric, permeable material, perforated pipe, pipe riser and cover, and non-perforated discharge pipe, as shown the plans, and as specified in the standard specifications, and these special provisions and no additional compensation will be allowed therefor.

10-1.30 PERMEABLE MATERIAL

Permeable wall backfill material shall be Class 1 Type A conforming to the provisions of Section 68-2.02F, "Permeable Material," of the Standard Specifications and these special provisions.

Permeable material shall be placed in layers and thoroughly consolidated along with and by the same methods specified for structure backfill in Section 19-3, “Structure Excavation and Backfill”, of the standard specifications.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in placing permeable material, complete in place, as shown on the plans, and as specified in the specifications, and these special provisions will be considered as included in the contract price paid **PER LINEAL FOOT** for **4” SUBDRAIN**, and no additional compensation will be allowed therefor.

10-1.31 FILTER FABRIC

Filter Fabric for use with permeable material for blankets shall conform to the requirements for filter fabric for underdrain trenches in Section 68-1, "Underdrains," of the Standard Specifications, these special provisions and the following:

Filter Fabric shall be handled and placed in accordance with the manufacturer's recommendations.

The fabric shall be aligned and placed in a wrinkle-free manner.

Adjacent borders of the fabric shall be overlapped from 12 inches to 18 inches or be stitched. The preceding roll shall overlap the following roll in the direction the material is being spread or shall be stitched. When the fabric is joined by stitching, it shall be stitched with yarn of a contrasting color. The size and composition of the yarn shall be as recommended by the fabric manufacturer. The stitches shall number 5 to 7 per 10 in of seam.

Within 24 hours after the filter fabric has been placed, it shall be covered with the planned thickness of permeable material as shown on the plans.

During spreading and compaction of the permeable material, a minimum of 6 inches of such material shall be maintained between the fabric and the Contractor's equipment. Equipment or vehicles shall not be operated or driven directly on the filter fabric.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in placing filter fabric, complete in place, as shown on the plans, and as specified in the specifications, and these special provisions will be considered as included in the contract price paid **PER LINEAL FOOT** for **4” SUBDRAIN**, and no additional compensation will be allowed therefor.

10-1.32 MINOR CONCRETE (SIDEWALK AND GUTTER)

Concrete flatwork and concrete gutter shall conform to the provisions in Section 73, "Concrete Curbs and Sidewalks," of the State Standard Specifications and these special provisions.

Aggregate base shall conform to the requirements in Section 26, "Aggregate Bases," of the State Standard Specifications.

The concrete flatwork and concrete gutter shall be constructed with 5 1/2 sacks minimum of cement per cubic yard of mix for a 28-day strength of 2500 psi minimum. Portland cement shall be ASTM C150 Type II with maximum water to cement ratio of 0.45. The maximum aggregate size and slump shall be 3/4" and 4" respectively. Water reducing admixtures may be used in concrete when approved by the Engineer. The Contractor shall submit a concrete mix to the Engineer for approval prior to construction.

Concrete flatwork for the ramp shall be constructed as detailed on the plans and these special provisions. Concrete gutter shall be constructed to match profile of the existing concrete gutter and as detailed on the plans and these special provisions.

The surface of the ramp flatwork shall be finished with a heavy non slip broom finish, with broom strokes transverse to the line of traffic.

Prior to placing concrete, the Engineer shall inspect and confirm the steel reinforcement.

Proper concrete placing and curing method for concrete flatwork shall be implemented. Aggregate base or base shall be properly compacted and moisten prior to concrete pour. For curing, use a light fog spray of water to keep the concrete surface moist between finishing operations. Do not finish the concrete if water from the fog spray can be seen on the surface. Follow with covering fresh concrete surfaces between finishing operations, with moist burlap and 5-mil white plastic or a poly burlap curing blanket. The concrete shall be kept moist cured for a minimum of 10 days. The contractor shall check, uncover, and rewet the burlap to assure that there is a constant supply of water available to satisfy the evaporation rate per weather condition at the project site.

Full compensation paid for per **SQUARE FOOT** of **MINOR CONCRETE (SIDEWALK AND GUTTER)** shall include furnishing all labor, materials, tools, equipment and incidentals, including weakened plane joints, sawed and expansion joints, reinforcements, surface texturing and curing, as shown on the plans, and no additional compensation will be allowed therefor.

10-1.33 LIGHTING ELECTRICAL

All site and trail lighting shall be as shown on plans and in accordance with City of Santa Cruz Standards and installation of all electrical systems shall conform with the California Electrical Code. The electrical system design shall be a deferred submittal provided by the Contractor.

Full compensation for all electrical work and site lighting shall be considered as included in the contract **LUMP SUM** price paid for **LIGHTING ELECTRICAL** and no additional compensation will be allowed therefor.

10-1.34 SALVAGE AND RELOCATE RIVER LEVEL TRANSDUCER

The work includes protecting in place conduits, wiring, sensors and other appurtenances of the existing river level transducer system during demolition and construction of the new trail, salvaging the weatherproof enclosure and transducer bolted to the existing western concrete ramp, and re-installing the existing weatherproof enclosure and transducer and wiring at a location to be selected by the City. The work shall conform with City of Santa Cruz standards. Prior to the commencement of work, the Contractor shall obtain all applicable permits from the City and any applicable permits from other regulatory agencies unless already obtained by City.

Except for salvaged weatherproof enclosure and river level transducer, all materials and wiring runs shall be new.

The contractor shall submit for review and approval by the Engineer plans which clearly show how the existing river level transducer system will be protected in place during demolition and construction, and material data cut sheets and specifications for all proposed new materials.

The contract **LUMP SUM** price paid for **SALVAGE AND RELOCATE RIVER LEVEL TRANSDUCER** shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved and no additional compensation will be allowed therefor.

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APPENDIX A
Geotechnical Investigation for Proposed Pedestrian Walkway.
Prepared by Dees & Associated, Inc., March 2018.

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GEOTECHNICAL INVESTIGATION
For
PROPOSED PEDESTRIAN WALKWAY
MBSST (Rail Trail) Segment 8
San Lorenzo River Railroad Trestle Bridge Widening
Santa Cruz, California

Prepared
For
MESITI-MILLER ENGINEERING
Santa Cruz, California

Prepared By
DEES & ASSOCIATES, INC.
Geotechnical Engineers
Project No. SCR-1200
MARCH 2018

Dees & Associates, Inc.
Geotechnical Engineers
501 Mission Street, Suite 8A Santa Cruz, CA 95060 Phone (831) 427-1770 Fax (831) 427-1794

March 13, 2018 Project No. SCR-1200

MESITI-MILLER ENGINEERING
224 Walnut Avenue, Suite B
Santa Cruz, California 95060

Attention: Dale Hendsbee

Subject: Geotechnical Investigation

Reference: Proposed Pedestrian Walkway
MBSST (Rail Trail) Segment 8
San Lorenzo River Railroad Trestle Bridge Walkway Widening
Santa Cruz, California

Dear Mr. Hendsbee:

As requested, we have completed a Geotechnical Investigation for the eastern abutment of the Rail Trail walkway improvements proposed at the referenced site. The existing walkway attached to the San Lorenzo River railroad trestle will be widened and improved. The improvements will include a new walkway approach at the east end of the trestle.

The purpose of our investigation was to evaluate the soil and bedrock conditions at the east end of the trestle bridge and provide geotechnical recommendations for design and construction of the walkway improvements proposed at the eastern end of the existing bridge.

This report presents the results, conclusions and recommendations of our investigation. If you have any questions regarding this report, please call our office.

Very truly yours,

DEES & ASSOCIATES, INC.

Rebecca L. Dees
Geotechnical Engineer
G.E. 2623

REGISTERED PROFESSIONAL ENGINEER
REBECCA LYNN DEES
GE-2623
EXPIRES: 12/19
GEOTECHNICAL
STATE OF CALIFORNIA

Copies: 4 to Addressee

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GEOTECHNICAL INVESTIGATION

Introduction

This report presents the results of our Geotechnical Investigation for the proposed Rail Trail walkway improvements proposed at the eastern end of the existing railroad trestle bridge at the referenced site.

Purpose and Scope

The purpose of our investigation was to evaluate the soil and bedrock conditions at the eastern end of the railroad trestle bridge and provide geotechnical recommendations for design and construction of the proposed walkway approach ramp improvements. Our investigation is limited to the new foundation proposed at the east end of the approach ramp and improvements that may be required to widen the existing land-based walkway where it meets the new approach ramp. Evaluation of the existing trestle bridge foundation and abutments are beyond the scope of our services.

The specific scope of our services was as follows:

1. Site reconnaissance and review of available data in our files pertinent to the site and vicinity.

2. Exploration of subsurface conditions by observing the soil and bedrock exposed on the slope and review of the geologic investigation prepared for the project by Zinn Geology, dated 11 March 2018.

3. Engineering analysis and evaluation of the resulting data. Based on our findings, we have developed geotechnical design criteria and recommendations for the walkway foundations, retaining wall criteria for the upslope side of the land-based walkway expansion, general site grading, concrete slab-on-grade, and general site drainage.

4. Preparation of this report presenting the results of our investigation.

Project Location and Description

The project site is located at the eastern end of the existing San Lorenzo River railroad trestle bridge that borders East Cliff Drive in Santa Cruz, California, Figure 1. A narrow walkway exists along the northern side of the trestle bridge. The walkway will be replaced with a wider walkway and a new approach ramp will be constructed at the eastern end of the trestle. The existing abutment approach ramp will remain at the western end of the bridge.

The eastern river bank is very steeply inclined and the walkway and bridge decks are located about 30 feet above the base of the river. The existing eastern bridge abutment is located on a bench carved into the bedrock slope face about 5 feet below the top of the bank. See Figures 2 and 3. The new walkway foundation will be located about 5 to 10 feet behind the top of the steep river bank. The walkway approach ramp will span between the new foundations and the existing bridge structure.

Subsurface Soil Conditions

Subsurface soil conditions were explored by visually observing the bedrock exposed on the river bank slope and observing the soil and bedrock conditions exposed in the cutslopes along the railroad approach to the trestle.

The entire river bank slope and the lower section of existing walkway are comprised of Pliocene aged Purisima Formation silty sandstone and sandy siltstone. Marine terrace deposits overly the bedrock and the slope above the walkway is mostly comprised of soil. The proposed walkway approach ramp foundation will be founded into bedrock. Retaining wall foundations constructed near the base of the walkway will also be founded into bedrock. We did not explore the soil conditions along the upper sections of the walkway. Additional subsurface exploration will be required if retaining walls are proposed to replace the existing retaining walls along the upper sections of the walkway.

A geologic evaluation of the bedrock conditions was performed by Zinn Geology and a discussion of their investigation is presented in their report, dated March 11, 2018. A copy of the geologic report is included in Appendix B of this report. The geologic report indicates the bedrock is jointed and the joints are steeply inclined. A map and section showing the rock bedding and jointing is included on Plate 1 of the Geologic Investigation and reproduced on Figures 2 and 3 of this report.

Drainage and Groundwater

Most of the runoff from the railroad bed is directed to catch basins located on each side of the track just behind the abutment. There are depressed areas along the railroad bed that pond and some water may make its way over the river bank slope around the bridge abutment. Drainage along the existing walkway approach flows into the northern catch basin. The catch basins appear to discharge water onto the river bank adjacent to the southern bridge abutment where it flows down into the river below.

Seismicity

The following is a general discussion of seismicity in the project area. A detailed discussion of seismicity is beyond the scope of our services.

The closest faults to the site are the Zayante Fault, the San Andreas Fault, the Monterey Bay Fault, and the San Gregorio Fault. The San Andreas Fault is the largest and most active of the faults in the site vicinity. However, each fault is considered capable of generating moderate to severe ground shaking. It is reasonable to assume that the proposed development will be subject to at least one moderate to severe earthquake from one of the faults during the next fifty years.

Zayante Fault Zone	San Andreas Fault Zone	San Gregorio Fault Zone	Monterey Bay Fault Zone
8.0 miles Northeast	11.1 miles Northeast	10.0 miles Southwest	6.8 miles Southwest

Structures designed according to the 2016 California Building Code may use the following parameters in their analysis. The following ground motion parameters may be used in

seismic design and were determined using the USGS Seismic Design Map and ASCE 7-10.

Ss	S1	SMs	SM1	SDs	SD1
1.500 g	0.600 g	1.500 g	0.780 g	1.000 g	0.520 g

PGAm	0.5 g

Liquefaction

Liquefaction occurs when saturated fine-grained sands, silts and sensitive clays are subject to shaking during an earthquake and the water pressure within the pores builds up leading to loss of strength. There is a high potential for liquefaction to occur within the sandy deposits along the river bed; however, there is a very low potential for liquefaction to occur in the bedrock which will support the proposed walkway improvements.

Landsliding and Slope Stability

The following is a general discussion of slope stability and landsliding in the vicinity of the eastern bridge abutment. Please refer to the geologic investigation by Zinn Geology, Appendix B, for a detailed discussion of landsliding and slope stability at the project site.

There is a very low potential for rotational type landslides to occur along the river bank in the vicinity of the bridge trestle. There is a potential for rock falls or slabs of bedrock to fall off the slope face during strong seismic shaking or from root growth that can separate rock pieces along their fractures.

Historical stereopair aerial photographs were analyzed by Zinn Geology to determine the slope retreat rate over the past 90 years and the retreat rate was so small it could not be measured. The older photographs have low resolution and there is some tree cover that may hide small movements so the geologist has recommended designing for a 5 feet setback for the proposed foundations.

DISCUSSIONS AND CONCLUSIONS

Primary geotechnical concerns for the project include setting foundations back from the top of the river bank slope, controlling site drainage and designing structures to resist strong seismic shaking.

The walkway approach ramp and any new retaining walls proposed to retain cuts may be supported on spread footing foundations or drilled piers embedded into sandstone/siltstone bedrock. Foundations should be setback from the top edge of the river bank slope. If spread footing foundations are used, the footings should be setback at least 10 feet from the top edge of the slope. If drilled piers are used, the piers may be located as close as 5 feet to the top edge of the slope as long as passive resistance is neglected in the upper 10 feet of pier length.

The walkway is supported on a combination of soil and bedrock subgrades. The lower areas of the walkway are located on bedrock and the upper walkway areas are most likely supported on soil. The subgrade soil below new concrete slabs-on-grade should be well compacted to provide a firm base for slab support. If any loose soil or fill is encountered below proposed slabs, the loose soil and fill should be removed and replaced with compacted engineered fill. Compaction is not required where dense bedrock is exposed.

Surface runoff should be directed away from foundations and concentrated runoff should be collected. Collected runoff may be dispersed at the base of the river bank slope in a controlled manner.

The proposed improvements will most likely experience strong seismic shaking during the design lifetime. Structures should be designed utilizing current seismic design standards.

RECOMMENDATIONS

The following recommendations should be used as guidelines for preparing project plans and specifications:

Site Grading

1. The geotechnical engineer should be notified **at least four days** prior to any grading or foundation excavating so the work in the field can be coordinated with the grading contractor and arrangements for testing and observation can be made. The recommendations of this report are based on the assumption that the geotechnical engineer will perform the required testing and observation during grading and construction. It is the owner's responsibility to make the necessary arrangements for these required services.

2. Areas to be graded or receive foundations should be cleared of obstructions and other unsuitable material and debris. All organic materials shall be stripped from any areas to receive foundations or slabs. Voids created during site clearing should be backfilled with engineered fill.

3. Permanent cut slopes excavated into soil should be inclined no steeper than 2:1 (horizontal to vertical). Permanent cut slopes excavated into sandstone or siltstone bedrock should be inclined no steeper than 1:1 (horizontal to vertical).

4. After the earthwork operations have been completed and the geotechnical engineer has finished their observation of the work, no further earthwork operations shall be performed except with the approval of and under the observation of the geotechnical engineer.

Concrete Slabs-on-Grade

5. The upper 8 inches of subgrade soil below concrete slabs-on-grade should be moisture conditioned to 1 to 2 percent over optimum moisture content and compacted to at least 90 percent relative compaction. Compaction is not required where dense bedrock is exposed.

6. Where referenced in this report, Percent Relative Compaction and Optimum Moisture Content shall be based on ASTM Test Designation D1557.

7. All concrete slabs-on-grade can be expected to suffer some cracking and movement. However, thickened exterior edges, a well-prepared subgrade including pre-moistening prior to pouring concrete, adequately spaced expansion joints and good workmanship should reduce cracking and movement.

Retaining Wall Lateral Pressures

8. Retaining structures should be designed to resist both lateral earth pressures and any additional surcharge loads.

9. Unrestrained retaining walls may be designed to resist an active lateral earth

pressure of 45 pcf equivalent fluid weight for level backfills, 53 pcf equivalent fluid weight for backslopes inclined up to 3:1 (horizontal to vertical) and 86 pcf equivalent fluid weight for backslopes inclined up to 2:1 (horizontal to vertical).

10. Restrained retaining walls may be designed to resist an at rest earth pressure of 66 pcf equivalent fluid weight for level backfills, 89 pcf equivalent fluid weight for backfills inclined up to 3:1 (horizontal to vertical) and 118 pcf equivalent fluid weight for backslopes inclined up to 2:1 (horizontal to vertical).

11. Retaining walls over 6 feet high should include an added seismic component of 16 pcf, equivalent fluid weight. Dynamic surcharges should be added to the above active lateral earth pressures. The resultant dynamic pressure should be applied at a point 0.6 H above the base of the wall.

12. The above lateral pressures assume that the walls are fully drained to prevent hydrostatic pressure behind the walls. Drainage materials behind the wall may consist of ¾-inch drainrock wrapped in filter cloth or Class 1 or Class 2 permeable material (Caltrans Specification 68). Wrap filter fabric around Class 1 permeable material. No filter fabric is required with Class 2 permeable material. The drains should extend from the base of the walls to within 12 inches of the top of the backfill. A perforated pipe should be placed (holes down) about 1 to 2 inches above the bottom of the wall and be tied to a suitable drain outlet. Wall backdrains should be plugged at the surface with clayey material to prevent infiltration of surface runoff into the backdrains.

Foundations

13. Foundations should be setback at least 5 feet from slopes. Plate 1 of the Geologic Investigation in Appendix B and Figure 2 in Appendix A has a line showing the 5 feet setback at the top of the river bank slope. Foundations should not be placed between the setback line and the river bank slope.

14. If spread footing foundations are used, the bases of the footings should be setback at least 10 feet from the top edge of the river bank slope.

15. If drilled piers are used, the piers may be located as close as 5 feet to the top edge of the slope as long as passive resistance is neglected in the upper 10 feet of pier length. The neglected zone may be reduced (linearly) as the pier moves away from the slope until there is no active zone 10 feet from the slope top.

Conventional Spread Footing Foundations

16. Conventional spread footings embedded into sandstone bedrock, and designed in accordance with the above, may be used to support walkway and retaining wall foundations.

17. Footings should be embedded a minimum of 12 inches into sandstone/siltstone bedrock and be a minimum of 12 inches wide.

18. Footings located adjacent to other footings or utility trenches should have their bearing surfaces founded below an imaginary 1:1 plane projected upward from the bottom edge of the adjacent footings or utility trenches.

19. Foundations designed in accordance with the above may be designed for an allowable soil bearing pressure of 4,000 psf. The allowable bearing capacity may be increased by 1/3 for short term seismic and wind loads.

20. Total and differential settlements are anticipated to be less than 1/2 inch.

21. Lateral load resistance for structures supported on footings may be developed in friction between the foundation bottom and the supporting subgrade. A friction coefficient of 0.35 is considered applicable.

22. Where footings are poured neat against firm subgrade, a passive lateral earth pressure of 400 pcf may be used. All topsoil and the top 4 inches of sandstone should be neglected in passive design.

23. Prior to placing concrete, foundation excavations should be observed by the soils engineer.

Drilled Concrete Piers

24. Piers may be located as close as 5 feet to the top edge of the slope as long as passive resistance is neglected in the upper 10 feet of pier length. The neglected zone may be reduced (linearly) as the pier moves away from the slope until there is no active zone 10 feet from the slope top.

25. Piers located at least 10 feet from the top edge of the river bank slope should be embedded at least 3 feet into sandstone bedrock. Piers located closer than 10 feet to the top edge of the river bank slope should be embedded a minimum of 5 feet below the neglected zone.

26. Piers should be at least 12 inches in diameter and spaced at least 3 pier diameters apart, center to center.

27. Piers may be designed using an allowable end bearing capacity of 4,000 psf. This value may be increased by 1,000 psf per foot of embedment up to a maximum of 15,000 psf. The allowable bearing capacity may be increased by one-third under short term wind or seismic loads. The bases of the pier excavations need to be clean to support the end bearing capacities indicated above.

28. Piers may be designed for an allowable skin friction of 350 psf. The top foot of sandstone/siltstone bedrock should be neglected in friction design.

29. Total and differential settlements for foundations supported on deep foundations are anticipated to be less than 1/2 inch.

30. For passive lateral resistance an equivalent fluid weight (EFW) of 400 pcf times 3.0 pier diameters may be used below the neglected zone. Piers located more than 10 feet from the top of the river bank slope should neglect at least the top foot of sandstone in passive design.

31. Prior to placing concrete, pier excavations should be observed by the soils engineer.

Site Drainage

32. Surface runoff from improvements should be collected and not allowed to flow over the top of the river bank slope in an uncontrolled manner.

33. Concentrated runoff should not be discharged onto the river bank slope. Collected runoff may be dispersed near the base of the slope.

Plan Review, Construction Observation, and Testing

34. Dees & Associates, Inc. should be provided the opportunity for a general review of the final project plans prior to construction to evaluate if our geotechnical recommendations have been properly interpreted and implemented. If our firm is not accorded the opportunity of making the recommended review, we can assume no responsibility for misinterpretation of our recommendations. We recommend that our office review the project plans prior to submittal to public agencies, to expedite project review. Dees & Associates, Inc. also requests the opportunity to observe and test grading operations and foundation excavations at the site. Observation of grading and foundation excavations allows anticipated soil conditions to be correlated to those actually encountered in the field during construction.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that planned at the time, our firm should be notified so that supplemental recommendations can be given.

2. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information and recommendations contained herein are called to the attention of the Architects and Engineers for the project and incorporated into the plans, and that the necessary steps are taken to ensure that the Contractors and Subcontractors carry out such recommendations in the field. The conclusions and recommendations contained herein are professional opinions derived in accordance with current standards of professional practice. No other warranty expressed or implied is made.

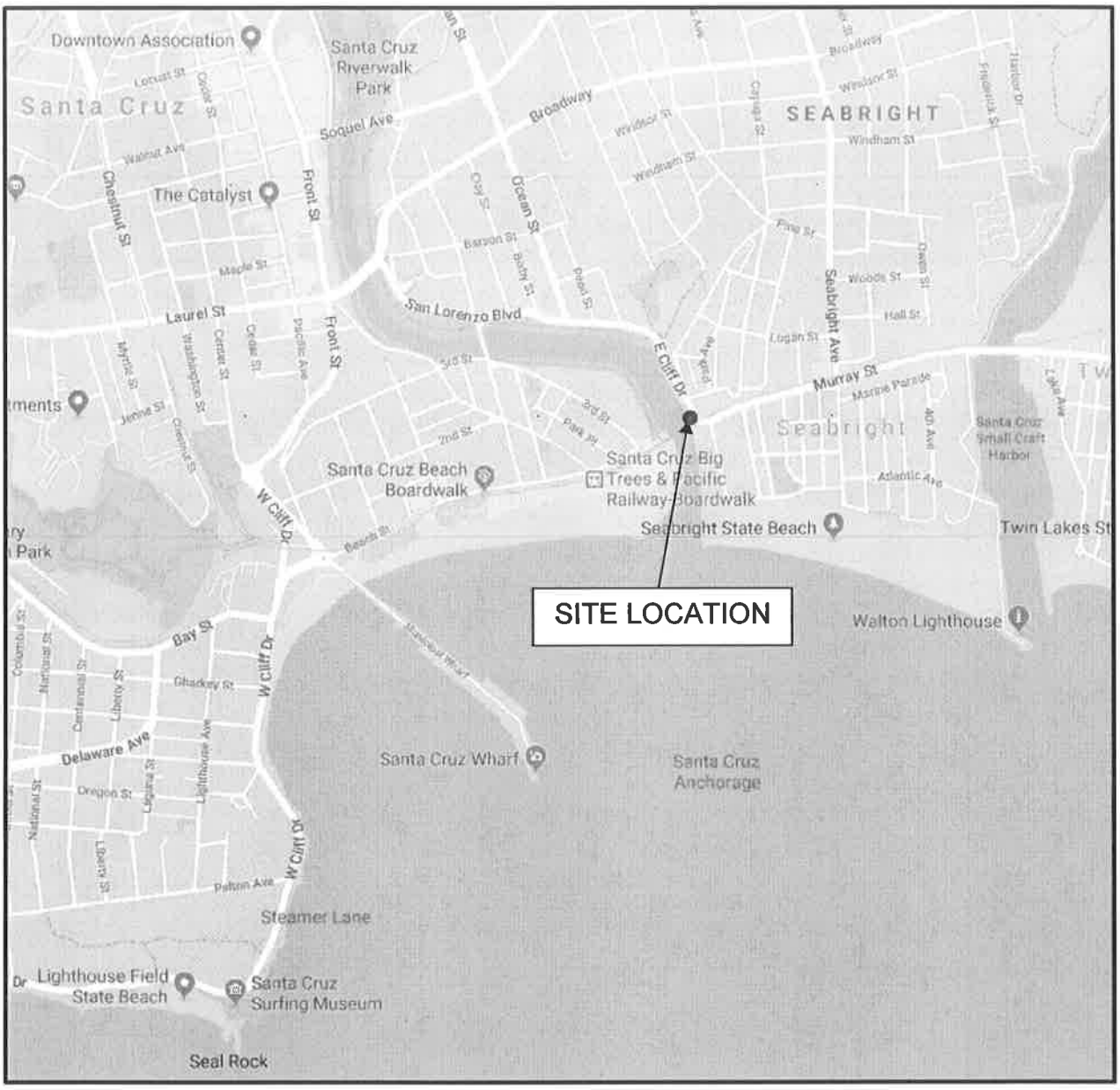
3. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or partially, by changes outside our control. Therefore, this report should not be relied upon after a period of three years without being reviewed by a soil engineer.

APPENDIX A

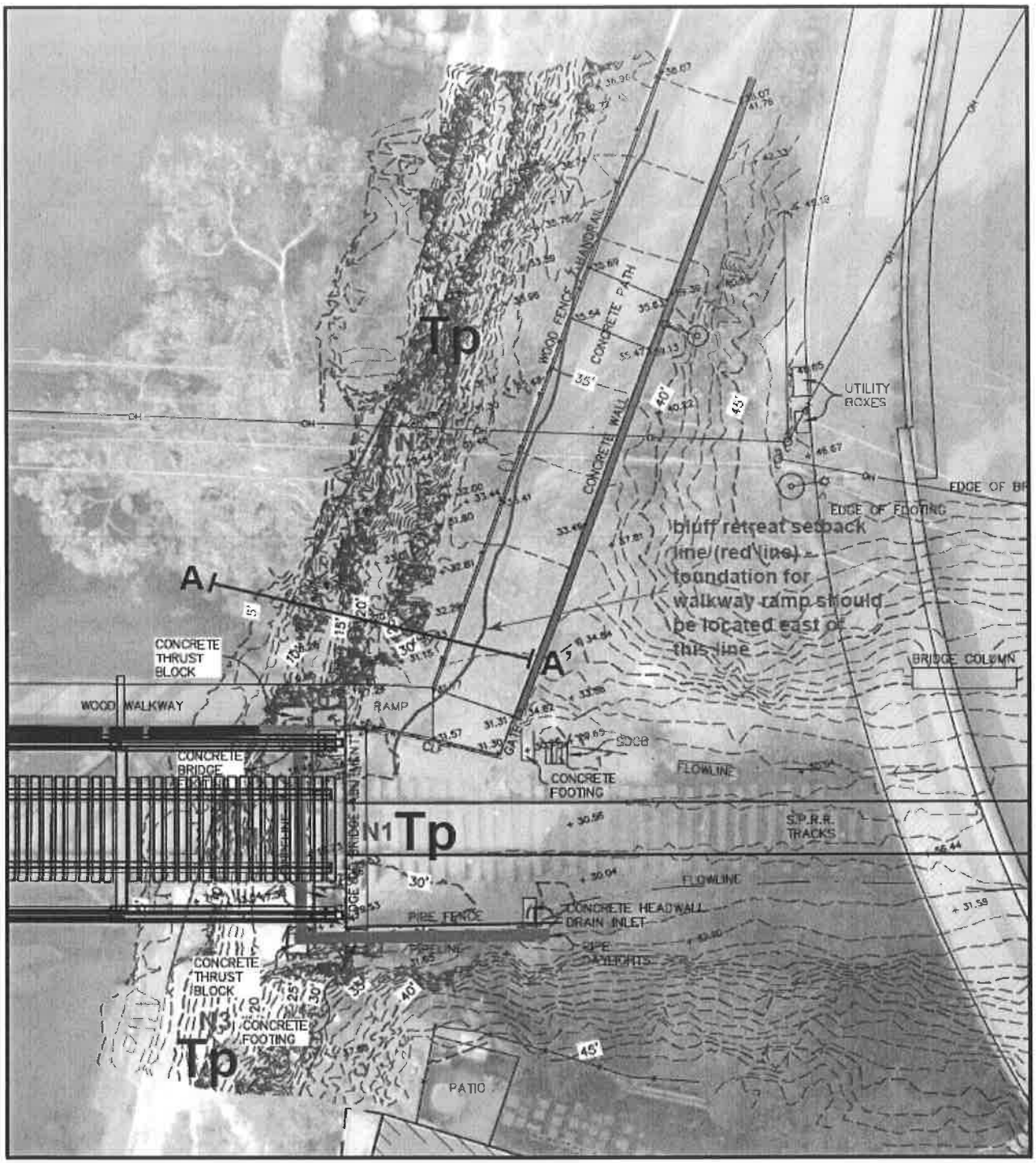
Site Vicinity Map

Site Plan

Geologic Cross Section



SITE VICINITY MAP
Figure 1



SITE PLAN
Figure 2

GEOLOGICAL CROSS SECTION

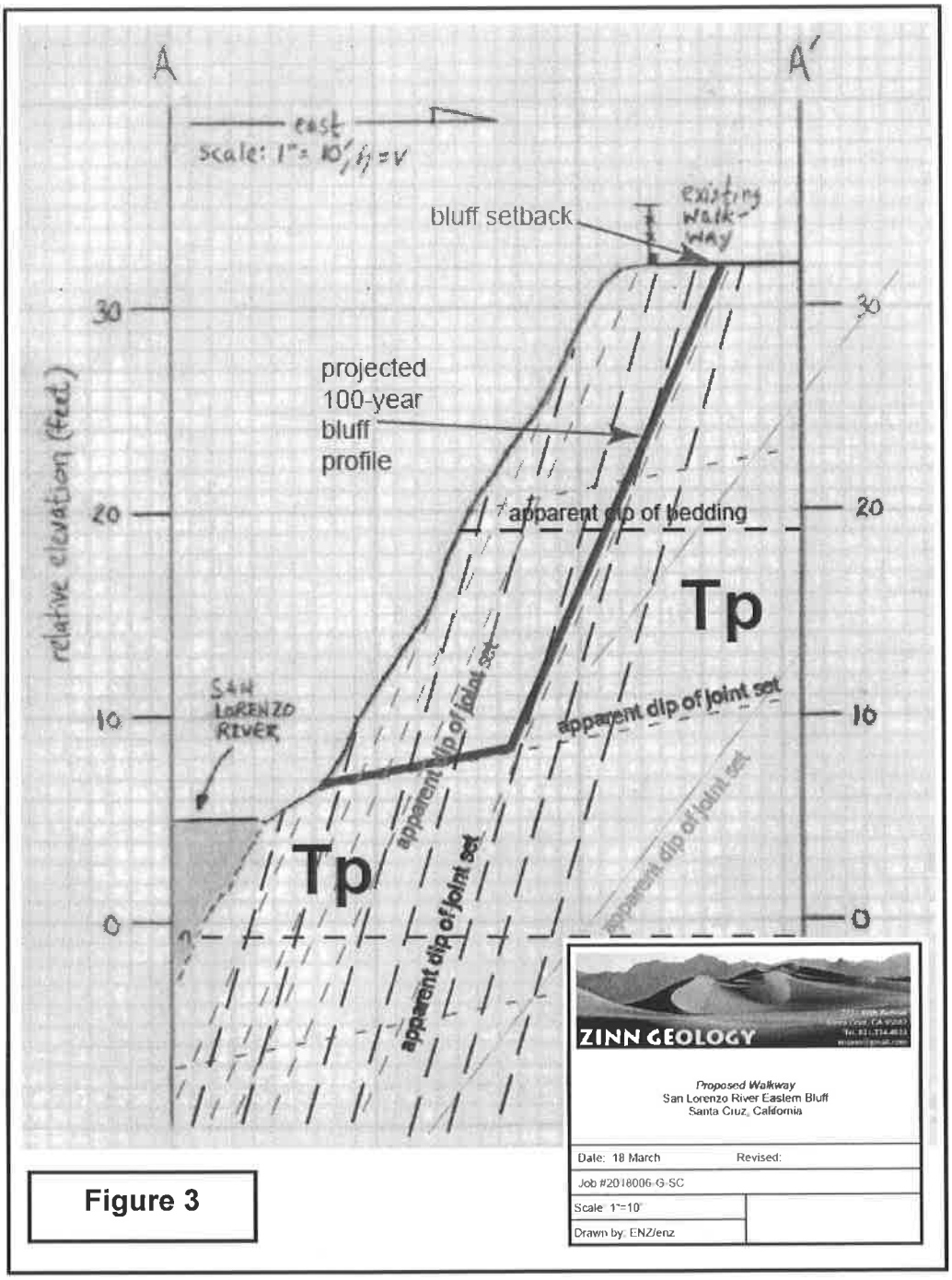
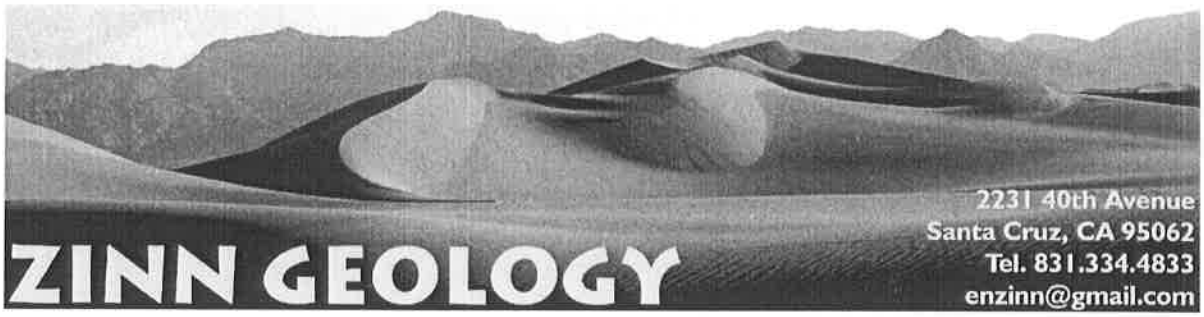


Figure 3

APPENDIX B

Geologic Investigation by Zinn Geology



11 March 2018 Job #2018006-G-SC

Dees & Associates, Inc.
Attention: Ms. Becky Dees
501 Mission Street
Santa Cruz, CA.95060

Re: Focused geological investigation on river bluff retreat
San Lorenzo River East Bluff At Railroad Crossing
Santa Cruz, California

Dear Ms. Dees:

This letter and attendant graphics present the results of our river bluff retreat investigation for the eastern San Lorenzo River bluff where it intersects the railroad, east of the Santa Cruz Beach Boardwalk in the City of Santa Cruz (Figure 1). The objective of the investigation is to characterize the processes contributing to and triggering the retreat of the top of the river bluff at this site and to issue mitigation recommendations, where warranted, for the proposed development.

It is our understanding that a new, wider walkway will replace the existing suspended walkway that is currently attached to the existing railroad trestle. The load of the new walkway will be distributed via the trestle to the different foundation structures that currently support the trestle, including the west and east bank abutments and two supports in the river. It is also our understanding that the suspended portion of the new walkway will be connected with the on-land portion of the walkway with a ramp that will be founded in the bedrock at the top of the bluff (Plate 1).

SCOPE OF INVESTIGATION

The scope of work performed for this investigation included:

1. A review of published and unpublished literature relevant to the geology of the site and vicinity.
2. Analysis of stereo-pair aerial photographs to help assess historic rockfall events and attempt to calculate the long term bluff retreat rate.
3. Geologic mapping of the site.
4. Preparation of this and accompanying illustrations.

It is important to note that we have only addressed the hazards and risks presented to the proposed foundation for the transitional ramp that connects the suspended walkway to the on-land walkway. We have not addressed the other foundation elements (the west abutment and two in-river supports) as part of this scope of work. We also have not addressed the impacts that loading from trestle might have on the bluff at the eastern abutment.

REGIONAL GEOLOGIC SETTING

The site is located along a steep, north-south trending bluff overlooking the San Lorenzo River, near its entry into Monterey Bay (Figure 1). This is one of many such bluffs and sea cliffs along the northern coast of Monterey Bay, characterized by gently dipping, late Tertiary sedimentary rocks overlain by nearly horizontal, Quaternary marine terrace deposits.

The north-south orientation of the bluff in this area mimics planes of weakness in the bedrock, called joints, which have probably controlled the long-term pattern of erosion by the San Lorenzo River. As shown on Figure 1, the bluff currently overlooks a wide beach that has formed west of the bluff, stretching from San Lorenzo Point (due south of the subject property) to Cowell Beach (west of the subject property). Although the beach fluctuates seasonally and annually, it has remained fairly wide on average over historical time, due to the large seasonal influx of sediment from the San Lorenzo River. Moreover, the north-south trending bluff projects out into Monterey Bay and acts as a natural groin, trapping some of the beach sand moving southeast via littoral drift. We will return to the site-specific geologic setting of the subject property in our discussion of potential geologic hazards, below.

The site is also located on the coastal plain just west of the central Santa Cruz Mountains and within the California Coast Range Geomorphic Province. The Santa Cruz Mountains are formed by a series of rugged, linear ridges and valleys following the pronounced northwest to southeast structural grain of central California geology. Underlying most of the Santa Cruz Mountains is a large, elongate prism of granitic and metamorphic basement rocks, known collectively as the Salinian Block. These rocks are separated from contrasting basement rock types to the northeast and southwest by the San Andreas and San Gregorio-Sur Nacimiento strike-slip fault systems, respectively. Overlying the granitic basement rocks is a sequence of dominantly marine sedimentary rocks of Paleocene to Pliocene age and non-marine sediments of Pliocene to Pleistocene age (Figure 2; Regional Geologic Map).

Throughout the Cenozoic Era, this portion of California has been dominated by tectonic forces associated with lateral or "transform" motion between the North American and Pacific litho-spheric plates, producing long, northwest-trending faults such as the San Andreas and San Gregorio, with horizontal displacements measured in tens to hundreds of miles. Accompanying the northwest direction of the horizontal (strike-slip) movement of the plates have been episodes of compressive stress, reflected by repeated episodes of uplift, deformation, erosion and subsequent redeposition of sedimentary rocks. Near the crest of the Santa Cruz Mountains, this

tectonic deformation is most evident in the sedimentary rocks older than the middle Miocene, and consists of steeply dipping folds, overturned bedding, faulting, jointing, and fracturing. Along the coast, the ongoing tectonic activity is most evident in the formation of a series of uplifted marine terraces.

In addition to tectonic effects, major changes in sea level caused by worldwide climatic fluctuations over the past million years have left their geologic imprint on the Monterey Bay region. During the last glacial maximum, between about 20,000 and 18,000 years ago, sea level stood as much as 300 to 400 feet below its present elevation (Helley et al., 1979). The streams presently draining the Santa Cruz Mountains eroded and flowed across a broad coastal plain. Between about 15,000 to 6,000 years ago sea level rose rapidly as glaciers melted. As sea level rose throughout this interval stream base levels were raised causing alluvial sediments to be deposited within their channel and on the flood plains around the Monterey bay. At the coastline tidal marshes were simultaneously migrating inland while the streams were backfilling their channels. Along portions of the coastline the end result was a complex interfingering of beach deposits, marsh and lagoon deposits and stream deposits (Dupré; 1975 and 1990).

REGIONAL SEISMIC SETTING

California's broad system of strike slip faulting has had a long and complex history. Some of these faults present a seismic hazard to the subject properties. The most important of these are the San Andreas, Zayante-Vergeles, Monterey Bay-Tularcitos and San Gregorio fault zones (Figure 2). These faults are either active or considered potentially active (Petersen et al., 1996; Working Group On Northern California Earthquake Potential [WGNCEP], 1996). Seismicity associated with these faults is shown on Figure 3 (Regional Seismicity Map).

We see no reason to discuss the historical activity of the listed faults, since it will not change the outcome of the design accelerations for the proposed ramp. If it becomes necessary to qualitatively assess the historical earthquakes on the regional faults later in the project, we will address that issue with a supplemental letter.

SITE GEOLOGIC SETTING

The Local Geologic Map (Figure 4) and Geological Site Map & Cross Section (Plate 1) depict the relevant topographic and geologic information on the subject site. We explored and mapped the site this past spring (March 2018).

Topography

The site is located along the edge of a broad, uplifted marine terrace. The natural ground surface east of and above the site slopes very gently toward the river bluff, where it drops off steeply. The railroad grade east of the site has been notched into the terrace, creating a cut that is about

20 feet deep. The railroad grade steps down approximately five feet to a bench that has been cut into the bedrock in the side of the steep river bluff. The bench is almost completely occupied by the trestle abutment, so we do not know how far back the bench has been notched into the river bluff.

The proposed transitional ramp will occupy the railroad grade at the top of the river bluff, as well as span the river bluff that projects out beyond the abutment notch. The bluff drops very steeply for about 25 feet to the river's edge. The intersection of the bluff and the river water is occupied by what appears to have been a historical concrete sluice; we have not determined how or when this concrete structure was constructed.

The bluff appeared to project down for at least five feet or more below the water level between the railroad grade and the river during this investigation. The elevation of the water and exposed bedrock is controlled by the seasonal changes to the river mouth and beach, south of the site. The smaller coastal waves associated with the spring through the fall weather typically create a beach that blocks the river mouth, causing the river to become impounded and higher below the site. When the river mouth is open during the winter, the water level drops and the river flows at higher velocities, which can cause sand bars to migrate laterally and vertically as they are pushed out to sea.

Earth Materials

The river bluff below the proposed ramp is a nearly vertical approximately 30+ foot exposure of bedrock of the Pliocene Purisima Formation, consisting of a very fine grained silty sandstone to sandy siltstone. The Purisima Formation dips to the south between 3 and 5 degrees on the site, based on regional mapping by Clark (1981) and our observation of a thin claystone bed outcropping along the river bluff about 20 feet above the river. We noted two dominant joint sets in the bedrock exposed in the river bluff; one set is on spacing of about five to ten feet, strikes N10E and dips 75 degrees between the east and the west. The other dominant set is on spacing of about 20 feet, strikes N30W and dips 68 degrees to the southwest. Two less prevalent joint sets, on spacing of about 20 to 40 feet, are also present in the bluff, with strikes and dips of N80W/27SW and N37W/54SW. Note that the average trend of the river bluff along this stretch is about parallel to the N10E joint set, suggesting the long-term erosion of the bluff has been controlled by these planes of weakness in the bedrock.

The first several sets of bluff parallel joints appear to be slightly dilated and filled with soil as well as Eucalyptus tree root mats and balls (see Appendix B). A large Eucalyptus root ball is present below the site in an area that looks like a small rock fall evacuation scar. It is likely that the root ball wedged into a near vertical bedrock joint, causing the slab of rock in front of it to peel off and fall in the river below.

Drainage And Groundwater

Drainage of surface water on the property occurs by overland sheet flow toward the San Lorenzo River. A small portion of the rainfall that hits the site probably infiltrates into the ground and enters the groundwater regime. Seasonal groundwater may perch within the marine terrace deposits above the less permeable Purisima Formation bedrock that lies above the site and near the top of the cut for the railroad grade.

Surface drainage off the railroad grade appears to be captured by inlets that carry the storm water away from the trestle abutment. Storm water and rainfall east of the inlets will pond and flow over the top of the abutment and the bench notched into the bluff.

We did not observe any seeps within the bedrock or at the contact between the marine terrace deposits and bedrock. We did not observe any stains on the bluff face that would indicate long term seepage. We hasten to add, however, that very little rainfall had occurred in this area in the fall and winter preceding our investigation. Hence, the conditions noted during our field work are not necessarily indicative of the magnitude of seepage that may occur during wetter years.

GEOLOGIC HAZARDS

The potential geologic hazards that could affect the proposed ramp are 1) intense seismic shaking, 2) landsliding, and 3) long-term erosion. The following sections address these hazards.

Seismic Shaking Hazard

Seismic shaking at the site will be intense during the next major earthquake along local fault systems. Seismic shaking values for any structures designed on the site should at least adhere to the minimum prescriptive design values outlined in the 2016 California Building Code. The seismic shaking values should be developed by the Project Geotechnical Engineer of Record as part of their soils report for the design of proposed structures.

Landsliding

Both the seismic setting and the site-specific geology influence the stability of the bluffs in this area. Intense ground shaking could trigger failure of the river bluff on the site. Local newspaper coverage (summarized in Youd and Hoose, 1978) and the Carnegie Commission report (Lawson et al., 1908) of the 1906 earthquake disclosed no documented accounts of large-scale cliff failure in Santa Cruz County due to the earthquake, although there was much sloughing of "earth" from the bluffs near Capitola (Lawson et al., 1908, p. 272). The surface of the river and beach sand deposits below the site (abutting the Santa Cruz Beach Boardwalk) was apparently disrupted during the 1906 earthquake due to liquefaction and lateral spreading (Youd and Hoose, 1978).

The 1989 Loma Prieta earthquake generated numerous localized coastal and river bluff failures in Santa Cruz County, including soil sloughing, rockfalls, blufftop fissuring, and shallow translational landslides (Sydnor et al., 1990). However, we did not observe any evidence of catastrophic failure of the bluff on the subject property during our analysis of stereo aerial photographs taken on 18 October 1989. In contrast, we did observe evidence of recent landsliding within the marine terrace deposits only on one of the neighboring properties to the south, on both the 1973 and 1989 aerial photographs. The total combined retreat of the bluff top for those two events was between five and ten feet. The 1989 failure was clearly in response to the intense seismic shaking generated by the Loma Prieta earthquake. It also appears that the 1989 failures coincided with the failure area noted on the 1973 photographs.

We did not observe any measurable retreat of the bluff at the proposed ramp location on the historical stereopair aerial photographs. It is important to note, however, that this portion of the bluff was obscured by tree canopy and the trestle on the photos, so it is possible that some bluff failures could have occurred and the evidence would be obscured. As noted in the "Earth Materials" section, the first several sets of bluff parallel joints appear to be slightly dilated and filled with soil as well as tree root mats and balls below the site. It is likely that the slabs of rock on the face of the bluff will eventually fall if triggered by seismic shaking or statically via continued growth and wedging by the tree roots.

Given the conditions discussed above, it is our opinion that first two feet of bedrock on the face of the bluff will fail in the near future below the ramp site. The failure of those slabs of rock along the bluff-parallel joint set will leave a fresh scar on the face of the bluff and the gradual dilation of the next joint sets in from the face will begin anew. In our opinion, it will take approximately 100 years for the top of the bluff at the site to fail back five feet, in the form of slab-type rock falls triggered by seismic shaking and root wedging. The failures will involve the entire bedrock bluff from the railroad grade to the river water level, leaving a near vertical bluff face. We have plotted the position of the future bluff configuration on both the site specific geology map (Plate 1) and the geologic cross section (Plate 2).

In our opinion, we consider it unlikely that the foundation for the proposed ramp will be threatened by bluff-top retreat within the next 100 years if it is set behind the bluff retreat line depicted on our plates.

Erosion

During our aerial photographic analysis of the river bluff on the subject property, we noted that the bluff has been sculpted by episodic river erosion. It is possible that the San Lorenzo River will continue to erode the toe of the bluff, but over the economic lifetime of the proposed development it is more likely that the river will erode the much softer and unconsolidated alluvial and beach sand deposits during large flooding events. Hence, we consider it unlikely that lateral

erosion by the San Lorenzo River will undermine and destroy the existing residence and proposed addition.

The old remnant concrete flume present at the base of the bluff near the river water level also appears to afford some protection with respect to bluff erosion too.

Overall, erosion has not caused the river bluff to retreat enough since 1928 (the date of the oldest aerial photo) to allow us to measure the effects of these processes, at least within the resolution of the aerial photographs. Additionally, it does not appear that the trestle abutment (constructed in the late 1800's?) has ever been undermined or removed by erosion.

FINDINGS

Based on the information gathered and analyzed, it is our opinion that the proposed ramp is subject to "Lowest possible risk to occupants of the structure" (as defined in Appendix C), provided our recommendations are followed. Appendix C should be reviewed in detail by all property owners to determine whether an that risk as defined in the appendix is acceptable. If this level of risk is unacceptable to the property owners or developers, then the geologic hazards in question should be mitigated to reduce the corresponding risks to an acceptable level.

The upper 30+ feet of the bluff, sloping up to about 75 degrees, exposes bedrock that is the Pliocene Purisima Formation and consists of a very fine grained silty sandstone to sandy siltstone, with some claystone interbeds. The Purisima Formation dips south between three and five degrees on the subject property. The bedrock joint set that is primarily responsible for the orientation of the river bluff on the subject property has an attitude of N10E/75SW.

We did not observe any evidence of groundwater seeping out of the bluff face.

The site is located in an area of high seismic activity and will be subject to strong seismic shaking in the future.

The overall bluff-top retreat measured on historical aerial photographs is nil since 1928.

Overall, erosion has not caused the river bluff to retreat enough since 1928 (the date of the oldest aerial photo) to allow us to measure the effects of these processes, at least within the resolution of the aerial photographs. Additionally, It does not appear that the trestle abutment (constructed in the late 1800's?) has ever been undermined or removed by erosion.

Although we did not measure any historical retreat of the bluff, it is our opinion that first two feet of bedrock on the face of the bluff will fail in the near future below the ramp site. The failure of those slabs of rock along the bluff-parallel joint set will leave a fresh scar on the face of the bluff and the gradual dilation of the next joint sets in from the face will begin anew. In our opinion, it

will take approximately 100 years for the top of the bluff at the site to fail back five feet, in the form of slab-type rock falls triggered by seismic shaking and continued root wedging. The failures will involve the entire bedrock bluff from the railroad grade to the river water level, leaving a near vertical bluff face. We have plotted the position of the future bluff configuration on both the site specific geology map and cross section (Plate 1). In our opinion, we consider it unlikely that the foundation for the proposed ramp will be threatened by bluff-top retreat within the next 100 years if it is set behind the bluff retreat line depicted on our plates, which takes up to five feet of long term retreat into account.

RECOMMENDATIONS

1. The foundation for the transitional walkway ramp should be founded at least five feet from the top of the bluff, as depicted on our Geological Site Map (Plate 1) and Geological Cross Section (Plate 2).

2. The transitional walkway ramp may also be further protected from the complete removal of the eucalyptus trees that are wedging roots into the bedrock joints.

3. The lifetime of the ramp may be extended if the face of the bluff below the ramp is bolted with a rock bolt system that will put the exposed bedrock into compression. If this mitigation is pursued, the developer may also want to rock bolt the face of the bluff below the trestle abutment. Stabilizing the bluff in this fashion may also negate the need for deep piers set behind the bluff setback line, pending input by the Project Geotechnical Engineer Of Record.

4. Seismic shaking values for any structures designed for the site should at least adhere to the minimum prescriptive design values outlined in the 2016 California Building Code. The seismic shaking values should be developed by the Project Geotechnical Engineer of Record as part of their soils report for the design of proposed structures.

5. We recommend that all drainage from improved surfaces be collected and dispersed below the site into the river. Drainage should be controlled in such a way as to avoid ponding or concentrated discharge on the bluff.

6. We recommend that our firm be provided the opportunity for a review of the design and specifications in order that our recommendations may be properly interpreted and implemented. If our firm is not accorded the privilege of making the recommended review we can assume no responsibility for misinterpretation of our recommendations.

INVESTIGATION LIMITATIONS

1. The conclusions and recommendations noted in this report are based on probability and in no way imply the site will not possibly be subjected to ground failure or seismic shaking so intense

that structures will be severely damaged or destroyed. The report does suggest that building structures at the subject site, in compliance with the recommendations noted in this report, is an "lowest possible risk to occupants of the structure" risk as defined in Appendix C.

2. This report is issued with the understanding that it is the duty and responsibility of the owner or his representative or agent to ensure that the recommendations contained in this report are brought to the attention of the architect and engineer for the project, incorporated into the plans and specifications, and that the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

3. If any unexpected variations in soil conditions or if any undesirable conditions are encountered during construction or if the proposed construction will differ from that planned at the present time, Zinn Geology should be notified so that supplemental recommendations can be given.

Sincerely,
ZINN GEOLOGY

Erik N. Zinn
Principal Geologist
P.G. #6854, C.E.G. #2139

Attachments: Appendix A - Figures
Appendix B - Photographs of site
Appendix C - Scale of acceptable risks from geologic hazards
Plate 1 - Geological site map & cross section

REFERENCES

Aerial Photographs

DATE FLOWN	FLIGHT LINE	PHOTO NUMBERS	PRINTS
6/1/1928	131-119	SC32	Black & White
4/1/31		29,30	Black & White
6/5/56	CJA-4R	51,52	Black & White
12/6/61	SC 1	35-37	Black & White
11/30/65	SC 1	13,14	Black & White
5/11/65	SC 1	69-70	Black & White
4/11/73	6	1,2	Black & White
10/5/76	DNOD-AFU-C	172, 173	Color
10/13/82	AV-2192-06	8,9	Black & White
3/26/86		227,228	Color
10/18/89	AV3662-A 4	4-6	Black & White
6/22/94	14	1,2	Black & White
9/20/97	WAC-97CA 15	1-3	Black & White
6/7/01	CCC-BQK-C	123-5 through -7	Color

The aerial photographs listed above are available for viewing at the University of California at Santa Cruz Map Library.

Literature

Clark, J.C., 1981, Stratigraphy, paleontology, and geology of the central Santa Cruz Mountains, California Coast Ranges, U. S. Geological Survey Professional Paper 1168, 51 p., 2 plates.

Dupré, W.R., 1975, Geology and liquefaction potential of Quaternary deposits in Santa Cruz County, California, U. S. Geological Survey Miscellaneous Field Studies Map MF 648, 2 sheets, scale 1:62,500.

Dupré, W.R., 1991, Quaternary geology of the Southern California Coast Ranges, in Morrison, R.B., ed., Quaternary nonglacial geology: conterminous U.S.: The geology of North America, Volume K-2, p. 176-184.

Helley, E.J., Lajoie, K.R., Spangle, W.E., and Blair, M.L., 1979, Flatland deposits of the San Francisco Bay Region, California - their geology and engineering properties, and their importance to comprehensive planning, U.S. Geological Survey Professional Paper 943, 88 p.

Jennings, C.W. et al., 1975, Fault map of California, California Division of Mines and Geology, California Geologic Data Map Series, map no. 1.

Lawson, A.C. et al., 1908, The California Earthquake of April 18, 1906, Report of the State Earthquake Investigation Commission, Carnegie Institute of Washington, Publication 87, 2 v., 600 p.

Petersen, M.D., Bryant, W.A., Cramer, C.H., Cao, T., Reichle, M.S., Frankel, A.D., Lienkaemper, J.J., McCrory, P.A., and Schwartz, D.P., 1996, Probabilistic seismic hazard assessment for the State of California, California Division of Mines and Geology Open-File Report 96-08 and U.S. Geological Survey Open-File Report 96-706.

Sydnor, R.H., Griggs, G.B., Weber, G.E., McCarthy, R.J., and Plant, N., 1990, Coastal bluff landslides in Santa Cruz County resulting from the Loma Prieta earthquake of 17 October 1989, in McNutt, S.R., and Sydnor, R.H. (Editors), The Loma Prieta (Santa Cruz Mountains), California Earthquake of 17 October 1989, California Division of Mines and Geology Special Publication 104, p. 67-82.

Working Group on California Earthquake Probabilities, 1988, Probabilities of large earthquakes occurring in California on the San Andreas fault, U.S. Geological Survey Open-File Report 88-398, 62 p.

Working Group on California Earthquake Probabilities, 1990, Probabilities of large earthquakes in the San Francisco Bay region, California, U.S. Geological Survey Circular 1053, 51 p.

Working Group on Northern California Earthquake Potential, 1996, Database of potential sources for earthquakes larger than magnitude 6 in northern California, U.S. Geological Survey Open-File Report 96-705, 53 p.

Youd, T.L., and Hoose, S.N., 1978, Historic ground failures in northern California triggered by earthquakes, U. S. Geological Survey Professional Paper 993, 177 p.

APPENDIX A

FIGURES

BASE MAP: Santa Cruz 7.5' Quadrangle, United States Geological Survey, 1954 (Photorevised 1994), Scale: 1:24000

N
W E
S

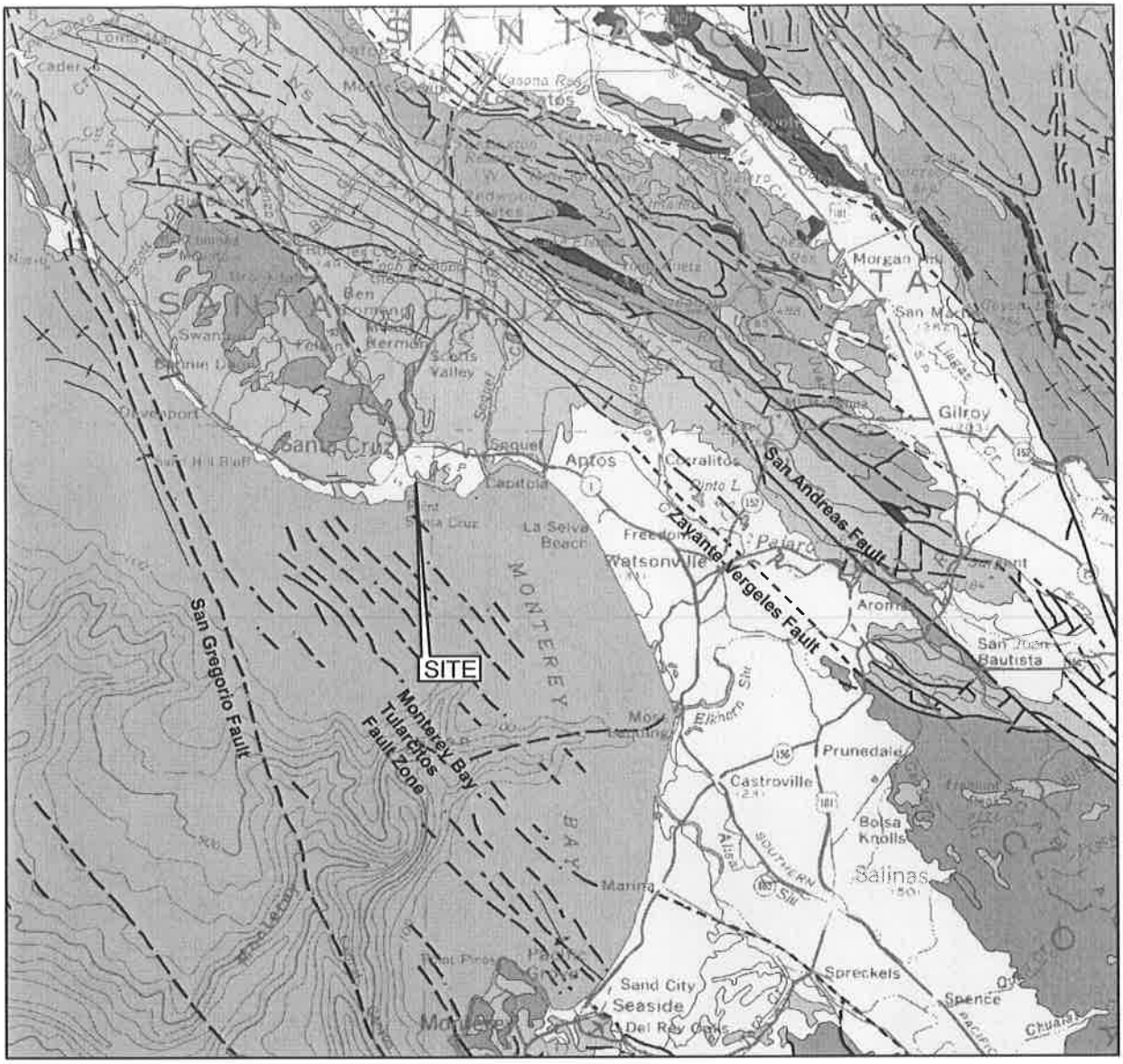
SCALE 1:24,000

1000 0 1000 2000 feet

ZINN GEOLOGY

Topographic Index Map
Proposed Walkway
San Lorenzo River Eastern Bluff
Santa Cruz, California

FIGURE #
1
JOB #
2018006-G-SC



Reference: Jennings, C.W., 1977, Geologic Map of California: California Department of Conservation, Division of Mines and Geology, scale 1:750,000.
Digital Data: Saucedo, G.J., Bedford, D.R., Raines, G.L., Miller, R.J., and Wentworth, C.M., 2000, GIS Data for the Geologic Map of California: California Department of Conservation, Division of Mines and Geology, CD-ROM 2000-007, ver. 2.0.

EXPLANATION

Geologic Units

- Quaternary Deposits
- Quaternary Volcanics
- Tertiary Sedimentary Rocks
- Tertiary Volcanic Rocks
- Pre-Tertiary Sedimentary Rocks
- Pre-Tertiary Volcanic Rocks
- Grantic Intrusive Rocks
- Franciscan Complex
- Ultramafic Rocks
- Pre-Tertiary Metamorphic Rock
- Pre-Cambrian Metamorphic and Igneous Rocks

Symbols

- contact
- fault, certain
- fault,approx. located
- fault, concealed or inferred
- anticline
- monocline
- syncline

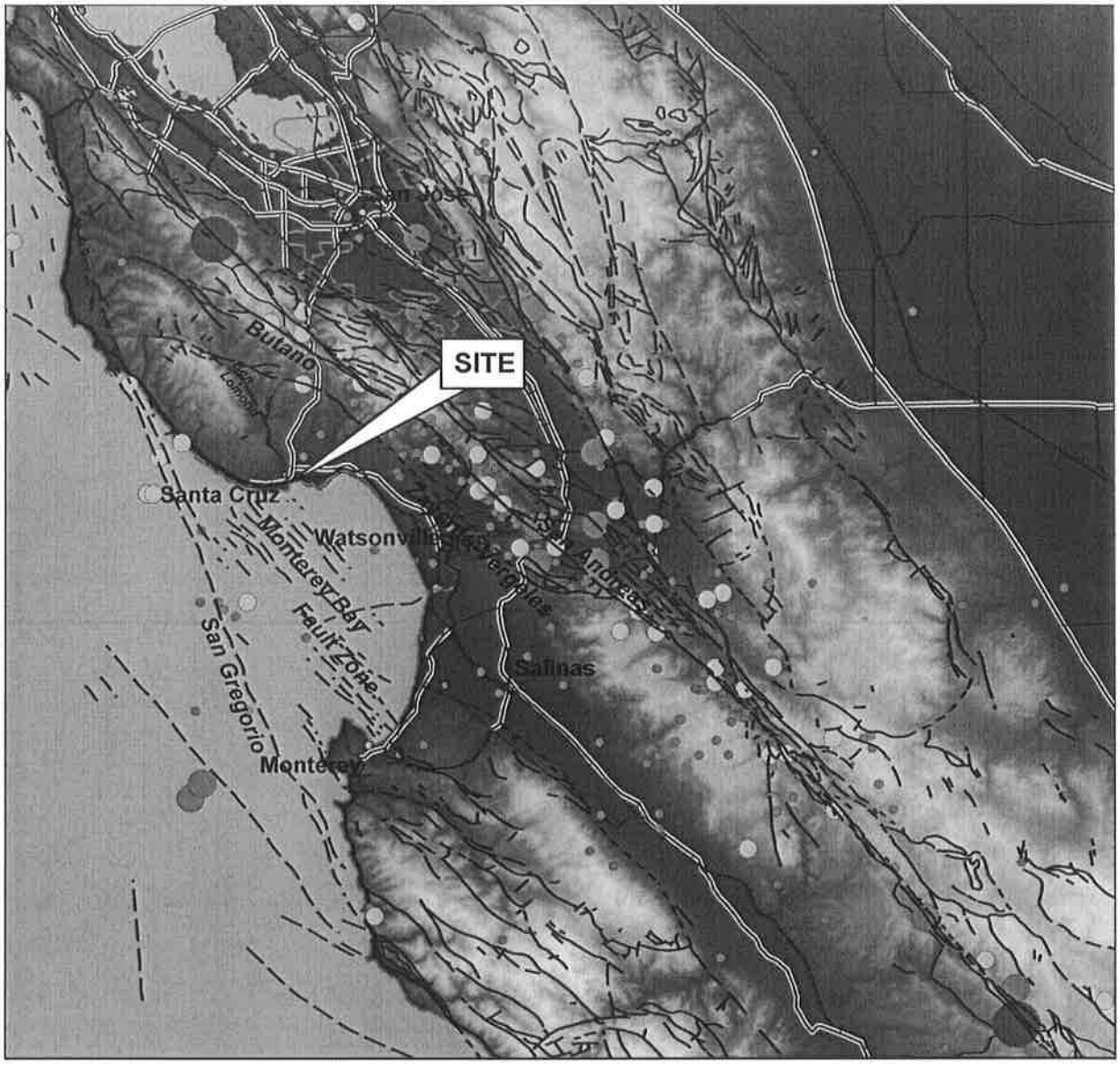
N
W E
S

SCALE 1:500,000
10 Miles 0

ZINN GEOLOGY

Regional Geologic Map
Proposed Walkway
San Lorenzo River Eastern Bluff
Santa Cruz, California

FIGURE # 2
JOB # 2018006-G-SC



Seismicity Information: Magnitude 4 and greater earthquakes, compiled from various sources, 1769 to 2000; available at www.consrv.cagov/CGS/rghm/quakes/cgs2000_fnl.txt
Fault Information: Jennings, C.W., 1977, Geologic map of California: California Department of Conservation, Division of Mines and Geology, scale 1:750,000

EXPLANATION

Symbols

- fault, certain
- fault,approx. located
- fault, concealed or inferred

Earthquake Magnitude

- 4.0 to 4.99
- 5.0 to 5.99
- 6.0 to 6.99
- 7.0 +

N
W E
S

SCALE 1:1,000,000

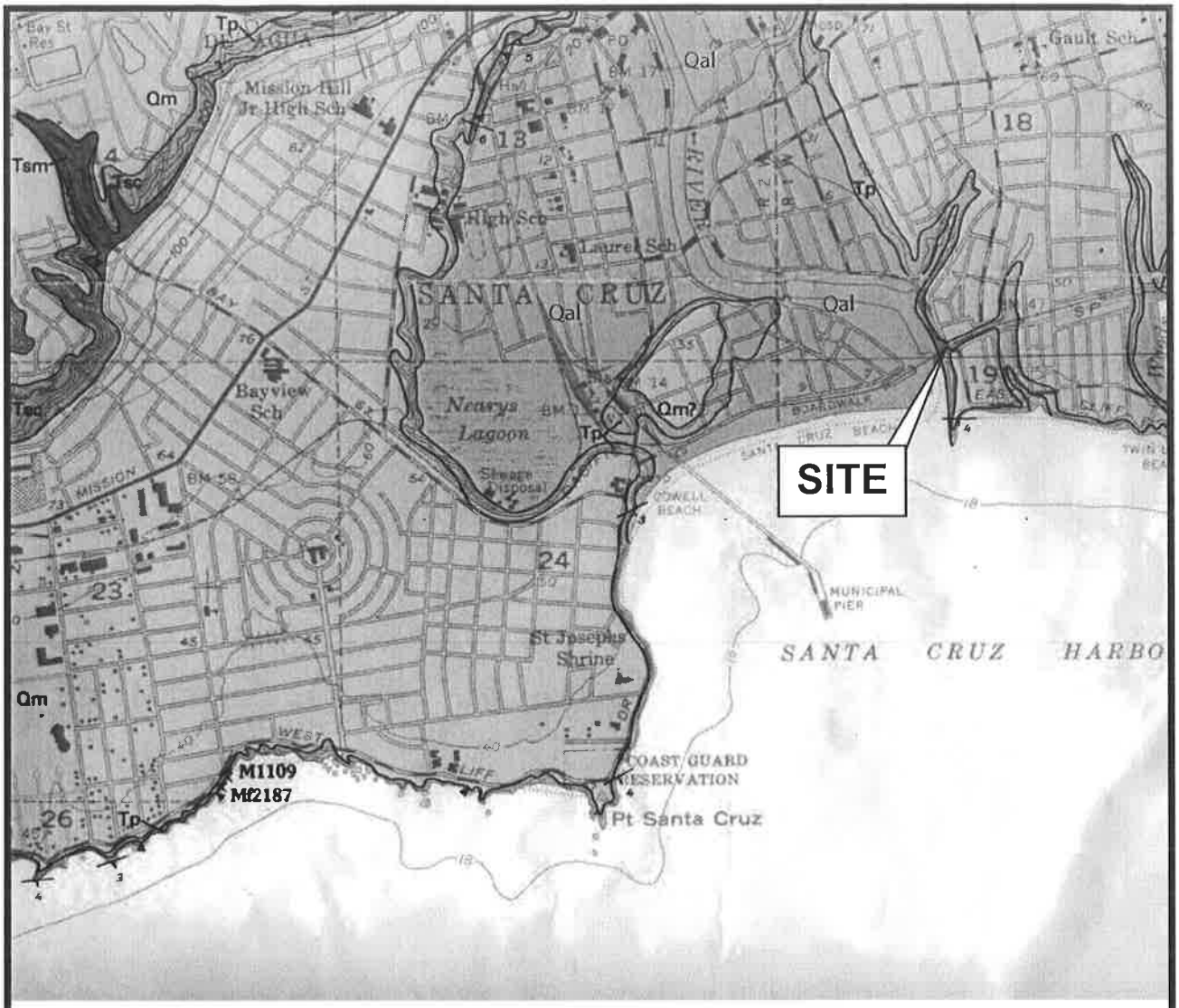
10 5 0 10

Miles

ZINN GEOLOGY

Regional Seismicity Map
Proposed Walkway
San Lorenzo River Eastern Bluff
Santa Cruz, California

FIGURE # 3
JOB # 2018006-G-SC



BASE MAP: Plate 2 from Clark, 1981, Stratigraphy, Palenotology, and Geology of the Central Santa Cruz Mountains, California Coast Ranges, Professional Paper 1168, scale 1:24,000.

EXPLANATION

Earth Materials

Qal	Alluvium
Qm	Marine Terrace Deposits
Tp	Purisima Formation
Tsc	Santa Cruz Mudstone
Tsm	Santa Margarita Sandstone

Symbols

Earth materials contact - triangle where well exposed; queried where uncertain

6 Strike and dip of beds

N
W E
S

SCALE 1:24,000

1000 0 1000 2000 feet

ZINN GEOLOGY

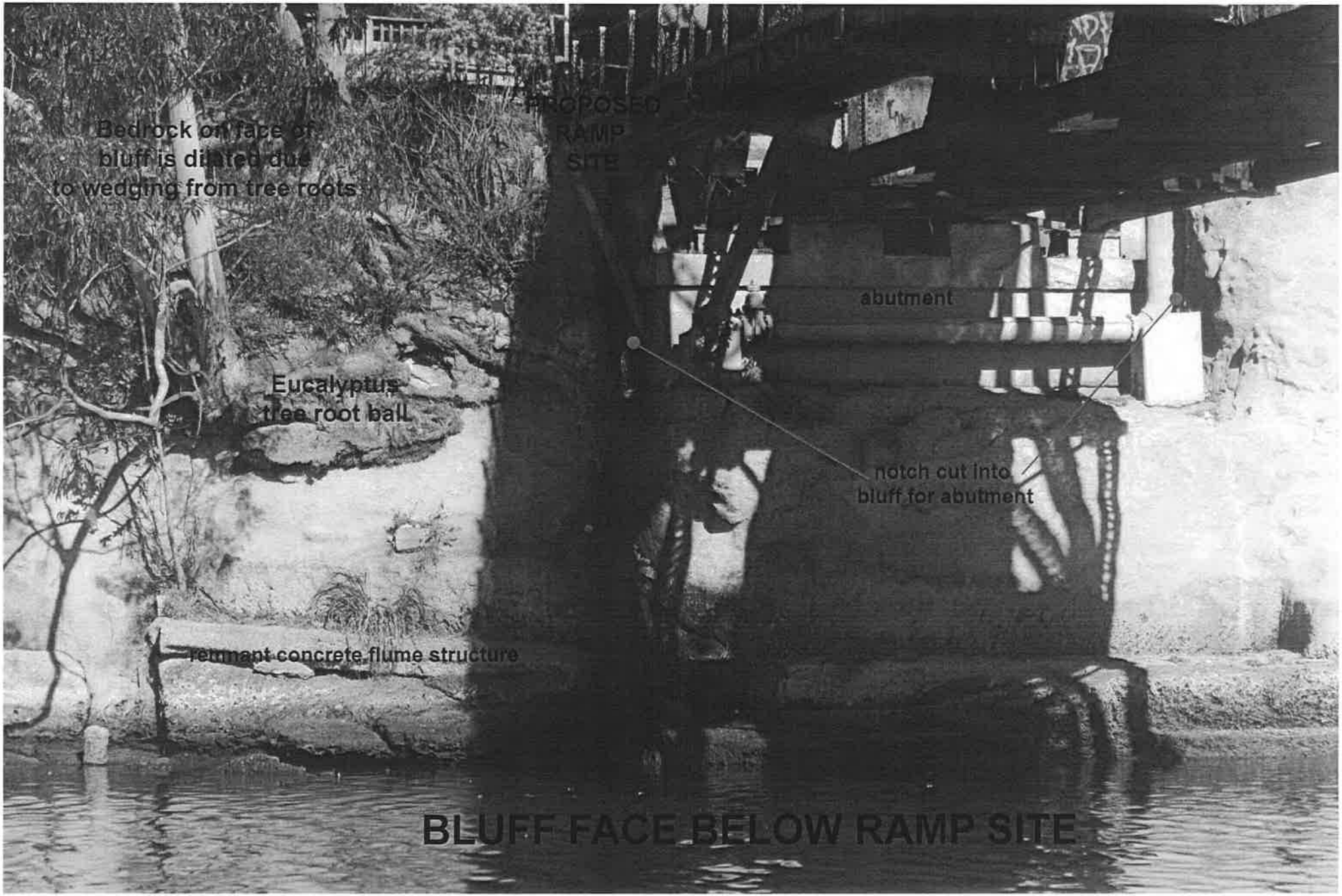
Local Geologic Map
Proposed Walkway
San Lorenzo River Eastern Bluff
Santa Cruz, California

FIGURE # 4
JOB # 2018006-G-SC

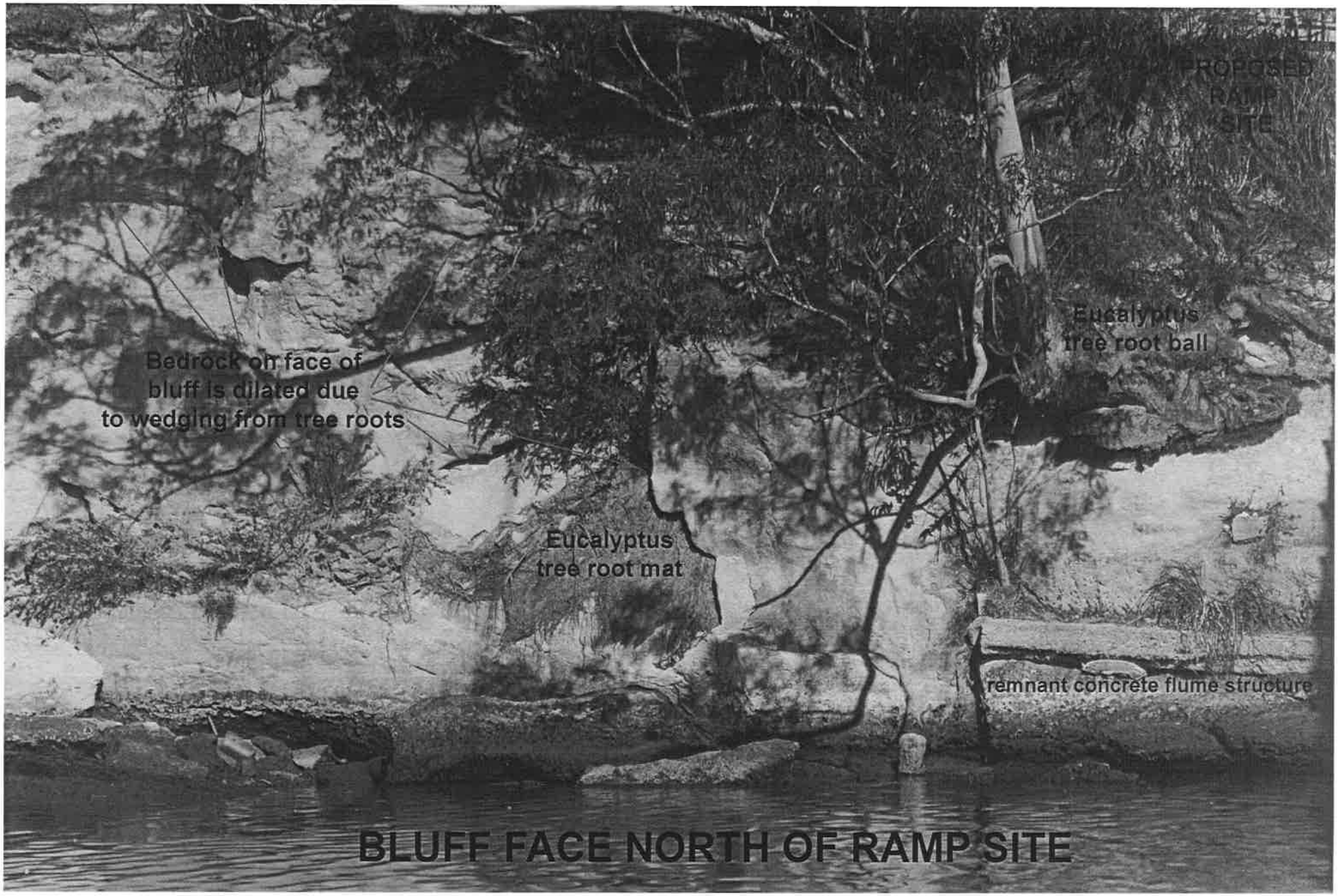
APPENDIX B

PHOTOGRAPHS OF SITE


SURFACE IN SOUTH RAILROAD GRADE CUT
Dilated joint with soil and roots in it
Dilated joint



BLUFF FACE BELOW RAMP SITE



BLUFF FACE NORTH OF RAMP SITE

APPENDIX C

SCALE OF ACCEPTABLE RISKS FROM GEOLOGIC HAZARDS

SCALE OF ACCEPTABLE RISKS FROM SEISMIC GEOLOGIC HAZARDS		
Risk Level	Structure Types	Extra Project Cost Probably Required to Reduce Risk to an Acceptable Level
Extremely low[1]	Structures whose continued functioning is critical, or whose failure might be catastrophic: nuclear reactors, large dams, power intake systems, plants manufacturing or storing explosives or toxic materials.	No set percentage (whatever is required for maximum attainable safety).
Slightly higher than under "Extremely low" level.[1]	Structures whose use is critically needed after a disaster: important utility centers; hospitals; fire, police and emergency communication facilities; fire station; and critical transportation elements such as bridges and overpasses; also dams.	5 to 25 percent of project cost.[2]
Lowest possible risk to occupants of the structure.[3]	Structures of high occupancy, or whose use after a disaster would be particularly convenient: schools, churches, theaters, large hotels, and other high rise buildings housing large numbers of people, other places normally attracting large concentrations of people, civic buildings such as fire stations, secondary utility structures, extremely large commercial enterprises, most roads, alternative or non-critical bridges and overpasses.	5 to 15 percent of project cost.[4]
An "ordinary" level of risk to occupants of the structure.[3,5]	The vast majority of structures: most commercial and industrial buildings, small hotels and apartment buildings, and single family residences.	1 to 2 percent of project cost, in most cases (2 to 10 percent of project cost in a minority of cases).[4]

1 Failure of a single structure may affect substantial populations.

2 These additional percentages are based on the assumptions that the base cost is the total cost of the building or other facility when ready for occupancy. In addition, it is assumed that the structure would have been designed and built in accordance with current California practice. Moreover, the estimated additional cost presumes that structures in this acceptable risk category are to embody sufficient safety to remain functional following an earthquake.

3 Failure of a single structure would affect primarily only the occupants.

4 These additional percentages are based on the assumption that the base cost is the total cost of the building or facility when ready for occupancy. In addition, it is assumed that the structures would have been designed and built in accordance with current California practice. Moreover the estimated additional cost presumes that structures in this acceptable-risk category are to be sufficiently safe to give reasonable assurance of preventing injury or loss of life during and following an earthquake, but otherwise not necessarily to remain functional.

5 "Ordinary risk": Resist minor earthquakes without damage: resist moderate earthquakes without structural damage, but with some non-structural damage; resist major earthquakes of the intensity or severity of the strongest experienced in California, without collapse, but with some structural damage as well as non-structural damage. In most structures it is expected that structural damage, even in a major earthquake, could be limited to repairable damage. (Structural Engineers Association of California)

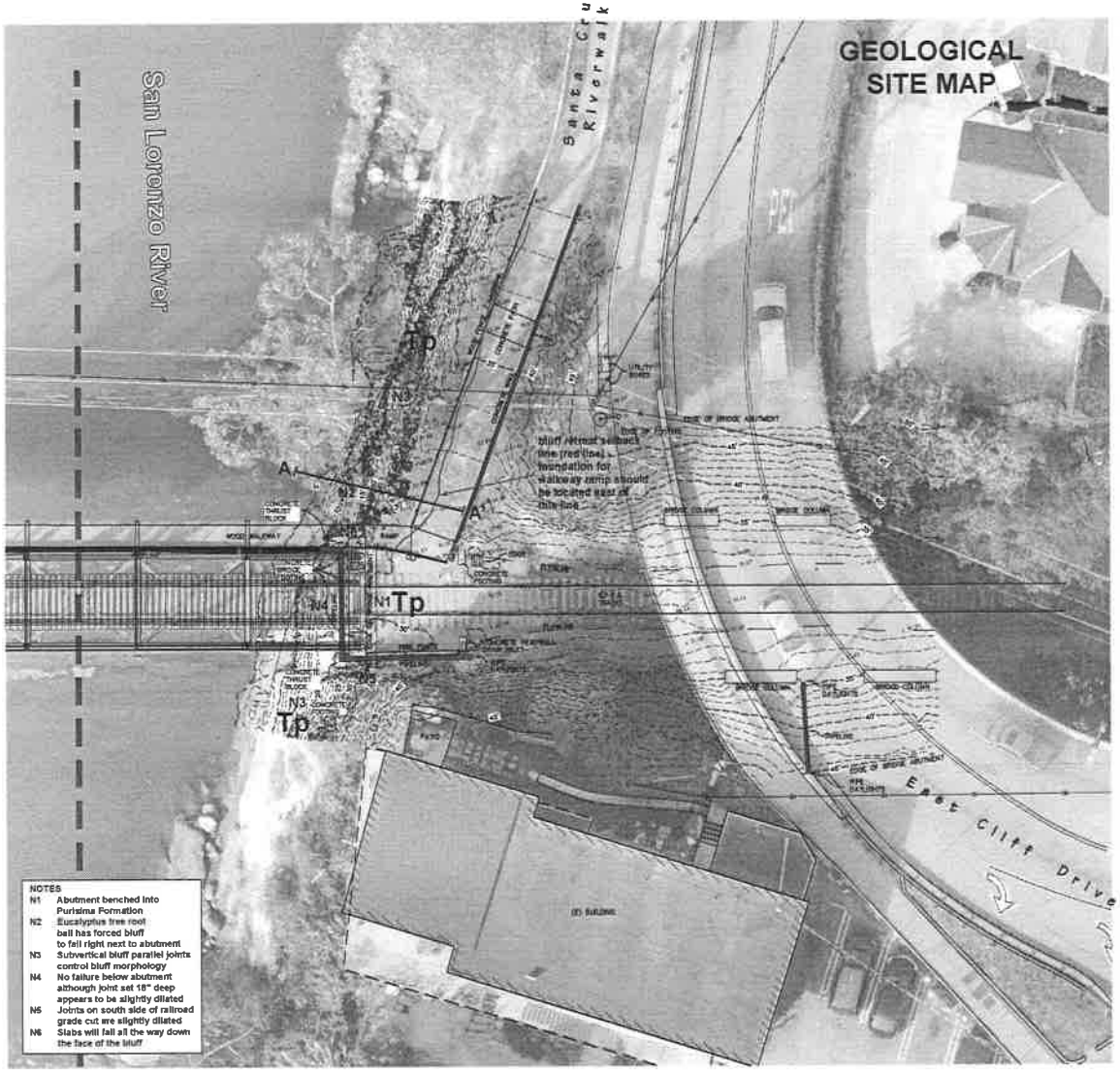
Source: *Meeting the Earthquake,* Joint Committee on Seismic Safety of the California Legislature, Jan. 1974, p.9.

SCALE OF ACCEPTABLE RISKS FROM NON-SEISMIC GEOLOGIC HAZARDS[6]		
Risk Level	Structure Type	Risk Characteristics
Extremely low risk	Structures whose continued functioning is critical, or whose failure might be catastrophic: nuclear reactors, large dams, power intake systems, plants manufacturing or storing explosives or toxic materials.	1. Failure affects substantial populations, risk nearly equals nearly zero.
Very low risk	Structures whose use is critically needed after a disaster: important utility centers; hospitals; fire, police and emergency communication facilities; fire station; and critical transportation elements such as bridges and overpasses; also dams.	1. Failure affects substantial populations. Risk slightly higher than 1 above.
Low risk	Structures of high occupancy, or whose use after a disaster would be particularly convenient: schools, churches, theaters, large hotels, and other high rise buildings housing large numbers of people, other places normally attracting large concentrations of people, civic buildings such as fire stations, secondary utility structures, extremely large commercial enterprises, most roads, alternative or non-critical bridges and overpasses.	1. Failure of a single structure would affect primarily only the occupants.
"Ordinary" risk	The vast majority of structures: most commercial and industrial buildings, small hotels and apartment buildings, and single family residences.	1. Failure only affects owners /occupants of a structure rather than a substantial population. 2. No significant potential for loss of life or serious physical injury. 3. Risk level is similar or comparable to other ordinary risks (including seismic risks) to citizens of coastal California. 4. No collapse of structures; structural damage limited to repairable damage in most cases. This degree of damage is unlikely as a result of storms with a repeat time of 50 years or less.
Moderate risk	Fences, driveways, non-habitable structures, detached retaining walls, sanitary landfills, recreation areas and open space.	1. Structure is not occupied or occupied infrequently. 2. Low probability of physical injury. 3. Moderate probability of collapse.

[6] Non-seismic geologic hazards include flooding, landslides, erosion, wave runup and sinkhole collapse

SEE SHEET 2 FOR CONTINUATION

GEOLOGICAL SITE MAP



Bedrock fracture attitudes collected in small tunnel in bedrock at toe of the bluff south of the site

BASE MAP: Original digital file from *"Topographic Map For: MBSST - Rail Trail - Santa Cruz - SLR Treatle"* by Ifland Survey, dated 18 January 2018, original scale 1"=10'.

GRAPHIC SCALE 1 INCH = 10 FEET

Legend

- STORM DRAIN INLET
- STREET SIGNAGE
- UTILITY BOX
- LIGHT STANDARD
- UTILITY POLE
- GUY WIRE
- BACKFLOW PREVENTER
- BENCHMARK
- ELECTROLIER
- BUILDING FOOTPRINT
- OVERHEAD UTILITY LINE
- FENCE
- CONTOUR LINE
- WALL
- FLOWLINE
- MATCH LINE

ALL DISTANCES SHOWN ARE IN FEET AND DECIMALS THEREOF.

EXPLANATION

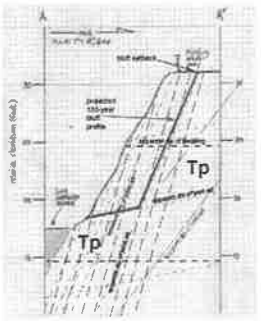
EARTH MATERIALS

Tp Purisima Formation

SYMBOLS

A — A' geologic cross section

GEOLOGICAL CROSS SECTION



ERIK N. ZINN No. 2139

ERIK N. ZINN No. 6854

ZINN GEOLOGY

GEOLOGICAL SITE MAP & CROSS SECTION
Proposed Walkway
San Lorenzo River Eastern Bluff
Santa Cruz, California

Date: 18 March	Revised
Job #2018006-C-SC	
Scale: 1"=10'	Plate 1
Drawn by: EZ/Geog	

APPENDIX B
Geotechnical Investigation for the Proposed San Lorenzo River Ramp Project. Prepared by Haro, Kasunich and Associates, Inc., January 2014.

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17103

San Lorenzo River Bicycle Ramp Project
West Abutment – Beach Street to East Cliff Drive Railroad Bridge
APN 005-134-13, 14, 18
City of Santa Cruz, California

Prepared for
Public Works Engineering
City of Santa Cruz
Santa Cruz, California

Prepared By
HARO, KASUNICH AND ASSOCIATES, INC
Geotechnical & Coastal Engineers
Project No. SC10558
January 2014

Project No. SC10558
24 January 2014

PUBLIC WORKS ENGINEERING
CITY OF SANTA CRUZ
809 Center Street, Room 201
Santa Cruz, California 95060-3862

Attention: Tony Lau, P.E.

Subject: Geotechnical Investigation

Reference: Proposed San Lorenzo River Bicycle Ramp
West Abutment – Beach Street to East Cliff Drive Railroad Bridge
APN 055-134-13, 14, 18
City of Santa Cruz, California

Dear Mr. Lau:

This report presents our Geotechnical Investigation for the proposed San Lorenzo River Bicycle Ramp Project at the west abutment of the railroad bridge crossing the San Lorenzo River from Beach Street to East Cliff Drive in Santa Cruz, California. The railroad bridge contains a bicycle and pedestrian pathway. Existing access to the west end of the railroad bridge bicycle and pedestrian pathway is from south side of the bridge abutment and across the railroad rails.

Preliminary project plans have been developed by Bowman & Williams, project civil engineers and surveyors dated November 2013. A concrete ramp with a 180° turn will be placed on the north flank or slope of the west abutment of the railroad bridge. The proposed project will provide a safe transition from the San Lorenzo Riverway bike/pedestrian pathway at elevation 13 feet NGVD29 on the west bank of the river up to the existing railroad bridge pathway landing at elevation 24 feet NGVD29.

The project site consists of a 1.5:1 (H:V) slope approximately 12 feet high. The slope is currently blanketed by ½ to 3+ ton quarrystones or riprap with the larger quarrystones encountered at the base of the slope. The project site slope above the base is covered with a 2 to 3 feet thick layer of smaller quarrystones extending up to the 3 feet thick gravel bed supporting the railroad tracks at the top of the abutment slope. An existing concrete slab vehicle ramp to the Santa Cruz Boardwalk maintenance facility is situated along the northern perimeter of the project site.

TO develop geotechnical design criteria fir the project, we explored the subsurface soil profile beneath the project site using a steel tracked excavator with a bucket and hydraulic thumb as well as a small, track mounted limited, access drill rig using hollow stem augers.

At the base of the slope on the east end of the project site, we excavated a pit to approximately 6.5 feet below grade and removed granitic quarrystones to 3+ tons. At the bottom of the 6.5 feet deep excavation we were able to locate buried riprap using the teeth of the excavator bucket. We also noted several large quarrystones extending both into the project site and under the maintenance building ramp.

Moving to the west along the base of the project site slope we excavated a second pit. We encountered riprap to approximately 5 feet below grade. We removed the riprap and backfilled the excavation with sand to construct a pad for the small track mounted drill rig.

Using the track mounted drill rig at the second pit location, we encountered loose to medium dense, sandy fill soils with angular gravels to 2 inches in diameter to limit of our boring, 15 feet below pad grade. Groundwater was encountered at approximately 9 feet below drill rig pad grade or at about elevation 4 feet NGVD29 during our September 2013 field investigation. Groundwater elevation may fluctuate due to rainfall, river level, tidal cycles, or coastal processes.

We next drilled an exploratory boring at the top of project site slope, approximately 4 feet north of the adjacent railroad rail and about 10 feet west of the railroad bridge. We found loose to medium dense granular fill soils with angular gravels to the limit of our boring, 26.5 feet below the top of the slope. At both boring locations, we encountered difficult drilling conditions in the loose sands at the water table.

The project site is located within an area of mapped and historic liquefaction. Liquefaction is the loss of soil strength caused by severe seismic shaking of loose, saturated sandy soils. Liquefaction can cause settlement at the surface and lateral displacement of gentle slopes. It is our understanding the bike ramp project will not be designed to mitigate the effects of liquefaction and as such may need to be repaired or replaced as the result of severe seismic shaking.

The proposed lower elevation, northern half of the ramp system is underlain by loose fill soils and buried riprap to 3+ tons. The upper elevation portion of the ramp will be placed upon a moderately steep slope composed of loose fill soils. Consistent bearing and minimizing differential settlement will be the primary geotechnical considerations for designing the bicycle ramp.

Pier drilling in the lower elevation, northern half of the ramp system would be prohibitive unless the buried quarrystones are removed. We recommend the ramp be constructed

as a mat or raft slab and designed to span a void of 8 feet occurring anywhere within the ramp mat slab footprint. To provide consistent bearing for the north half of the proposed bicycle ramp, the mat or raft slab should bear upon at least 2 feet of granular soils or aggregate base material compacted to at least 90 percent relative compaction.

The upper elevation, southern half of the ramp system will include a retaining wall along the southern or inboard perimeter accommodate the slope of the ramp and support the railroad track and gravel bed. After the riprap is removed from the slope, drilled piers may be used to support the upper elevation, southern half of the ramp system. To reduce pier construction difficulty, we recommend the project site drilled piers be designed for bearing above the water table. We anticipate the drilled pier excavations within the loose granular soils will need to be cased during construction.

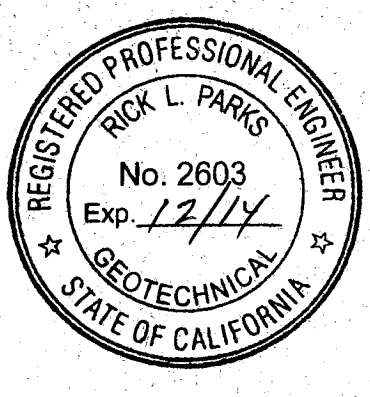
The Bowman and Williams preliminary project plans show vertical cuts and proposed retaining wall heights on the order of 6 to 9 feet. Temporary shoring of the vertical cuts will be required during ramp construction to minimize damage to the railroad tracks. We anticipate top down construction methodology will be utilized for the temporary shoring to reduce the potential for shallow slump sliding and undermining of the railroad tracks. We understand temporary shoring design and installation will be the responsibility of the project contractor.

The accompanying report presents our conclusions and recommendations, as well as the results of the geotechnical investigation on which they are based.

If you have any questions concerning this report or the geotechnical aspects of the project, please call our office.

Respectfully submitted,

HARO, KASUNICH & ASSOCIATES, INC.



Rick L. Parks, GE 2603
Senior Geotechnical Engineer

RLP/sr
Copies: 3 to Addressee (+ electronic copy)
1 to Bowman & Williams; Attn: Jeff Naess (+ electronic copy)

Project No. SC10558
24 January 2014

TABLE OF CONTENTS

Project No. SC10558
24 January 2014

GEOTECHNICAL INVESTIGATION

Introduction

This report presents the results of our Geotechnical investigation for the proposed San Lorenzo River Bicycle Ramp Project at the west abutment of the railroad bridge crossing the San Lorenzo River from Beach Street to East Cliff Drive in Santa Cruz, California; see the Site Vicinity Map, Figure 1 in the Appendix of this report.

Preliminary project plans have been developed by Bowman & Williams, project civil engineers and surveyors. A concrete ramp with a 180° turn will be placed on the north flank or slope of the west abutment of the railroad bridge. The proposed project will provide a safe transition from the San Lorenzo Riverway bike/pedestrian pathway at elevation 13 feet NGVD29 on the west bank of the river up to the railroad bridge pathway landing at elevation 24 feet NGVD29.

Purpose and Scope

The purpose of our investigation was to explore and evaluate surface and subsurface soil conditions at the site, and to provide geotechnical criteria for design and construction of the project. The specific scope of our services was as follows:

1. Review the data in our files pertinent to the site.
2. USA utility locates. Exploration of the subsurface conditions at the site with two exploratory pits dug using a steel tracked excavator with a bucket and hydraulic thumb as well as two exploratory borings drilled with a small, track mounted limited, access drill rig using hollow stem augers.
3. Test selected soil samples to determine their pertinent engineering properties.
4. Analyze the field and laboratory data to develop recommendations for non-seismic conditions support of the proposed bicycle and pedestrian pathway

ramp system including site grading, foundations elements, and retaining walls.

5. Present the results of our investigation in a report.

Site Description

The proposed San Lorenzo River Bicycle Ramp Project is located at the west abutment of the railroad bridge crossing the San Lorenzo River from Beach Street to East Cliff Drive in Santa Cruz, California; see the Site Vicinity Map, Figure 1 in the Appendix of this report. The project site is situated at the eastern end of the Santa Cruz Boardwalk.

The railroad bridge contains a dedicated bicycle and pedestrian pathway on the north side of the railroad track. Existing access to the west end of the railroad bridge bicycle and pedestrian pathway is from south side of the railroad bridge abutment and across the railroad rails.

The project site consists of a 1.5:1 (H:V) slope approximately 12 feet high. Existing project site elevations range from approximately 12 feet NGVD29 at the east end of the base of the project site slope to 24+ feet NGVD29 at the top of the slope adjacent the railroad bridge pathway landing.

The project site slope is currently blanketed by ½ to 3+ ton quarrystones or riprap with the larger quarrystones encountered at the base of the slope. The project site slope above the base is covered with a 2 to 3 feet thick layer of smaller quarrystones extending up to the 3 feet thick gravel bed supporting the railroad tracks at the top of the abutment slope. An existing concrete slab vehicle ramp to the Santa Cruz Boardwalk maintenance facility is situated along the northern perimeter of the project site.

Project Description

Preliminary project plans have been developed by Bowman & Williams, project civil engineers and surveyors dated November 2013. A concrete ramp with a 180° turn will be placed on the north flank or slope of the west abutment of the railroad bridge. The proposed project will provide a safe transition from the San Lorenzo Riverway bike/pedestrian pathway at elevation 13 feet NGVD29 on the west bank of the river up to the railroad bridge pathway landing at elevation 24 feet NGVD29.

The project site is located within an area of mapped and historic liquefaction. Liquefaction is the loss of soil strength caused by severe seismic shaking of loose saturated sandy soils. Liquefaction can cause settlement at the surface and lateral displacement of gentle slopes. It is our understanding the bike ramp will not be designed to mitigate the effects of liquefaction and as such may need to be repaired or replaced as the result of severe seismic shaking.

The proposed lower elevation, northern half of the ramp system is underlain by loose fill soils and buried riprap to 3+ tons. The upper elevation portion of the ramp will be placed upon a moderately steep slope composed of loose fill soils. Consistent bearing and minimizing differential settlement will be the primary geotechnical considerations for designing the bicycle ramp.

Pier drilling in the lower elevation, northern half of the ramp system would be prohibitive unless the buried quarrystones are removed. We recommend the ramp be constructed as a mat or raft slab and designed to span a void of 8 feet occurring anywhere within the ramp mat slab footprint. To provide consistent bearing for the north half of the proposed bicycle ramp, the mat or raft slab should bear upon at least 2 feet of granular soils or aggregate base material compacted to at least 90 percent relative compaction.

The upper elevation, southern half of the ramp system will include a retaining wall along the southern or inboard perimeter accommodate the slope of the ramp and support the railroad track and gravel bed. After the riprap is removed from the slope, drilled piers may be used to support the upper elevation, southern half of the ramp system. To reduce pier construction difficulty, we recommend the project site drilled piers be designed for bearing above the water table. We anticipate the drilled pier excavations within the loose granular soils will need to be cased during construction.

The Bowman and Williams preliminary project plans show vertical cuts and proposed retaining wall heights on the order of 6 to 9 feet. Temporary shoring of the vertical cuts will be required during ramp construction to minimize damage to the railroad tracks. We anticipate top down construction methodology will be utilized for the temporary shoring to reduce the potential for shallow slump sliding and undermining of the railroad tracks. We understand temporary shoring design and installation will be the responsibility of the project contractor.

Field Exploration

Subsurface conditions were investigated on 13 September 2013 using a steel tracked excavator with a bucket and hydraulic thumb to dig two exploratory pits; and a small, track mounted limited, access drill rig using hollow stem augers to drill two exploratory borings drilled.

The approximate locations of the exploratory pits and test borings are indicated on the Pit and Boring Locations Plan, see Figure 2 in the Appendix of this report.

The purpose of the excavator was to determine the thickness of the layer of existing riprap or quarrystones within the proposed ramp footprint and remove the riprap where feasible to facilitate advancement of the exploratory borings.

The borings were advanced with 8-inch diameter continuous flight, hollow stem auger equipment powered by a rubber track mounted limited access drill rig.

Representative soil samples were obtained from the exploratory borings at selected depths or at major strata changes. These samples were recovered using the Standard Terzaghi Sampler (T).

The penetration resistance blow counts noted on the boring logs were obtained as the sampler was dynamically driven into the in situ soil. The process was facilitated using a tripod with a gasoline engine powered cathead to raise and drop a 140-pound hammer a 30-inch free fall distance and driving the sampler 6 to 18 inches and recording the number of blows for each 6-inch penetration interval. The blows recorded on the boring logs represent the accumulated number of blows that were required to drive the last 12 inches.

The soils encountered in the borings were continuously logged in the field and described in accordance with the Unified Soil Classification System (ASTM D2486). The Logs of the Test Borings are included as Figures 5 and 6 in Appendix of this report. The Boring Logs denote subsurface conditions at the locations and time observed, and it is not warranted that they are representative of subsurface conditions at other locations or times.

Laboratory Testing

The laboratory testing program was directed toward determining pertinent engineering and index soil properties.

The natural moisture contents were determined on selected samples and are recorded on the boring logs at the appropriate depths. Full gradation or sieve analyses were performed on two samples to aid in soil classification.

The strength parameters of the underlying earth materials were determined from field test values derived from Standard Penetration Testing.

The results of the field and laboratory testing appear on the "Logs of Test Borings" opposite the sample tested. The sieve analyses are included in the Appendix of this report as Figures 7 through 10.

Subsurface Conditions

The project site slope is currently blanketed by ½ to 3+ ton quarrystones or riprap with the larger quarrystones encountered at the base of the slope. The project site slope above the base is covered by a 2 to 3 feet thick layer smaller quarrystones extending up to the 3 feet thick gravel bed supporting the railroad tracks at the top of the abutment slope.

At the base of the abutment slope on the east end of the project site, we excavated a Pit A to approximately 6.5 feet below grade and removed granitic quarrystones to 3+ tons. At the bottom of the 6.5 feet deep excavation we were able to locate buried riprap using the teeth of the excavator bucket. We also noted several large quarrystones extending both into the project site and under the maintenance building ramp.

Moving to the west along the base of the project site slope we excavated a second pit, Pit B. We encountered riprap to approximately 5 feet below grade with sandy fill soils below. We removed the riprap and backfilled the excavation with sand to construct a pad for the small track mounted drill rig.

Using the track mounted drill rig at the second pit location to drill boring B-1, we encountered loose to medium dense, sandy fill soils with angular gravels to 2 inches in diameter to limit of our boring, 15 feet below pad grade. Groundwater was encountered at approximately 9 feet below drill rig pad grade or at about elevation +4 feet NGVD29 during our September 2013 field investigation.

We next drilled an exploratory boring at the top of project site slope, approximately 4 feet north of the adjacent railroad rail and about 10 feet west of the railroad bridge. We found loose to medium dense granular fill soils with angular gravels to the limit of our boring, 26.5 feet below the top of the slope. At both boring locations, we encountered difficult drilling conditions in the loose sands at the water table.

The project site Standard Penetration Testing N_{60}-values ranged from 6 to 17 blows per foot of penetration. Most of the sample zones with the N_{60}-values above 10 blows per foot of penetration coincided with sandy soil layers containing course angular gravels to 2 inches in diameter. Gravels larger than the diameter of the sampler shoe opening can inflate the blows per foot of sampler penetration and indicate greater than insitu density.

The project site soils are identified as Holocene Basin Deposits (Brabb, 1989); see the Regional Geologic Map, Figure 3 in the Appendix of this report.

Groundwater

We encountered groundwater in our September 2013 at approximately elevation +4 feet NGVD29 during our September 2013 field investigation.

Groundwater elevations may fluctuate due to variations in rainfall, river level, tidal cycles.

Geologic Hazards

Regional Seismic Setting

California contains a broad system of strike-slip faults. Some of these faults have the potential to present a seismic hazard to the project site. The most important of these are the San Andreas, San Gregorio and Zayante Faults. These faults are either active or considered potentially active (Working Group on Northern California Earthquake Potential [WGNCEP] 1996).

San Andreas Fault

The proposed project lies about 11 miles southwest of the San Andreas Fault zone. This is a major fault zone of active displacement which extends from the Gulf of California to the vicinity of Point Arena, where the fault leaves the California coastline. Between these points, the fault is about 700 miles long. The fault zone is a break or series of breaks along the earth's crust, where shearing movement has taken place. This fault movement is primarily horizontal. The largest historic earthquake in Northern California occurred along the San Andreas Fault on 18 April 1906 (M8.3+). The second largest earthquake last century, the 17 October 1989 Loma Prieta earthquake occurred along the Santa Cruz Mountain segment of the San Andreas Fault system.

Although it is uncertain whether the Santa Cruz Mountains segment has a characteristic earthquake independent of great San Andreas Fault earthquakes, the WGNCEP (1996)

assumed an "idealized" earthquake of M_w 7.0 with the same right-lateral slip as the 1989 Loma Prieta earthquake, but having an independent segment recurrence interval of 138 years and a multi-segment recurrence interval of 400 years.

Zayante Fault

The Zayante Fault lies west of the San Andreas Fault and trends about 50 miles northwest from the Watsonville lowlands into the Santa Cruz Mountains.

The Zayante Fault zone is situated approximately 8 miles northeast of the project site and should be considered potentially active. The WGNCEP (1996) considers it capable of generating a M_w 6.8 earthquake with an effective recurrence interval of 8,800 years.

San Gregorio Fault

The San Gregorio fault zone lies about 8 miles southwest of the project site and skirts the coastline of Santa Cruz County northward from Monterey Bay and trends onshore at Point Año Nuevo.

The WGNCEP (1996) divided the San Gregorio fault into the "San Gregorio" and "San Gregorio, Sur Region" segments. The segmentation boundary is located west of Monterey Bay. The San Gregorio segment is assigned a slip rate producing a M_w 7.3 earthquake with a recurrence interval of 400 years.

Historical Seismicity

The epicenter of the 17 October 1989 Loma Prieta earthquake is located about 8 miles northeast of the project site.

Experience following the 17 October 1989 Loma Prieta earthquake indicates that the quality of construction is a primary factor affecting the amount of earthquake damage

sustained by structures. Most of the structural damage from the Loma Prieta earthquake was sustained where the foundations were not adequately embedded into firm materials, where the structures were not well braced for lateral shear and/or where the structures were not securely tied to the foundation system. Conversely, where structures were supported on foundations embedded into firm material, well braced for lateral shear and securely tied to the foundation, damage was generally minor even in areas quite close to the epicenter where structures sustained very strong to severe ground shaking. Based on these considerations, the risk of substantial structural damage from earthquakes appears relatively low for well built structures which incorporate lateral shear bracing and modern building code requirements into their design and construction.

Liquefaction

During an earthquake, seismic waves travel through the earth and vibrate the ground. In cohesionless, granular materials having low relative density (loose to medium dense sands for example), this vibration can disturb the particle framework leading to increased compaction of the material and reduction of pore space between the framework grains. If the sediment is saturated, water occupying the pore spaces resists this compaction and exerts pore pressure that reduces the contact stress between the sediment grains. With continued shaking, transfer of intergranular stress to pore water can generate pore pressures great enough to cause the sediment to lose its strength and change from a solid state to a liquefied state. This mechanical transformation termed liquefaction can cause various kinds of ground failure at or near the ground surface.

The liquefaction process typically occurs at depths less than 50 feet below the ground surface. Liquefaction can occur at deeper intervals, given the right conditions, however ground manifestations have been found to be relatively minor.

The project site is mapped as having a high potential for liquefaction (Dupre, 1975); see the Regional Liquefaction Map, Figure 4 in the Appendix of this report.

Based on the project geologic mapping, local effects of the 1989 Loma Prieta Earthquake, year round high groundwater at the river mouth, a deep incised channel into bedrock filled with alluvial sediments and low blow counts per foot of sampler penetration of the within the project sandy soils at our boring locations, there is a very high potential for liquefaction to occur at the project site.

Slope Instability

The project site consists of a 1.5:1 (H:V) slope approximately 12 feet high. Based upon our exploratory borings the abutment slope soils consist of loose to medium dense granular fill soils with angular gravels. The slope is currently blanketed by ½ to 3+ ton quarrystones or riprap with the larger quarrystones encountered at the base of the slope. The project site slope above the base is covered with a 2 to 3 feet thick layer of smaller quarrystones extending up to the 3 feet thick gravel bed supporting the railroad tracks are at the top of the abutment slope. We surmise the riprap was placed to stabilize and buttress the moderately steep fill soil slope.

We observed no sign of slope instability during our project site reconnaissance of the west abutment of the railroad bridge.

Non-Seismic Differential Settlement

Based upon Standard Penetration Testing of the project site soil profile and our recommended allowable bearing capacities, non-seismic total and differential settlements for the project are anticipated to be less than 1 inch and 0.5 inch respectively.

Seismically induced Surface Displacement and Settlement

The potential for surface displacement at or adjacent the project site due to liquefaction lateral spreading is high.

The potential for settlement at the surface of the project site is high with severe seismic shaking. Potential dry settlement due to severe seismic shaking and potential settlement of saturated sands due to severe seismic shaking have not been quantified.

2013 CBC and Site Class

Project design and construction should conform to the following current building codes:
-2013 California Building Code (CBC); and
-2013 Green Building Standards Code (CALgreen).

In accordance with Section 1613.3.2 of the 2013 CBC and Section 20.3 of the ASCE 7-10, the project site should be assigned the Site Class F. For structures having a fundamental period of vibration equal or less than 0.5 seconds, a design response spectrum for liquefiable soils may be developed using Tables 11.4-1 and 11.4-2.

It is our understanding the bike ramp project will not be designed to mitigate the effects of liquefaction and as such may need to be repaired or replaced as the result of severe seismic shaking.

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our investigation, the outlined project appears compatible with the site, provided the following recommendations are incorporated into the design and construction of the proposed San Lorenzo River Bicycle Ramp Project at the west abutment of the railroad bridge crossing the San Lorenzo River from Beach Street to East Cliff Drive in Santa Cruz, California.

The project site is located within an area of mapped and historic liquefaction. Liquefaction is the loss of soil strength caused by severe seismic shaking of loose saturated sandy soils. Liquefaction can cause settlement at the surface and lateral displacement of gentle slopes. It is our understanding the bike ramp project will not be designed to mitigate the effects of liquefaction and as such may need to be repaired or replaced as the result of severe seismic shaking.

The proposed lower elevation, northern half of the ramp system is underlain by loose fill soils and buried riprap to 3+ tons. The upper elevation portion of the ramp will be placed upon a moderately steep slope composed of loose fill soils. Consistent bearing and minimizing differential settlement will be the primary geotechnical considerations for designing the bicycle ramp.

Pier drilling in the lower elevation, northern half of the ramp system would be prohibitive unless the buried quarrystones are removed. We recommend the ramp be constructed as a mat or raft slab and designed to span a void of 8 feet occurring anywhere within the ramp mat slab footprint. To provide consistent bearing for the north half of the proposed bicycle ramp, the mat or raft slab should bear upon at least 2 feet of granular soils or aggregate base material compacted to at least 90 percent relative compaction.

The upper elevation, southern half of the ramp system will include a retaining wall along the southern or inboard perimeter of the ramp mat slab. The retaining wall will support the railroad track and gravel bed. After the riprap is removed from the slope, drilled piers may be used to support the upper elevation, southern half of the ramp system. To reduce pier construction difficulty, we recommend the project site drilled piers be designed for bearing above the water table. We anticipate the drilled pier excavations within the loose granular soils will need to be cased during construction.

The Bowman and Williams preliminary project plans show vertical cuts and proposed retaining wall heights on the order of 6 to 9 feet. Temporary shoring of the vertical cuts will be required during ramp construction to minimize damage to the railroad tracks. We anticipate top down construction methodology will be utilized for the temporary shoring to reduce the potential for shallow slump sliding and undermining of the railroad tracks. We understand temporary shoring design and installation will be the responsibility of the project contractor.

The following recommendations should be used as guidelines for preparing project plans and specifications:

Site Grading

1. The geotechnical engineer should be notified at least four (4) working days prior to any site clearing or grading so that the work in the field can be coordinated with the grading contractor and arrangements for testing and observation can be made. The recommendations of this report are based on the assumption that the geotechnical engineer will perform the required testing and observation during grading and construction. It is the owner's responsibility to make the necessary arrangements for these required services.

2. Where referenced in this report, Percent Relative Compaction and Optimum Moisture Content shall be based on ASTM Test Designation D1557-current.

3. Areas to be graded should be cleared of all obstructions including loose fill, building foundations, trees not designated to remain, or other unsuitable material. Existing depressions or voids created during site clearing should be backfilled with engineered fill.

4. Cleared areas should then be stripped of organic-laden topsoil. Stripping depth should be from 2 to 4 inches. Actual depth of stripping should be determined in the field by the geotechnical engineer. Strippings should be wasted off-site or stockpiled for use in landscaped areas if desired.

5. Areas to receive engineered fill should be scarified to a depth of 6 inches, moisture conditioned, and compacted to at least 90 percent relative compaction. Portions of the site may need to be moisture conditioned to achieve suitable moisture content for compaction. These areas may then be brought to design grade with engineered fill.

6. Engineered fill should be placed in thin lifts not exceeding 8 inches in loose thickness; moisture conditioned, and compacted to at least 90 percent relative compaction. Project site mat or raft slabs should be supported by 24 inches of engineered fill compacted to at least 90 percent relative compaction.

7. If grading is performed during or shortly after the rainy season, the grading contractor may encounter compaction difficulty, such as pumping or bringing free water to the surface, in the upper surface silty sands. If compaction cannot be achieved after adjusting the soil moisture content, it may be necessary to over-excavate the subgrade

soil and replace it with angular crushed rock to stabilize the subgrade. We estimate that the depth of overexcavation would be approximately 24 inches under these adverse conditions.

8. Project site fills if needed, should be buttressed by the retaining walls.

9. The onsite soils generally appear suitable for use as engineered fill when properly moisture conditioned. Import soils utilized as engineered fill at the project site should:

1) Be free of wood, organic debris and other deleterious materials;
2) Not contain rocks or clods greater than 2.5 inches in any dimension;
3) Not contain more than 25 percent of fines passing the #200 sieve;
4) Have a Sand Equivalent greater than 18;
5) Have a Plasticity Index less than 15;
6) Have an R-Value of not less than 30; and
7) Be approved by the project geotechnical engineer. Contractor should submit to the geotechnical engineer samples of import material or utility trench backfill for compliance testing a minimum of 4 days before it is delivered.

10. We estimate shrinkage factors of about 20 percent for the loose, granular soils when used in engineered fills.

11. All project site permanent cut slopes should be inclined no steeper than 3:1 (horizontal to vertical) or should be buttressed by the retaining walls.

12. Following grading, all exposed slopes should be planted as soon as possible with erosion resistant vegetation.

13. After the earthwork operations have been completed and the geotechnical engineer has finished his observation of the work, no further earthwork operations shall be performed except with the approval of and under the observation of the geotechnical engineer.

Foundations

14. The proposed lower elevation, northern half of the ramp system is underlain by loose fill soils and buried riprap to 3+ tons. The upper elevation portion of the ramp will be placed upon a moderately steep slope composed of loose fill soils. Consistent bearing and minimizing differential settlement will be the primary geotechnical considerations for designing the bicycle ramp.

Lower Elevation Ramp Mat Slab Foundation

15. Pier drilling in the lower elevation, northern half of the ramp system would be prohibitive unless the buried quarrystones are removed. We recommend the bicycle ramp be constructed as a mat or raft slab and designed to span a void of 8 feet occurring anywhere within the ramp mat slab footprint.

16. Mat slabs are typically 10 to 12 inches thick with a mat of steel reinforcement at both the top and bottom of the concrete slab-on-grade. The mat slab may be designed for an allowable soil bearing pressure of 1,200 psf plus a one-third short term increase for dead plus live loads. For the structural design of the bicycle ramp slab, we recommend a modulus of subgrade reaction of 100 kips per cubic foot should be used.

17. To provide consistent bearing for the north half of the proposed bicycle ramp, the mat or raft slab should bear upon at least 2 feet of granular soils or aggregate base material compacted to at least 90 percent relative compaction.

18. Lateral load resistance for the raft or mat slab bearing on the compacted granular material may be developed in friction between the slab bottom and the supporting subgrade. A coefficient of friction of 0.35 is recommended for design of the structure.

Drilled Piers Foundation

19. The upper elevation, southern half of the proposed bicycle ramp system will include a retaining wall along the southern or inboard perimeter accommodate the slope of the proposed bicycle ramp and buttress the railroad track and gravel bed. After the riprap is removed from the slope, drilled piers may be used to support the upper elevation, southern half of the proposed bicycle ramp system. To reduce pier construction difficulty, we recommend the project site drilled piers be designed for end bearing above the water table measured to be +4 feet NGVD29 on 13 September 2013.

20. We anticipate the drilled pier excavations within the project site loose granular soils will need to be cased during construction.

21. Drilled piers supporting the proposed bicycle ramp and designed for both lateral resistance and vertical bearing should be placed at three piers diameters on center or greater. The drilled piers should be embedded at least 10 feet below grade for an allowable end bearing capacity of 3,000 psf plus a one third increase for short term loading. At 12 feet below grade, an allowable end bearing capacity of 4,000 psf plus a one third increase for short term loading may be used to design the drilled piers.

22. For piers spacing closer than three pier diameters on center the vertical bearing capacity is reduced. At two piers diameters on center the vertical bearing capacity is reduced by 22 percent for an allowable end bearing capacity of 3,100 psf plus a one-

third increase for short term loads at 12 feet embedment. Lateral or passive resistance for the project site piers is not reduced for piers placed at two piers diameters on center.

23. Below 3 feet of embedment, the drilled piers may be designed for a lateral resistance of 250 psf acting on 1.5 pier diameters (FS = 1). The top 3 feet of pier embedment should be neglected when calculating lateral resistance.

24. Total and differential settlements for non-seismic conditions are anticipated to be less than 1 inch and 0.5 inch respectively.

25. Prior to placing reinforcing steel and concrete, all pier excavations should be thoroughly cleaned. The foundation excavations must be observed by the geotechnical engineer or his representative prior to placing reinforcing steel and concrete.

Retaining Wall Lateral Pressures

26. The proposed retaining wall system will buttress the railroad track and gravel bed. The retaining wall should be designed to resist both lateral earth pressures and a railroad surcharge as specified by the owner of the railroad; or from the Southern Pacific Transportation Company's Supplemental Specifications to Part 20 of Chapter 8 of the AREA Manual for Railway Engineering or an equivalent reference. Project site retaining walls should include a backdrain and be designed to resist a lateral active earth pressure of 45 pcf-efw for a cantilever condition with a level backslope.

27. The above lateral earth pressures assume that the walls are fully drained to prevent hydrostatic pressure behind the walls. Drainage materials behind the wall should consist of Caltrans Permeable Material Class 1 – Type A (Caltrans Specification 68-1.025) or an approved equivalent. The drainage material should be at least 12 inches thick. The drains should extend from the base of the wall to within 12 inches of

the top of the backfill. A perforated pipe should be placed (holes down) about 4 inches above the bottom of the wall and be tied to a suitable drain outlet and energy dissipater. Wall backdrains should be plugged at the surface with clayey material to prevent infiltration of surface runoff into the backdrains.

Plan Review, Construction Observation, and Testing

28. Our firm should be provided the opportunity for a general review of the final project plans prior to construction so that our geotechnical recommendations may be properly interpreted and implemented. If our firm is not accorded the opportunity of making the recommended review, we can assume no responsibility for misinterpretation of our recommendations. We recommend that our office review the project plans prior to submittal to public agencies, to expedite project review. The recommendations presented in this report require our review of final plans and specifications prior to construction and upon our observation and, where necessary, testing of the earthwork and foundation excavations. Observation of grading and foundation excavations allows anticipated soil conditions to be correlated to those actually encountered in the field during construction.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that planned at the time, our firm should be notified so that supplemental recommendations can be given.

2. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information and recommendations contained herein are called to the attention of the Architects and Engineers for the project and incorporated into the plans, and that the necessary steps are taken to ensure that the Contractors and Subcontractors carry out such recommendations in the field. The conclusions and recommendations contained herein are professional opinions derived in accordance with current standards of professional practice. No other warranty expressed or implied is made.

3. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or partially, by changes outside our control. Therefore, this report should not be relied upon after a period of three years without being reviewed by a geotechnical engineer.

APPENDIX A

Site Vicinity Map

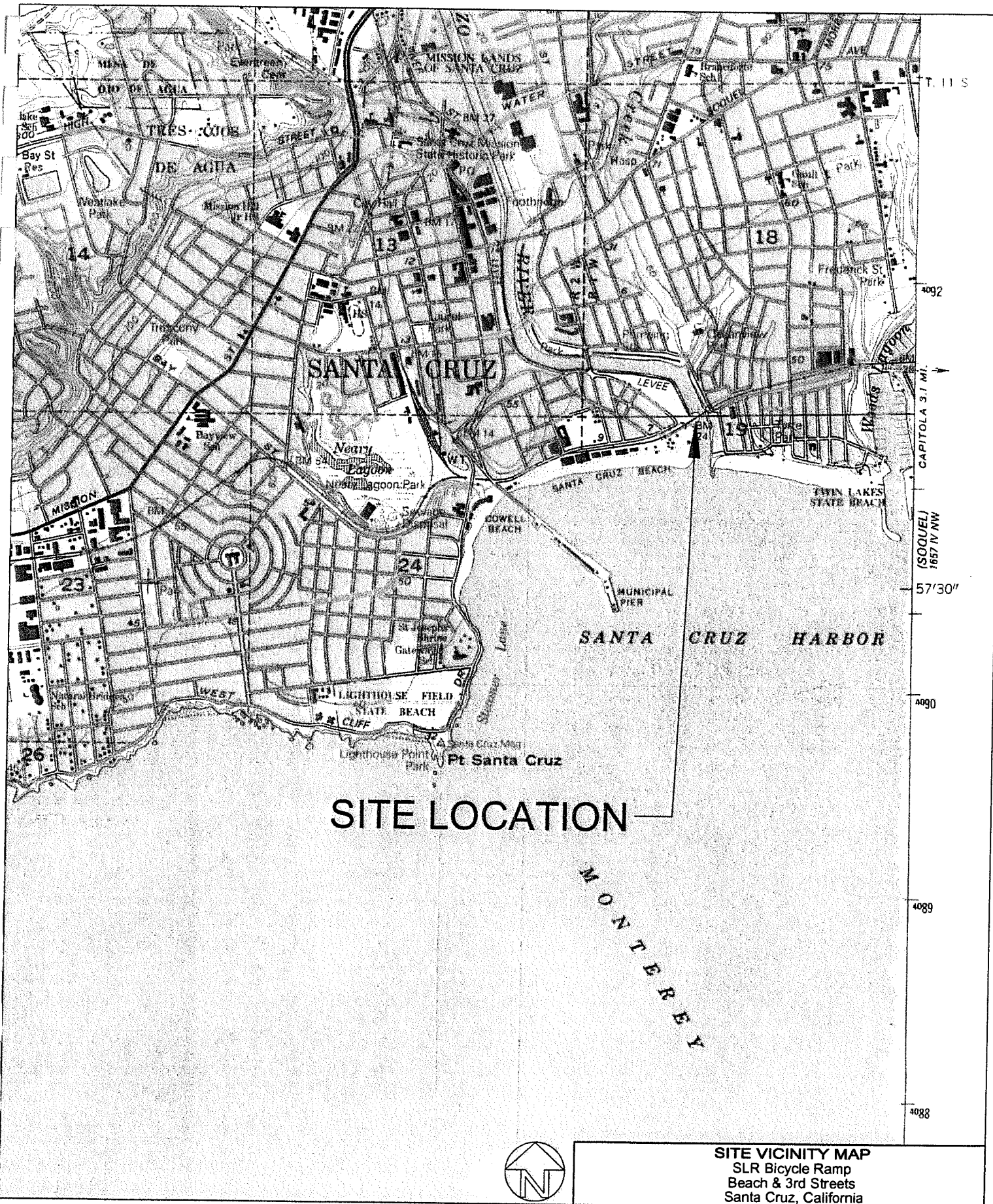
Pit and Boring Locations Plan

Regional Geologic Map

Regional Liquefaction Map

Logs of Test Borings

Sieve Analyses



SITE VICINITY MAP
SLR Bicycle Ramp
Beach & 3rd Streets
Santa Cruz, California

FROM:
USGS Santa Cruz Topographic Quadrangle, 1954, revised 1994.
20 ft. contour interval

SCALE:	1:24,000 (1" = 2,000')
DRAWN BY:	JD
DATE:	January 2014
REVISED:	
JOB NO.	SC10558

HARO, KASUNICH & ASSOCIATES, INC.
GEOTECHNICAL AND COASTAL ENGINEERS
116 E. LAKE AVENUE, WATSONVILLE, CA 95076
(831) 722-4175

FIGURE NO. 1

SHEET NO. 23

PIT AND BORING LOCATIONS PLAN
SLR Bicycle Ramp
Beach & 3rd Streets
Santa Cruz, California

KEY:

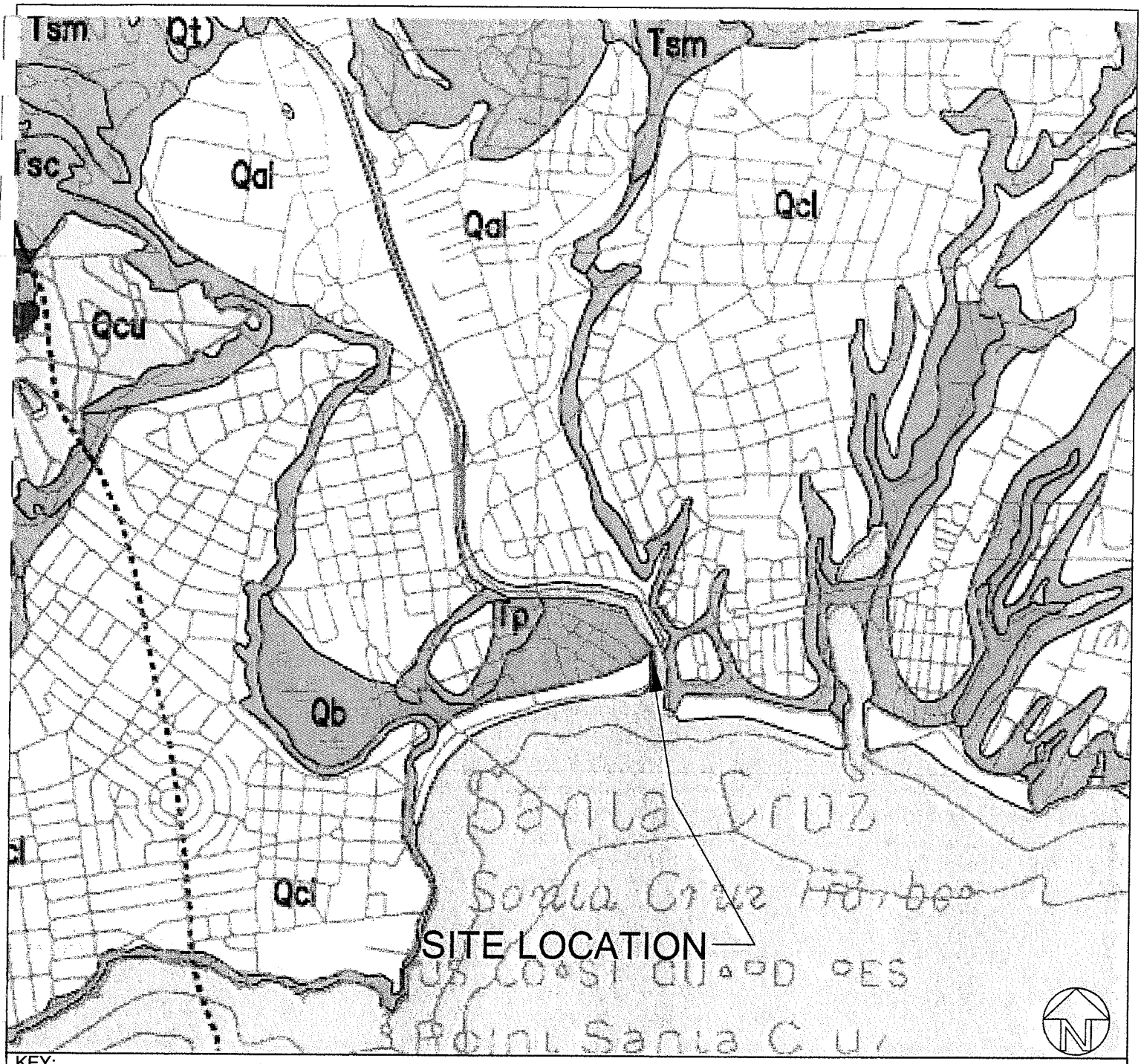
B-2 = SOIL BORING LOCATION

= EXCAVATOR TEST PIT LOCATION

SCALE: NO SCALE	aerial photo from Google Earth, dated 16 April 2013
PHOTOS BY: JD	
DATE: January 2014	HARO, KASUNICH & ASSOCIATES, INC.
REVISED:	GEOTECHNICAL AND COASTAL ENGINEERS
JOB NO: SC10558	116 E. LAKE AVENUE, WATSONVILLE, CA. 95076 (831) 722-4175

FIGURE NO. 2

SHEET NO. 24



KEY:

Tp **Purisima Formation (Pliocene and upper Miocene)**—Very thick bedded yellowish-gray tuffaceous and diatomaceous siltstone containing thick interbeds of bluish-gray, semifriable, fine-grained andesitic sandstone. As shown, includes Santa Cruz Mudstone east of Scotts Valley and north of Santa Cruz. Thickness approximately 3,000 ft in the Corralitos Canyon area

Qal **Alluvial deposits, undifferentiated (Holocene)**—Unconsolidated, heterogeneous, moderately sorted silt and sand containing discontinuous lenses of clay and silty clay. Locally includes large amounts of gravel. May include deposits equivalent to both younger (Qyf) and older (Qof) flood-plain deposits in areas where these were not differentiated. Thickness highly variable; may be more than 100 ft thick near coast

Qb **Basin deposits (Holocene)**—Unconsolidated, plastic, silty clay and clay rich in organic material. Locally contain interbedded thin layers of silt and silty sand. Deposited in a variety of environments including estuaries, lagoons, marsh-filled sloughs, flood basins, and lakes. Thickness highly variable; may be as much as 90 ft thick underlying some sloughs

Qcl **Lowest emergent coastal terrace deposits (Pleistocene)**—Semiconsolidated, generally well-sorted sand with a few thin, relatively continuous layers of gravel. Deposited in nearshore high-energy marine environment. Grades upward into eolian deposits of Manresa Beach in southern part of county. Thickness variable; maximum approximately 40 ft. Unit thins to north where it ranges from 5 to 20 ft thick. Weathered zone ranges from 5 to 20 ft thick. As mapped, locally includes many small areas of fluvial and colluvial silt, sand, and gravel, especially at or near old wave-cut cliffs

FROM:

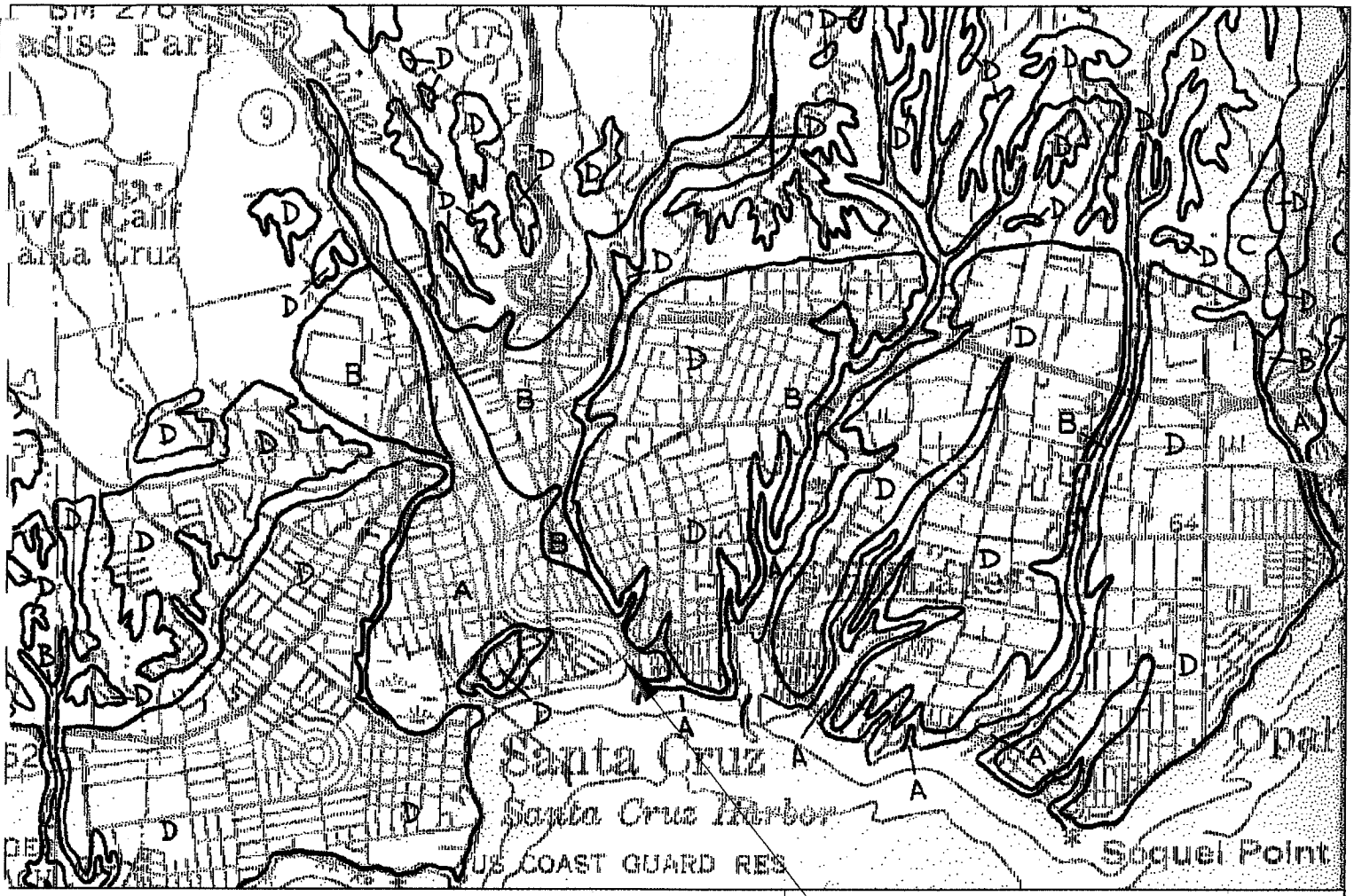
GEOLOGIC MAP OF SANTA CRUZ COUNTY, CALIFORNIA
Compiled by
Earl E. Brabb
Digital Database Prepared by S. Graham, C. Wentworth, D. Knifong, R. Graymer and J. Blissenbach
1997

REGIONAL GEOLOGIC MAP
SLR Bicycle Ramp
Beach & 3rd Streets
Santa Cruz, California

SCALE: NO SCALE	
DRAWN BY: JD	
DATE: January 2014	HARO, KASUNICH & ASSOCIATES, INC.
REVISED:	GEOTECHNICAL AND COASTAL ENGINEERS
JOB NO. SC10558	116 E. LAKE AVENUE, WATSONVILLE, CA 95076 (831) 722-4175

FIGURE NO. 3

SHEET NO. 25



SITE LOCATION

EXPLANATION:

INTRODUCTION

Liquefaction occurs when water-saturated sand and silt change from a solid to a liquid during an earthquake. The liquid may no longer support the ground or structures with the result that landslides may form on hillside areas, large fissures and cliffs may develop on what was previously flat ground along streams and rivers, and bridge supports, building piles, and other structures may sink into the ground. Such damage occurred along the Pajaro and San Lorenzo Rivers and at many other localities in Santa Cruz County and the San Francisco Bay region during the 1906 earthquake (Lawson and others, 1908). Figure 1 shows some of this damage.

Predicting the effects of liquefaction requires knowledge of the distribution of sand and silt, the physical properties of these sediments, and their degree of water saturation. The general distribution of sand and silt is shown on the geologic map. Information on the physical properties of the sediments is scarce but can be determined for a few geologic units and estimated for the others from studies of similar sediments in the southern San Francisco Bay region (Youd and others, 1973, table 1). The degree of water saturation was obtained in part from Muir (1972), from unpublished well records, and in part from field investigations. Youd (1973) and Youd and others (1973) have established a method for combining this information to estimate liquefaction potential; their method was used for the Santa Cruz County analysis.

ZONES OF LIQUEFACTION POTENTIAL

The following zones express the general liquefaction potential of areas underlain by Quaternary deposits in Santa Cruz County. This information is suitable for general land-use planning but it is not authoritative in determining the relative hazard at any particular site. Presence of water in sandy layers near the surface of the ground could make a site highly susceptible to liquefaction during an earthquake even though the geologic unit generally has low potential. Similarly, local dewatering of a sandy deposit by pumping could make a site less susceptible to liquefaction. Site safety with respect to liquefaction should be determined after field investigations by qualified engineering geologists or soils engineers.

A — HIGH POTENTIAL FOR LIQUEFACTION--Geologic units in this zone include younger flood-plain deposits (Qyf); some of the older flood-plain deposits (Qof) and alluvial deposits (Qal); basin deposits (Qb); beach sand (Qbs); and abandoned channel fill deposits (Qcf)

B — MODERATELY HIGH POTENTIAL FOR LIQUEFACTION--Geologic units in this zone include some of the older flood-plain (Qof) and alluvial (Qal) deposits; dune sand (Qds); colluvium (Qc); and alluvial fan deposits (Qf)

C — MODERATELY LOW POTENTIAL FOR LIQUEFACTION--Geologic units in this zone are alluvial fan deposits (Qf); colluvium (Qc); older flood-plain deposits (Qof); and alluvial deposits (Qal)

D — LOW POTENTIAL FOR LIQUEFACTION--Geologic units in this zone include eolian deposits of Manresa Beach (Qem) and Sunset Beach (Qes); terrace deposits (Qwf, Qwa, Qcu, Qce, Qt, and Qcl); Aromas Sand (Qa, Qac, and Qaf); and continental deposits (QTc)

FROM:

Maps Showing geology and Liquefaction Potential of Quaternary Deposits in Santa Cruz County, California
By William R. Dupre, 1975

REGIONAL LIQUEFACTION MAP

SLR Bicycle Ramp
Beach & 3rd Streets
Santa Cruz, California

SCALE: NO SCALE	
DRAWN BY: JD	
DATE: January 2014	HARO, KASUNICH & ASSOCIATES, INC.
REVISED:	GEOTECHNICAL AND COASTAL ENGINEERS
JOB NO. SC10558	116 E. LAKE AVENUE, WATSONVILLE, CA 95076 (831) 722-4175

FIGURE NO. 4

SHEET NO. 26

Haro, Kasunich & Associates, Inc.
Geotechnical and Environmental Engineers

SLR - Bike Ramp

PROJECT NO. SC10558

LOGGED BY RP DATE DRILLED September 19, 2013 BORING DIAMETER 8" - HS BORING NO. B-1

Depth, ft.	Sample No. and type	Symbol	SOIL DESCRIPTION	Unified Soil Classification	Blows/foot 350 ft - lbs.	Qu - t.s.f. Penetrometer	Dry Density p.c.f.	Moisture % dry wt.	MISC. LAB RESULTS
0			Excavator location B - excavated to 5 feet below adj ramp grade or to 10 ft NGVD to remove riprap to 1 ton+. Set up location B-1 for Cenozoic track rig. Observed ramp subgrade settlement of 4".						
	1-1 (T)		Granite gravel in sample shoe, minimal sample, Silty SAND w/angular gravels, damp, loose (fill)	SM	14			3	
5	1-2 (T)				9			7	
			2" Granite Gravel in shoe, mottled red/dark brown Silty SAND w/angular gravels, damp, loose (fill)	SP					
			Water at 9 feet or 4 feet NGVD						
10	1-3 (T)		Brown, Silty Clayey SAND, w/angular Gravels wet, medium dense (Fill)	SC	17			10	
15	1-4 (B)		Boring extended to 15 feet sand flow into auger when plug removed & wedged rods in place Fine to medium grain SAND on auger bottom	SP				24	
			Boring terminated at 15 feet below ramp grade or 0 feet NGVD.						
20									
25									
30									
35									

HARO, KASUNICH AND ASSOCIATES, INC.

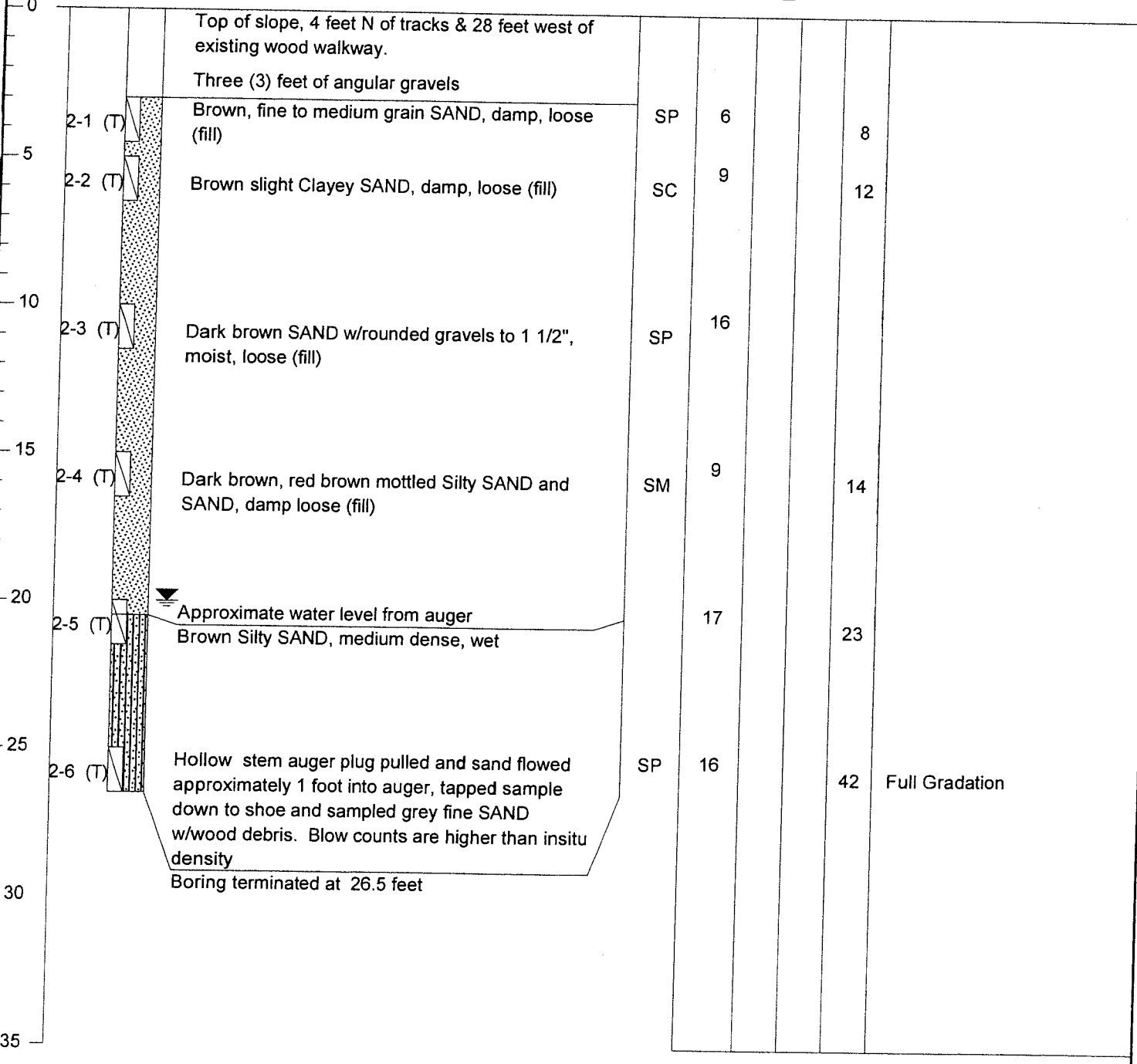
BY: dk | FIGURE NO. 5

Haro, Kasunich & Associates, Inc.
Geotechnical and Geological Engineers

SLR - Bike Ramp

PROJECT NO. SC10558

LOGGED BY RP DATE DRILLED September 19, 2013 BORING DIAMETER 8" - HS BORING NO. B-2



HARO, KASUNICH AND ASSOCIATES, INC.

BY: dk

FIGURE NO. 6

Haro, Kasunich & Associates, Inc.
Coastal and Geotechnical Engineers

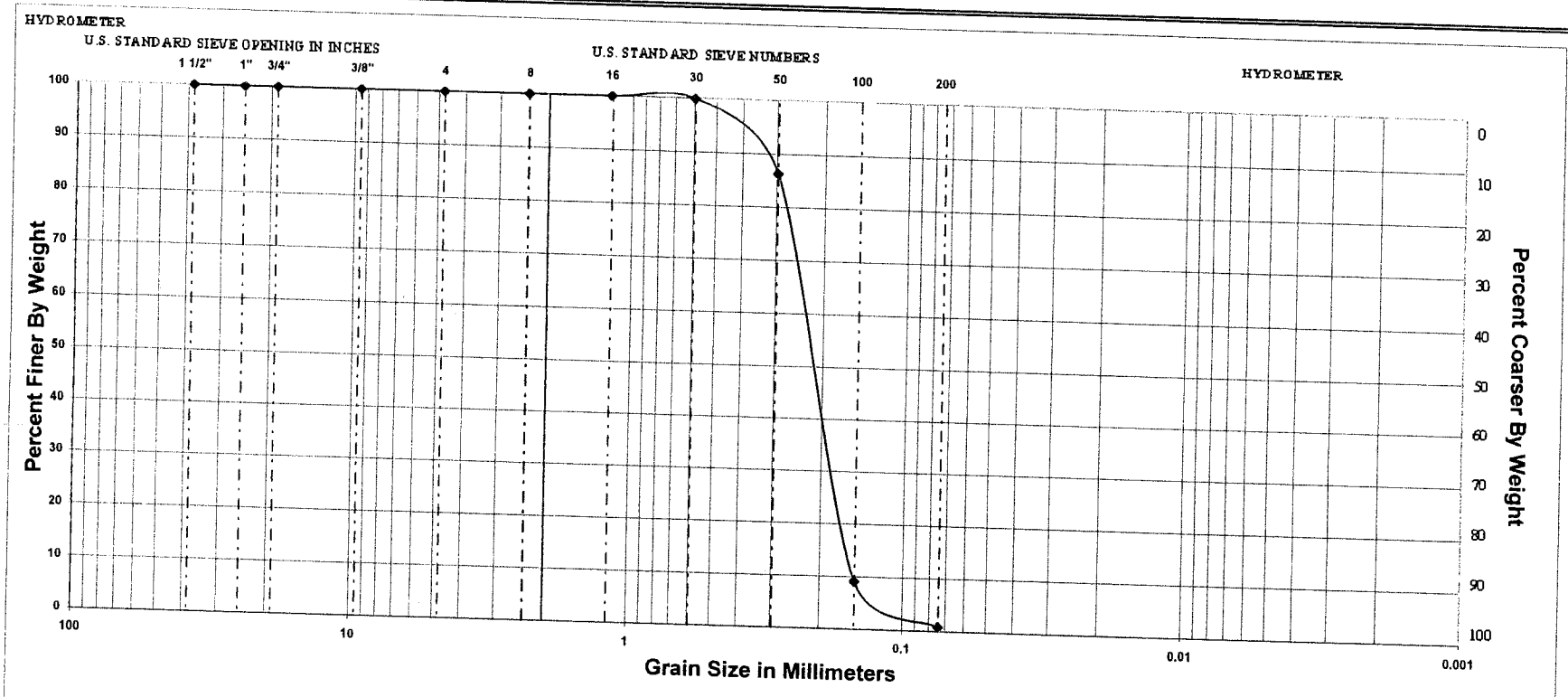
Sieve Analysis

Project Name:	SLR - Bicycle Ramp				
File No.:	SC 10558				
Sample No.:	1-4				
Date:	October 3, 2013				
By:	MA				
Sample Description:					
Brown Poorly-Graded Sand					
Group Symbol:	SP				
Gravel Content:	0.0%				
Sand Content:	99.2%				
Fines Content:	0.8%				

Moisture Density		
Height Of Sample (in) or Enter "Bag"	Bag	
Tare No.	300	
Gross Wet Weight	527.7	
Gross Dry Weight	439.7	
Tare Weight	72.2	
Net Dry Weight	367.5	
Weight of Water	88.0	
% Moisture	23.9%	
Dry Density	#VALUE!	

Sieve	Weight Retained	% Retained	Cumulative Percent		Specs
			Retained	Passing	
1½"	0.0	0.0%	0.0%	100.0%	
1"	0.0	0.0%	0.0%	100.0%	
¾"	0.0	0.0%	0.0%	100.0%	
1/2"	0.0	0.0%	0.0%	100.0%	
3/8"	0.0	0.0%	0.0%	100.0%	
No. 4	0.0	0.0%	0.0%	100.0%	
No. 8	0.0	0.0%	0.0%	100.0%	
No. 16	0.1	0.0%	0.0%	100.0%	
No. 30	0.3	0.1%	0.1%	99.9%	
No. 50	50.0	13.6%	13.7%	86.3%	
No. 100	283.8	77.2%	90.9%	9.1%	
No. 200	30.5	8.3%	99.2%	0.8%	
Pan	2.8 0.0	0.8%	100.0%	0.0%	
Total	367.5	100.0%		100.0%	

Before	367.5	After	
Dry Wt.		Dry Wt.	436.9
Tare		Tare	72.2
		364.7	



Gravel Content:	0.0%
Sand Content:	99.2%
Fines Content	0.8%
Cumulative Sum	100.0%

Sample Description: Brown Poorly-Graded Sand
Group Symbol: SP

Haro, Kasunich & Associates, Inc.
Coastal and Geotechnical Engineers
116 East Lake Avenue, Watsonville, California
(831) 722-4175 ~ Fax (831) 722-3202

HKA Project No: SC 10558	***GRAIN SIZE ANALYSIS***
Sample No: 1-4	
Date: October 3, 2013	**SLR - Bicycle Ramp**
	Figure No. 8

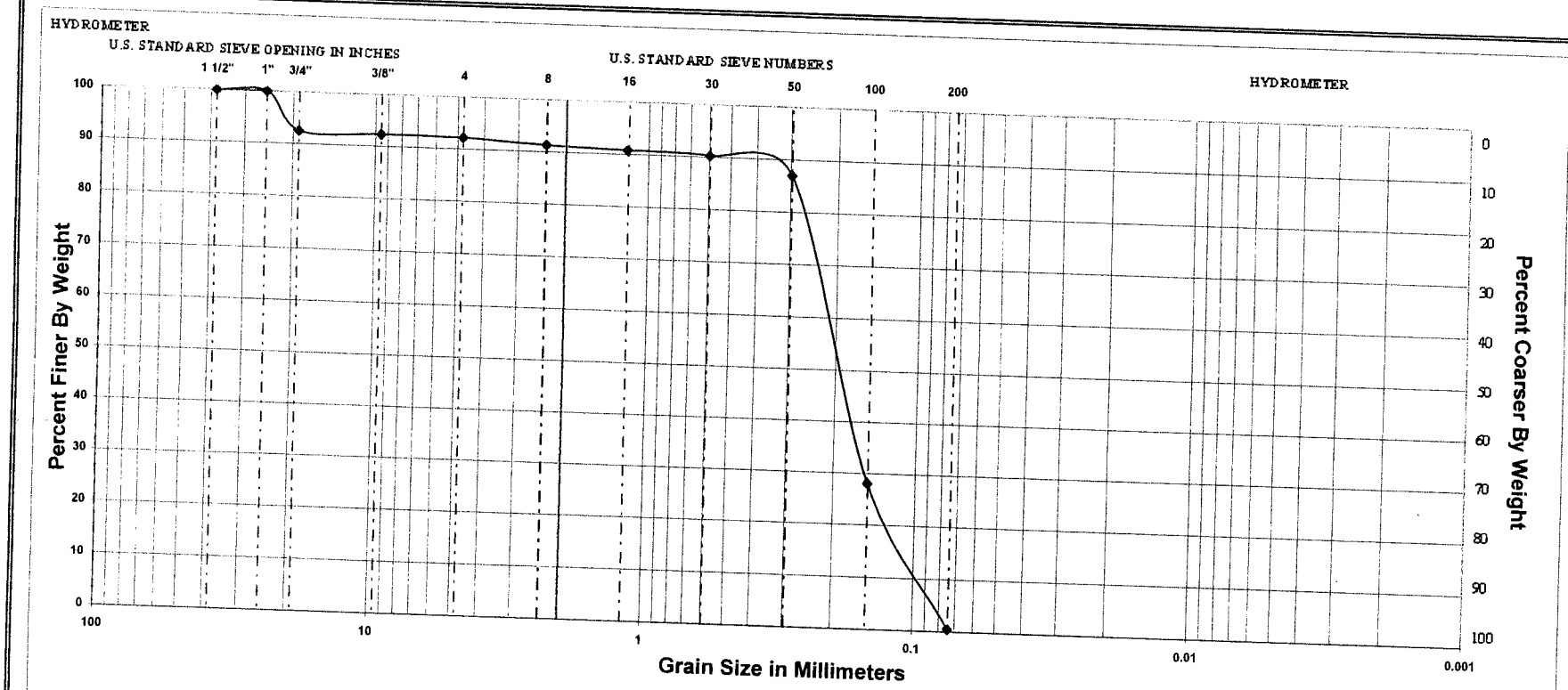
Haro, Kasunich & Associates, Inc.
Coastal and Geotechnical Engineers

Sieve Analysis

Moisture Density			Project Name:	SLR - Bicycle Ramp	
			File No.:	SC 10558	
Height Of Sample (in) or Enter "Bag"		Bag	Sample No.:	2-6	
Tare No.		176	Date:	October 3, 2013	
Gross Wet Weight		384.8	By:	MA	
Gross Dry Weight		291.6	Sample Description:		
Tare Weight		71.4	Gray Poorly-Graded Sand w/ Wood		
Net Dry Weight		220.2	Group Symbol:	SP	
Weight of Water		93.2	Gravel Content:	7.8%	
% Moisture		42.3%	Sand Content:	91.8%	
Dry Density		#VALUE!	Fines Content:	0.4%	

Sieve	Weight Retained	% Retained	Cumulative Percent		Specs
			Retained	Passing	
1½"	0.0	0.0%	0.0%	100.0%	
1"	15.1	7.5%	7.5%	92.5%	
¾"	0.0	0.0%	7.5%	92.5%	
1/2"	0.0	0.0%	7.5%	92.5%	
3/8"	0.4	0.2%	7.7%	92.3%	
No. 4	0.2	0.1%	7.8%	92.2%	
No. 8	1.8	0.9%	8.7%	91.3%	
No. 16	1.0	0.5%	9.2%	90.8%	
No. 30	1.1	0.5%	9.7%	90.3%	
No. 50	6.6	3.3%	13.0%	87.0%	
No. 100	119.0	59.0%	72.0%	28.0%	
No. 200	55.7	27.6%	99.6%	0.4%	
Pan	0.9 0.0	0.4%	100.0%	0.0%	
Total	201.8	100.0%		100.0%	

Before	220.2	After	
Dry Wt.		Dry Wt.	272.3
Tare		Tare	71.4
		200.9	



Gravel Content: 7.8%
Sand Content: 91.8%
Fines Content 0.4%
Cumulative Sum 100.0%

Sample Description: Gray Poorly-Graded Sand w/ Wood
Group Symbol: SP

Haro, Kasunich & Associates, Inc.
Coastal and Geotechnical Engineers
116 East Lake Avenue, Watsonville, California
(831) 722-4175 ~ Fax (831) 722-3202

HKA Project No: SC 10558	***GRAIN SIZE ANALYSIS***
Sample No: 2-6	
Date: October 3, 2013	**SLR - Bicycle Ramp**
	Figure No. 10

APPENDIX C
Benchmark, Lead Paint Chip Sample Collection, 7/24/18.

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July 24, 2018

Dale Hendsbee
MME Civil And Structural Engineering
224 Walnut Ave. Ste. B
Santa Cruz, CA, 95060

Re: Lead Paint Chip Sample Collection
Just East Of 100 Beach Street, Santa Cruz
Benchmark Project #E18-1230-LSC
On Site Technician: Rob LoGrasso
San Lorenzo River Railroad Trestle Bridge

Lead-Based Paint Identified, Worker Protection is Required

Dear Dale Hendsbee,

In accordance with our verbal agreement, California Department of Public Health Certified Lead Inspector/Assessor Rob LoGrasso CDPH #17622 conducted a lead paint chip sample collection at Just East of 100 Beach Street in Santa Cruz for the purpose of identifying the presence of lead-based paint/lead surface coatings prior to disturbance.

Benchmark collected paint chip samples from miscellaneous surfaces located on the property site to determine the presence or absence of lead-based paint.

LEAD PAINT CHIP SAMPLES

Paint chip sampling was performed in accordance to the U.S. Department of Housing and Urban Development (HUD) guidelines for the Evaluation and Control of Lead-Based Paint Hazards. A 2" x 2" area was outlined and a sample of the surface coating was collected and placed in a clear zip lock baggy.

HUD Guidelines "action levels"
0.5% by weight = 5,000ppm (Atomic Absorption Spectroscopy)
1.0 mg/cm² (XRF)

Paint Chip Sample Results

Component	% by weight	parts per million	Worker Protection
Watsonville End Train Trestle Mid Span Steel Bracket -	*0.21%*	*2,100 PPM*	*Yes*
North/Mid End Santa Cruz Train Trestle Steel Bracket -	*19%*	*190,000 PPM*	*Yes*
North Most End Santa Cruz Train Trestle Steel Bracket -	*33%*	*330,000 PPM*	*Yes*
North/Mid End Santa Cruz Train Trestle Web Steel Upright -	*22%*	*220,000 PPM*	*Yes*
North Most End Santa Cruz Train Trestle Web Steel Upright -	*37%*	*370,000 PPM*	*Yes*

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- The paint chip samples collected were ***above both*** the EPA/HUD level of 0.50% (5,000ppm) and the Cal-OSHA level of 0.06% (600 PPM) of lead by weight.

Based upon the sample results, some level of worker protection regarding lead-based paint is required.

Waste Stream Characterization

A number of components assayed/inspected contained lead-based paint. Benchmark understood that the structure will be demolished and/or dismantled, and as such, bulk sampling of the lead painted components for the purpose of waste stream characterization prior to demolition should be conducted.

ANALYTICAL

Laboratory analysis was performed by Forensic Analytical. Their CA ELAP number is #101762. Samples are analyzed by Flame Atomic Absorption in accordance with EPA's "Standard Operating Procedures for Lead in Paint by Hotplate or Microwave based Acid digestion and Atomic Absorption or Inductively Coupled Plasma Emission Spectrometry" (1991), EPA/600/8-91/213, NTIS Document No. PB92-114172. Samples are prepared by hotplate digestion with nitric acid and hydrogen peroxide, and analyzed by Flame AA.

LABORATORY QUALITY CONTROL PROGRAM

Forensic Analytical maintains an in-house quality control program. This program involves blind reanalysis of ten percent of all samples, precision and accuracy controls, and use of standard bulk reference materials.

We appreciate this opportunity to provide professional services for this project. If we can be of further assistance, or if you have questions concerning this report, please do not hesitate to contact our office at (408) 448-7594.

Sincerely
Benchmark Environmental Engineering

Terri MacFarlane
Environmental Field Service Manager

Enclosure: Laboratory Results, Lead Hazard Evaluation Form, Diagram

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BENCHMARK
3732 Charter Park Drive, Ste. A San Jose CA 95136
408-448-7594 / 408-448-3849 (fax)

Please Include Sample Locations on Laboratory Report

Email Lab Receipts & Reports To: *labs@benchmarkenvironmental.com*

BULK CHAIN OF CUSTODY

Page: 1 of 1

Project #: C18-1230-LPC Date: 7/20/18 Technician: RDD

Project Address: 100 Beach street, Santa cruz

Sample Number	Location	Homogenous Group # or Measurement	Material Type or Component	Results To Be Reported As
C18-1230-7-20 1PC	Watsonville end Train trestle mid span steel Bracket	2"x2"	paint chip	% By wt &
2PC	North/mid end santa cruz Train Trestle steel Bracket			PPM
3PC	northern most end santa cruz Train Trestle steel Bracket			
4PC	North/mid end santa cruz Train Trestle web steel upright			
5PC	northern most end santa cruz train Trestle web steel upright			

Project Type (X box)
- ☐ Asbestos Bulk
- ☒ Lead-Based Paint Bulk
- ☐ Risk Assessment
- ☐ Clearance (Lead)
- ☐ Mold/Fungus
- ☐ Sewage Screen (Baseline)
- ☐ Sewage Screen (Post-Remediation)
- ☐ Other: _____

Type of Analysis (X box)
- ☐ PLM/Bulk (EPA 600)
- ☐ EPA SW 846-7420 FLAA
- ☐ Dust Wipe (*Ghost Wipes*)
- ☐ Soil (Lead)
- ☒ Paint Chip
- ☐ GFAA Water (Lead)
- ☐ Qualitative (MUG) E.Coli/Coliforms
- ☐ Direct Microscopic Exam
- ☐ Other: _____

TAT (X box)
- ☐ *Same Day/Rush*
- ☐ *Date Needed:* 7/24/18 3pm

Relinquished By: _____ Received By: _____ Date/Time: _____

Rev 2017

RECEIVED JUL 20 2018 4:30 pm cym d/o

Forensic Analytical LABORATORIES

Final Report

Metals Analysis of Paints

(AIHA-LAP, LLC Accreditation, Lab ID #101762)

Benchmark Environmental
Project Manager
3732-A Charter Park Drive

San Jose, CA 95136

Client ID: 3565
Report Number: M200515
Date Received: 07/20/18
Date Analyzed: 07/23/18
Date Printed: 07/23/18
First Reported: 07/23/18

Job ID / Site: E18-1230-LPC, 100 Beach Street, Santa Cruz
Date(s) Collected: 7/20/18

FALI Job ID: 3565
Total Samples Submitted: 5
Total Samples Analyzed: 5

Sample Number	Lab Number	Analyte	Result	Result Units	Reporting Limit*	Method Reference
E18-1230-7-20-1PC	30808352	Pb	0.21	wt%	0.02	EPA 3050B/7000B
Comment:	Watsonville and Train trestle mid span steel bracket Additional Result: 2100 ppm					
E18-1230-7-20-2PC	30808353	Pb	19	wt%	2	EPA 3050B/7000B
Comment:	North/mid end santa cruz train trstle steel bracket Additional Result: 190000 ppm					
E18-1230-7-20-3PC	30808354	Pb	33	wt%	2	EPA 3050B/7000B
Comment:	norther most end santa cruz train trstle steel bracket Additional Result: 330000 ppm					
E18-1230-7-20-4PC	30808355	Pb	22	wt%	2	EPA 3050B/7000B
Comment:	North/mid end santa cruz train trestle web steel upright Additional Result: 220000 ppm					
E18-1230-7-20-5PC	30808356	Pb	37	wt%	3	EPA 3050B/7000B
Comment:	Northern most end santa cruz train trestle web steel upright Additional Result: 370000 ppm					

* The Reporting Limit represents the lowest amount of analyte that the laboratory can confidently detect in the sample, and is not a regulatory level. The Units for the Reporting Limit are the same as the Units for the Final Results.

Daniele Siu

Daniele Siu, Laboratory Supervisor, Hayward Laboratory

3777 Depot Road, Suite 409, Hayward, CA 94545 / Telephone: (510) 887-8828 (800) 827-FASI / Fax: (510) 887-4218

LEAD HAZARD EVALUATION REPORT

Section 1 — Date of Lead Hazard Evaluation July, 20, 2018

Section 2 — Type of Lead Hazard Evaluation (Check one box only)

☐ Lead Inspection ☐ Risk assessment ☐ Clearance Inspection ☑ Other (specify) Paint Chip Collection

Section 3 — Structure Where Lead Hazard Evaluation Was Conducted

Address [number, street, apartment (if applicable)]	City	County	Zip Code
Just East of 100 Beach Street	Santa Cruz	Santa Cruz	95060

Construction date (year) of structure	Type of structure	Children living in structure?
1903	☐ Multi-unit building ☐ School or daycare ☐ Single family dwelling ☑ Other Train Trestle	☐ Yes ☑ No ☐ Don't Know

Section 4 — Owner of Structure (if business/agency, list contact person)

Name	Telephone number
Dale Hendsbee C/O MME Civil And Structural Engineering	831-431-8416

Address [number, street, apartment (if applicable)]	City	State	Zip Code
224 Walnut Avenue, Ste. B	Santa Cruz	CA	95060

Section 5 — Results of Lead Hazard Evaluation (check all that apply)

☐ No lead-based paint detected ☐ Intact lead-based paint detected ☑ Deteriorated lead-based paint detected

☐ No lead hazards detected ☐ Lead-contaminated dust found ☐ Lead-contaminated soil found ☑ Other Worker Protection Required

Section 6 — Individual Conducting Lead Hazard Evaluation

Name	Telephone number
Rob LoGrasso	800-988-7424

Address [number, street, apartment (if applicable)]	City	State	Zip Code
3732 Charter Park Drive, Ste. A	San Jose	CA	95136

CDPH certification number	Signature	Date
CDPH #17622	Rob LoGrasso	07/24/18

Name and CDPH certification number of any other individuals conducting sampling or testing (if applicable)

Section 7 — Attachments

A. A foundation diagram or sketch of the structure indicating the specifc locations of each lead hazard or presence of lead-based paint;
B. Each testing method, device, and sampling procedure used;
C. All data collected, including quality control data, laboratory results, including laboratory name, address, and phone number.

First copy and attachments retained by inspector

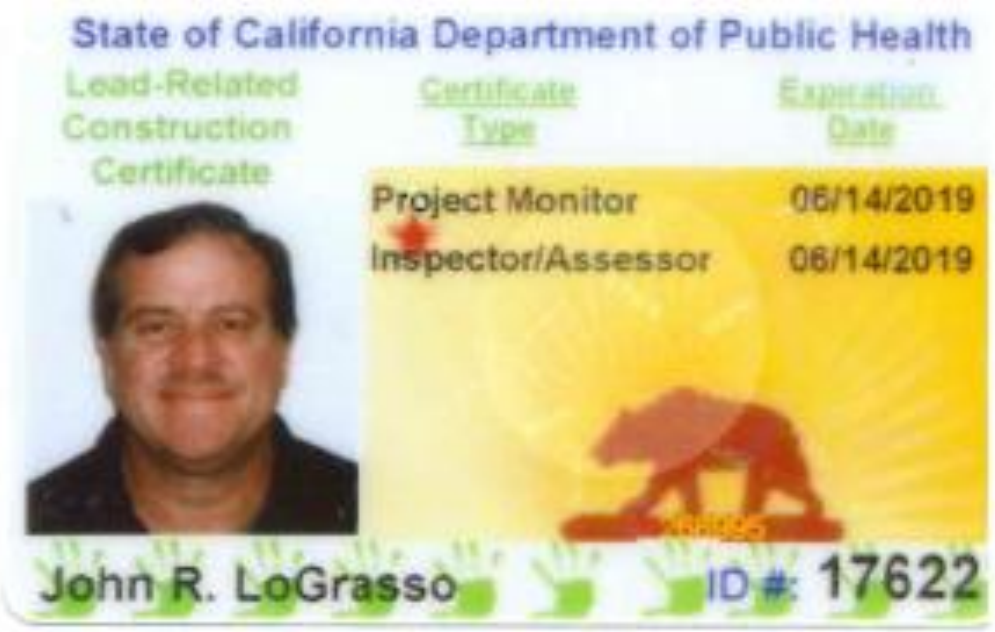
Second copy and attachments retained by owner

Third copy only (no attachments) mailed or faxed to:

California Department of Public Health
Childhood Lead Poisoning Prevention Branch Reports
850 Marina Bay Parkway, Building P, Third Floor
Richmond, CA 94804-6403
Fax: (510) 620-5656

Rob LoGrasso
Benchmark Environmental
3732 Charter Park Dr., Ste. A
San Jose, CA, 95136

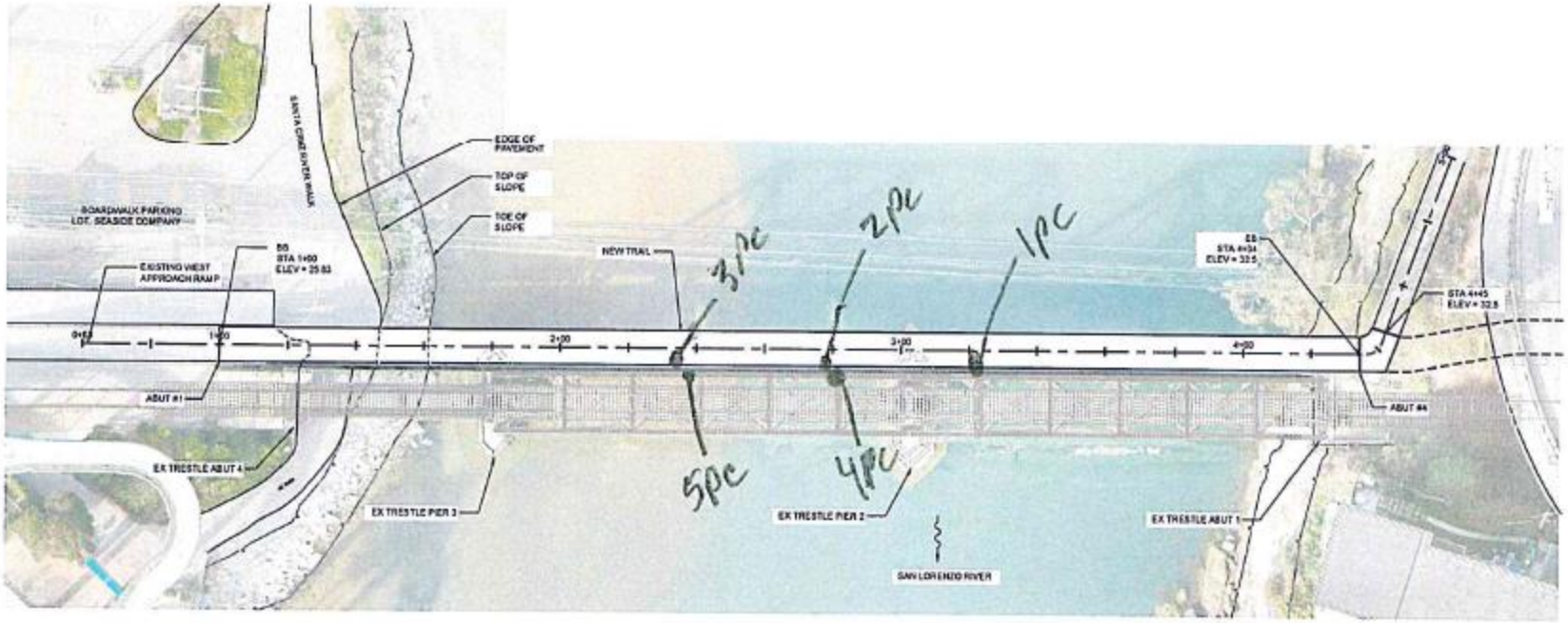
CDPH #17622



BENCHMARK

San Lorenzo River Railroad Trestle Bridge

Just East of 100 Beach Street
Santa Cruz, CA, 95060



APPENDIX D
Benchmark, Asbestos Renovation/Demolition Survey, 7/24/18.

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July 24, 2018

Dale Hendsbee
MME Civil And Structural Engineering
224 Walnut Ave. Ste. B
Santa Cruz, CA, 95060

Re: Lead Exterior Only and Asbestos Sample Collection - Specific
Just East of 100 Beach Street, Santa Cruz
Benchmark Project #: E18-1230-ACS
On Site Technician: Rob LoGrasso
San Lorenzo River Railroad Trestle Bridge

ASBESTOS PRESENT

Dear Dale Hendsbee,

In accordance with our verbal agreement, Benchmark conducted an asbestos renovation/demolition survey of suspect asbestos containing materials (ACM) at Just East Of 100 Beach Street, Santa Cruz on July 20, 2018. Benchmark inspected materials in general accordance with the Environmental Protection Agency (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAP) building demolition requirements.

Benchmark understood that the San Lorenzo River Railroad Trestle Bridge located at Just East of 100 Beach Street in Santa Cruz will be undergoing renovation/remediation activities in pre-designated areas only. As such, suspect asbestos containing materials located in the following areas were sampled.

Location of Samples Collected:
- Watsonville End Train Trestle
  - Mid Span Street Bracket
- Northern Most End Santa Cruz
  - Train Trestle Steel Bracket
  - Train Trestle Web Steel Upright
- North/Mid End Santa Cruz
  - Train Trestle Steel Bracket
  - Train Trestle Web Steel Upright

Suspect materials observed on the property site were:
- *Miscellaneous/Painted Coating (Grey)* *Asbestos Present*
- Miscellaneous/Painted Coating (Black/Red)

Asbestos sampling was performed by a Certified Asbestos Consultant (CAC).The survey was conducted in general accordance with procedures described by the Environmental Protection Agency in 40 CFR 763 (AHERA) guidelines to determine the presence of exposed or accessible suspect asbestos-containing materials (ACM).

Bulk asbestos samples obtained from the building(s) were analyzed in the laboratory using Polarized Light Microscopy (PLM) with dispersion staining. The results of these analyses are presented in the Findings and Observations - Asbestos Laboratory Analytical Results Table.

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Findings:

The following table provides information on the asbestos containing materials identified.

Material/Description	Location	Percent Asbestos	Friable/Non-Friable	Estimated Quantity*
Miscellaneous/Painted Coating (Grey)	Steel Bracket	2% Chrysotile	Friable	+/- 40 SF

**This is a field estimate only. All quantities should be confirmed prior to removal.*

Asbestos Containing Materials (ACM)

The laboratory results (see attached) indicated that the aforementioned samples contained asbestos. A material is considered by the EPA to be asbestos-containing if at least one sample collected from the area shows asbestos present in an amount greater than one percent (> 1%).

Removal and disposal of asbestos containing materials (ACM) must be performed in accordance with Monterey Bay Unified Air Pollution Control District (MBUAPCD) and California-Occupational Safety and Health Administration (CAL/OSHA) notification and work practice requirements. Applicable fees for removal and disposal may apply based upon quantity of asbestos being removed.

Assumed Asbestos Containing Materials (AACM):

Only miscellaneous/painted coating (grey) and miscellaneous/painted coating (black/red) were sampled during the course of this assignment. All other building materials are assumed to contain asbestos until sampled.

Synopsis/Recommendations

If the asbestos containing material and/or asbestos containing construction material is to be removed or disturbed, such activities must be conducted by a licensed asbestos abatement contractor.

- Asbestos containing waste must be bagged, labeled and disposed of at facility licensed to accept asbestos waste.

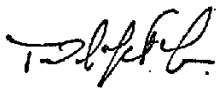
- A clearance inspection should be conducted following the removal of the asbestos containing materials.

The laboratory that conducted the analysis was Forensic Analytical, located in Hayward, California.

The analytical results and chain of custody are attached.

We appreciate this opportunity to provide professional services for this project. If we can be of further assistance, or if you have any questions concerning this report, please do not hesitate to contact our office at (408) 448-7594.

Sincerely,
Benchmark Environmental Engineering



Terri MacFarlane, CAC #00-2747
Environmental Field Service Manager

Environmental Engineering, Consulting, Testing and Training
Corporate Office: 3732 Charter Park Drive, Ste. A San Jose, CA 95136
408-448-7594 * 408-448-3849 (Fax) ▪ www.benchmarkenvironmental.com

APPENDIX A- GENERAL INFORMATION/METHODOLOGY

Environmental Engineering, Consulting, Testing and Training
Corporate Office: 3732 Charter Park Drive, Ste. A San Jose, CA 95136
408-448-7594 * 408-448-3849 (Fax) ▪ www.benchmarkenvironmental.com

Regulated Asbestos Containing Materials (RACM)

The asbestos containing materials identified are Category I non-friable ACM that has become, or is likely to become friable as the result of significant fire damage, and therefore are considered Regulated Asbestos Containing Materials (RACMs).

Materials are considered by the EPA to be asbestos-containing if at least one sample collected from the area shows asbestos present in an amount greater than one percent (> 1%). Asbestos-containing materials (ACM) are regulated by federal, state, and local agencies.

The EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) requires an inspection and identification for asbestos on facilities that are to undergo demolition or renovation work. Materials found to contain asbestos may need to be removed prior to the start of such demolition/renovation work.

EPA groups asbestos containing materials (ACM) into three (3) types:

- Friable ACM – Asbestos containing materials that can reduce to powder by hand pressure such as, thermal system insulation (TSI), acoustical ceiling material.
- Category I non-friable ACM - asbestos-containing resilient floor coverings or VAT, asphalt roofing products, packings and gaskets.
- Category II non-friable ACM – any material, excluding Category I materials, that when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure.

It is possible for any of the above types of ACM to become Regulated Asbestos Containing Materials (RACMs) under the Standard. RACMs are defined as:

- Friable ACM
- Category I non-friable ACM that has become friable.
- Category I non-friable ACM that has been or will be subjected to sanding, grinding, cutting, or abrading
- Category II non-friable ACM which has already been or is likely to become crumbled, pulverized, or reduced to powder by mechanical forces expected to act on the materials during demolition/renovation operations as covered by the Standard.

Methodology

General References
Inspection, sampling, and assessment procedures were performed in general accordance with the guidelines published by the EPA in 40 CFR Part 763 Subpart E, October 30, 1987. The survey consisted of three major activities: visual inspection, sampling, and analysis. Although these activities are listed separately, they are integrated tasks.

Visual Inspection
An initial building walkthrough was conducted to determine the presence of suspect materials that were accessible or exposed. Materials that were similar in general appearance were grouped into homogeneous sampling areas.

Homogenous Material Classification
A preliminary walkthrough of the building was conducted to determine areas of materials that were visually similar in color, texture, and general appearance and that appeared to have been installed at the same time.

Such materials are termed "homogeneous materials" by the EPA. During this walkthrough, the approximate locations of these homogeneous materials were noted.

Sampling Procedures

Following the walkthrough, the inspector collected selected samples of exposed or accessible materials identified as suspect ACM. EPA guidelines were used to determine the sampling protocol. Sampling locations were chosen to be representative of the homogeneous material.

Samples of surfacing material for asbestos were collected in general accordance with the EPA random sampling protocol outlined in the EPA publication, "Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials" (EPA 560/5-85-030a, October 1985). Samples of miscellaneous materials were taken as randomly as possible, while attempting to sample already damaged areas so as to minimize disturbance of the material.

Methods of Analysis

Asbestos

Analysis was performed by visually observing the bulk sample and preparing slides for microscopic examination and identification. The samples were mounted on slides and then analyzed for asbestos (Chrysotile, Amosite, Crocidolite, Anthophyllite, and Actinolite/Tremolite), fibrous non-asbestos constituents (mineral wool, paper, etc.) and non-fibrous constituents. Asbestos was identified by refractive indices, morphology, color, pleochroism, birefringence, extinction characteristics, and signs of elongation. The same characteristics were used to identify the non-asbestos constituents.

The microscopist used a stereoscope to visually estimate relative amounts of each constituent using a stereoscope to determine the volume of each constituent in proportion to the total volume of the sample.

All bulk samples were analyzed by Polarized Light Microscopy (PLM) with dispersion staining as described by the interim method of the determination of asbestos in bulk insulation, Federal Register, Volume 47, No. 103, May 27, 1982. This is a standard method of analysis in optical mineralogy and the currently accepted method for the determination of asbestos in bulk samples. A suspect material is immersed in a solution of known refractive index and subjected to illumination by polarized light. The characteristic color displays that result enable mineral identification. It should be noted that some ACM may not be accurately identified or quantified by PLM. As an example, the original fabrication of vinyl floor tiles routinely involved milling of asbestos fibers to extremely small sizes. As a result, these fibers may go undetected under the standard polarized light microscopy method. Transmission Electron Microscopy (TEM) is recommended for a more definitive analysis of these materials.

Laboratory Quality Control Program

Forensic Analytical Laboratories Inc., located in Hayward, California, performed the analysis. Forensic maintains an in-house quality control program. This program involves blind reanalysis of ten percent of all samples, precision and accuracy controls, and use of standard bulk reference materials.

APPENDIX B-LABORATORY RESULTS

Environmental Engineering, Consulting, Testing and Training
Corporate Office: 3732 Charter Park Drive, Ste. A San Jose, CA 95136
408-448-7594 * 408-448-3849 (Fax) ▪ www.benchmarkenvironmental.com

BENCHMARK
3732 Charter Park Drive, Ste. A San Jose CA 95136
408-448-7594 / 408-448-3849 (fax)

Please Include Sample Locations on Laboratory Report

Email Lab Receipts & Reports To: *labs@benchmarkenvironmental.com*

Page: 1 of 1

BULK CHAIN OF CUSTODY

Project #: E18:1230-ACS Date: 7/20/18 Technician: RBB

Project Address: 100 Beach street, santa Cruz

Sample Number	Location	Homogenous Group # or Measurement	Material Type or Component	Results To Be Reported As
E18-1230-7-20 1B	watsonville end train Trestle Mid span steel Bracket	(1)	misc/painted coating Grey	
2B	northern most end santa cruz train Trestle steel Bracket	↓	↓	
3B	north/mid end santa cruz train Trestle steel Bracket	↓	↓	
4B	north/mid end Santa cruz Train Trestle web steel upright	(2)	misc/painted coating - Black/Red	
5B	northern most end Santa cruz train Trestle web steel upright	↓	↓	

Project Type (X box)
- ☒ Asbestos Bulk
- ☐ Lead-Based Paint Bulk
- ☐ Risk Assessment
- ☐ Clearance (Lead)
- ☐ Mold/Fungus
- ☐ Sewage Screen (Baseline)
- ☐ Sewage Screen (Post-Remediation)
- ☐ Other: _____

Type of Analysis (X box)
- ☒ PLM/Bulk (EPA 600)
- ☐ EPA SW 846-7420 FLAA
- ☐ Dust Wipe (*Ghost Wipes*)
- ☐ Soil (Lead)
- ☐ Paint Chip
- ☐ GFAA Water (Lead)
- ☐ Qualitative (MUG) E.Coli/Coliforms
- ☐ Direct Microscopic Exam
- ☐ Other: _____

TAT (X box)
- ☐ *Same Day/Rush*
- ☐ *Date Needed:* 7/24/18 3PM

Relinquished By: _____ Received By: _____ Date/Time: _____

Rev 2017

RECEIVED JUL 20 2018 PM

Forensic Analytical LABORATORIES

Final Report

Bulk Asbestos Analysis

(EPA Method 40CFR, Part 763, Appendix E to Subpart E and EPA 600/R-93-116, Visual Area Estimation)

Benchmark Environmental
Project Manager
3732-A Charter Park Drive

San Jose, CA 95136

Client ID: 3565
Report Number: B262255
Date Received: 07/20/18
Date Analyzed: 07/24/18
Date Printed: 07/24/18
First Reported: 07/24/18

Job ID/Site: E18-1230-ACS - 100 Beach Street, Santa Cruz

Date(s) Collected: 07/20/2018

FALI Job ID: 3565
Total Samples Submitted: 5
Total Samples Analyzed: 5

Sample ID	Lab Number	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer	Asbestos Type	Percent in Layer
E18-1230-7-20-1B	12058956						
Layer: Silver Paint		Chrysotile	**2 %**				
Total Composite Values of Fibrous Components: Cellulose (Trace)		**Asbestos (2%)**					
E18-1230-7-20-2B	12058957						
Layer: Silver Paint		Chrysotile	**2 %**				
Total Composite Values of Fibrous Components: Cellulose (Trace)		**Asbestos (2%)**					
E18-1230-7-20-3B	12058958						
Layer: Silver Paint		Chrysotile	**2 %**				
Total Composite Values of Fibrous Components: Cellulose (Trace)		**Asbestos (2%)**					
E18-1230-7-20-4B	12058959						
Layer: Black Tar			**ND**				
Layer: Orange Coating			**ND**				
Total Composite Values of Fibrous Components: Cellulose (Trace)		**Asbestos (ND)**					
E18-1230-7-20-5B	12058960						
Layer: Black Tar			**ND**				
Layer: Orange Coating			**ND**				
Total Composite Values of Fibrous Components: Cellulose (Trace)		**Asbestos (ND)**					

Tad Thrower

Tad Thrower, Laboratory Supervisor, Hayward Laboratory

Note: Limit of Quantification ('LOQ') = 1%. 'Trace' denotes the presence of asbestos below the LOQ. 'ND' = 'None Detected'.

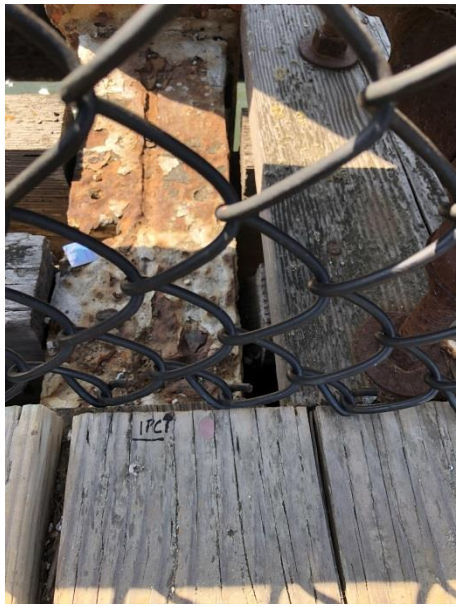
3777 Depot Road, Suite 409, Hayward, CA 94545 / Telephone: (510) 887-8828 (800) 827-FASI / Fax: (510) 887-4218

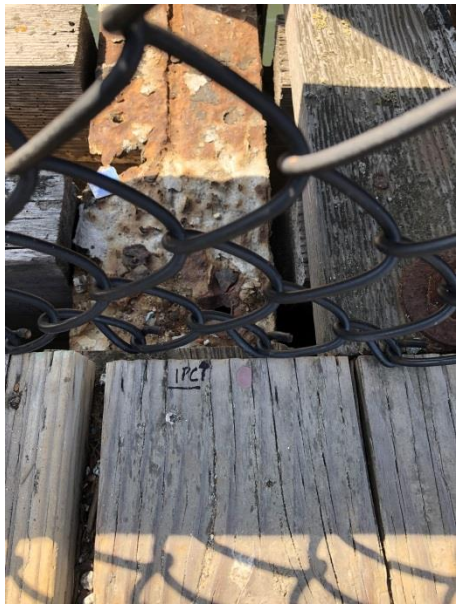
BENCHMARK

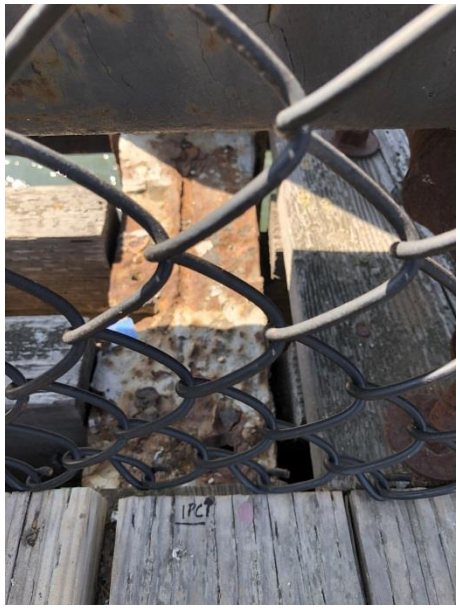
San Lorenzo River Railroad Trestle Bridge

Just East of 100 Beach Street

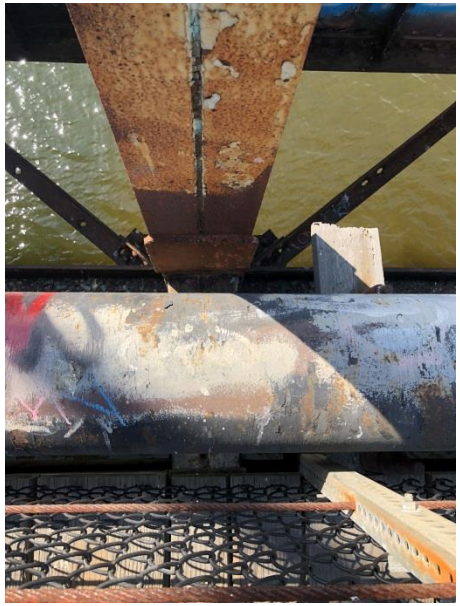
Santa Cruz, CA, 94116

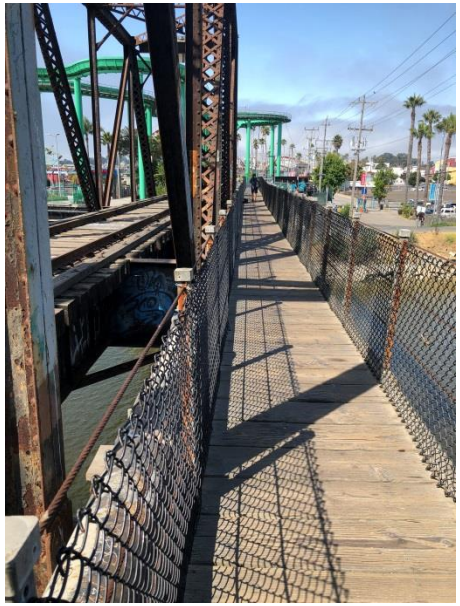


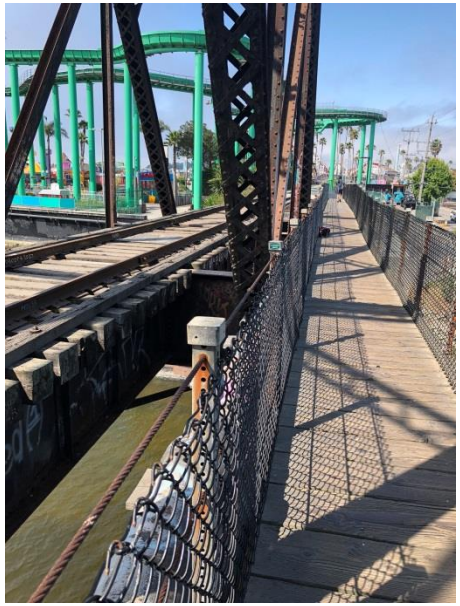




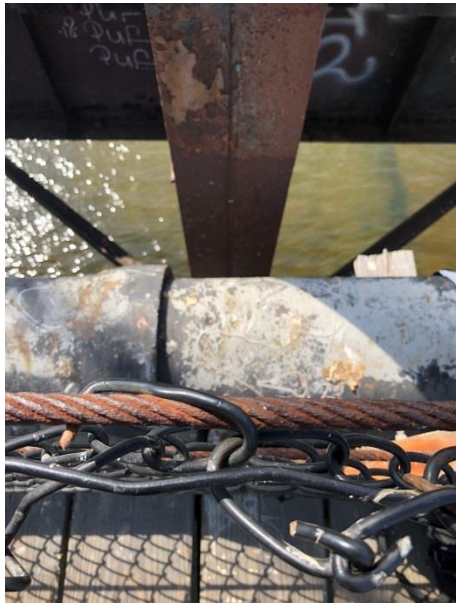

2 PC








3Pc+



APPENDIX E
Rincon, Hazardous Materials Technical Study, 3/5/18.

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Rincon Consultants, Inc.
437 Figueroa Street, Suite 203
Monterey, California 93940
831 333 0310 OFFICE AND FAX
info@rinconconsultants.com
www.rinconconsultants.com

March 5, 2018
Project No: 17-04616

Dale Hendsbee
Mesiti-Miller Engineering, Inc.
224 Walnut Avenue, Suite B
Santa Cruz, California 95060
Via email: Dale@m-me.com

Subject: **Hazardous Materials Technical Study**
Monterey Bay Sanctuary Scenic Trail (MBSST) Segment 8
San Lorenzo River Railroad Trestle Bridge – Trail Widening Project
Santa Cruz, California

Dear Mr. Hendsbee:

This report presents our findings of a Hazardous Materials Technical Study for the Monterey Bay Sanctuary Scenic Trail (MBSST) Rail Trail Segment 8 San Lorenzo River Railroad Trestle Bridge – Trail Widening Project (Project) located in Santa Cruz, California. This report has been prepared for Mesiti-Miller Engineering, Inc. (Mesiti-Miller) by Rincon Consultants, Inc. (Rincon) in accordance with our contract dated November 21, 2017.

Project Description

As described in the Request for Qualifications document dated June 29, 2017, it is our understanding that the Project is located near the mouth of the San Lorenzo River in the City of Santa Cruz, and entails replacing the existing 4-foot-wide walkway on the San Lorenzo River Railroad Trestle Bridge (milepost 19.43) with a new multi-use trail that is 10 to 12 feet wide. The structure is approximately 306 feet long and connects to the existing access ramps at each end of the bridge. The Project would involve installation of a new landing and footing at the eastern ramp, which was constructed approximately 28 years ago, to maintain the connection to East Cliff Drive above and to accommodate a future extension to Segment 9 of the Rail Trail. The western ramp was constructed approximately two years ago and no modifications are anticipated. It is our understanding that the existing railroad tracks are inactive at this time and that although trains come to the Boardwalk, they do not currently cross the San Lorenzo River Railroad Trestle Bridge. Construction is expected to be initiated in the summer of 2018, with anticipated completion date of early 2019.

Purpose and Scope

The purpose of this Hazardous Materials Technical Study is to examine the potential for hazardous materials that may be encountered by subcontractors and the public as a result of the proposed Project, and the effects that such materials may have on proposed future development. Of particular concern is

the potential for lead-based paint (LBP) or asbestos-containing materials (ACM) that may be disturbed during structural analysis or construction. Additionally, it is our understanding that the exisitng railroad ties, which may consist of hydrocarbon-treated wood, will not be disturbed as part of the proposed Project. We expect that there may be minor soil disturbance on the east bluff potentially to accommodate the wider landing needed for the widened cantilevered section.

Rincon has reviewed available documents pertaining to the proposed Project as well as hazardous materials information available online through the California Department of Toxic Substances Control (DTSC) and other oversight agencies.

The following sections describe potential impacts relating to hazardous materials for the Project.

Hazardous Materials Evaluation

Hazardous material regulatory data reviewed included leaking underground storage tank (LUST) cleanup, cleanup programs, military, and land disposal sites tracked through the State Water Resources Control Board (SWRCB) GeoTracker database and the DTSC EnviroStor database.

GeoTracker and EnviroStor Review

There are no SWRCB GeoTracker or DTSC EnviroStor sites located within 1,000 feet of the Project site.

CORTESE Review

There are no Cortese listings (DTSC Hazardous Waste and Substances Site List) within 5 miles of the Project site (see attachment).

DOGGR Review

Based on a review of the Division of Oil, Gas, and Geothermal Resources (DOGGR) website, the Project site is located in the Coastal District; however, there are no oil wells located within 1,000 feet of the Project site (DOGGR, 2018).

Hazardous Material Pipelines Review

The National Pipeline Mapping System (NPMS) website indicates that there are no hazardous liquid pipelines and no gas transmission pipelines located within a quarter mile of the Project site. The NPMS website did not report any pipeline accidents or incidents within 1,000 ft. of the Project site (NPMS, 2018).

Trestle Components

The removal of existing trestle components (e.g., paint, framework sections, joints, and other appurtenances) requires proper management for their reuse or disposal. The potential contaminants of concern consist of ACM in some fabricated trestle components, and heavy metals (lead) in paint coatings. Consequently, an LBP and ACM survey should be completed prior to the commencement of the proposed Project.

If generator knowledge is not available regarding fabricated materials or coatings, or a survey cannot be conducted, then trestle joint compounds and/or paint coating should be assumed to contain asbestos and/or lead, and should be managed accordingly. If potential ACM is discovered during construction and

there is a concern over friability or if LBP is suspected, additional sampling may be required. A State-certified abatement and industrial hygiene firm should be retained to support abatement activities, where necessary.

Because the exisitng railroad ties will reportedly not be disturbed under the actions of this Project, hazards associated with these components have not been included in this document.

Soil

Minor soil disturbance may be expected on the east bluff to accommodate the wider landing needed for the widened cantilevered section. Given the proximity of the soil to historically active railroad tracks, there is the potential for shallow soil located on the eastern bluff to be impacted by hydrocarbons, heavy metals, and organochlorine pesticides.

Groundwater and Surface Water

It is our understanding that groundwater and surface water will not be encountered or disturbed as part of the proposed Project. However, it should be noted that asbestos and lead-based paint should be properly disposed offsite and should be prevented from entering San Lorenzo Creek River water.

Recommendations

The following measures are recommended to reduce the risk of exposure to hazardous materials during construction of the Project.

Dust Control. It is our understanding that the proposed Project may include surface cleaning/refurbishment, sandblasting, the attachment of new materials to the existing trestle components, and the potential for minor amount of soil disturbance on the east bluff. Therefore, a dust control plan (DCP) should be prepared for the Project. The purpose of the DCP is to set forth best management practices to be followed to minimize fugitive dust, paint chips, and other vagrant airborne particles that may be generated during the proposed Project. Additionally, no particulate matter generated during abatement and construction activities should be allowed to enter the San Lorenzo River.

Public Foot Traffic. Pedestrian traffic on the San Lorenzo River Railroad Trestle Bridge should be limited during Project construction. Additionally, the construction contractor(s) should set up an Exclusion Zone which extends under the bridge, on the bridge, and around the bridge. The Exclusion Zone should be coned, delineated using caution tape and signs, and monitored for public encroachment.

Lead-Based Paint Materials. A lead-based paint survey should be completed prior to construction of the proposed Project. If LBP is identified, the construction contractor should inform the Project Manager immediately so that the handling and removal of LBP can be completed by properly trained and protected employees.

Asbestos-Containing Materials. An ACM survey should be completed prior to construction of the proposed Project. If ACM is identified, the construction contractor should inform the Project Manager immediately so that the handling and removal of ACM can be completed by properly trained and protected employees.

Impacted Soil. If soil along the eastern bluff will be disturbed, then shallow soil samples should be collected prior to construction of the proposed Project. If impacted soil is identified, the construction contractor should inform the Project Manager immediately so that the handling, sampling, and removal

of impacted soil can be completed by properly trained and protected employees. If more soil than anticipated is disturbed, then a Soil Management Plan (SMP) should be prepared to detail soil sampling procedures and aid in the characterization of potentially impacted soil for disposal.

Storage and Labeling. If impacted soil, ACM and or lead-impacted hazardous materials are generated during construction of the proposed Project, the soil/materials should be stored appropriately and properly labeled pending disposal. Impacted soil should be contained in properly labeled, DOT-approved 55-gallon industrial drums. Impacted soil should be containerized separate from ACM or lead-impacted materials. A minimal amount of hazardous material should be stored onsite. Because fuel for equipment and other materials may be stored onsite or at a nearby staging area, coordination with the Project team should occur to determine if a Hazardous Materials Business Plan (HMBP) will be needed. In general, hazardous material and impacted soil should be covered and stored off the ground in secondary containment or on an impervious surface. Hazardous materials should not be stored near the water or where water flows, and incompatible materials should not be stored together. The State of California (Health & Safety Code § 25507) requires an owner or operator of a facility to establish and implement an HMBP if the facility handles or stores a hazardous material or mixture containing a hazardous material that has a quantity at any one time during the reporting year equal to or greater than 500 pounds of a solid substance, 55 gallons of a liquid, or 200 cubic ft. of compressed gases. The HMBP should be prepared in accordance with the California Health & Safety Code § 25507.

Should you have any questions concerning this review, please do not hesitate to contact either of the undersigned.

Sincerely,
Rincon Consultants, Inc.

Meghan Hearne, GIT
Environmental Scientist

Ed Morelan, PG, CEG
Principal, Senior Engineering Geologist

Attachment – Cortese Review Documentation

References

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DEPARTMENT OF TOXIC SUBSTANCES CONTROL
ENVIROSTOR

Tools Reports Community Involvement How to Use EnviroStor ESI DTSC Web

HAZARDOUS WASTE AND SUBSTANCES SITE LIST

For additional information and listing of sites, please refer to the California Environmental Protection Agency's Cortese web pages

533 RECORDS FOUND EXPORT TO EXCEL PAGE 10 OF 11

		SITE / FACILITY NAME	ESTOR / EPA ID	PROGRAM TYPE	STATUS	ADDRESS DESCRIPTION	CITY	ZIP	CALENVIROSCREEN SCORE	COUNTY
[REPORT]	[MAP]	SYNTEX	43360114	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	3300 HILLVIEW AVE	PALO ALTO	94304	1-5%	SANTA CLARA
[REPORT]	[MAP]	MOYER CHEMICAL	60001663	STATE RESPONSE	ACTIVE	1300,1310, 1336 OLD BAYSHORE HWY	SAN JOSE	95112	86-90%	SANTA CLARA
[REPORT]	[MAP]	MANSION GROVE	43280031	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	4101 LICK MILL BOULEVARD	SANTA CLARA	95054	26-30%	SANTA CLARA
[REPORT]	[MAP]	SOUTH BAY ASBESTOS AREA	43490060	FEDERAL SUPERFUND - LISTED	ACTIVE - LAND USE RESTRICTIONS	FT OF LIBERTY ST GUADALUPE RIV	SAN JOSE	95002	81-85%	SANTA CLARA
[REPORT]	[MAP]	HEWLETT PACKARD BUILDINGS 28A, B, AND C	43350089	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	CORNER OF PAGE MILL RD AND PORTER DRIVE	PALO ALTO	94304	1-5%	SANTA CLARA
[REPORT]	[MAP]	TELEDYNE MEC	43360088	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	3165 PORTER DR	PALO ALTO	94304	1-5%	SANTA CLARA
[REPORT]	[MAP]	AYDIN ENERGY	43360085	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE - LAND USE RESTRICTIONS	3180 HANOVER STREET	PALO ALTO	94304	1-5%	SANTA CLARA
[REPORT]	[MAP]	GILROY - MGP - 1	43490064	STATE RESPONSE	BACKLOG	MONTEREY/6TH/OLD GILROY	GILROY	95020	86-90%	SANTA CLARA
[REPORT]	[MAP]	TOWN & COUNTRY VILLAGE SHOPPING CENTER	43590001	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE - LAND USE RESTRICTIONS	2980 & 3030 STEVENS CREEK BOULEVARD	SAN JOSE	95113	41-45%	SANTA CLARA
[REPORT]	[MAP]	HEWLETT PACKARD BUILDING 15	43360078	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	3215 PORTER DRIVE	PALO ALTO	94304	1-5%	SANTA CLARA
[REPORT]	[MAP]	COHERENT INC	43360115	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	3210 PORTER DR	PALO ALTO	94304	1-5%	SANTA CLARA
[REPORT]	[MAP]	SMITHKLINE AND FRENCH LABORATORIES	43360079	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	3400 HILLVIEW AVENUE	PALO ALTO	94304	1-5%	SANTA CLARA
[REPORT]	[MAP]	LOCKHEED MISSILES AND SPACE CO BLDG 255	43280130	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	3170 PORTER DRIVE	PALO ALTO	94304	1-5%	SANTA CLARA
[REPORT]	[MAP]	WATKINS JOHNSON COMPANY (SRP)	43360076	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	3333 HILLVIEW AVENUE	PALO ALTO	94304	1-5%	SANTA CLARA
[REPORT]	[MAP]	VARIAN	43360086	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	611 HANSEN WAY	PALO ALTO	94304	1-5%	SANTA CLARA
[REPORT]	[MAP]	HILLVIEW - ELEANOR AREA PLUME	43490059	STATE RESPONSE	BACKLOG	BTW HILLVIEW;ELEANOR AVE&SAN ANTONIO RD	LOS ALTOS	94022	1-5%	SANTA CLARA
[REPORT]	[MAP]	ALMADEN QUICKSILVER COUNTY PARK	43100001	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	ALAMITOS ROAD & HICKS ROAD	SAN JOSE	95110	6-10%	SANTA CLARA
[REPORT]	[MAP]	HILLVIEW PORTER PLUME	43360077	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	HILLVIEW AVENUE AND PORTER DRIVE	PALO ALTO	94304	1-5%	SANTA CLARA
[REPORT]	[MAP]	TELEDYNE SINGER	43360073	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE	3176 PORTER DRIVE	PALO ALTO	94304	1-5%	SANTA CLARA
[REPORT]	[MAP]	DELIA'S CLEANERS	60000349	STATE RESPONSE	ACTIVE	7335 BOLINGER ROAD	CUPERTINO	95014	16-20%	SANTA CLARA
[REPORT]	[MAP]	EL PUEBLO ROAD PLUME	44490005	STATE RESPONSE	BACKLOG	EL PUEBLO ROAD	SCOTTS VALLEY	95066	6-10%	SANTA CRUZ
[REPORT]	[MAP]	SHORT'S SCRAP IRON AND METAL, INC	45500010	STATE RESPONSE	BACKLOG	2041 GIRVAN ROAD	REDDING	96001	31-35%	SHASTA
[REPORT]	[MAP]	IRON MOUNTAIN MINE	45100001	FEDERAL SUPERFUND - LISTED	ACTIVE	OFF HWY 299 - 9 MI NW OF REDDING	REDDING	96001	36-40%	SHASTA
[REPORT]	[MAP]	VALLEY PLATING COMPANY	45340001	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE -	3872 EL CAJON	SHASTA LAKE	96019	31-35%	SHASTA

[REPORT]	[MAP]	J H BAXTER CO	47240001	FEDERAL SUPERFUND - LISTED	LAND USE RESTRICTIONS CERTIFIED / OPERATION & MAINTENANCE - LAND USE RESTRICTIONS	422 MILL STREET	WEED	96094	61-65%	SISKIYOU
[REPORT]	[MAP]	BLUE LEDGE MINE	60001382	FEDERAL SUPERFUND - LISTED	ACTIVE	2 MILES SOUTH OF OREGON ON ROAD 1060	ROGUE RIVER NATIONAL FOREST	00000	21-25%	SISKIYOU
[REPORT]	[MAP]	SOUTHERN PACIFIC, SUISUN MARSH	48400001	STATE RESPONSE	CERTIFIED / OPERATION & MAINTENANCE - LAND USE RESTRICTIONS	END OF CHADBORNE RD, SUISUN MARSH	FAIRFIELD	94585	41-45%	SOLANO
[REPORT]	[MAP]	TRAVIS AFB - IR/MMRP	48970001	FEDERAL SUPERFUND - LISTED	ACTIVE - LAND USE RESTRICTIONS	5025 ACRES; 3 MILES EAST OF FAIRFIELD,CA	TRAVIS	94535	NA	SOLANO
[REPORT]	[MAP]	MARE ISLAND NAVAL SHIPYARD	48970002	STATE RESPONSE	ACTIVE - LAND USE RESTRICTIONS	W END OF TENNESSEE STREET, MARE ISLAND	VALLEJO	94590	81-85%	SOLANO
[REPORT]	[MAP]	WICKES FOREST INDUSTRIES	48240001	STATE RESPONSE	ACTIVE - LAND USE RESTRICTIONS	INTERSECTION OF HOLDENER & A STREETS	ELMIRA	95625	61-65%	SOLANO
[REPORT]	[MAP]	BENICIA ARSENAL (J09CA0756)	48970007	STATE RESPONSE	ACTIVE	BETWEEN HWY 680 & 4TH STREET	BENICIA	94510	56-60%	SOLANO
[REPORT]	[MAP]	LAB FOR ENERGY RELATED HEALTH RESEARCH	48990004	FEDERAL SUPERFUND - LISTED	ACTIVE - LAND USE RESTRICTIONS	U.C., DAVIS (ITEH) - OLD DAVIS ROAD	DAVIS	95616	56-60%	SOLANO
[REPORT]	[MAP]	BENICIA ARSENAL, AREA I, BUILDING 50 COMPLEX	60001959	STATE RESPONSE	ACTIVE	946 TYLER ROAD	BENICIA	94510	56-60%	SOLANO
[REPORT]	[MAP]	BENICIA ARSENAL, AREA I, BUILDING 165	60001960	STATE RESPONSE	ACTIVE	750 JACKSON STREET	BENICIA	94510	56-60%	SOLANO
[REPORT]	[MAP]	DIXON NAVAL RESERVE TRAINING FACILITY	48970003	STATE RESPONSE	ACTIVE	7200 RADIO STATION ROAD	DIXON	95620	56-60%	SOLANO
[REPORT]	[MAP]	MARE ISLAND WESTON	48000004	STATE RESPONSE	ACTIVE - LAND USE RESTRICTIONS	750 DUMP ROAD - PO BOX 2135	VALLEJO	94592	81-85%	SOLANO
[REPORT]	[MAP]	MARE ISLAND LENNAR	48330003	STATE RESPONSE	ACTIVE - LAND USE RESTRICTIONS	900 WALNUT AVENUE, QUARTERS D	VALLEJO	94592	81-85%	SOLANO
[REPORT]	[MAP]	BODEGA HEAD GUNNERY RANGE - J09CA7290	80001096	STATE RESPONSE	ACTIVE		BOLINAS		6-10%	SONOMA
[REPORT]	[MAP]	PETER PAN CLEANERS	60000979	STATE RESPONSE	ACTIVE	2231 MENDOCINO AVENUE	SANTA ROSA	95403	51-55%	SONOMA
[REPORT]		ECODYNE DRAINAGE DITCH	60002525	STATE RESPONSE	ACTIVE	930 SHILOH ROAD	WINDSOR	95492		SONOMA
[REPORT]	[MAP]	ECODYNE POND	49240001	STATE RESPONSE	ACTIVE	930 SHILOH RD	WINDSOR	95492	46-50%	SONOMA
[REPORT]	[MAP]	PETALUMA BOMB TARGET	80001081	STATE RESPONSE	ACTIVE		PETALUMA		41-45%	SONOMA
[REPORT]	[MAP]	VALLEY WOOD PRESERVING, INC.	50240001	FEDERAL SUPERFUND - LISTED	ACTIVE - LAND USE RESTRICTIONS	2237 SOUTH GOLDEN STATE BLVD	TURLOCK	95380	96-100%	STANISLAUS
[REPORT]	[MAP]	RIVERBANK ARMY AMMUNITION DEPOT	50340001	FEDERAL SUPERFUND - LISTED	ACTIVE	5300 CLAUS ROAD	RIVERBANK	95367	71-75%	STANISLAUS
[REPORT]	[MAP]	CROWS LANDING NALF	50970001	STATE RESPONSE	ACTIVE	1.5 MI NW OF CROWS LANDING; (T6S R8E)	CROWS LANDING	95313	76-80%	STANISLAUS
[REPORT]	[MAP]	MODESTO GROUNDWATER CONTAMINATION	50950002	FEDERAL SUPERFUND - LISTED	ACTIVE - LAND USE RESTRICTIONS	MCHENRY AVE., SOUTH OF ORANGEBURG AVE. (BEHIND HALFORD'S CLEANERS AT 941 MCHENRY AVE.)	MODESTO	95351	81-85%	STANISLAUS
[REPORT]	[MAP]	CUSTOM CHROME AND BUMPER	51340009	STATE RESPONSE	ACTIVE	335 GARDEN HIGHWAY	YUBA CITY	95991	81-85%	SUTTER
[REPORT]	[MAP]	MODERN DRY CLEANERS	60001154	STATE RESPONSE	ACTIVE	609 WALNUT STREET	RED BLUFF	96080	51-55%	TEHAMA
[REPORT]	[MAP]	CORNING CITY DISPOSAL SITE	52490006	STATE RESPONSE	ACTIVE	RAWSON & CARONA, SE CORNER	CORNING	96021	71-75%	TEHAMA
[REPORT]	[MAP]	FORMER VILLAGE CLEANERS	60001053	STATE RESPONSE	BACKLOG	2615 S. MOONEY BLVD.	VISALIA	93277	71-75%	TULARE

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APPENDIX F
Right of Entry Agreement Form.

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RIGHT OF ENTRY AGREEMENT

THIS RIGHT OF ENTRY AGREEMENT (the "Agreement") is made and entered into as of this ____ day of _____, 20__ by and between _____ (hereinafter called "Contractor"), and _____ (hereinafter called "Railroad"). Contractor and Railroad are each at times referred to herein as a "Party" and collectively as the "Parties".

The Parties hereto agree as follows:

Section 1. NOTICE OF COMMENCEMENT OF WORK-FLAGGING

Contractor agrees to notify the Railroad at least 72 hours in advance of Contractor commencing its work. Flagging services by Railroad will be required for any work by Contractor in which any person or equipment will be within 25 feet of any track, or will be near enough to any track that any equipment extension (such as, but not 1imited to, a crane boom) will reach to within 25 feet of any track. Upon receipt of notice the Railroad will determine and inform Contractor whether Contractor will need to implement any special protective or safety measures. If the Railroad provides any flagging or other services Contractor shall not be relieved of any of its responsibilities or liabilities set forth herein.

Section 2. NO INTERFERENCE WITH RAILROAD'S OPERATION

No work performed by Contractor shall cause any interference with the constant, continuous and uninterrupted use of the tracks, property and facilities of the Railroad its lessees, licensees or others, unless specifically permitted under this Agreement, or specifically authorized in advance by the Railroad. Nothing shall be done or suffered to be done by Contractor at any time that would in any manner impair the safety thereof. When not in use, Contractor's machinery and materials shall be kept at least 50 feet from the centerline of Railroad's nearest track, and there shall be no vehicular crossings of Railroad's tracks except at existing open public crossings.

Section 3. MECHANIC'S LIENS

Contractor shall pay in full all persons who perform labor or provide materials for the work to be performed by Contractor. Contractor shall not create, permit or suffer any mechanic's or materialmen's liens of any kind or nature to be created or enforced against any property of the Railroad for any such work performed.

Section 4. COMPLIANCE WITH LAWS

In the progression of work covered by this Agreement, Contractor shall secure any and all necessary permits and shall comply with all applicable federal, state and local laws, regulations and enactments affecting the work. Contractor shall use only such methods as are consistent with safety, both as concerns Contractor, Contractor's agents and employees, the officers, agents and employees, and property of the Railroad and the public in general. Contractor (without limiting the generality of the foregoing) shall comply with all applicable state and federal occupational safety and health acts and regulations. All Federal Railroad Administration ("FRA") regulations shall be fol1owed when work is performed on the Railroad's property. If any failure by Contractor to comply with any such laws, regulations, and enactments, shall result in any fine, penalty, cost or charge being assessed, imposed or charged against the Railroad, Contractor shall reimburse and indemnify the Railroad for any such fine, penalty, cost, or charge, including without limitation attorney's fees, court costs and expenses. Contractor further agrees in the event of any

such action, upon notice thereof being provided by the Railroad, to defend such action free of cost, charge, or expense to the Railroad.

Section 5. SAFETY INSTRUCTIONS

Safety of personnel, property, rail operations and the public is of paramount importance in the progression of the work pursuant to this Agreement. As reinforcement and in furtherance of overall safety measures to be observed by Contractor (and not by way of limitation), the following special safety rules shall be followed:

a). Contractor shall keep the job site free from safety and health hazards and ensure that its employees are competent and adequately trained in all safety and health aspects of the job. Contractor shall have proper first aid supplies available on the job site so that prompt first aid services can be provided to any person that may be injured on the job site. Contractor shall promptly notify the Railroad of any U.S. Occupational Safety and Health Administration ("OSHA") reportable injuries occurring to any person that may arise during the work performed on the job site. Contractor shall have a non-delegable duty to control its employees, while they are on the job site or any other property of the Railroad to be certain they do not use, be under the influence of, or have in their possession any alcoholic beverage, drug, narcotic or other substance that may inhibit the safe performance of work by the employee.

b). The employees of Contractor shall be suitably dressed to perform their duties safely and in a manner that will not interfere with their vision, hearing or free use of their hands or feet. Only waist length shirts with sleeves and trousers that cover the entire leg are to be worn. If flare-legged trousers are worn, the trouser bottoms must be tied to prevent catching. The employees shou1d wear sturdy and protective work boots and at least the following protective equipment:

(1) Protective headgear that meets American National Standard-Z89.1-latest revision. It is suggested that all hardhats be affixed with Contractor's or subcontractor's company logo or name;

(2) Eye protection that meets American National Standard for occupational and educational eye and face protection, Z87.1-latest revision. Additional eye protection must be provided to meet specific job situations such as welding, grinding, butning, etc.; and

(3) Hearing protection which affords enough attenuation to give protection from noise levels that will be occurring on the job site.

c). All heavy equipment provided or leased by Contractor shall be equipped with audible back-up warning devices. If in the opinion of the Railroad Representative any of Contractor's or any ofits subcontractor's equipment is unsafe for use on the Railroad's right-of-way, Contractor, at the request of the Railroad Representative, shall remove such equipment from the Rai1road's right-of-way.

Section 6. INDEMNITY

a). As used in this Section, "Railroad" includes its owner, its operator and all of their respective officers, agents, and employees; "Loss" includes loss, damage, claims, demands, actions, causes of action, penalties, costs, and expenses of whatsoever nature, including court costs and attorneys' fees, which may result from: (a) injury to or death of persons whomsoever (including the Railroad's officers, agents, and employees, Contractor's officers, agents, and employees, as well as

any other person); and/or (b) damage to or loss or destruction of property whatsoever (including Contractor's property, damage to the roadbed, tracks, equipment, or other property of the Railroad, or property in its care or custody).

b). As a major inducement and in consideration of the license and permission herein granted, Contractor agrees to indemnify and hold harmless the Railroad from any Loss which is due to or arises from Contractor's work performed under this Agreement, its breach of the agreement or its failure to observe the health and safety provisions herein, or any activity, omission or negligence arising out of its performance or nonperformance of this Agreement, except to the extent such Loss is caused by Railroad's gross negligence or willful misconduct.

Section 7. INSURANCE

Contractor shall at all times during its entry, use and occupancy of the right-of-way keep and maintain in full force and effect (a) commercial general liability insurance coverage of $2,000,000 on ISO form CG 00 01, or equivalent, for (i) bodily injury and death, property damage and personal injury; and (ii) contractual liability; (b) business automobile and/or trucker's liability insurance coverage, including coverage for owned, hired and non-owned automobile liability, on ISO form CA 00 01, or equivalent, with an inclusive limit of not less than $2,000,000 for any one occurrence in respect of the use or operation of motor vehicles owned, leased or controlled by Contractor; and (c) worker's compensation insurance coverage meeting the statutory requirements of the State of California covering all of Contractor's employees. This insurance shall name Railroad as an additional insured, and include a waiver of subrogation by insurer as to Railroad. Evidence of such insurance coverage on an ACCORD form has been or will be provided to Railroad prior to or upon entry.

Section 8. RESTORATION OF PROPERTY

In the event the Railroad authorizes Contractor to take down any fence of the Railroad or in any manner move or disturb any of the other property of the Railroad in connection with the work to be performed by Contractor, then in that event Contractor shall, as soon as possible and at Contractor's sole expense, restore such fence and other property to the same condition as the same were in before such fence was taken down or such other property was moved or disturbed.

Section 9. MISCELLANEOUS

a). Each provision, paragraph, sentence, clause, phrase, and word of this Agreement shall apply to the extent permitted by applicable law and is intended to be severable. If any provision, paragraph, sentence, clause, phrase or word of this lease is illegal or invalid for any reason whatsoever, such illegality or invalidity shall not affect the legality or validity of the remainder of the Agreement.

b). This Agreement shall be governed by and construed in accordance with the laws of the State of California, excluding its conflicts of law principles. Any cause of action ensuing out of the enforcement of these provisions shall be litigated in courts located in Santa Cruz County California.

c). This Agreement may be modified or amended only by means of a written amendment executed by the Parties hereto.

d). This Agreement constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes all prior agreements, whether written or oral, with

respect to such subject matter.

e). This Agreement may be executed in several counterparts, each of which shall constitute an original and all of which, when taken together, shall constitute one agreement. A facsimile or email transmission of a signed copy of this Agreement shall be deemed an original.

f). The waiver by either Party of the breach of any condition, covenant or agreement herein contained to be kept, observed and performed by the other Party shall in no way impair the right of the waiving Party to avail itself of any remedy for any subsequent breach thereof.

The Parties hereto have executed this Agreement in duplicate as the date first herein written.

RAILROAD NAME	**CONTRACTOR**
Printed Name, Title	Printed Name, Title
Signature	Signature
Date	Date

APPENDIX G
Coastal Development Permit, Issued on 9/24/18.

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California Coastal Commission

COASTAL DEVELOPMENT PERMIT

CDP 3-18-0777 (San Lorenzo River Trestle Bridge Pathway)

Issue Date: September 24, 2018

Coastal development permit (CDP) number 3-18-0777 was approved by the California Coastal Commission on September 13, 2018. CDP 3-18-0777 provides for the demolition and removal of an existing four-foot-wide, wooden pedestrian walkway and replacement with a ten-foot-wide multi-use path, and improvements to the existing eastern landing to provide an improved flow of bicycle and pedestrian traffic. The property is located over the waters and on the banks of the San Lorenzo River and the River's lagoon between the intersection of Beach and 3rd Streets (western/upcoast landing) and East Cliff Drive between Murray Street and Hiawatha Avenue (eastern/downcoast landing) on the existing San Lorenzo River Trestle Bridge in the City of Santa Cruz in Santa Cruz County (all as more specifically described in the Commission's CDP file). CDP 3-18-0777 is subject to certain terms and conditions, including the standard and special conditions beginning on page 2 of this CDP.

By my signature below, the CDP is issued on behalf of the California Coastal Commission:

Susan Craig

Susan Craig, Central Coast District Manager, for John Ainsworth, Executive Director

Acknowledgement

The undersigned Permittee acknowledges receipt of this coastal development permit and agrees to abide by all terms and conditions thereof. The undersigned Permittee acknowledges that Government Code Section 818.4 (that states in pertinent part that "a public entity is not liable for injury caused by the issuance of any permit") applies to the issuance of this coastal development permit.

Chris J. Schneider 9/25/18

Permittee: City of Santa Cruz Representative — Date

Standard Conditions

Please note that this coastal development permit is not valid unless and until a copy of it with the signed acknowledgement has been returned to the California Coastal Commission's Central Coast District Office (14 Cal. Admin. Code Section 13158).

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the Permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the Permittee to bind all future owners and possessors of the subject property to the terms and conditions.

Special Conditions

1. **Approved Project.** This CDP authorizes demolition of the existing four-foot-wide pedestrian walkway and related components on the San Lorenzo River Trestle Bridge (Trestle) and replacement with a new ten-foot-wide pedestrian pathway and related components in roughly the same location, as well as demolition of the existing eastern landing and construction of a replacement landing, all as more specifically described in the proposed project plans (see **Exhibit 2**) as adjusted by these special conditions. Minor adjustments to these approved project parameters that do not require a CDP amendment or a new CDP (as determined by the Executive Director) may be allowed by the Executive Director if such adjustments: (1) are deemed reasonable and necessary; and (2) do not adversely impact coastal resources.

2. **Construction Timing.** If the new pathway is not completed and available for public use prior to the Friday of Memorial Day weekend 2019 (i.e., May 24, 2019), then the Permittee shall submit two copies of a plan for addressing all continuing public access impacts due to the public access detour to the Executive Director for review and approval prior to May 15, 2019, where such plan shall be premised on implementing additional alternatives for public access and/or offsetting mitigation for public access impacts continuing past May 15, 2019 until the new pathway is complete and open. The Permittee shall implement the approved plan as directed by the Executive Director.

3. **Detour Signage.** At least one week in advance of the commencement of construction activities that necessitate closure of public access across the existing Trestle walkway, the Permittee shall place detour signs at the following locations: 1) where the downcoast ramp to the Trestle meets the sidewalk along East Cliff Drive; 2) where the East Cliff Drive ramp meets the railroad right-of-way (visible from the right-of-way); and 3) where the upcoast ramp to the Trestle meets the levee path

(see **Exhibit 1**, p. 2 for these locations). The signs shall advise the public of the temporary Trestle walkway closure and direct cyclists and pedestrians to the San Lorenzo Riverwalk and Riverside Avenue Bridge detours, and shall be modified as directed by the Executive Director as construction progresses if additional notification at these locations is deemed necessary to ensure adequate compensatory public access mitigation during the closure of the Trestle walkway. These signs shall remain in place until the new pathway is completed and available for public use.

4. **Signage Plan.** Within 90 days of CDP issuance, the Permittee shall submit for Executive Director review and approval two copies of a sign plan that provides for the installation of directional signs, by the time of project completion, at both the eastern and western landings and their ramps that provide clear direction to pathway users regarding access to the Boardwalk, the levee path, and continuing coastal trail connections (western landing), and East Cliff Drive and continuing coastal trail connections (eastern landing). Such signs shall be sited and designed to be visually compatible with the area, shall provide clear information in a way that minimizes public view impacts.

5. **Assumption of Risk, Waiver of Liability and Indemnity.** By acceptance of this CDP, the Permittee acknowledges and agrees, on behalf of itself and all successors and assigns to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage. The Permittee shall reimburse the Coastal Commission in full for all Coastal Commission costs and attorneys' fees (including but not limited to such costs/fees that are: (1) charged by the Office of the Attorney General; and (2) required by a court that the Coastal Commission incurs in connection with the defense of any action brought by a party other than the Permittee against the Coastal Commission, its officers, employees, agents, successors and assigns challenging the approval or issuance of this permit). The Permittee shall reimburse the Coastal Commission within 60 days of being informed by the Executive Director of the amount of such costs/fees. The Coastal Commission retains complete authority to conduct and direct the defense of any such action against the Coastal Commission, its officers, employees, agents, successors and assigns.