CITY OF CAPITOLA

SPECIAL PROJECT SPECIFICATIONS

FOR CONSTRUCTION OF

Capitola Bridge over Soquel Creek Bridge [Stockton Bridge] Repairs

Federal Project No. ER-15J7(85)

FOR USE IN CONJUNCTION WITH
STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION
STANDARD SPECIFICATIONS AND STANDARD PLANS
DATED 2018 WITH MOST RECENT REVISIONS

BIDS OPEN: 10:00 A.M, TUESDAY, DECEMBER 5, 2023

THIS IS A PREVAILING WAGE PROJECT

CITY OF CAPITOLA
420 Capitola Avenue
Capitola, CA 95010
(831) 475-7300 – Phone
(831) 479-8879 – Fax
www.cityofcapitola.org

TABLE OF CONTENTS

NOTICE TO CONTRACTORS

NOTICE INVITING SEALED PROPOSALS OR BIDS

NOTICE IS HEREBY GIVEN that the City of Capitola, 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, copies of which are on file with the City of Capitola, County of Santa Cruz, State of California, to wit:

Capitola Bridge over Soquel Creek Bridge [Stockton Bridge] Repairs

General work description: Emergency Repair of the Stockton Avenue Bridge (bridge) over Soquel Creek in Capitola, California. Clean and patch exposed rebar at 7 locations to prevent further spalling of the bridge, remove and replace walkway slab and adjacent retaining wall in-kind, general debris removal. Work to take place from the dry creek bed when waters have receded sufficiently, and/or via snooper trucks/cranes from the bridge/street as needed.

The estimated cost of construction is **$213,000**

The plans, and specifications and contract documents may be examined and copies secured from the Director of Public Works, City Hall, 420 Capitola Avenue, Capitola, CA 95010 or accessible from the City's website http://www.cityofcapitola.org

No contractor or subcontractor shall be qualified to bid on, be listed in a bid proposal, or enter into any contract for public work, unless currently registered and qualified to perform public work pursuant to Labor Code section 1725.5. By submitting a bid or proposal to the City, Contractor is certifying that he or she has verified that all subcontractors used on this public work project are registered with the DIR in compliance with Labor Code sections 1771.1 and 1725.5, and Contractor shall provide proof of registration to the City.

In accordance with California Labor Code Section 1771, all workers engaged in performance of the specified contract work shall be paid not less than the general prevailing rate of per diem wages for work of a similar character in the locality in which the project is to be performed, including for holiday and overtime work as determined by the Director of Industrial Relations. Prevailing rate of per diem wages are available online at:

http://www.dir.ca.gov/dlsr/DPreWageDetermination.htm

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

Notice is also hereby given that all bidders shall submit, with their proposals or bids, a sworn statement of their financial responsibility, technical ability and experience.

Each Bidder shall be a licensed contractor pursuant to the Business and Professions Code and shall be licensed in the following appropriate classification(s) of contractor's license(s), for the work bid upon, and must maintain the license(s) throughout the duration of the Agreement.

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 Capitola, 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 Capitola.

All proposals for the above-mentioned work will be received by the City of Capitola, County of Santa Cruz, State of California by

Tuesday, December 5, 2023 @ 10:00 a.m.

at the Capitola City Hall, 420 Capitola Avenue, Capitola, California 95010. All proposals shall be in sealed envelopes plainly endorsed:

Capitola Bridge over Soquel Creek Bridge [Stockton Bridge] Repairs

Proposals/bids will be opened publicly and read aloud on **Tuesday, December 5, 2023 @ 10:00 a.m.** at Capitola City Hall, 420 Capitola Avenue. Capitola, CA 95010.

Closing time to receive bids will be determined by a clock designated by the City of Capitola. Bidder shall be responsible to check the designated clock.

The successful bidder 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 within which to deliver the agreement with his/her signature affixed thereto, together with the completed aforementioned bonds and insurance certificates, to the Director of Public Works of the City of Capitola.

The City of Capitola 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 thirty 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.

The City of Capitola hereby notifies all bidders that it will affirmatively insure that in any agreement entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, sex, national origin, religion, age, or disability in consideration for an award.

INSTRUCTIONS TO BIDDERS

CAPITOLA BRIDGE OVER SOQUEL CREEK BRIDGE [STOCKTON BRIDGE] REPAIRS

All bidders' attention is directed the City of Capitola's Special Project Specifications, Part 1 – Standard Provisions, Section 2 "Proposal Requirements and Conditions," for requirements related to bidding and bid proposals. Bids shall be submitted in writing on the proposal forms provided by the City. All information requested therein must be clearly and legibly set forth in the manner and form indicated. The City will not consider any proposal not meeting these requirements.

By submitting a proposal/bid, each bidder represents that they have carefully examined and investigated the site of the work contemplated and the Plans, Drawings, and Specifications therefore, in accordance with the City's Special Project Specifications.

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

Bid protests and procedures therefore are set forth in the City's Special Project Specifications.

In the event the bidder has any questions as to the meaning of any part of the plans and specifications, or if the bidder finds any error, inconsistency, or ambiguity in the Contract Documents, the bidder shall make a written request for clarification prior to submitting its bid. All questions and comments regarding the plans and specifications should be directed to the Project Manager indicated below and will only be responded to if received in writing at least five (5) working days before the bid opening (On/Before Tuesday November 28, 2023). Questions received after this time and date may not be responded to.

Kailash Mozumder
City of Capitola
420 Capitola Avenue
Capitola, CA 95010
Email: kmozumder@ci.capitola.ca.us

These "Instructions to Bidders" are hereby made a part of the Contract Documents.

PROPOSAL FORMS

BIDDER'S PROPOSAL

Enclosed is Bidder's proposal 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 Capitola for

CAPITOLA BRIDGE OVER SOQUEL CREEK BRIDGE [STOCKTON BRIDGE] REPAIRS

and referred to the "Notice to Contractors/Notice Inviting Sealed Proposals of Bids", and to provide all necessary machinery, tools, apparatus, and other means of construction and do all work and furnish all materials required by said specifications, plans, and drawings in the manner prescribed therein.

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 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 20 WORKING DAYS.

WORK IS TO BE COMPLETED PRIOR TO JANUARY 5, 2024 IN COMPLIANCE WITH EMERGENCY COASTAL DEVELOPMENT PERMIT (ECDP) NO. G-3-23-0065 AND SOIS ACTION PLAN.

To do any extra work, not covered by the schedule of price, which may be ordered by the City, and to accept as full compensation therefore such prices as may be agreed upon in writing by the City and the Contractor in accordance with the Standard Specifications.

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 any and all other Contract Documents shall be a part, within 20 calendar days after receipt of notice of the award of said contract, and to begin work within 10 working days after receiving Notice to Proceed with the contract. An exact start date for the project will be determined by the Engineer in coordination with the Contractor after the project has been awarded.

THE UNDERSIGNED BIDDER HAS CAREFULLY EXAMINED THE FORM OF THIS CONTRACT, THE STANDARD SPECIFICATIONS, THE PLANS, THE DRAWINGS, PERMIT CONDITIONS, THE NOTICE TO CONTRACTORS/NOTICE INVITING SEALED PROPOSALS OR BIDS, 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 THEREIN.

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 Capitola 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 Capitola.

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 Capitola, California, and which is given as a guarantee that the undersigned will enter into the contract if awarded the work.

The City of Capitola 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 30 days from the opening thereof.

NOTE: Bidders must 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.

Firm Name: _____

Signature of Bidder: _____

Printed Name: _____

Title: _____

Date: _____

Business Address: _____

Mailing Address: _____

Phone: _____

Email: _____

Tax ID No. or
Social Security No. _____

State Contractor's License No.: _____

Expiration Date: _____

Classifications(s): _____

CA State DIR Registration No.: _____

Classification of Workers Used on Job: _____

REQUIRED CONTRACTOR INFORMATION

NOTICE: In the case of a corporation, complete the following:

Corporation Name: _____

Business Address: _____

Mailing Address: _____

President: _____

Business Address: _____

Mailing Address: _____

Secretary: _____

Business Address: _____

Mailing Address: _____

Treasurer: _____

Business Address: _____

Mailing Address: _____

Manager: _____

Business Address: _____

Mailing Address: _____

BID SCHEDULE

Item	Description	Quantity	Unit	Unit Price	Total
1	TRAFFIC CONTROL SYSTEM	LS	1		
2	JOB SITE MANAGEMENT	LS	1		
3	WATER POLLUTION CONTROL PROGRAM	LS	1		
4	REMOVE CONCRETE (CY)	CY	10		
5	STRUCTURE EXCAVATION	CY	25		
6	STRUCTURE EXCAVATION (RETAINING WALL)	CY	5		
7	STRUCTURE BACKFILL	CY	25		
8	STRUCTURE BACKFILL (RETAINING WALL)	CY	5		
9	STRUCTURAL CONCRETE	CY	10		
10	STRUCTURAL CONCRETE, RETAINING WALL	CY	3		
11	DRILL AND BOND DOWEL	LF	8		
12	BAR REINFORCING STEEL	LB	1,400		
13	BAR REINFORCING STEEL (RETAINING WALL)	LB	450		
14	REPAIR SPALLED SURFACE AREA	SQFT	46		
15	REMOVE RETAINING WALL (LS)	LS	1		
				TOTAL BID	$

Bid Amount in words:_____

The City will award the contract to the lowest responsible bidder complying with the instructions in the Notice Inviting Sealed Bids. The lowest bidder will be determined on the basis of the Base Bid solely. In the event that the product of a unit price and an estimated quantity does not equal the extended amount quoted, the unit price shall govern and the corrected product of the unit price and the estimated quantity shall be deemed to be the amount bid. If the sum of two or more item totals in the bid schedule does not equal the total amount bid, the individual item totals shall govern and the corrected sum shall be deemed to be the amount bid.

BIDDER'S ACKNOWLEDGEMENT OF ADDENDUM(S)

Acknowledgement of Addendums(s): Receipt of the following addendum(s) issued during the time of bidding is acknowledged and the information contained therein has been considered in the preparation of this bid proposal.

Note: Failure to execute the following may be considered as an irregularity in the bid proposal.

Addendum No.: (None _____) (1 _____) (2 _____) (3_____) (4_____) (5_____)

Check appropriate space(s)

I certify under penalty of perjury that the representations made herein are true and correct to the best of my knowledge.

Signature of Bidder _____

Printed Name of Bidder _____

LIST OF SUBCONTRACTORS

The Bidder shall list the name, location of place of business, the California contractor's license number, the public works contractor registration number issued pursuant to California Labor Code Section 1725.5, and the dollar amount and proportion (in percent) of work of each subcontractor to whom the Bidder proposes to subcontract portions of the work.

Subcontractor Name	Location of Place of Business	CSLB License Number	Public Works Contractor Registration Number	Amount and Proportion of Subcontractor Work

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

WORKERS' COMPENSATION ACKNOWLEDGMENT CERTIFICATE

Labor Code section 1861 provides every contractor must submit the following certification prior to performing the work of the contract:

"I am aware of the provisions of Section 3700 of the Labor Code which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract."

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____[date], at _____[city], _____[state].

On behalf of Contractor by: _____

Its: _____

_____
Signature

NONCOLLUSION DECLARATION
TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

The undersigned declares:

I am the _____ of _____, the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. 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. All statements contained in the bid are true. 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, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____[date], at _____[city], _____[state].

_____
Contractor/Bidder

JURAT CERTIFICATE

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of _____)

County of _____)

Subscribed and sworn to (or affirmed) before me on this _____ day of _____, by _____, proved to me on the basis of satisfactory evidence to be the persons who appeared before me.

(This area for official notary seal)

Signature _____

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 Capitola 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 Capitola 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 Capitola 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 Capitola, aforesaid, for certain construction specifically described as follows, for which bids are to be opened at

10:00 A.M, TUESDAY, DECEMBER 5, 2023

at Capitola City Hall, 420 Capitola Ave, Capitola CA 95010

For:

Capitola Bridge over Soquel Creek Bridge [Stockton Bridge] Repairs

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 _____, 2021.

_____(Seal) _____(Seal)

_____(Seal)_____(Seal)

Principal Surety

Address_____ Address_____

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

AGREEMENT

THIS AGREEMENT, made and entered into this _____day of _____, 2021, by and between the CITY OF CAPITOLA, 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, "Standard Provisions" 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:

CAPITOLA BRIDGE OVER SOQUEL CREEK BRIDGE [STOCKTON BRIDGE] REPAIRS

General work description: Emergency Repair of the Stockton Avenue Bridge (bridge) over Soquel Creek in Capitola, California. Clean and patch exposed rebar at 7 locations to prevent further spalling of the bridge, remove and replace walkway slab and adjacent retaining wall in-kind, general debris removal.

In strict conformity and compliance with the City's Special Project Specifications, the Plans, and Drawings, and to do everything required by this agreement, and by said Standard Specifications as hereinafter defined.

ARTICLE II

It is expressly agreed and understood by the Contractor that the City's Special Project Specifications consists of the documents on file at the Office of the Director of Public Works of the City of Capitola, entitled:

"City of Capitola Special Project Specifications"

All sections of the Standard Specifications of the State of California, Department of Transportation, dated 2018 with most recent revisions, ("State Specifications"), shall apply. Where conflicts arise between the City's Special Project Specifications and the State Specifications, the City's Special Project Specifications shall control and apply.

ARTICLE III

It is expressly agreed and understood by each and every party to this agreement that the Notice to Contractors/Notice Inviting Sealed Proposals or Bids, Instructions to Bidders, the City's Special Project Specifications, including the Standard Provisions, Technical Provisions, and Special Provisions, the City's Standard Details, the State Specifications, the Bid Proposal including all required forms and bonds, the Plans, and the Drawings are hereby incorporated and made a part of this contract (hereinafter the "Contract Documents"). The parties to this agreement do hereby expressly acknowledge that they have read, understand, and promise to comply with each and every provision of Contract Documents.

ARTICLE IV

Contractor shall conform to all laws and regulations of the United States and the State of California, as well as laws of Capitola, as may be applicable to the project.

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 Contract Documents.

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 Capitola, by approval of a Notice of Completion, 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 Capitola, and the Contractor has affixed his/her signature hereto the day and year first hereinabove written.

CITY OF CAPITOLA	CONTRACTOR:
A Municipal Corporation	
By:	By:
_____	_____
Benjamin Goldstein	
City Manager	Title: _____
Date: _____	Date: _____

Approved by the City Council on _____

ATTEST:

_____
City Clerk

FAITHFUL PERFORMANCE & MAINTENANCE BOND

WHEREAS, the City of Capitola, 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:

Capitola Bridge over Soquel Creek Bridge [Stockton Bridge] Repairs

WHEREAS, said Principal is about to enter into the contract with the City of Capitola:

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 Capitola, 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 Capitola, 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 Capitola, 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 ($_____), being not less than 10 percent of the estimated contract cost, shall remain in force for a period of one (1) year after the completion and acceptance of the said work, during which time if the Principal, his/her or its heirs, executors, administrators, successors or assigns shall fail to make full, complete and satisfactory repairs and replacements or totally protect the City of Capitola from loss or damage made evident during said period of one (1) year from the date of official acceptance of said work and resulting from or caused by defective materials or faulty workmanship in the prosecution of the work done, the above obligation in the sum of _____ dollars ($_____), 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_____, 20____, by its undersigned representative, pursuant to the authority of its governing body, the day and year first hereinabove written.

_____

PRINCIPAL

_____

SURETY

LABOR AND MATERIAL BOND

WHEREAS, the City of Capitola, 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:

Capitola Bridge over Soquel Creek Bridge [Stockton Bridge] Repairs

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 Capitola to complete the work or improvement referred to above for the City of Capitola, County of Santa Cruz, State of California, all as more particularly and in detail as shown upon the Special Project Specifications and Contract Documents filed in the Public Works Department of the City of Capitola;

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 Capitola 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 Capitola, 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 authorized under Civil Code Section 9100 to assert a claim against a payment bond, 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 Principal or his/her subcontractor pursuant to Section 18806 of the Revenue and Taxation Code, or fails to pay for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the principal and all subcontractors 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, will pay, in addition to the face amount hereof, 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 and entities authorized in Civil Code Section 9100 to assert a claim against a payment bond so as to give a right of action to such persons or entities or their assigns in any suit brought upon or action to enforce liability on 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_____, 20__, and duly signed by its undersigned representation, pursuant to authority of its governing body.

_____

PRINCIPAL

_____

SURETY

ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

This escrow agreement is made on _____ and entered into by and between; City of Capitola whose address is 420 Capitola Avenue, Capitola, CA 95010, hereinafter called "City", and _____ whose address is _____hereinafter called "Contractor", whose address is _____, and _____whose address is _____, hereinafter called "Escrow Agent"

For the consideration hereinafter set forth, the City, Contractor, and Escrow Agent agree as follows:

(1) Pursuant to Section 22300 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by City pursuant to the Construction Contract entered into between the City and Contractor for _____ project in the amount of $_____ dated _____ (hereinafter referred to as the "Contract"). Alternatively, on written request of the Contractor, the City shall make payments of the retention earnings directly to the Escrow Agent. When the Contractor deposits the securities as a substitute for Contract earnings, the Escrow Agent shall notify the Owner within 10 days of the deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as retention under the terms of the Contract between the City and the Contractor. Securities shall be held in the name of the City of Capitola and shall designate the Contractor as the beneficial owner.

(2) The City shall make progress payments to the Contractor for those funds which otherwise would be withheld form progress payments pursuant to the Contract provisions, provided that the Escrow Agent holds securities in the form and amount specified above.

(3) When the City makes payment of retentions earned directly to the Escrow Agent, the Escrow Agent shall hold them for the benefit of the contractor until the time that the escrow created under this contract is terminated. The Contractor may direct the investment of the payments into securities. All terms and conditions of this agreement and the rights and responsibilities of the parties shall be equally applicable and binding when the City pays the Escrow Agent directly.

(4) The Contractor shall be responsible for paying all fees for the expenses incurred by the Escrow Agent in the administering the Escrow Account and all expenses of the City. These expenses and payment terms shall be determined by the City, Contractor and Escrow Agent.

(5) The interest earned on the securities or the money market accounts held in Escrow and all interest earned on that interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor t any time and from time to time without notice to the City.

(6) Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to the Escrow Agent accompanied by written authorization from the City to the Escrow Agent that the City consents to the withdrawal of the amount sought to be withdrawn by the Contractor.

(7) The City shall have the right to draw upon the securities in the event of default by the Contractor. Upon seven days' written notice to the Escrow Agent from the City of the default, the Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by the City.

(8) Upon receipt of written notification from the City certifying that the Contract is final and complete, and that the Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payment of fees and charges.

(9) The Escrow Agent shall rely on the written notifications from the City and the Contractor pursuant to Sections (5) to (8), inclusive, of this Agreement and the City and Contractor shall hold the Escrow Agent harmless from Escrow Agent's release and disbursement of the securities and interest as set forth above.

(10) The names of the persons who are authorized to give written notice or to receive written notice on behalf of the City and on behalf of the Contractor in connection with the foregoing, and examples of their respective signatures are as follows:

CITY	Contractor
_____	_____
Authorized Signer	Authorized Signer
Name: _____	Name: _____
Title: _____	Title: _____
Address: _____	Address: _____
City, State, Zip _____	City, State, Zip _____
Phone: _____	Phone: _____

On behalf of the Escrow Agent:

_____

Authorized Signer

Name: _____

Title: _____

Address: _____

City, State, Zip _____

Phone: _____

PART 2: STANDARD PROVISIONS

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
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
DIR	Department of Industrial Relations
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
SPSPWC	Special Project Specifications for Public Works Construction
UL	Underwriters Laboratories

All references to 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/Contract.

SECTION 1
DEFINITIONS AND TERMS

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

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

1.03 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

1.04 Article - A numbered portion of a title Section of the Specifications

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

1.06 City - The City of Capitola.

1.07 Contract/Contract Documents - 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 to Contractors, Proposal, Drawings, City Special Project Specifications, Addenda, and Contract Bonds; also, any and all supplemental agreements amending or extending the work in a substantial and acceptable manner. Supplemental agreements are written agreements signed by both parties covering alterations, amendments, or extensions to the Contract and include Contract change orders.

1.08 Contractor - The person or persons, firm, partnership, corporation, or combination thereof, private or municipal, who is the successful bidder and has entered into a contract with the City.

1.09 Council, City Council - The City Council of the City of Capitola.

1.10 Days - Working days, unless otherwise designated.

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

1.12 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.

1.13 Engineer - The City Engineer acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties delegated to them.

1**.14 Liquidated Damages** - The amount prescribed in the specifications, pursuant to the authority of Government Code Section 53069.85, and the Standard Specifications of the State of California, Department of Transportation dated 2018, with the most recent revisions, 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.

1.15 Plans, Constructions Plans - The Drawings which are a part of the Contract.

1.16 Project - The project, works of improvement, or other work identified in the Contract Documents.

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

1.18 Special Provisions - The special provisions are specific clauses setting forth conditions or requirements peculiar to the work and supplementary to the Standard Provisions and Technical Provisions.

1.19 Specifications - The directions, provisions and requirements contained in the City's Special Project Specifications, including the Standard Provisions, Technical Provisions, and Special Provisions, and those incorporated by reference.

1.20 State Specifications - Wherever in these Specifications reference is made to the "State Specifications," reference shall be to specifications entitled, "State of California, Department of Transportation, Standard Specifications," 2018 edition with most recent revisions, and which are incorporated herein and made a part hereof by reference. Where the terms "State" or the "Engineer" are used in reference to the State Specifications, they shall be considered as meaning the "City" or "Director/Engineer" as defined hereinabove and as may be applicable.

1.21 Subcontractor - A person, firm or corporation that is obligated as a party to a contract with the Contractor to perform part of the Project work. For purposes of these General Conditions Subcontractors include, but are not limited to, those that are obligated as parties to a contract with the Contractor to specially fabricate and install a portion of the Project Work according to the Technical Specifications and/or Project Plans.

1.22 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.

SECTION 2
PROPOSAL REQUIREMENTS AND CONDITIONS

2.01 OBTAINING PLANS AND SPECIFICATIONS - The City's Special Project Specifications, Plans, and Drawings may be obtained at the location indicated on the Notice to Bidders and/or the Office of the Engineer, Capitola City Hall, 420 Capitola Ave, Capitola, California 95010.

2.02 CONTENTS OF PROPOSAL FORMS – 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.

2.03 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. No allowance will be made for anticipated profit on work which is deleted or decreased.

2.04 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 of 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; the conformation and conditions 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 themselves with all 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 other 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 Article 5.17 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 borings 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 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, of 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 Article and bidders must satisfy themselves through their own investigations as to conditions to be encountered.

No information derived from such inspection of records or 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 of Public Works, Capitola City Hall, 420 Capitola Ave, Capitola, California 95060, or at such other locations as may be stated in the Notice to Contractors.

2.05 PROPOSAL FORM – The Proposal forms furnished by the City or its representatives, when filled out by the bidder and executed, shall be submitted as his/her Proposal. Neither the Proposal form nor any other portion of the Contract Documents or Specifications shall be detached therefrom. Proposals submitted on forms detached shall be disregarded. All Proposals should give the final price proposed, both in writing and in figures in the respective spaces provided and shall be signed by the bidder. In the event of a discrepancy between writing and figures, the writing shall prevail over the figures. The bidder shall set forth for each item of work, in clearly legible figures, an item price and a total for the item in the respective spaces provided for this purpose. In the case of unit basis items, the amount set forth under the "TOTAL" column shall be the extension of the unit price bid on the basis of the estimated quantity for the item. If the unit price and the total amount named for any item do not agree, the unit price will be considered as representing the Bidder's intention. If the amount set forth as an item price is ambiguous, unintelligible or uncertain for any cause, or is omitted, or in the case of unit basis items, is the same amount as the entry in the "TOTAL" column, then the amount set forth in the "TOTAL" column for the item shall prevail in accordance with the following:

1. As to lump sum items, the amount set forth in the "TOTAL" column shall be the item price.

2. As to unit basis items, the amount set forth in the "TOTAL" column shall be divided by the estimated quantity for the item and the price thus obtained shall be the item price.

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

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 Director, at Capitola City Hall,

420 Capitola Ave, Capitola, California 95060, in writing. 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/BIDDER'S SECURITY – All Proposals shall be presented under sealed cover and accompanied by one of the following forms of bidder's bond executed by an admitted surety, made payable to the City of Capitola. 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 Director of Public Works. 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 article 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 for this Contract.

Contractors or subcontractors who are ineligible under Labor Code sections 1777.1 and 1777.7 are prohibited from working on the Project.

2.13 ADDENDUM – 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 indicated in his/her application for a Proposal form. A copy of each addendum so issued shall be attached to the Specifications containing the Proposal.

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 fifty percent (50%) of the value of all work embraced in the contract, except when certain items may be exempted by the Special Provisions from said fifty percent requirement.

In accordance with Public Contract Code sections 4100 *et seq.*, the Subletting and Subcontracting Fair Practices Act, each proposal shall have listed on the form provided with the Proposal, (a) the name, the location of the place of business, the California contractor license number, and public works contractor registration number issued pursuant to California Labor Code Section 1725.5 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.

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

No Contractor or Subcontractor may be listed on a bid or proposal for a public works project unless registered with the DIR pursuant to Labor Code section 1725.5. A Contractor or Subcontractor shall not be qualified to bid on, be listed in a bid proposal, or enter into any contract for public work, unless currently registered and qualified to perform public work pursuant to Labor Code section 1725.5. By submitting a bid or proposal to the City, Contractor is certifying that he or she has verified that all subcontractors used on this project are registered with the DIR in compliance with Labor Code sections 1771.1 and 1725.5, and Contractor shall provide proof of registration to the City as part of the Proposal.

A Contractor's inadvertent error in listing a Subcontractor who is not registered pursuant to Labor Code section 1725.5 in response to a solicitation shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive provided that any of the following apply: (1) the Subcontractor is registered prior to bid opening; (2) within twenty-four hours after the bid opening, the Subcontractor is registered and has paid the penalty registration fee specified in Labor Code section 1725.5; or (3) the Subcontractor is replaced by another registered subcontractor pursuant to Public Contract Code section 4107.

2.15 COMPETENCY OF BIDDER – The bidder shall be licensed under the applicable provisions 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 s/he has the requisite experience and ability and that s/he has sufficient capital, facilities, and plans 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 Public Contract Code sections 5100 *et seq.*, 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.

2.17 BID PROTESTS – Any contractor who unsuccessfully bids on a City contract awarded by the City in accordance with the provisions of the Capitola Municipal Code (CMC), Chapter 3.16, or any trade association representing workers who would have potentially been employed by such a contractor, may file a bid protest.

The bid protest shall be in writing and filed with the Director of Public Works within five days of the bid opening date. The City Engineer or their designated representative shall hear the bid protest prior to award of the contract. The protesting party may protest the bid award for the City's or successful bidder's failure to comply with the requirements of CMC, Chapter 3.16, the bid documents, or any other applicable provision of the CMC. The bid protest shall clearly set forth the basis for the bid protest.

Grounds not set forth in the written protest may not be considered by the City at the bid protest hearing. The City shall sustain a bid protest if the protesting party demonstrates by clear and convincing evidence that, as specified above, the City would act improperly in awarding the bid. The decision of the City Engineer shall be considered by the City Council at time of award of contract.

SECTION 3
AWARD AND EXECUTION OF CONTRACT

3.01 CONSIDERATION OF PROPOSALS – After the proposals have been opened and read, they will be checked for accuracy and compliance with these Specifications.

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

3.02 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 appropriately licensed in accordance with law. Such award, if made, will be made within 30 days after the opening of the Proposals or as specified in the Proposal or Special Provisions. If the lowest responsible bidder refuses or fails to execute the Contract, the City 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 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.

3.03 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.

3.04 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 (s)he 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. Contractor and Surety shall warrant to the City that the Surety is licensed by the California Secretary of State to conduct business in the State of California and Surety shall provide proof of its authorization to conduct business in 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 inure to the benefit of persons performing labor or furnishings 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 work.

The Bond for Faithful Performance shall remain in effect to guarantee the repair and replacement of defective equipment, materials and work, 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 (1) 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 completion 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 the Contractor to that effect, and s(he) 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.

3.05 EXECUTION OF CONTRACT – The Contract shall be signed by the successful bidder and returned, together with the contract bonds, within twenty days, not including Sundays and legal holidays, after the bidder has received the Contract for execution or as specified in the proposal or Special Provisions.

3.06 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 twenty days or as specified in the Proposal form or Special Provisions, not 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 forfeiture of the proposed guarantee.

3.07 CONTRACTOR'S INSURANCE

3.07.01 **General** - Without limiting the responsibility of the Contractor for damages as set forth in Article 7.18, the Contractor must obtain all insurance required under this Article, in a form approved by the City, and Contractor must not allow any Subcontractor to commence work on any Subcontract until all insurance required of Contractor has been likewise obtained by the Subcontractor, and such insurance is approved by the City. Approval of the insurance by City shall not relieve or decrease the liability of Contractor hereunder. Contractor shall procure and maintain for the duration of the Contract, and at least 5 years thereafter, insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or subcontractors.

3.07.02 **Minimum Scope and Limit of Insurance** - Without limiting any of the other obligations or liability of Contractor, Contractor shall provide and maintain, until the work is

completed and accepted by the City, the following minimum insurance coverages, unless otherwise specified in the particular specifications.

a. **Commercial General Liability** (CGL): Insurance Services Office Form CG 00 01 covering CGL on an "occurrence" basis, including products and completed operations, property damage, bodily injury and personal & advertising injury with limits no less than $2,000,000 per occurrence. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit. Such CGL shall include, or be endorsed to include, the following:
    - **i.** Cross Liability Coverage
    - **ii.** Blanket Contractual Liability Coverage
    - **iii.** Contractor's Protective Liability Coverage
    - **iv.** Products and Completed Operations Coverage
    - **v.** Broad Form Property Damage Coverage
    - **vi.** Explosion, Collapse and Underground Property Damage Liability Coverage

b. **Workers' Compensation Insurance** as required by the State of California, with Statutory Limits. The Contractor and any subcontractors engaged in performance of the Work must secure payment of workers compensation in accordance with California Labor Code Section 3700 and other applicable law. The Contractor must verify that all Subcontractors comply with this requirement.

c. **Employers' Liability Insurance** with a limit of no less than $1,000,000 per accident for bodily injury or disease.

d. **Automobile Liability Insurance** coverage all automobiles, trucks, tractors, trailers, motorcycles, or other automotive equipment, whether owned or rented by Contractor or owned by employees of Contractor. Such insurance shall be on Insurance Services Office Form Number CA 0001 covering Code 1 (any auto), with limits no less than $1,000,000 per accident for bodily injury and property damage.

e. **Professional Liability** (Error's & Omissions), with limits no less than $1,000,000 per occurrence or claim, and $2,000,000 policy aggregate.

f. **Contractors Pollution Legal Liability and/or Asbestos Legal Liability** with limits no less than $1,000,000 per occurrence or claim, and $2,000,000 policy aggregate.

3.07.03 **Insurance Provisions** - The insurance provided by the above insurance policies shall name as additional insured the City of Capitola, its officer, 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 policy 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 Capitola.

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 a County, or any City within a County, the policy of insurance required by paragraph 3.07.02, entitled "Minimum Scope and Limit of Insurance" shall name the State of California, that County, and/or that City or other agency additional insured in addition to naming City and the statement contained in paragraph 3.07.03, entitled, "Insurance Provisions," shall be modified accordingly.

SECTION 4
SCOPE OF WORK

4.01 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 and professional manner all the work herein provided for.

4.02 MAINTENANCE AND CLEAN-UP – Throughout the construction period, 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 Director.

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 ordinances of the jurisdiction in which the work is performed.

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.

4.03 CHANGES & CHANGE ORDERS – 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 therefor 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.

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 determined by one or more of the following methods:

a. **Lump Sum Price**. By an acceptable lump-sum proposal from the Contractor. Said proposal shall be based on a cost estimate as to materials, equipment, and labor, to which total may be added a maximum of 15 percent for overhead, profit, and all other expenses; this 15 percent limitation shall apply for work done directly by the Contractor's organization or by his/her subcontractors, and shall be added only once.

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 Director may order, a correct account of the cost of the change, together with all vouchers therefor.

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 Director.

Upon receipt of an approved Contract Change Order, or of a written authorization from the Director setting forth a description of the change and agreed upon changes in contract price, the Contractor shall proceed with the work so ordered. The Contractor may request the issuance of Change Orders. 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 Director, but shall do no extra work except upon written order from the Director, and in the absence of such written order, (s)he 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, (s)he shall be paid on force account.

If the work is done on force account, compensation shall be in accordance with Article 9.04 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 Contractors 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.

4.04 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 Director to be unfair, s/he shall immediately, upon such work being demanded, or such record or ruling being made, ask in writing for written instructions or decision, whereupon (s)he shall proceed without delay to perform the work or to conform to the record or ruling, within 30 days after the date of receipt of the written instruction or decision, (s)he shall file a written protest with the Director 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, decisions, and acts or omissions of the Director shall be final and conclusive. Instructions and decisions of the Director contained in letters transmitting Drawings to the Contractor shall be considered as written instructions and decisions subject to protest in the manner herein described.

4.05 DUST CONTROL – During the performance of all work under this contract, the Contractor shall assume all responsibility for dust control and shall furnish all labor, equipment, and means required to carry out proper and efficient measures wherever and whenever dust control is necessary to prevent the operations from producing dust damage and nuisance to persons and property. Any claims resulting therefrom shall be borne solely by the Contractor.

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

SECTION 5
CONTROL OF WORK

5.01 AUTHORITY OF DIRECTOR – The Director 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 s/he shall have authority to enforce and make effective such decision and orders which the Contractor fails to carry out promptly.

5.02 DRAWINGS TO BE FURNISHED BY THE CONTRACTOR – The Drawings listed in the Specifications shall be supplemented by the Contractor with such working drawings as may be required for the prosecution of the work and approval of equipment. Such data may include shop detail drawings, reinforcing steel details, fabrication drawings, falsework and formwork drawings, pipe layouts and similar classes of drawings, which shall be favorably reviewed by the Director before any work involving these drawings is performed. No change shall be made by the Contractor in any working drawing after it has been favorably reviewed by the Director. Drawings shall contain all required detailed information of reasonable scale with enough views to clearly show the work to be done or the item to be furnished and shall be properly checked.

Working drawings will be subject to approval insofar as the details affect the character of the finished work, but details of design will be left to the Contractor who shall be responsible for successful construction of the work and operation of the equipment.

It is expressly understood, however, that approval of the Contractor's working drawing shall not relieve the Contractor of any responsibility for accuracy of dimensions and details, or for mutual agreement of dimensions and details. It is mutually agreed that the Contractor shall be responsible for agreement and conformity of his/her working Drawings and Specifications.

The sequence of submission of working drawings shall be such that all information is available to the Director for review of each drawing as it is received. A minimum of five prints of each working drawing shall be submitted. Three prints will be retained, and the balance returned within 20 calendar days with the Director's action indicated thereon. The Contractor shall make any necessary corrections and revisions to returned Drawings and shall resubmit the Drawings in the same routine as before within 20 calendar days after receipt.

Responsibility will be upon the Contractor to furnish Drawings in sufficient time for approval action including resubmittal, without delaying construction.

The cost of furnishing all working Drawings shall be included in the Contract prices for work to which the Drawings are appurtenant.

5.03 DRAWINGS AND DATA TO BE FURNISHED BY THE CITY – The City may issue supplemental Drawings for the construction work under the Contract. These drawings will show additional details as required for construction purposes. Installation instructions for City furnished materials will be furnished if required.

5.04 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 Director.

5.05 MAINTENANCE & OPERATION MANUALS – For use in the subsequent operation, the Contractor shall furnish two copies of maintenance and operation instructions supplied by the manufacturer for all equipment items. They shall be bound and suitably indexed in heavy, loose leaf binders.

5.06 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 Director the name of their authorized representative who shall have full authority to direct the work and to whom orders will be given by the Director, 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 time while work is suspended, arrangements acceptable to the Director 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 Director, 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 Director, 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 director, not otherwise required by the Specifications to be in writing, will, on request of the Contractor, be given or confirmed by the Director in writing.

5.07 LAYOUT OF WORK AND SURVEYS – The work performed in connection with “Survey Monumentation” shall conform to the requirements of the County Surveyor of the County of Santa Cruz, and shall consist of locating, referencing, resetting existing survey monuments to finish grade, and in conformance with these special provisions.

Attention is also directed to Section 8771 of the California Business and Professions Code for the requirements concerning survey monumentation. Existing survey monuments shall be located and referenced by or under the direction of a licensed land surveyor or registered civil engineer prior to construction operations, and a corner record or record of survey shall be filed with the County Surveyor of the County of Santa Cruz. Existing survey monuments shall be reset to finish grade, and a corner record or record of survey shall be filed with the County Surveyor of the County of Santa Cruz prior to the recording of the certificate of completion for the project.

5.08 INSPECTION – The Director 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 work 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 inspection and approval.

The right of general supervision shall not make the Contractor an agent of the City and the liability of the Contractor for all damages to persons or to public or private property arising from the execution of the work shall not be lessened because of such general supervision.

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 Director 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 Director or his representatives. Any plan or method suggested to the Contractor by the Director 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 Director will assume no responsibility therefor.

Defective work shall be made good, and unsuitable materials may be rejected notwithstanding that such defective work or unsuitable materials have been previously inspected by the Director or that payment therefor has been included in the progress estimate.

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.

5.09 REMOVAL OF DEFECTIVE AND UNAUTHORIZED WORKS – All work which 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, in the City's sole discretion.

If the Contractor should fail to comply promptly with any order of the Director made under the provisions of this Article, the Director may cause rejected or unauthorized work to be remedied, removed, or replaced, and the costs thereof to be deducted from any monies 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, the Director shall have the right and authority to retain the work instead of requiring it to be removed and reconstructed, but s\he shall make such deductions therefore in the payment due or to become due the Contractor as may be just and reasonable.

5.10 CONSTRUCTION EQUIPMENT AND PLANTS – Only equipment and plants suited to produce the quality of work required will be permitted to operate on the work. Plants shall be designed and constructed in accordance with general practice for such equipment and 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 plants to meet the above requirements; and, when ordered by the Director, 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 person 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 equipment, other than hand tools, by 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.

5.11 ALTERNATIVE CONSTRUCTION EQUIPMENT – While certain of these Specifications may provide that equipment of a particular size and type is to be used to perform portions of the work, it is to be understood that the development and use of new or improved equipment is to be encouraged.

The Contractor may request, in writing, permission from the Director to use equipment of a different size or type in place of the equipment specified.

The Director, before considering or granting such request, may require the Contractor to furnish, at their expense, evidence satisfactory to the Director that the equipment proposed for use by the Contractor is capable of producing work equal to, or better than, that which can be produced by the equipment specified.

If such permission is granted by the Director, it shall be understood that such permission is granted for the purpose of testing the quality of work actually produced by such equipment and is subject to continuous attainment of results which, in the opinion of the Director, are equal to, or better than that which can be obtained with the equipment specified. The Director shall have the right to withdraw such permission at any time the Director determines that the alternative equipment is not producing work that is equal, in all respects, to that which can be produced by the equipment specified. Upon withdrawal of such permission by the Director, the Contractor will be required to use the equipment originally specified and shall, in accordance with the direction of the Director, remove and dispose of or otherwise remedy, at his/her expense, any defective or unsatisfactory work produced with the alternative equipment.

Neither the City nor the Contractor shall have any claim against the other for either the withholding or the granting of permission to use alternative equipment, or for the withdrawal of such permission.

Permission to use alternative equipment in place of equipment specified will only be granted where such equipment is new or improved and its use is deemed by the Director to be in furtherance of the purposes of this Article. The approval for use of particular equipment on any project shall in no way be considered as an approval of the use of such equipment on any other project.

Nothing in this Article shall relieve the Contractor of his/her responsibility for furnishing materials or producing finished work of the quality specified in these Specifications.

5.12 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.

5.13 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 communication 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.

5.14 FINAL INSPECTION – When the work authorized by the Contract has been completed, the Director will make the final inspection.

5.15 ACCEPTANCE OF CONTRACT – When the Director 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, the Director will recommend that the City Council formally accept the Work of Improvement.

5.16 COORDINATION OF SPECIFICATIONS AND DRAWINGS – The Standard Provisions, Technical Provisions, 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 Technical Provisions shall govern over both the Standard Provisions and the Drawings; the Special Provisions shall govern over the Technical Provisions, the Standard Provisions and the Drawings.

Detail Drawings shall govern over general Drawings. Figures written on Drawings shall govern over the drawings themselves.

5.17 INTERPRETATION OF SPECIFICATIONS AND DRAWINGS – The work herein provided for is to be done in accordance with the Specifications and Drawings on file in the Department of Public Works. 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/her. 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.

5.18 STATE SPECIFICATIONS – Where specifically required and referenced, the work set forth in these Specifications shall be accomplished in accordance with appropriate provisions of the State Specifications with most recent revisions insofar as they apply. Said Specifications are herein referred to as the "State Specifications" and are, by reference, made a part of these Specifications the same as though as set out in full. In the event of conflict between the State Specifications and the Standard, Special, or Technical Provisions of the City's Special Project Specifications or the Drawings, the City's Special Project Specifications and Drawings shall apply.

5.19 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.

5.20 POTENTIAL CLAIMS AND DISPUTE RESOLUTION – No claims for extra work, materials, labor, equipment, or costs shall be considered or permitted if Contractor fails to timely notify the City of the claim and thereafter diligently pursue and exhaust all the administrative remedies and processes set forth in the Contract Documents and State Specifications, including but not limited to Change Orders, Differing Site Conditions, Initial Potential Claim Records, Supplemental Potential Claim Records, and Full and Final Potential Claims Records. Contractor must exhaust all such processes in order to preserve and pursue any claim, and failure to do so shall be deemed a waiver of the claim.

A. In accordance with California Public Contract Code Section 20104.2, presuming Contractor has diligently pursued and exhausted the administrative procedures of the Contract, the following procedures apply to claims of $375,000 or less between the Contractor and the City:
    1. The claim shall be in writing and include the documents necessary to substantiate the claim. Claims must be filed on or before the date of final payment. Nothing in this subdivision is intended to extend the time limit or supersede notice requirements otherwise provided by contract for the filing of claims.

    2. For claims of less than fifty thousand dollars ($50,000), the City shall respond in writing to any written claim within 45 days of receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the City may have against the Contractor.

        i. If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the City and the Contractor.

        ii. The City's written response to the claim, as further documented, shall be submitted to the Contractor within 15 days after receipt of the further documentation or within a period of time no greater than that taken by the Contractor in producing the additional information, whichever is greater.

3. For claims of over fifty thousand dollars ($50,000) and less than or equal to three hundred seventy-five thousand dollars ($375,000), the City shall respond in writing to all written claims within 60 days of receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the City may have against the Contractor.

    i. If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the City and the Contractor.

    ii. The City's written response to the claim, as further documented, shall be submitted to the Contractor within 30 days after receipt of the further documentation, or within a period of time no greater than that taken by the Contractor in producing the additional information or requested documentation, whichever is greater.

4. If the Contractor disputes the City's written response, or the City fails to respond within the time prescribed, the Contractor may so notify the City, in writing, either within 15 days of receipt of the City's response or within 15 days of the City's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon a demand, the City shall schedule a meet and confer conference within 30 days for settlement of the dispute.

5. Following the meet and confer conference, if the claim or any portion remains in dispute, the Contractor shall file a claim for money or damages as provided in Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code, prior to filing a civil action to resolve the disputed claim. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the Contractor submits his or her written claim pursuant to subdivision (a) until the time that claim is denied as a result of the meet and confer process, including any period of time utilized by the meet and confer process.

6. This article does not apply to tort claims and nothing in this article is intended nor shall be construed to change the time periods for filing tort claims or actions specified by Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code.

B. In accordance with California Public Contract Code Section 20104.4, the following procedures apply to civil actions to resolve claims of $375,000 or less between the City and the Contractor:

1. Within 60 days, but no earlier than 30 days, following the filing or responsive pleadings, the court shall submit the matter to non-binding mediation unless waived by mutual stipulation of both parties. The mediation process shall provide for the selection within 15 days by both parties of a disinterested third person as mediator, shall be commenced within 30 days of the submittal, and shall be concluded within 15 days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court or by stipulation of both parties. If the parties fail to select a mediator within the 15-day period, any party may petition the court to appoint the mediator.

2. If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1141.11 of that code. The Civil Discovery Act of 1986 (Article 3 (commencing with Section 2016) of Chapter 3 of Title 3 of Part 4 of the Code of Civil Procedure) shall apply to any proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration.

    i. Notwithstanding any other provision of law, upon stipulation of the parties, arbitrators appointed for purposes of this article shall be experienced in construction law, and, upon stipulation of the parties, mediators and arbitrators shall be paid necessary and reasonable hourly rates of pay not to exceed their customary rate, and such fees and expenses shall be paid equally by the parties, except in the case of arbitration where the arbitrator, for good cause, determines a different division. In no event shall these fees or expenses be paid by state or county funds.

    ii. In addition to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, any party who after receiving an arbitration award requests a trial de novo but does not obtain a more favorable judgment shall, in addition to payment of costs and fees under that chapter, pay the attorney's fees of the other party arising out of the trial de novo.

3. The court may, upon request by any party, order any witnesses to participate in the mediation or arbitration process.

C. In accordance with California Public Contract Code Section 20104.6:

1. The City shall not fail to pay money as to any portion of a claim which is undisputed except as otherwise provided in the contract.

2. In any suit filed under Public Contract Code Section 20104.4 concerning this contract, the City shall pay interest at the legal rate on any arbitration award or judgment. Such interest shall accrue from date the suit was filed.

D. Claim for money or damages required. For any all claim not covered the procedures set forth in Article 5.20, Contractor shall file a claim for money or damages as provided in Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code, prior to filing a civil action to resolve the claim. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the Contractor submits his or her written claim pursuant to subdivision (a) until the time that claim is denied by the City, including any period of time utilized by the meet and confer process.

SECTION 6
CONTROL OF MATERIALS AND INSTALLED EQUIPMENT

6.01 FURNISHING AND QUALITY OF MATERIALS & EQUIPMENT – The Contractor shall furnish all materials and equipment required to complete the work, except materials or equipment that are designated in the Special Provisions to be furnished by the City or materials furnished by the City in accordance with Article 4.03.

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 the time limit of the guaranty are as specified in Article 9.09. Said guaranty shall be signed and delivered to the Director before Acceptance of the Project. Upon completion of the Work of Improvement, the amounts of the Contract bonds required in Article 3.04 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.

6.02 SOURCE OF MATERIAL AND EQUIPMENT SUBMITTALS - The Contractor shall furnish a list of his/her sources of materials and equipment to the Director. 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 which may be delivered later for incorporation in the work. No 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 materials, and equipment proposed for installation. The data shall be submitted in the same routine as prescribed for working drawings in Article 5.02. 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 Technical Provisions.

At the option of the Director, 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.

6.03 STORAGE OF MATERIALS AND EQUIPMENT - Materials and equipment 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. Unless specifically authorized by the Director, no materials shall be stored overnight upon any public right of way within the City.

6.04 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 otherwise permitted by the Director. No rejected material, the defects of which have been subsequently corrected, shall be used unless approval in writing has been given by the Director. If the Contractor should fail to comply promptly with any order of the Director made under the provisions of this Article, the Director may cause defective materials to be removed and replaced, and the costs thereof to be deducted from any monies due or to become due the Contractor.

6.05 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 and 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 the comparative quality and suitability of alternative equipment or materials shall be upon the Contractor and s/he shall furnish, at their 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 Director. The Director will be the sole judge as to the comparative quality and suitability of alternative equipment or materials and this decision shall be final. The Contractor, pursuant to Public Contract Code, Section 3400 et seq., 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.

6.06 TESTING MATERIALS - Unless otherwise specified in the Special Provisions or Technical Provisions called for on the drawings, all tests of materials and work, for determining compliance with requirement, 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 Director.

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 requirements, the Contractor shall submit two copies of certified test results, unless the requirement therefore is waived. No material will be accepted until these data have been passed upon by the Director and accepted.

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

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

6.07 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 Director. Where plant inspection is so designated, the Director 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 Director shall bear a suitable notation advising suppliers and subcontractors of inspection requirements.

The Director or an 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.

6.08 CITY FURNISHED MATERIALS - Materials furnished by the City will be available at locations designated in the Special Provisions. They shall be loaded, unloaded and hauled to the site of the work by the Contractor at his\her expense. The Contractor shall be held responsible for all materials furnished to him\her, and s\he shall pay all demurrage and storage charges. The cost of handling and placing City furnished material shall be considered as included in the price paid for the Contract item involving such City furnished material.

SECTION 7
LEGAL RELATIONS AND RESPONSIBILITY

7.01 LAWS TO BE OBSERVED – The Contractor shall remain 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. S\he shall at all times 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 him or 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.

7.02 LABOR DISCRIMINATION – Attention is directed to the following sections of the Labor Code:

1735. No discrimination shall be made in the employment of persons upon Public Works because of race, color, national origin or ancestry, or religion of such persons and every Contractor for Public Works violating this section is subject to all the penalties imposed for a violation of this chapter.

1420. It shall be unlawful employment practice, unless based upon a bonafide occupational qualification, or except where based upon applicable security regulations established by the United States or the States or the State of California:

(a) For an employer, because of the race, religious creed, color, national origin, or ancestry of any person, to refuse to hire or employ him/her or to bar or to discharge from employment such person, or to discriminate against such person in compensation or in terms, conditions or privileges of employment.

Contractor agrees to abide by all of the foregoing statutes, regulations, ordinances and resolutions.

7.03 REMOVED.

7.04 PREVAILING WAGES, APPRENTICESHIP, PAYROLL RECORDS – In accordance with California Labor Code Section 1773.2, the City has determined the general prevailing wages in the locality in which the work is to be performed for each craft or type of work needed to be as published by the State of California Department of Industrial Relations, Division of Labor Statistics and Research, a copy of which is on file in the Public Works Department and shall be made available on request. The Contractor shall cause a copy of these wage rates to be posted at each job site. The Contractor and subcontractors engaged in the performance of the Work shall pay no less than these rates to all persons engaged in performance of the Work. These rates are set forth in the Notice to Contractors and excludes contracts for projects of $25,000 or less for construction work, or projects of $15,000 or less for alteration, demolition, repair, or maintenance work.

In accordance with California Labor Code Section 1777.5, the Contractor, on behalf of the Contractor and any subcontractors engaged in performance of the Work, will be responsible for ensuring compliance with California Labor Code Section 1777.5 governing employment and payment of apprentices on public works contracts.

In accordance with California Labor Code Section 1775, the Contractor and any Subcontractors engaged in performance of the Work shall forfeit a penalty of up to $200 per day for each worker engaged in the performance of the Work that the Contractor or any subcontractor pays less than the specified prevailing wage. The amount of such penalty shall be determined by the Labor Commissioner. The Contractor or subcontractor shall pay the difference between the prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing wage rate. If a subcontractor worker engaged in performance of the Work is not paid the general prevailing per diem wages by the subcontractor, the Contractor is not liable for any penalties therefore unless the Contractor had knowledge of that failure or unless the Contractor fails to comply with all of the following requirements:

1. The contract executed between the Contractor and the subcontractor for the performance of part of the Work must include a copy of the provisions of California Labor Code Sections 1771, 1775, 1776, 1777.5, 1813, and 1815.
2. The Contractor must monitor payment of the specified general prevailing rate of per diem wages by the subcontractor by periodic review of the subcontractor's certified payroll records.
3. Upon becoming aware of a subcontractor's failure to pay the specified prevailing rate of wages, the Contractor must diligently take corrective action to halt or rectify the failure, including, but not limited to, retaining sufficient funds due the subcontractor for performance of the Work.
4. Prior to making final payment to the subcontractor, the Contractor must obtain an affidavit signed under penalty of perjury from the subcontractor that the subcontractor has paid the specified general prevailing rate of per diem wages employees engaged in the performance of the Work and any amounts due pursuant to California Labor Code Section 1813.

In accordance with California Labor Code Section 1776, the Contractor and each subcontractor engaged in performance of the Work, must keep accurate payroll records showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed in performance of the Work. Each payroll record must contain or be verified by a written declaration that it is made under penalty of perjury, stating that the information contained in the payroll record is true and correct and that the employer has complied with the requirements of Sections 1771, 1811, and 1815 for any work performed by the employer's employees on the public works project. The payroll records required pursuant to California Labor Code Section 1776 must be certified and must be available for inspection by the City and its authorized representatives, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the Department of Industrial Relations and must otherwise be available for inspection in accordance with California Labor Code Section 1776. Contractor and their subcontractors shall furnish the payroll records specified in Labor Code section 1776 directly to the Labor Commissioner in the manner required by Labor Code section 1771.4.

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 too

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 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.

In case it becomes necessary for the Contractor or any subcontractor engaged in performance of the Work to employ on the Work any person in a trade or occupation (except executive, supervisory, administrative, clerical, or other non-manual workers as such) for which no minimum wage rate has been determined by the Director of the Department of Industrial Relations, the Contractor must pay the minimum rate of wages specified therein for the classification which most nearly corresponds to Work to be performed by that person. The minimum rate thus furnished will be applicable as a minimum for such trade or occupation from the time of the initial employment of the person affected and during the continuance of such employment.

7.05 HOURS OF LABOR – Eight hours labor constitutes a legal day's work. The Contractor shall forfeit as a penalty to the City up to $25 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 any one calendar day and 40 hours in any one calendar week in violation of Labor Code Sections 1810 to 1815, inclusive, except as provided for under Labor Code Section 1815.

7.06 APPRENTICES – The Contractor's attention is directed to the provisions of 1770 *et seq.* of the Labor Code concerning the employment of apprentices by the Contractor or any Subcontractor under him\her.

Section 1777.5, as amended, requires the Contractor or subcontractor employing tradespersons in any apprenticible 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 3 months prior to the request for certificate,

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

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 assignment of an apprentice to any work performed under a public works contract would create a condition that would jeopardize his or her life or the life, safety, or property of fellow employees or the public at large, or the specific task to which the apprentice is to be assigned is of a nature that training cannot be provided by a journeyman.

The Contractor is required to make contributions to funds established for the administration of apprenticeship programs if (s)he employs registered apprentices or journeymen in any apprenticible 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.

7.07 PERMITS AND LICENSES – The Contractor shall procure all permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the work. The Contractor shall note and comply all permit conditions provided in the Special Provisions or Technical Provisions, if any.

7.08 PATENTS AND COPYRIGHTS – The Contractor shall assume all costs arising from the use of, and shall indemnify, defend, hold harmless, and save the City and the Council, its officers, 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 him/her in the performance of the Contract, including their use by the City, unless otherwise specifically stipulated in the Specifications.

7.09 SANITARY FACILITIES – The Contractor shall conform to the rules and regulations pertaining to sanitary provisions as established by the State of California, the County of Santa Cruz and the City of Capitola, as may be applicable.

7.10 PUBLIC SAFETY – In accordance with generally accepted construction practices and applicable law, the Contractor will be solely and completely responsible for conditions of the Work site, including safety of all persons and property during performance of the Work. This requirement will apply continuously and not be limited to normal working hours. For purposes of California Labor Code Section 6400 and related provisions of law the Contractor and the Contractor's privities and any other entities engaged in the performance of the Work will be "employers" responsible for furnishing employment and a place of employment that is safe and healthful for the employees, if any, of such entities engaged in the performance of the Work. Neither the City nor its officials, officers, employees, agents, volunteers or consultants will be "employers" pursuant to California Labor Code Section 6400 and related provisions of law with respect to the Contractor, the Contractor's privities or other entities engaged in the performance of the Work.

Furthermore, the Contractor shall, at his/her own expense, furnish, erect and maintain such fences, barriers, lights, bridges, and signs and provide such flaggers and guards as are necessary to give adequate warning to the public of the construction and of any dangerous conditions 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 creates a condition hazardous to the public traffic, s\he shall provide and station competent flaggers whose sole duties shall consist of directing the movement of public traffic through or around the work.

7.11 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 the 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 the 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 for extra costs or damages by the Contractor.

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

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

7.12 EXPLOSIVES AND STREAM POLLUTION – When the use of explosives is necessary for the prosecution of work, the Contractor shall not endanger life or property, and will be required to obtain a permit for use of explosives within City limits. All explosives shall be stored in accordance with the provisions of Division XI of the Health and Safety Code, and any applicable County or local ordinances.

Attention is called to the necessity of obtaining a permit from the Department of Fish and Wildlife of the State of California in advance of use of underwater explosives. Attention is directed to the Fish and Game Code relating to stream pollution, particularly, Section 5650.

7.13 FIRES – The Contractor shall obtain any necessary fire permits from the properly constituted authority and comply with all regulations of the County in which the work is to be performed.

7.14 INTERFERENCE WITH FIRE HYDRANTS, HIGHWAYS, AND FENCES – The Contractor shall so conduct his/her operations so 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 s\he 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 s\he shall make such repairs or provide such temporary guards as shall be acceptable to the authorities having jurisdiction and to the Director. 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 Director, 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.

7.15 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 responsibility or ascertaining the existence of any underground improvements or facilities which may be subject to damage by reason of the operation.

Any obstruction along the line of work, such as mail-boxes or paper-boxes, posts, fences, culverts, improvements, etc., which interferes 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 Director, 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 Director. Tree branches that extend over the work and must be removed, shall be cut off at the bole in a competent 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 Director 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 monies due or to become due the Contractor under the Contract.

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

The Contractor, employee, 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.

7.16 PUBLIC CONVENIENCE – Unless otherwise provided in the Special Provisions, all public traffic shall be permitted to pass through the work, and the Contractor shall so conduct operations as to offer the least possible obstruction and inconvenience to the public. The Contractor shall have under construction not greater length or amount of work than can be prosecuted properly with due regard to

the rights of the public, and the Director 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 Article 7.10, the Contractor shall erect such warning and directional signs as may be necessary, 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 Director, and (s)he shall be notified 24 hours in advance of any disturbance of existing traffic patterns. No changes shall be made until approved by the Director.

Traffic signs, existing within the limits of the project, such as STOP signs, shall be maintained in an upright secure 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 are to be installed under the contract across 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 Director 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 crossings or intersecting roads or streets shall be provided and kept in good condition. When traffic control signals are shut down as provided in Section 86-1.05 of the State Specifications, the Contractor shall control traffic by use of flaggers, as directed by the Director, at those locations set forth in the Special Provisions. No STOP signs will be permitted at these locations. The flaggers 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 Director. The Director 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.

7.17 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 Article 9.06.

7.18 RESPONSIBILITY FOR DAMAGES; INDEMNIFICATION – 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. To the fullest extent permitted by law, Contractor shall defend, indemnify, and hold harmless the City and its Directors, officers, officials, members, managers, departments, divisions, agents, representatives, volunteers, and employees (collectively "Indemnitee(s)"), from and against any and all claims, suits, actions, legal or administrative proceedings, judgments, debts, demands, injuries (including, without limitation, injury or death to any person or persons), damages (including, without limitation, damage to any property including loss of use resulting therefrom, and incidental and consequential damages), liabilities, losses, debts, interest, penalties, costs, attorneys' fees, and expenses of whatsoever kind of nature (collectively "Loss(es")), whether arising before, during, or after commencement or completion of this Contract, which in any manner, directly or indirectly, in whole or in part, result from, relate to, or arise from (or are claimed to result from, relate to, or arise from) the work called for by this Contract, or any act, omission, fault, recklessness, negligence (whether active or passive), or willful misconduct of Contractor or any of his/her/its subcontractors, or any of their respective officers, directors, agents, employees, or anyone acting under their direction, authority, control, or on their behalf or for whose acts or omissions either of them may be liable (collectively "Contractor Agent(s)"), or the condition of the premises while in the control of the Contractor or any Contractor Agent, even though the same may have resulted from the joint, concurrent, or contributory negligence, or from the passive negligence of an Indemnitee or any other person or persons. Except as provided in Section 3.07, this provision shall not be deemed to require the Contractor to indemnify the City or other Indemnitee for any Loss proximately caused by the sole negligence of an Indemnitee, or to the extent such Loss is proximately caused by the active negligence or willful misconduct of an Indemnitee. Notwithstanding anything to the contrary contained herein, Contractor's indemnification obligations shall not apply to the extent that such indemnity is void or otherwise unenforceable under applicable law in effect on or validly retroactive to the date of the Contract.

Contractor specifically acknowledges and agrees that he/she/it has an immediate and independent obligation to defend the City and the other Indemnitees from any Loss that falls within the scope of this Section 7.18 (Responsibility for Damages; Indemnification), which obligation arises at the time such Loss is tendered to Contractor by the Indemnitee and continues at all times until finally resolved.

Contractor's obligations under this Section 7.18 will survive the termination of the Contract.

7.19 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.

7.20 COOPERATION BETWEEN CONTRACTORS – Should construction be underway by other forces or by other Contractors within or adjacent to the limits of the work specified or should work of any other nature be underway by other forces within or adjacent to said limits, the Contractor shall cooperate with all such other Contractors or other forces to the end that any unnecessary delay or hindrance to their work will be avoided. The right is reserved to perform other or additional work at or near the site (including designated material sources) at any time by the use of other forces.

When two or more Contractors are employed on related or adjacent work, or are to obtain materials from the same designated material source, each shall conduct his/her operations in such a manner as not to cause any unnecessary delay or hindrance to the other. Each Contractor shall be responsible to

the other for all damage to work, to person or property caused to the other by his/her operations, and for loss caused the other due to his/her unnecessary delays or failure to finish the work within the time specified for completion.

7.21 PROPERTY RIGHTS IN MATERIAL – 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 Article 9.06.

7.22 RIGHTS IN LAND AND 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.

7.23 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 which meet the requirements of these Specifications.

7.24 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.

7.25 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.

7.26 SUBCONTRACTING – The Contractor shall comply with Public Contract Code Sections 4100 *et seq*, inclusive, relating to subletting and subcontracting.

No contractor or subcontractor may be listed on a bid or proposal for a public works project unless registered with the DIR pursuant to Labor Code section 1725.5. A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, or enter into any contract for public work, unless currently registered and qualified to perform public work pursuant to Labor Code section 1725.5. By submitting a bid or proposal to the City, Contractor is certifying that he or she has verified that all subcontractors used on this public work project are registered with the DIR in compliance with Labor Code sections 1771.1 and 1725.5, and Contractor shall provide proof of registration to the City.

Space is provided in the Proposal for listing subcontractors, and their DIR registration information, to be employed on the Project.

In no case shall the use of subcontractors in any way alter the position of the Contractor or his/her sureties with relation to this Contract. When a subcontractor is used, the responsibility for every portion of the work shall still remain with the Contractor.

7.27 PROTECTION OF PUBLIC UTILITIES – In accordance with California Government Code Section 4215, the City assumes the responsibility for the timely removal, relocation or protection of existing main or trunk line utility facilities located on the Work site if such utilities are not identified in the plans and specifications made a part of the invitation for bids. The City will compensate the Contractor for the costs of locating, repairing damage not due to the Contractor's failure to exercise reasonable care, and removing or relocating existing main or trunk line utility facilities located at the Work site and not identified with reasonable accuracy in plans and specifications made a part of the invitation for bids. The City will also compensate the Contractor for the cost of equipment on the Project necessarily idled during such work. The Contractor will not be assessed liquidated damages for Work completion delays caused by the City's failure to provide for removal or relocation of such main or trunk line utility facilities.

Nothing in this provision or the Contract Documents will be deemed to require the City to indicate the presence of existing service laterals or appurtenances whenever the presence of such utilities on the Work site can be inferred from the presence of other visible facilities, such as buildings, meter and junction boxes, on or adjacent to the Work site; provided, however, that nothing in this provision or the Contract Documents shall relieve the City from identifying main or trunk lines in the plans and specifications made a part of the invitation for bids.

Nothing in this provision or the Contract Documents will preclude the City from pursuing any appropriate remedy against the utility for delays which are the responsibility of the utility.

Nothing in this provision or the Contract Documents will be construed to relieve the utility from any obligation as required either by law or by contract to pay the cost of removal or relocation of existing utility facilities.

If the Contractor while performing the Work discovers utility facilities not identified by the City in the plans and specifications made a part of the invitation for bids, the Contractor must immediately notify the City and utility in writing.

Either the City or the utility, whichever owns existing main or trunk line utility facilities located on the Work site, shall have sole discretion to effect repairs or relocation work or to permit the Contractor to perform such repairs or relocation work at a reasonable price

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 (s)he 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 (s)he is working in the vicinity of their facilities.

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 operation in such a manner as to avoid unnecessary delay or hindrance to the work being performed by such other forces.

The Santa Cruz City Municipal Utilities (SCMU) and Soquel Creek Water District (SCWD) owns, operates and maintains its own water distribution systems; the County of Santa Cruz owns, operates and maintains its own sewer 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 SCMU or SCWD-owned fire hydrants provided that application is made to the SCMU or SCWD and permission obtained with provision for payment.

Full compensation for conforming to the requirements of this article, 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.

7.28 PUBLICATIONS – The Contractor shall submit and obtain written approval from the Director 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 acknowledge, technical innovations are properly acknowledged, and such publication is in the best interest of the City.

7.29 LANDS AND 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.

7.30 ASSIGNMENT OF UNFAIR BUSINESS PRACTICE CLAIMS – In accordance with California Public Contract Code Section 7103.5, the Contractor and any subcontractors offer and agree to assign to the City all rights, title, and interest in and to all causes of action the Contractor or any subcontractors may have under Section 4 of the Clayton Act (15 U.S.C. § 15) or under the Cartwright Act (Chapter 2 (commencing with § 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services or materials pursuant to this contract. This assignment shall be made and become effective at the time the City tenders final payment to the Contractor, without further acknowledgement by the parties.

7.31 TRENCHING REQUIREMENTS – Pursuant to Labor Code section 6705 and these Specifications, before the excavation of any trench or trenches, five (5) feet or more in depth, where the estimated contract expenditure is twenty-five thousand dollars ($25,000) or more, the Contractor shall submit a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches. If such plan varies from the shoring system standards, established by the Construction Safety Orders, the plan shall be prepared by a registered civil or structural engineer. No excavation shall be started until said plan has been approved by the City Engineer. When the estimated contract expenditure is less than twenty-five thousand dollars ($25,000) the above-mentioned shoring plan may be required at the discretion of the City Engineer prior to or during the course of construction.

Pursuant to Public Contract Code section 7104, for any project which involves digging trenches or other excavations that extend deeper than four (4) feet:

1. The Contractor shall promptly, and before the following conditions are disturbed, notify the local public entity, in writing, of any:

a. Material that the contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law;
b. (2) Subsurface or latent physical conditions at the site differing from those indicated by information about the site made available to bidders prior to the deadline for submitting bids.
c. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the contract.

2. The City shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the contractor's cost of, or the time required for, performance of any part of the work shall issue a change order under the procedures described in the contract.
3. In the event that a dispute arises between the City and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the contractor's cost of, or time required for, performance of any part of the work, the Contractor shall not be excused from any scheduled completion date provided for by the contract, but shall proceed with all work to be performed under the contract. The Contractor shall retain any and all rights provided either by contract or by law which pertain to the resolution of disputes and protests between the parties.
4.

7.32 THIRD PARTY CLAIMS – The City shall timely notify Contractor of the receipt of any third-party claim relating to the Contract, and the City shall be entitled to recover its reasonable costs incurred in providing such notice.

SECTION 8
PROSECUTION AND PROGRESS OF WORK

8.01 ASSIGNMENT - The performance of the Contract may not be assigned except upon the written consent of the City. 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 Contractor may assign monies 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.

8.02 COMMENCEMENT OF WORK – The Contractor shall not begin work until s\he has received a 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 provide written notice to the Director of the Contractor's intention to start work, specifying the date on which s\he intends to start at least 24 hours in advance.

8.03 WORK IN PROGRESS SCHEDULE – Unless not required by the Special Provisions, the Contractor or the bidder to whom the Contract is awarded shall, prior to beginning work, submit to the Director a practicable work schedule in the form required by the Special Provisions showing the order and dates within which the Contractor proposes to carry out the work.

8.04 TEMPORARY SUSPENSION OF WORK – The Director shall have the authority to suspend the work wholly, or in part, for such period as (s)he 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 Director 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 Director 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 Director when conditions are favorable, and methods corrected.

8.05 TEMPORARY SUSPENSION OF WORK FOR THE CONVENIENCE AND BENEFIT OF THE CITY – The Director 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 Director 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 Director may make an equitable adjustment in the contract price and contract time.

8.06 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 the City's evaluation of the work done and the bid costs.

8.07 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 Director, and the subcontractor shall not again be employed on the type of work in which his/her performance was unsatisfactory.

8.08 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 Director or shall appear to the Director to be incompetent or to act in a disorderly or improper manner, (s)he shall be removed from the work immediately on the request of the Director, and such persons shall not again be employed on the work.

8.09 TIME OF COMPLETION AND LIQUIDATED DAMAGES – The Contractor shall complete all the work under the Contract within 45 working days as set forth in the Special Provisions or the Proposal form. When a delay occurs due to unforeseen causes beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of nature, acts of the public enemy, governmental acts, fires, floods, epidemics, strikes (except as caused by improper acts or omissions of the Contractor), the time of completion shall be extended for a period justified by the effect of such delay on the completion of the work. A delay of a subcontractor or supplier due to the above circumstances will be taken into consideration for extensions of time of completion.

Acts of nature means an earthquake, flood, cloudburst, cyclone, or other cataclysmic phenomena of nature beyond the power of the Contractor to foresee or to make preparation in defense against but does not include ordinary precipitation. The number of days provided for the work as set forth in the Special Provisions includes a normal amount of days for downtime due to weather according to the time of year in which the Contract will be operational.

Should any of the unforeseen circumstances as described in the preceding portion of this Article occur, the Contractor shall file written notice with the Director within the 10 days of the beginning of such delay. The notification shall be accompanied by documentary evidence to the fact and effect of the circumstances. Circumstances of which no notification has been given within 10 days of their occurrence shall not afterward be claimed as grounds for extension of time of completion. The Director will determine the facts in the matter and his/her findings shall be final and conclusive.

If the Contract is revised by a Contract Change Order and the Director determines that such revision will cause delay in completion of the work, the Change Order will provide for extension of the time of completion.

It is agreed by the parties to the Contract that in case all the work called for under the Contract in all parts and requirements is not finished or completed within the number of days as set forth in the Special Provisions, damage will be sustained by the City, and that it is and will be impracticable and extremely difficult to ascertain and determine the actual damage which the City will sustain in the event of a reason of such delay; and it is therefore agreed that the Contractor will pay to the City the sum set forth in the Special Provisions per day for each and every day's delay in finishing the work in excess of the number of days prescribed; and the Contractor agrees to pay said liquidated damages herein in the amount of $1,000 per day herein provided for in the State Specifications, provided for, and further agrees that the City may deduct the amount thereof from any monies due or that may become due to the Contractor under the Contract.

8.10 TERMINATION OF CONTRACT – If the Contractor should fail to supply sufficient workers, material, supplies, and equipment, the City shall give written notice to the Contractor, which notice shall require that the Contractor supply sufficient workers, 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 job site, 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.

8.11 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 rights-of-way, an extension of time will be granted pursuant to provisions of Article 8.09.

8.12 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 subcontractor 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 subcontractor, 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.

8.13 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 location 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.

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 of 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.

8.14 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 s\he 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. Unless authorized by the Director, any work done without liens, levels, or grades established by the Director shall be done at the Contractor's risk.

8.15 TEMPORARY FACILITIES AND SERVICES – The Contractor shall be responsible for providing and maintaining the necessary storage places, field office, temporary roads, fences, guards, 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 has approval of the owner for such a connection.

8.16 UNFAVORABLE WEATHER AND OTHER CONDITIONS – During unfavorable weather and other conditions, the Contractor shall pursue only such portion 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 the Contractor employs special means or precautions, approved by the Director to overcome them.

8.17 CONSTRUCTION HOURS – Construction hours shall be limited between the hours of 8:00 a.m. and 5:00 p.m. on weekdays. Construction shall be prohibited on weekends or legal holidays except in case of an emergency work approved by the Director.

It is understood, however, that two or three shift operations may be established as a regular procedure by the Contractor if (s)he first obtains written permission from the Director. Such permission may be revoked by the Director 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 Contractor shall give the Director 24 hours prior notice of any work to be done on weekends with the location and type of work to be done specified; and any work done without such notice and without the supervision of an inspector may be ordered removed and replaced at the Contractor's expense.

SECTION 9
MEASUREMENT AND PAYMENT

9.01 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 s\he 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 s\he 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.

9.02 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 with respect to the functional purposes of the installation, and no extra compensation will be allowed for anything omitted but fairly implied.

9.03 REMOVED.

9.04 FORCE ACCOUNT WORK

9.04.01 General – Where extra work is to be paid for on a force account basis, the extra work will be paid for at the actual necessary cost as determined by the Director, plus an allowance for superintendence, general expense, and profit. Such an allowance will be made in accordance with the following schedule:

Actual Necessary Cost	Allowance
Labor	20 Percent
Materials	15 Percent
Equipment	15 Percent

The actual necessary cost for labor, material or equipment will be computed in accordance with Articles 9.04.02, 9.04.03, and 9.04.04, respectively. Office expense, general superintendence, and other general expense will not be included in the computation of actual necessary costs.

It is understood that labor, materials, and equipment may be furnished by the Contractor or by the subcontractor or by others on behalf of the Contractor.

When extra work paid for on a force account basis is performed by forces other than the Contractor’s organization, the Contractor shall reach agreement with such other forces as to the distribution of the payment made by the City for such work and no additional payment therefor will be made by the City.

The Contractor shall furnish the Director daily report sheets covering the direct costs of labor and materials and charges for equipment, whether furnished by the Contractor, subcontractor, or other forces and said report sheets shall be signed by the Contractor or his\her authorized agent. The daily report sheets shall provide names or identifications and classifications of workers, and hours worked; size, type and identification number of equipment, and hours operated. Material charges shall be substantiated by valid copies of vendor's invoices.

The Director will make any necessary adjustments and compile the costs of force account work on daily extra work report forms furnished by the City. When these reports are agreed upon and signed by both parties, they shall become the basis of payment for the work performed but shall not preclude subsequent adjustment based on a later audit.

9.04.02 Labor – The cost of labor used in performing the work by the Contractor, a subcontractor, or other forces will be the sum of the following:

a. The actual wage paid which shall include any employer payments to, or on behalf of, workers for fringe benefits including health and welfare, pension, vacation, and similar purposes.

b. To the actual wages, as defined in Article 9.04.02(a), will be provided a percentage set forth in the Special Provision, which percentage shall constitute full compensation for all payment imposed by State and Federal laws including, but not limited to, compensation insurance, and social security payments.

c. The amount paid for subsistence and travel required by collective bargaining agreements.

At the beginning of the Contract and as later requested by the Director, the Contractor shall furnish the Director three copies of a certificate from the insurance company showing labor compensation rates.

9.04.03 Materials – The cost of materials used in performing the work will be the cost to the purchaser, whether Contractor, subcontractor, or other forces, from the supplier thereof, except as the following are applicable:

a. Cash or trade discounts available to the purchaser shall be credited to the City notwithstanding the fact that discounts may not have been taken.

b. In materials secured by other than a direct purchase and direct billing to the purchase, the cost shall be deemed to be the price paid to the actual supplier as determined by the Engineer. Markup except for actual costs incurred in the handling of such materials will not be allowed.

c. Payment for materials from sources owned wholly or in part by the purchaser for similar materials from said sources on Contract items or the current wholesale price for such materials delivered to the job site, whichever price is lower.

d. If, in the opinion of the Director, the cost of materials is excessive, or the Contractor does not furnish satisfactory evidence of the cost of such materials, then the cost shall be deemed to be the lowest current wholesale price for the quantity concerned delivered to the job site less cash or trade discounts.

The City reserves the right to furnish materials for the work and no claim shall be made by the Contractor for costs and profit on such materials.

9.04.04 Equipment – The allowance made for such equipment used on force account work shall be determined from the latest schedule of equipment rental rates in use at the date hereof by the California State Transportation Department and incorporate herein by reference the same as though set out in full. Equipment shall be in good operating condition when starting work covered by the order. Rental time will not be allowed while equipment is inoperative due to breakdowns. Allowance for equipment ownership expense for use of items of equipment not listed with the Board shall be established in conformance with the items listed.

When extra work is ordered, the Contractor shall furnish a complete description of each item of equipment to be used on such extra work, listing the make, model, size, capacity, mounting, type of power and cost.

Allowance determined in accordance with this Article include all costs of operating equipment such as servicing labor and equipment, labor and parts for minor field repairs, fuel, oil, grease, and supplies, but not operating crew labor. No additional payment or allowance will be made in extra work orders for these items other than operating labor in addition to the amounts allowed for equipment use.

When equipment is obtained for the extra work from beyond the limits of the Contract, in addition to the rental rates paid while the equipment is actually in use on the work, the City will pay the cost of loading, unloading, and transporting to and from work subject to the following conditions:

a. The point from which the equipment is to be transported shall be agreed to by the Director in advance.

b. Transportation on low bed trailers shall not exceed rates of established haulers or applicable minimum rates of the Public Utilities Commission.

c. Saturdays, Sundays, and Holidays will not be paid for unless directed by the Director.

d. The City will pay an amount not to exceed the charge for moving the equipment to the work if the equipment is returned to a location other than from which it was obtained.

e. Payment for transportation, loading, and unloading will not be made if the equipment is used on the work under the Contract in any other way than upon extra work paid for on a force account

9.05 RETENTION – In accordance with the Contract Documents and applicable law, the City may retain out of any payment due the Contractor up to 5% of the payment. In no event shall the City's total retention proceeds exceed 5% of the contract price.

Under no circumstances shall any provision of this section be construed to limit the ability of the City to withhold 150 percent of the value of any disputed amount of work from the final payment, as provided for Public Contract Code section 7107l. In the event of a good faith dispute, nothing in this section shall be construed to require a public entity to pay for work that is not approved or accepted in accordance with the proper plans or specifications.

9.05.010 SECURITIES IN LIEU OF RETENTION – In accordance with Public Contract Code Section 22300, except where federal regulations or polices do not permit substitution of securities, the

Contractor may substitute securities for any moneys withheld by the City to ensure performance of the Work. At the Contractor's request and expense, securities equivalent to the amount withheld will be deposited with the City, or with a state or federally chartered bank in California as the escrow agent, who will then pay those moneys to the Contractor under the terms of an Escrow for Security Deposit agreement. The Escrow for Security Deposit agreement is provided in the Contract Documents. Upon satisfactory completion of the Work, the securities will be returned to the Contractor.

Alternatively, at the Contractor's request and expense, the City will pay retentions earned directly to the escrow agent. At the Contractor's expense, the Contractor may direct investment of the payments into securities. Upon satisfactory completion of the Work, the Contractor will receive from the escrow agent all securities, interest, and payments received by the escrow agent from the City pursuant to this provision and the terms of the Escrow for Security Deposit agreement. The Contractor will, within 20 days of receipt of payment, pay to each subcontractor the respective amount of interest earned, less costs of retention withheld from each Subcontractor, on monies withheld to ensure the Contractor's performance of the Work.

Securities eligible for investment in accordance with this provision include those listed in Government Code Section 16430, bank or savings and loan certificates of deposit, interest bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by the Contractor and the City.

The Contractor will be the beneficial owner of any securities substituted for moneys withheld and will receive any interest thereon.

9.06 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. No such estimate of 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.

9.07 FINAL ESTIMATE AND PAYMENT – As soon as practicable after completion of the work, the Director 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. 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 the 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 the 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 Article 4.04.

9.08 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 items of work, and no additional allowance will be made therefor.

9.09 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 work, 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 s\he is given written notice of such failure; provided, however, that in case of emergency where, in the opinion of the Director, 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 work, or defective equipment and to guarantee the Contractor’s responsibility as outlined above, for period of one year after completion and acceptance of the project by the City. Said bond shall be a sum not less than ten (10%) of the Contract amount.

PART 3: TECHNICAL PROVISIONS

Whenever reference is made to “Standard Specifications”, it shall be interpreted to mean the State of California Department of Transportation Standard Specifications 2018 (unless otherwise noted), issued by the State of California Department of Transportation. Here the term “Special Provisions” is used in the Standard Specifications, it shall be understood to mean these Specifications.

The *Standard Specifications* including *Revised Standard Specifications* (RSS) as revised by these special provisions will apply to this project.

Special provisions are under headings that correspond with the main-section headings of the *Standard Specifications*. A main-section heading is a heading shown in the table of contents of the *Standard Specifications*.

Each special provision begins with a revision clause that describes or introduces a revision to the *Standard Specifications* or *Revised Standard Specifications (RSS).*

Any paragraph added or deleted by a revision clause does not change the paragraph numbering of the *Standard Specifications or RSS* for any other reference to a paragraph of the *Standard Specifications or RSS*.

When the word “Department” appears in the Specifications, it refers to the “City.”

Revisions to Standard Specifications and Revised Standard Specifications (RSS)

In the event of conflict between the Standard Specifications and these Special Provisions, the latter shall take precedence over and be used in lieu of such conflicting portions. The listing of certain salient sections from the Standard Specifications and these Special Provisions shall not in any way relieve the Contractor of complying with each and every section of the Standard Specifications.

SECTION 10
GENERAL

10.01 ORDER OF WORK

Order of work shall conform to the provisions in Section 10, "General," of the Standard Specifications and these special provisions.

Comply with the Statewide General Waste Discharge Requirements for Discharges of Dredged or Fill Material to Waters of the State from Emergency Repair and Protection Activities (Water Quality Order No. 2023-0058-DWQ).

Comply with Emergency Coastal Development Permit (ECDP) No. G-3-23-0065 issued by the Central Coast District of the California Coastal Commission, and SOIS Action Plan.

The Contractor shall prepare a traffic control plan that conforms to Section 12, Traffic Control Plan. The work shall be performed in conformance with the phases of construction shown on the Contractor's approved Traffic Control Plan. Non-conflicting work in subsequent phases may proceed concurrently with work in preceding phases.

The first order of work shall be to contact Underground Service Alert (U.S.A.). The Contractor shall contact Underground Service Alert to mark out and locate all existing utility facilities within the project area. The Contractor is responsible for repairing and restoring any damaged utility facilities to a condition satisfactory to the utility owner at no cost to the City of Capitola or County of Santa Cruz.

The second order of work shall be to place Best Management Practices (BMP). BMP's shall remain in place until the project is complete.

The order of all other work shall be such as to assure the completion of the project within the allotted time as described herein while complying with the requirements set forth in the contract documents.

The Contractor is responsible for all material and/or equipment needed to perform the project. Should the City have to supply the Contractor with material and/or equipment to do the work, the Contractor will be charged accordingly.

Full compensation for preparing roadway and coordinating with utility companies and property owners is considered included in various bid items and no additional compensation shall be provided, therefore.

10.02 PROGRESS SCHEDULE

The Contractor shall submit a detailed construction schedule to the Engineer for review and approval prior to the pre-construction meeting for the project. Construction schedules shall conform to the provisions in Section 8-1.02, "Schedule," of the Standard Specifications.

The construction schedule shall be consistent in all respects with the times and order of work requirements in Section 10-1.01, "Order of Work," elsewhere in the special provisions.

10.03 OBSTRUCTIONS

Attention is directed to Section 5-1.36, "Property and Facility Preservation," and 10-1.06, "Existing Facilities" of the Standard Specifications and these special provisions.

The Contractor's attention is directed to the existence of certain underground facilities that may require special precautions be taken by the Contractor to protect the health, safety and welfare of workmen and

of the public. Facilities requiring special precautions include, but are not limited to: conductors of petroleum products, oxygen, chlorine, and toxic or flammable gases; natural gas in pipelines greater than 6 inches in diameter or pipelines operating at pressures greater than 60 psi (gage); underground electric supply system conductors or cables either directly buried or in duct or conduit which do not have concentric neutral conductors or other effectively grounded metal shields or sheaths; and underground electrical conductors with potential to ground of more than 300 volts.

The Contractor shall notify the Engineer and the appropriate regional notification center for operators of subsurface installations at least 2 working days prior to performing any excavation or other work close to any underground pipeline, conduit, duct, wire or other structure. Regional notification centers include but are not limited to the following:

Underground Service Alert

Northern California (USA) Telephone: 811 or (800) 227-2600

Pursuant to Government Code Section 4216.e, the inquiry identification number from the regional notification center shall remain valid for not more than 14 calendar days from the date of issuance, and after that date shall require regional notification center revalidation. Inquiry identification number means the number which is provided by a regional notification center to every person who contacts the center pursuant to Government Code Section 4216.2.

The Contractor is responsible for locating all underground utilities (utility location, type, size, and depth) prior to any excavation and protecting facilities in place. The existing utilities shown on the plans are approximate locations established from information available and do not include all the existing utilities. The Contractor shall use extreme caution when excavating, grading, raising manholes, and paving in the vicinity of such facilities.

The Contractor shall visit the site of the proposed work and determine the quantity and location of the manholes, valve covers and utility appurtenances to be encountered in the proposed work area and his/her bid accordingly. Damage to such utilities resulting from the Contractor's operations to complete the Project shall be repaired at the Contractor's expense.

Where possible conflicts may exist, the Contractor shall verify the grade and location of existing underground utility prior to any work by careful hand digging. It is recognized by the City and the Contractor that the locations of existing utilities as shown on the plans are approximate, their actual location is unknown. Recognition is given to the fact there may be additional existing utilities unknown to either party to the contract. Location of utilities, as shown on the drawings, represent the best information obtainable from utility maps and information furnished by the various agencies and companies involved. The City warrants neither the accuracy nor the extent of the actual utilities involved.

Contractor shall be responsible for locating all existing utilities. All existing utilities within the project limits shall remain in use during construction.

In the event the Contractor discovers existing utilities within the limits of the excavation, the Contractor shall immediately notify the Engineer and the affected utility owner by the most reasonable expeditious method and later confirm in writing. All required relocation of existing facilities that interfere with the work shall be made by the owning agencies.

Facilities damaged or disturbed shall be reset, repaired, or replaced, as directed by the Engineer, at the Contractor's expense.

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 involved and no additional compensation will be allowed, therefore.

10.04 MAINTAINING TRAFFIC

Attention is directed to Sections 7-1.03, "Public Convenience," 7-1.04, "Public Safety," and 12, "Temporary Traffic Control," of the Standard Specifications, the provisions under "Traffic Control System and Construction Area Signs" elsewhere in the special provisions, and these special provisions. Nothing in these special provisions shall be construed as relieving the Contractor from responsibility as provided in said Section 7-1.04.

Vehicular and pedestrian access to private property shall be maintained at all times unless the closing of such access is approved by the Engineer. The Contractor shall request in writing permission from the Engineer a minimum of five (5) working days in advance of making such closing.

Detours and all lights, signs, barricades, flag persons or other devices necessary to provide for safety and convenience shall be furnished, installed and maintained by the Contractor. Lighted or flashing barricades shall be used during hours of darkness.

Existing traffic signs shall be protected in place by the Contractor during the construction period.

The Contractor shall place, remove, store, maintain, relocate, replace, and dispose construction area traffic control devices and traffic control and construction area signs.

No trench shall be permitted to remain open overnight or when construction activities are not in progress. Each trench shall be backfilled to the surface. The Contractor shall not open more trench than can be successfully completed and backfilled in one day. Where this requirement is impracticable, the Contractor shall request in writing permission from the Engineer to extend the trench to its practical limit and to bridge the trench with steel plates. When necessary, trenches and other excavations shall be bridged with steel plates as required by the Engineer. The bridging shall be placed to permit an unobstructed flow of traffic. Advanced warning signs shall be required when trenches and other excavation are bridged in the travel way.

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

The Contractor shall notify local public safety authorities of this intent to begin work at least 5 working days before work is begun. The Contractor shall cooperate with local public safety authorities relative to handling traffic through the area and shall make its own arrangements relative to keeping the working area clear of parked vehicles.

The full width of the traveled way shall be open for use by public traffic on Saturdays, Sundays and designated legal holidays, after 3:00 p.m. on Fridays and the day preceding designated legal holidays, and when construction operations are not actively in progress.

Designated legal holidays are: January 1, the third Monday in February, the last Monday in May, July 4, the first Monday in September, November 11, Thanksgiving Day, and December 25. When a

designated legal holiday falls on a Sunday, the following Monday shall be a designated legal holiday. When November 11 falls on a Saturday, the preceding Friday shall be a designated legal holiday.

Minor deviations from the requirements of this section concerning hours of work which do not significantly change the cost of the work may be permitted upon the written request of the Contractor if in the opinion of the Engineer public traffic will be better served and the work expedited. Such deviations shall not be implemented until the Engineer has issued written approval. All other modifications will be made by Contract Change Order.

10.05 EXISTING FACILITIES

Existing facilities which are to remain in place shall be protected in conformance with the provisions in Sections 5-1.36, “Property and Facility Preservation,” 7-1.15, “Indemnification,” and 7-1.06, “Insurance” of the Standard Specifications.

10.06 WATERING

Watering shall conform to the provisions in Section 10-6, “Watering,” of the Standard Specifications.

10.07 LINES AND GRADES

Lines and grades shall conform to the provisions in the Standard Specifications and these special provisions except that the Contractor shall be responsible for setting all lines and grades necessary to establish the lines and grades required for the completion of the work specified in these specifications, on the plans, and in the special provisions.

The City shall not provide these services. The Contractor shall be responsible for the accuracy of his/her own layout and staking work. The Contractor shall be responsible for the preservation of all established signal lines, grades, and layout points. Stakes damaged or destroyed by the Contractor, his/her employees, subcontractors, utility company employees, or the public shall be replaced by the Contractor at the Contractor’s expense. Signal pole, cabinet, and striping locations shall be verified by the City prior to installation.

Full compensation for compliance with this section shall be considered included in the various items of work and no additional compensation shall be allowed.

10.08 REMOVAL OF ASBESTOS AND HAZARDOUS SUBSTANCES

When the presence of asbestos or hazardous substances are not shown on the plans or indicated in the specifications and the Contractor encounters materials which the Contractor reasonably believes to be asbestos or a hazardous substance as defined in Section 25914.1 of the Health and Safety Code, and the asbestos or hazardous substance has not been rendered harmless, the Contractor may continue work in unaffected areas reasonably believed to be safe. The Contractor shall immediately cease work in the affected area and report the condition to the Engineer in writing.

In conformance with Section 25914.1 of the Health and Safety Code, removal of asbestos or hazardous substances including exploratory work to identify and determine the extent of the asbestos or hazardous substance will be performed by separate contract.

If delay of work in the area delays the current controlling operation, the delay will be considered a right of way delay and the Contractor will be compensated for the delay in conformance with the provisions in Section 8-1.07, “ Delays,” of the Standard Specifications.

SECTION 11
TRAFFIC CONTROL SYSTEM

11.01 GENERAL

Construction area traffic control devices shall be installed and maintained in accordance with the applicable sections of these Special Provisions, the Standard Specifications, the current Edition of the California Manual on Uniform Traffic Control Devices (CA MUTCD), the Americans with Disabilities Act (ADA) and as directed by the Engineer.

11.02 MAINTAINING TRAFFIC

Attention is directed to Section 7-1.08, "Maintaining Traffic", to Section 5-1.05, "Order of Work," of these Special Provisions.

Exact locations of Project Identification signs and Advance Notice signs (Section 7-1.08 "Maintaining Traffic") shall be determined in the field by the Engineer.

Two changeable message boards are MANDATORY for each bridge during lane closures and shall be located, relocated and message changed as required by the engineer. The changeable message boards shall be installed at a bridge seven days in advance of a lane closure, with a message indicating the dates and times of the lane closures.

Lane closures will be permitted between the hours of 8:00 a.m. and 4:30 p.m. only. Only one lane at a time may be closed and no lanes shall be closed at any other hours unless specifically approved by the Engineer. The Contractor shall maintain vehicle access to homes and other properties at all times while work is in progress.

The Contractor shall not park construction vehicles contractor employee vehicles, stage materials or stockpiles in front of any business or residential driveway access and the Contractor shall maintain access to private parking lots within the block where work is in progress. Construction vehicles shall not be left running for any length of time if parked in front of a business or residential unit.

The Contractor shall comply with regulatory requirements for closure of streets. At least 48 hours in advance of closing any street, alley, or other public thoroughfare, the Contractor shall notify the Police and Fire Departments, and shall comply with their requirements.

The Contractor shall notify the following waste disposal and recycling company at least 2 working days prior to performing construction operations:
Green Waste Recovery, Inc. Telephone: (831) 768-9505 or (800) 665-2209

If the Contractor has been given an approved Traffic Control Plan that includes road closures, they shall maintain vehicular access to homes and other properties where work is in progress within the closure area.

Where necessary, and only after receiving written approval from the Engineer, the Contractor may temporarily suspend curb side parking in their immediate work zone. Notification to businesses and residents shall be hand delivered at least 72 hours prior to construction in the affected areas.

11.03 TEMPORARY PEDESTRIAN WALKWAYS

The Contractor is directed to Chapter 6D, Pedestrian and Worker Safety, in the CA MUTCD, the improvement plans and these Special Provisions.

Pedestrians shall be provided with a safe convenient and accessible path that, at a minimum, replicates the most desirable characteristics of the existing sidewalk, path or footpath. At no point along the road shall the sidewalks on both sides of the road be closed at the same time.

The Contractor shall construct and maintain temporary pedestrian pathways through the work zone, where required, that shall be in compliance with the requirements of the Americans with Disabilities Act (ADA), and the CA MUTCD.

Pedestrian routes shall not be impacted for the purposes of any non-construction activities such as parking of vehicles or equipment, or stock piling of materials. Pedestrians shall not be led into conflicts with work site vehicles, equipment or operations.

Pedestrian routes shall be open and accessible at the end of the work day unless an alternate ADA compliant route has been approved by the Engineer. The construction of curb ramps and/or long sections of sidewalk do not alleviate the Contractor from this requirement.

11.04 MEASUREMENT AND PAYMENT

The contract price paid for “Traffic Control System” shall include full compensation for furnishing all labor, materials, tools and equipment, and doing all work involved in vehicular and pedestrian traffic control, including but not limited to, providing, placing, maintaining, and removal of temporary paths and/or ramps, temporary relocation of regulatory signs, changeable message boards, project and public notification signs, flagging, excavation, compaction, furnishing, and placement of deck treatment and joint sealant and/or PCC, barricades, toe-rails, hand rails, complying with CA MUTCD Standards for Pedestrian Safety, coordination efforts and any other items necessary for vehicle and pedestrian traffic control not specifically enumerated in the plans or these specifications, and no additional allowance will be made therefor.

SECTION 12
WATER POLLUTION CONTROL PROGRAM

12.01 GENERAL

Before any ground-disturbing activities, the Contractor shall prepare and implement a Water Pollution Control Plan (WPCP), that includes erosion control measures and construction waste containment measures to ensure that waters of the State are protected during and after proposed project construction. The WPCP shall include site design to minimize offsite storm water runoff that might otherwise affect downstream habitat. The WPCP will incorporate standard erosion and sediment control practices required by the San Mateo Countywide Water Pollution Prevention Program and Town policies.

Under no circumstances shall water contaminated with sediment or other pollutants be allowed to enter the storm drain system or other drainage courses. Contractor shall clean up all surfaces contaminated by construction operations that could pollute stormwater runoff. D. The Contractor is required to prepare a Water Pollution Control Plan (WPCP) and implement the plan once approved by the Engineer

This project is less than 1 acre and does not need to comply with NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES No. CAS000002).

Comply with the Statewide General Waste Discharge Requirements for Discharges of Dredged or Fill Material to Waters of the State from Emergency Repair and Protection Activities (Water Quality Order No. 2023-0058-DWQ).

Work to take place from the dry creek bed when waters have receded sufficiently, and/or via snooper trucks/cranes from the bridge/street as needed.

11.02 MEASUREMENT AND PAYMENT

The contract price paid for "Water Pollution Control Program" shall include full compensation for furnishing labor, materials, and equipment for water pollution control, including developing, preparing, obtaining approval of, revising, amending, and implementing the water pollution control plan and maintaining best management practices (BMP's), and for doing all the work involved in installing, constructing, maintaining, removing, and disposing of water pollution control practices, including non-storm water and waste management and materials pollution water pollution control practices, and no additional allowance will be made therefor.

SECTION 13
EARTHWORK

13.01 GENERAL

A. Earthwork shall conform to Section 19, "Earthwork" of the Standard Specifications and these Special Provisions.
B. This section applies to all earthwork required for the Work (embankment, ditch, structure, etc.) and shall include but may not be limited to:
   1. Excavation
   2. Excavation and replacing unsuitable material
   3. Excavation, Stockpiling, Sampling
   4. Rough grading
   5. Roadway excavation
   6. Embankment Construction
   7. Backfilling
   8. Grading, spreading and compaction
   9. Export - Off haul of excess or unsuitable material
   10. All other subsidiary work necessary to complete the grading of the slope and roadway areas in conformance with the lines, grades and slopes as shown on the Plans and as specified in the contract documents.
C. Structure Excavation shall conform to Section 19-3, "Structural Excavation and Backfill" of the Standard Specifications unless otherwise specified in these Special Provisions

13.02 MATERIALS

A. Materials for Structure Backfill shall conform to Section 19-3.02, "Materials" of the Standard Specifications unless otherwise specified in these Special Provisions.
B. Imported borrow shall conform to Section 19-7.02C, "Imported Borrow."

13.03 MEASUREMENT AND PAYMENT

A. The contract price paid for "Structure Excavation" and "Structure Excavation (Retaining Wall)"shall include full compensation for furnishing all labor, materials, tools, equipment, and

incidentals and for performing all the work involved (including sheeting, bracing, etc.) as shown on the plans and as specified in these Special Provisions, the Special Provisions, and as directed by the Engineer and no additional allowance will be made therefor.

B. The contract price paid for “Structure Backfill” and “Structure Backfill (Retaining Wall)” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved as shown on the plans and as specified in these Special Provisions, the Standard Specifications, and as directed by the Engineer and no additional allowance will be made therefor.

SECTION 14
CONCRETE STRUCTURES

14.01 GENERAL

Existing and new concrete facilities including walkway slab and retaining wall shall be removed and replaced or constructed at the locations indicated on the plans or as directed by the Engineer.

Concrete structures shall conform to the provisions in Section 51, "Concrete Structures", of the Standard Specifications.

14.02 MEASUREMENT AND PAYMENT

The contract price paid for “”Structural Concrete” and “Structural Concrete, Retaining Wall” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals in constructing slab walkway and retaining wall, including formwork, expansion joints, wall drainage system, base material, and reinforcement, complete in place, as shown on the Plans, as specified in the Standard Specifications, these Technical Specifications and the Special Provisions, and as directed by the Engineer. Additionally, no payment will be made for work, equipment, or materials not covered in these plans and specifications, but necessary to insure a completed project as specified.

SECTION 15
DRILL AND BOND DOWELS

15.01 GENERAL

Drilling and bonding dowels shall conform to the details shown on the plans, the provisions in Section 51-1.03E(3), "Drill and Bond Dowels", of the Standard Specifications and these technical specifications.

15.02 EXECUTION

If reinforcement is encountered during drilling before the specified depth is attained, the Engineer shall be notified. Unless the Engineer approves coring through the reinforcement, the hole will be rejected and a new hole, in which reinforcement is not encountered, shall be drilled adjacent to the rejected hole to the depth shown on the plans.

15.03 MEASUREMENT AND PAYMENT

The contract price paid for “Drill and Bond Dowels” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for work involved in drilling and bonding reinforcement dowels to the required depth of holes as shown on the plans or as directed by the Engineer and no additional allowance will be made therefor.

SECTION 16
REINFORCEMENT

16.01 GENERAL

Reinforcement shall conform to the provisions in Section 52, "Reinforcement", of the Standard Specifications and these technical specifications.

16.02 MATERIALS

Reinforcement shall conform to the provisions in Section 52-1.02B, “Bar Reinforcement,” and Section 52-1.02C, “Welded Wire Reinforcement,” of the Standard Specifications.

16.03 MEASUREMENT AND PAYMENT

The contract price paid for “Bar Reinforcing Steel” and “Bar Reinforcing Steel (Retaining Wall)” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for work involved as shown on the plans and as specified in these Special Provisions, the Special Provisions, and as directed by the Engineer and no additional allowance will be made therefor.

SECTION 17
REPAIRING SPALLED SURFACE AREAS

17.01 GENERAL

Section 60-3.05B of State of California Department of Transportation Standard Specifications 2023 includes specifications for repairing spalled concrete surfaces except on bridge decks.

17.02 MATERIALS

Materials Mortar must comply with section 51-1.02F. Shotcrete must comply with section 53.

17.03 EXECUTION

A. Clean concrete surfaces and existing reinforcing steel by abrasive blasting before placing filler material. Place reinforcing steel where shown.
B. Fill spalled surface areas under section 51-1.03F(2) or you may use an authorized alternative filler material and bonding agent. If using an alternative filler material, apply a bonding epoxy before placing the filler material. Place the filler material under the manufacturer's instructions.
C. If using shotcrete, you may apply the shotcrete using a dry-mix process with a hydration liquid applied immediately after placing the shotcrete.
D. The final surface finish of the patched concrete surface must comply with section 51-1.03F.

17.04 MEASUREMENT AND PAYMENT

The contract price paid for “Repair Spalled Surface Area” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for work involved as shown on the plans and as specified in these Special Provisions, the Special Provisions, and as directed by the Engineer and no additional allowance will be made therefor.

SECTION 18
REMOVE CONCRETE AND RETAINING WALL

18.01 GENERAL

This item shall consist of removing the existing walkway and retaining wall system as shown on the plans and as directed by the Engineer. Demolition shall include removal of general debris, coring existing walkway, excavation of material, removal of retaining wall, and sawcut and remove portion of the walkway slab. Removal of wall shall also conform to Section 18, “Clearing and Grubbing,” of these Technical Specifications.

18.04 MEASUREMENT AND PAYMENT

The contract price paid for “Remove Concrete” and “Remove Retaining Wall” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for work involved as shown on the plans and as specified in these Special Provisions, the Special Provisions, and as directed by the Engineer and no additional allowance will be made therefor.

SECTION 19
CLEARING AND GRUBBING

19.01 GENERAL

A. Clearing and grubbing shall conform to the provisions in Section 16 of the Standard Specifications and these Technical Specifications.
B. Clearing and grubbing includes selective demolition, dismantling, cutting and alterations as indicated, specified, and necessary for the completion of the Contract, including site clearing, removing trees, stumps, shrubs and other plants designated for removal, and removing demolished materials off the site.
C. Sawcutting shall be done in such a manner that spalling and/or cracking of the existing concrete or asphalt concrete pavement which is to remain in place is avoided. Existing improvements to remain in place that are damaged by the Contractor’s operations, shall be removed and replaced at the sole expense of the Contractor. Any previously cracked concrete or asphalt concrete pieces outside of the removal area that become loose as a result of the sawcutting shall be removed and disposed of at the Contractor’s expense and replaced in kind.
D. The Contractor shall be fully responsible for the adequacy and installation of all temporary shoring and bracing systems used during the performance of this work.
E. Debris, waste, and removed materials, other than items to be salvaged, are the Contractor's property for legal disposal off the site. Continuously clean up and remove these items and do not allow them to accumulate on the site

19.02 MEASUREMENT AND PAYMENT

Payment for Clearing and Grubbing will be considered incidental to the contract price paid for related work, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete the clearing and grubbing operation as specified, including disposal or salvage of materials, and restoration of ground surfaces.

APPENDIX A: PERMIT COMPLIANCE

ECDP and SIOS Action Plan

CALIFORNIA COASTAL COMMISSION
455 MARKET STREET, SUITE 300
SAN FRANCISCO, CA 94105
PHONE: (415) 904-5200
FAX: (415) 904-5400
WEB: WWW.COASTAL.CA.GOV

EMERGENCY COASTAL DEVELOPMENT PERMIT

Emergency CDP G-3-23-0065 (Stockton Avenue Bridge)

Issue Date: October 2, 2023

Permittee: City of Capitola

Emergency Location: The Stockton Avenue Bridge above the waters of Soquel Creek between Cliff Drive to the southwest and Stockton Avenue to the northeast in the City of Capitola, Santa Cruz County.

Emergency Description: Continuous storm surges and swells in January 2023 caused structural sections under the bridge to spall, where pieces of the bridge subsequently broke off, resulting in exposed rebar and cracked concrete. Additionally, cracks formed along the concrete walkway that runs under the western side of the bridge and the adjacent retaining wall, putting these sections at risk of fully collapsing into Soquel Creek. Lastly, debris has accumulated underneath the bridge, including a tree trunk, which is currently wedged against the cracked retaining wall, putting stress on the retaining wall, and if left in place, may cause additional damage in the upcoming winter storm cycle.

Emergency Development: The exposed rebar would be cleaned and patched at 7 locations to prevent further spalling of the bridge. Three spall sites are located on the eastern pier underneath the bridge, and four spall sites are located on western pier. The walkway slab would be removed and replaced in-kind, along with the adjacent retaining wall. Finally, debris would be removed, including the aforementioned tree trunk wedged underneath the bridge. Construction is anticipated to take approximately three weeks to complete, and work would take place from the dry creek bed when waters have receded sufficiently, and/or via snooper trucks/cranes from the bridge/street as needed. The project includes typical over water construction BMPs (i.e., construction debris storage, spill prevention, proper disposal, etc.) and other BMPs designed to help avoid and minimize potential impacts to coastal resources, including to Soquel Creek/Lagoon and the Pacific Ocean.

Executive Director's Determination
The Executive Director of the California Coastal Commission hereby finds that: (a) a sudden unexpected occurrence demanding immediate action to prevent or mitigate loss or damage to life, health, property or essential public services exists (i.e., an "emergency" (see Title 14 California Code of Regulations Section 13009 and California Coastal Act (Public Resources Code) Section 30624); (b) the emergency requires action more quickly than allowed by the procedures for regular CDPs; (c) the emergency development can and will be completed within 30 days unless otherwise specified by the terms of this ECDP; (d) the emergency development carried out under

Enclosure: ECDP Acceptance Form

cc: (via email): Kailash Mozumder (City of Capitola); Sophie De Beukelaer (Monterey Bay National Marine Sanctuary); Kim Sanders (Regional Water Quality Control Board); Joel Casagrande (National Oceanic and Atmospheric Administration); Serena Stumpf (California Department of Fish and Wildlife)

this ECDP is considered temporary work done in an emergency situation to abate an emergency and is undertaken at Permittee risk; (e) a regular CDP must be obtained for the emergency development to become more than temporary emergency abatement and/or if the Permittee wishes to expand the scope of work beyond that authorized by this ECDP; (f) absent obtaining a regular CDP, the emergency development shall be removed and the affected area restored; and (g) Commission staff will review public comment on the proposed emergency development as time allows.

The emergency development is hereby approved, subject to the conditions listed below.

Dan Carl, Central Coast District Director, for Kate Huckelbridge, Executive Director

Conditions of Approval

1. The enclosed ECDP acceptance form must be signed by the Permittee and returned to the California Coastal Commission's Central Coast District Office within 15 days of the date of this ECDP (i.e., by October 17, 2023). This ECDP is not valid unless and until the acceptance form has been received in the Central Coast District Office.

2. All emergency development shall be limited in scale and scope to that specifically identified in the Emergency Permit Application Form dated received in the Commission's Central Coast District Office on August 25, 2023. Only that emergency development specifically described in this ECDP and for the specific location listed above is authorized. Any other development requires separate authorization from the Executive Director or the Commission, as applicable.

3. The emergency development authorized on a temporary basis by this ECDP must be completed within 90 days of ECDP issuance (i.e., by December 31, 2023).

4. This ECDP does not obviate the need to obtain necessary authorizations and/or permits from other agencies (e.g., Regional Water Quality Control Board, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, etc.). The Permittee shall submit to the Executive Director copies of all such authorizations and/or permits upon their issuance.

5. By exercising this ECDP, Permittee acknowledges and agrees that: (a) the emergency development is temporary, is designed to temporarily abate the emergency, and shall be removed unless and until a regular CDP authorizing the work is approved, and provided the Permittee adheres to such regular CDP's terms and conditions; and (b) a regular CDP is subject to all of the provisions of the California Coastal Act (as codified in Sections 30000 to 30900 of the Public Resources Code) and any applicable Local Coastal Program (LCP) policies and may be conditioned accordingly to avoid and/or to offset coastal resource impacts consistent with the Coastal Act (and LCP as applicable) (including but not limited to requirements for public access provisions (such as offers to dedicate, easements, in-lieu fees, etc.), assumption/disclosure of risks (including deed restrictions), triggers

for relocation/removal, offsetting mitigations, etc.). The Permittee acknowledges that review of the CDP application to determine consistency with the Coastal Act (and LCP as applicable) will be based on the conditions the property was legally in prior to initiation of the temporary emergency development that is the subject of this ECDP.

6. By exercising this ECDP, the Permittee acknowledges and agrees in relation to this ECDP and the emergency development that it authorizes: (a) to assume all risks (including all coastal hazard risks, that include but are not limited to episodic and long-term shoreline retreat and coastal erosion, high seas, ocean waves, tidal scour, storms, tsunami, coastal flooding, landslide, earth movement, and the interaction of all of these, many of which will worsen with future sea level rise); (b) to unconditionally waive any claim of damage and/or liability against the Commission and/or its officers, employees, agents, successors and/or assigns; (c) to indemnify and hold harmless the Commission and its officers, employees, agents, successors and/or assigns 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, including as it relates to any damages to public and/or private properties and/or personal injury; (d) that any adverse effects to property or people caused by the emergency development shall be fully the responsibility of the Permittee.

7. The Permittee shall reimburse the Commission in full for all Commission costs and attorneys' fees (including but not limited to such costs/fees that are: (a) charged by the Office of the Attorney General; and/or (b) required by a court) that the Commission incurs in connection with the defense of any action brought by a party other than the Permittee against the Commission, its officers, employees, agents, successors and/or assigns challenging the approval or issuance of this ECDP, the interpretation and/or enforcement of ECDP terms and conditions, or any other matter related to this ECDP. The Permittee shall reimburse the Commission within 60 days of being informed by the Executive Director of the amount of such costs/fees. The Commission retains complete authority to conduct and direct the defense of any such action against the Coastal Commission, its officers, employees, agents, successors and/or assigns.

8. Within 120 days of ECDP issuance (i.e., by January 30, 2024), the Permittee shall either: (a) remove all of the materials placed or installed in connection with the emergency development, and restore all affected areas to their prior condition or better, all subject to Executive Director review and approval (and, in some cases, if directed by the Executive Director, subject to a regular CDP); or (b) submit a complete application (i.e., satisfying the requirements of Title 14 California Code of Regulations Section 13056) for a regular CDP to authorize the emergency development (or for a different project designed to address the emergency development), including submitting all information and materials requested, and as directed, by the Executive Director if/when the Executive Director determines that such application is incomplete. If such regular follow-up CDP application is withdrawn by the Permittee, or is denied by the Commission, or if it remains incomplete for a period of 120 days after the Executive Director informs the

Permittee that the application is incomplete, then all of the materials placed and/or installed in connection with the emergency development shall be removed, and all affected areas shall be restored to their prior condition or better, all subject to Executive Director review and approval (and, in some cases, if directed by the Executive Director, subject to a regular CDP).

9. Failure to meet any of the applicable requirements of Condition 8 above shall constitute a knowing and intentional violation of the Coastal Act and may result in formal enforcement action by the Executive Director and/or the Commission. Such formal action may include: recordation of a Notice of Violation on the Permittee's property; the issuance of a Cease and Desist Order and/or a Restoration Order; imposition of administrative penalties of up to $11,250 per day per violation; a civil lawsuit (that may result in the imposition of monetary penalties, including daily penalties of up to $15,000 per violation per day); and/or other applicable penalties and relief pursuant to Coastal Act Chapter 9. In addition, failure to follow and meet all terms and conditions of this ECDP shall also constitute a knowing and intentional Coastal Act violation to which the same actions above may be applied.

10. All emergency development shall be limited to the least amount necessary to temporarily abate the emergency, and shall be undertaken in a time and manner that avoids any and all coastal resource impacts as much as possible, including avoiding impacts to public access. The Permittee shall keep the Executive Director informed regarding emergency development progress, including in terms of any issues encountered that may require adjustment.

11. A licensed civil engineer with experience in coastal structures and processes shall oversee all construction activities and shall ensure that all emergency development is limited to the least amount necessary to temporarily abate the emergency consistent with the terms and conditions of this ECDP.

12. All emergency construction activities shall limit impacts to coastal resources (including public recreational access and the Pacific Ocean) to the maximum extent feasible including by, at a minimum, adhering to the following construction requirements:

    a. Construction activities shall take place on non-holiday weekdays to the maximum extent feasible.

    b. All construction activities shall take place during daylight hours (i.e., from one-hour before sunrise to one-hour after sunset).

    c. Construction work and equipment operations: shall avoid areas seaward of the tidal extent as much as possible; shall be prohibited in ocean waters and/or wetted sand (i.e., areas either wet and/or with a noticeable sheen from tidal and/or wave action); and shall avoid beachgoers and beach/shoreline recreational areas as much as possible.

    d. All construction areas shall be minimized and demarked by temporary fencing designed to allow through public access and protect public safety to the

maximum extent feasible, where such areas shall be limited in their spatial extent as much as possible. Construction (including but not limited to construction activities, and materials and/or equipment storage) is prohibited outside of the defined construction, staging, and storage areas.

e. The construction site shall maintain good construction site housekeeping controls and procedures (e.g., clean up all leaks, drips, and other spills immediately; keep equipment covered and out of the rain (including covering exposed piles of soil and wastes); dispose of all wastes properly, place trash receptacles on site for that purpose, and cover open trash receptacles during wet weather; remove all construction debris from the beach; etc.).

f. All construction activities that result in discharge of materials, polluted runoff, or wastes to the beach or the adjacent marine environment shall be prohibited. Equipment washing, refueling, and/or servicing shall not take place on the beach or in the creek channel. Any erosion and sediment controls used shall be in place prior to the commencement of construction as well as at the end of each workday.

g. All areas impacted by construction activities shall be restored to their pre-construction condition or better within three days of completion of construction.

h. All contractors shall ensure that work crews are carefully briefed on the importance of observing the construction precautions given the sensitive work environment. Construction contracts shall contain appropriate penalty provisions sufficient to offset the cost of retrieval/cleanup of foreign materials not properly contained and/or remediation to ensure compliance with this ECDP otherwise.

i. The Permittee shall notify planning staff of the Coastal Commission's Central Coast District Office immediately upon completion of construction. If planning staff should identify reasonable restoration measures, such measures shall be implemented immediately.

13. Copies of this ECDP shall be maintained in a conspicuous location at the construction job site at all times, and such copies shall be available for public review on request. All persons involved with the construction shall be briefed on the content and meaning of this ECDP, and the public review requirements applicable to it, prior to commencement of construction.

14. Within 30 days of completion of construction authorized by this ECDP, the Permittee shall submit site plans and cross sections to the Executive Director clearly identifying all development completed under this emergency authorization (comparing the legal pre-emergency development condition to both the emergency condition and to the post-emergency development condition), and a narrative description of all emergency development activities undertaken pursuant to this ECDP. Photos showing the project site before the emergency (if available), during emergency development construction activities, and after the work authorized by this ECDP is complete shall be provided with the site plans and cross sections.

15. A construction coordinator shall be designated to be contacted during construction should questions arise regarding the construction (in case of both regular inquiries and emergencies), and the construction coordinator's contact information (i.e., address, email, phone numbers, etc.) including, at a minimum, an email address and a telephone number (with voice mail capabilities) that will be made available 24 hours a day for the duration of construction, shall be conspicuously posted at the job site where such contact information is readily visible from public viewing areas, along with indication that the construction coordinator should be contacted in the case of questions regarding the construction (in case of both regular inquiries and emergencies). The construction coordinator shall record the contact information (e.g., name, address, email, phone number, etc.) and nature of all complaints received regarding the construction, and shall investigate complaints and take remedial action, if necessary, within 24 hours of receipt of the complaint or inquiry. The Permittee shall submit the record of complaints/inquiries and actions taken in response to the Executive Director on a weekly basis, and upon completion of construction activities.

16. Minor adjustments to the requirements above, including deadline adjustments, may be allowed by the Executive Director if the Executive Director determines that such adjustments: (a) are deemed reasonable and necessary to help to temporarily abate the identified emergency, including as emergency conditions may change; (b) are designed to avoid coastal resource impacts (and limit those that are unavoidable) as much as possible; and (c) in the case of deadline extension adjustments, are appropriate in light of circumstances, including that the Permittee has shown diligence in pursuing the emergency development and meeting all ECDP terms and conditions.

17. By exercising this ECDP, Permittee acknowledges and agrees that this ECDP shall not constitute evidence against and/or a waiver of any public rights which may exist on the property.

18. Failure to comply with the terms and conditions of this ECDP may result in enforcement action under the provisions of Coastal Act Chapter 9. The issuance of this ECDP does not constitute admission as to the legality of any development undertaken on the property without a CDP and shall be without prejudice to the California Coastal Commission's ability to pursue any remedy under Coastal Act Chapter 9.

If you have any questions about the provisions of this ECDP, please contact the Commission's Central Coast District Office at 725 Front Street, Suite 300, Santa Cruz, CA 95060; centralcoast@coastal.ca.gov; and/or (831) 427-4863.

Secretary of the Interior's Standards for the Treatment of Historic Properties Action Plan for the Stockton Avenue Bridge Emergency Repair Project Capitola, Santa Cruz County, California

Emergency CDP G-3-23-0065 (Stockton Avenue Bridge)
Federal Project No. EO ER – 15J7 (058)

Prepared for:
California Department of Transportation
District 5
50 Higuera Street
San Luis Obispo, CA 93401

and:
City of Capitola
420 Capitola Avenue
Capitola, California 95010

Prepared by:

Steven Treffers, M.H.P.
Rincon Consultants, Inc.
2511 Garden Road, Suite C-250
Monterey, California 93940
Steven Treffers, M.H.P.
Rincon Consultants, Inc.

Reviewed for approval by:

_____ _____
Date

Daniel Leckie
PQS Principal Architectural Historian
Cultural Studies Office
Caltrans Headquarters
1120 North Street, MS 27
Sacramento, California 95814

Approved by:

_____ _____
Date

Sunny McBride
Environmental Stewardship Branch Chief
Caltrans District 5
50 Higuera Street
San Luis Obispo, California 93401

U.S.G.S. *Soquel, CA* quadrangle

November 2023

Please cite this report as follows:

Treffers, Steven

2023 *Secretary of the Interior's Standards for the Treatment of Historic Properties Action Pan for the Stockton Avenue Bridge Emergency Repair Project*, Capitola, Santa Cruz County, California. Rincon Consultants Project No. 23-15383.

Summary of Action Plan

The City of Capitola (City) proposes the Stockton Avenue Bridge Emergency Repair Project to restore the Stockton Avenue Bridge (#36C0110), located above the waters of Soquel Creek between Cliff Drive and Stockton Avenue in Capitola, California. The purpose of the project is to repair damage to the structure sustained from storm surges and swells in January 2023, which caused structural sections of the bridge to spall, resulting in exposed rebar and cracked concrete on the underside of the bridge. Additionally, the storm surges and swells caused cracks to form along the concrete walkway running under the western side of the bridge and the adjacent retaining wall, putting these sections at risk of fully collapsing into Soquel Creek. Lastly, debris accumulated underneath the bridge, including a tree trunk, which is wedged against the cracked retaining wall, putting stress on the retaining wall, and if left in place, has the ability to cause additional damage in the upcoming winter storm cycle.

The Stockton Avenue Bridge is a historic structure which is identified in Caltrans's Local Bridge Inventory as Caltrans Bridge #36C0110 and has been recommended eligible for listing in the National Register of Historic Properties (NRHP). The bridge is also designated at the local level in the City of Capitola's Register of Historic Features and was identified in the City's 2004 Historic Context Statement (Swift 2004) and the 1986 Capitola Architectural Survey (Rowe and Associates 1986). The Stockton Avenue Bridge will be protected from any potential adverse effects via the implementation of the Secretary of the Interior's Standards (SOIS) for the Treatment of Historic Properties (Preservation) Action Plan. This SOIS Action Plan was prepared by Steven Treffers, who meets the Professionally Qualified Staff Standards as an Architectural Historian as defined in Attachment 1 of *Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California* (Caltrans 2014). A field visit was conducted by Architectural Historian Josh Bevan on November 13, 2023 to assess the existing condition of the bridge. Photographs from this field visit are included in the Additional Detail Photographs section of this SOIS Action Plan.

Project Description

The City proposes the Stockton Avenue Bridge Project to repair recent damage from storm surges and swells in January 2023. The exposed rebar would be cleaned and patched at seven locations to prevent further spalling of the bridge. Three spall sites are located on the eastern side of the pier underneath the bridge, and four spall sites are located on the western face of the pier. The walkway slab would be removed and replaced in-kind, along with the adjacent retaining wall. Finally, debris would be removed, including the aforementioned tree trunk wedged underneath the bridge. Construction is anticipated to take approximately three weeks to complete, and work would take place from the dry creek bed when waters have receded sufficiently, and/or via snooper trucks/cranes from the bridge/street as needed. The project includes typical over water construction Best Management Practices (BMPs) (i.e., construction debris storage, spill prevention, proper disposal, etc.) and other BMPs designed to help avoid and minimize potential impacts to coastal resources, including to Soquel Creek/Lagoon and the Pacific Ocean. Plans for the proposed work are included in Attachment A.

Historic Properties Description

Stockton Avenue Bridge (#36C0110)

The Stockton Avenue Bridge (#36C0110) is a two-lane concrete bridge constructed in 1934 over Soquel Creek. Funded by the Works Progress Administration (WPA), the bridge was heralded when it opened as an important transportation link for the City of Capitola and a source of optimism during the Great Depression era (Swift 2004). Although the bridge has not been formally evaluated for NRHP eligibility, it is identified in Caltrans's Local Bridge Inventory as Caltrans Bridge No. 36C0110 and has been recommended eligible for listing in the NRHP (Attachment B). The bridge is also designated at the local level in the City of Capitola's Register of Historic Features and was identified in the City's 2004 Historic Context Statement (Swift 2004) and the 1986 Capitola Architectural Survey (Rowe and Associates 1986).

Based on this past documentation, the bridge is assumed to be eligible for listing in the NRHP under Criterion A for its significant for its association with the economic development of Capitola and under Criterion C for as a representative example of a WPA bridge. Its character-defining features broadly include its central shallow arch with half segmental arches on either side, two lane width with adjacent sidewalks, concrete construction exhibiting rough aggregate finish, and Art Deco elements, specifically the pointed arched barrier walls, pylons with shar-edge beveled detailing, and single standard lamp posts with decorative metal globes.

Methods

The Stockton Avenue Bridge Emergency Repair Project will avoid any adverse effects to the Stockton Avenue Bridge (#36C0110) by ensuring that proposed project work will meet the Secretary's Standards for Preservation. According to the Standards, preservation is defined as "the act or process of applying measures necessary to sustain the existing form, integrity, and materials of a historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction.

The following includes the eight standards for preservation and the project-specific activities that will be undertaken to meet each standard, ensuring that the project will not cause any adverse effects to the Stockton Avenue Bridge.

1. *A property shall be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.*

   The historic use and function of the bridge will not be altered under the project. Rather, the restoration of damage from January 2023 storm surges and swells, including repair of rebar and spalls, in-kind replacement of the walkway slab and adjacent retaining wall, and the removal of debris, will serve to extend the functional life of the bridge by restoring damaged concrete, protecting the interior reinforcing steel from potential corrosion, and ensuring its structural stability. These measures will help extend the life of the bridge and the continuation of its historic use. All distinctive materials, features, spaces, and spatial relationships will be retained.

2. *The historic character of a property shall be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property shall be avoided*.

   No character-defining features of the Stockton Avenue Bridge, including its central shallow arch with half segmental arches on either side, two lane width with adjacent sidewalks, concrete construction exhibiting rough aggregate finish, and Art Deco elements, will be removed, replaced, or significantly altered. The walkway and adjacent retaining wall, neither of which are considered character defining or are highly visible, are beyond repair and will be replace in-kind and in their current configuration and design. The features and spatial relationships that characterize the bridge and the district will be preserved.

3. *Each property shall be recognized as a physical record of its time, place and use. Work needed to stabilize, consolidate and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection and properly documented for future research*.

   The spall repair and in-kind replacement of the damaged walkway slab and retaining wall will not result in any visual changes to the bridge. These features, which are not character-defining are located beneath the bridge superstructure and are largely out of view. The patching of concrete spalls and the walkway and retaining wall replacement is necessary for preservation of the bridge's structure and function and will be completed with the most visually and physically compatible means of application. The in-kind repairs will occur after first testing the repair method on a small area to ensure compatible texture and color in accordance with Preservation Brief 15: Preservation of Historic Concrete as well as Caltrans Standard Environmental Reference (SER) Chapter 2, Exhibit 6.4: Historic Bridges and Tunnels No Adverse Effects with Standard Conditions, page(s) 4 & 5. All preservation and maintenance activities will be documented for future research.

   PQS Architectural Historian, Steven Treffers, attended a preliminary meeting with City staff on November 20th, 2022. At this meeting Mr. Leckie stressed the importance of matching concrete patches to the existing concrete structure to the maximum extent possible. Additionally, Mr. Leckie has provided the Project Manager, Kailash Mozumbder, and Public Works Director, Jessica Kahn, with a copy of *Preservation Brief 15: Preservation of Historic Concrete* and the Caltrans SER references as a guide to making appropriate repairs to historic concrete structures. Both *Preservation Brief 15* and the *Caltrans SER, Exhibit 6.4* also appear as Attachments C and D respectively to this report.

4. *Changes to a property that have acquired historic significance in their own right shall be retained and preserved*.

   The bridge has not been altered in ways that defined new historical significance for the structure; thus, this condition does not apply to the current project.

5. *Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be retained and preserved*.

   All distinctive materials, features, finishes, and construction techniques and examples of craftsmanship that characterize the bridge will be preserved and retained. The spalls and walkway/retaining walls are not highly visible and will be repaired and replaced respectively using compatible concrete materials that will be visually compatible to the maximum extent with historic materials.

6. *The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material shall match the old in composition, design, color, texture, and other visual qualities*.

   The replacement of features is limited to the walkway and retaining wall along the eastern side of Soquel Creek. However, these features are not considered character-defining or distinctive. Further, the replacement of these features and the repairing of concrete spalls will be completed in a manner that minimizes visual and physical impacts to the structure and matches the existing concrete as closely as possible in composition, design, color, texture, and other visual qualities.

7. *Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used*.

   The preparation of surfaces for patching will be completed using the gentlest means possible and in accordance with Preservation Brief 15 & Caltrans SER, Exhibit 6.4. This work may include the use of wire brushes, detergents and low pressure washing as is needed to stabilize the overall structure. These methods will first be tested in a small & discrete area to ensure they will not damage the structure.

8. *Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken*.

   The Stockton Avenue Bridge (#36C0110) is not considered an archaeological resource; as such, this standard is not applicable to this SOIS Action Plan. The project does not propose any actions that will disturb archaeological resources.

Responsible Parties

The following table identifies appropriate Caltrans staff, consultants or others who are responsible parties, as well as all aspects of the plan for which each party is responsible.

The Caltrans Architectural Historian will be responsible for providing the information contained in the SOIS Action Plan to the Environmental Planner, who will be responsible for including this document in the Environmental Commitment Records.

The Local Agency Project Manager will be responsible for contacting the consulting Architectural Historian at streffers@rinconconsultants.com to provide notification of pre-construction meeting times and dates in order for the consulting Architectural Historian to discuss with other responsible parties the Secretary's Standards for Preservation and the non-renewable nature of cultural resources, and to explain that violation of provisions provided in the Standard Special Provisions constitutes a breach of contract.

See Responsible Parties Table below.

SOIS Action Plan for the Stockton Avenue Bridge Emergency Repair Project

Stage	Responsible Parties	Task		Date Task Completed
Pre-Construction	Caltrans Architectural Historian* Caltrans Environmental Branch Chief Caltrans Local Assistance Engineer Caltrans Environmental Planner	Caltrans Architectural Historian will ensure the SOIS Action Plan is included in Environmental Commitment Record (ECR).		
	Local Agency Project Manager* Local Agency Engineer Qualified Architectural Historian	The Local Agency will notify the Caltrans Architectural Historian that construction is commencing two weeks prior to commencement.		
During Construction	Qualified Architectural Historian* Local Agency Project Manager	Spot monitoring and photo documentation will be conducted by the Qualified Architectural Historian		
Post Construction	Qualified Architectural Historian* Local Agency Project Manager Caltrans Environmental Branch Chief	The Qualified Architectural Historian will prepare a technical memorandum that includes the following: 1) record of existing conditions of the historic property prior to commencement of construction; 2) summarize the monitoring logs; 3) and document the project area following completion of construction. The final technical memorandum will be filed with the Environmental Branch Chief.		
Responsible Parties as of Date	Caltrans Architectural Historian	Daniel Leckie	daniel.leckie@dot.ca.gov	805-458-6618
	Caltrans Environmental Branch Chief	Sunny McBride	sunny.mcbride@dot.ca.gov	805-440-9575
	Caltrans Local Assistance Engineer	Evelyn Frederic	evelyn.frederic@dot.ca.gov	805-478-5428
	Caltrans Environmental Planner	Kelso Vidal	kelso.vidal@dot.ca.gov	805-478-8952
	Local Agency Project Manager	Kailash Mozumbder	kmozumder@ci.capitola.ca.us	831-475-7300
	Public Works Director	Jessica Kahn	jkahn@ci.capitola.ca.us	831-475-7300
	Qualified Architectural Historian	Steven Treffers	streffers@rinconconsultants.com	206-971-1177
	Local Agency Engineer	Garrett Dekker	gdekker@moffattnichol.com	925-956-4947

* denotes primary responsibility

Sources

Caltrans

2014 *First Amended Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it pertains to the Administration of the Federal-Aid Highway Program in California*

2015 Standard Environmental Reference Handbook, vol. 2, exhibit 5.1: Archaeological Survey Report Format and Content Guide.

Rowe and Associates

1986 *City of Capitola Architectural Survey*. Prepared for the City of Capitola by Rowe and Associates.

Swift, Carolyn

2004 *Historic Context Statement for the City of Capitola*. Prepared for the City of Capitola Community Development Department by Carolyn Swift, Capitola Museum Director an City Historian. June.

Additional Detail Photographs

Figure 1. Stockton Avenue Bridge, view towards West.

Figure 2. Stockton Avenue Bridge, view towards Southwest.

Figure 3. Detail of spalled concrete on West face section of West Pier

Figure 4. Detail of spalled concrete on East face section of East Pier

Figure 5. Detail of cracked concrete walkway on eastern side of Soquel Creek

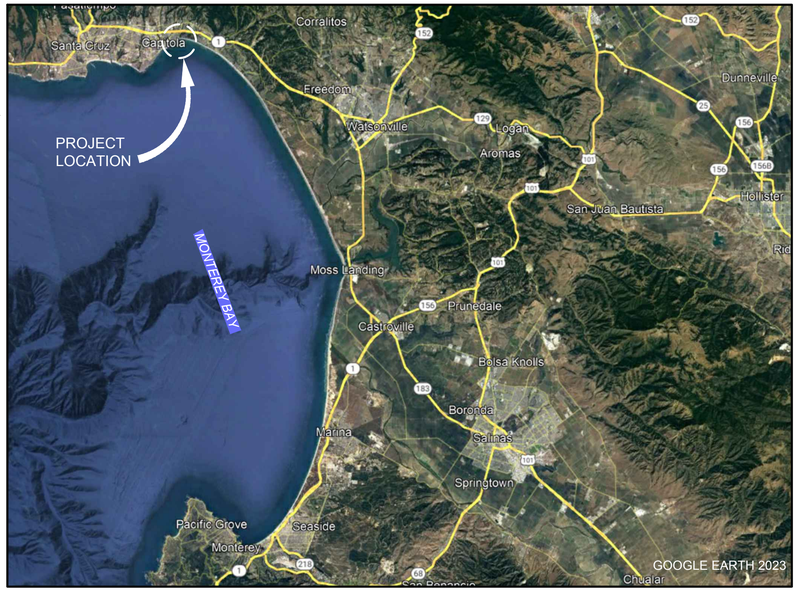
Figure 6. Detail of cracked concrete walkway and retaining wall on eastern side of Soquel Creek

Attachment A

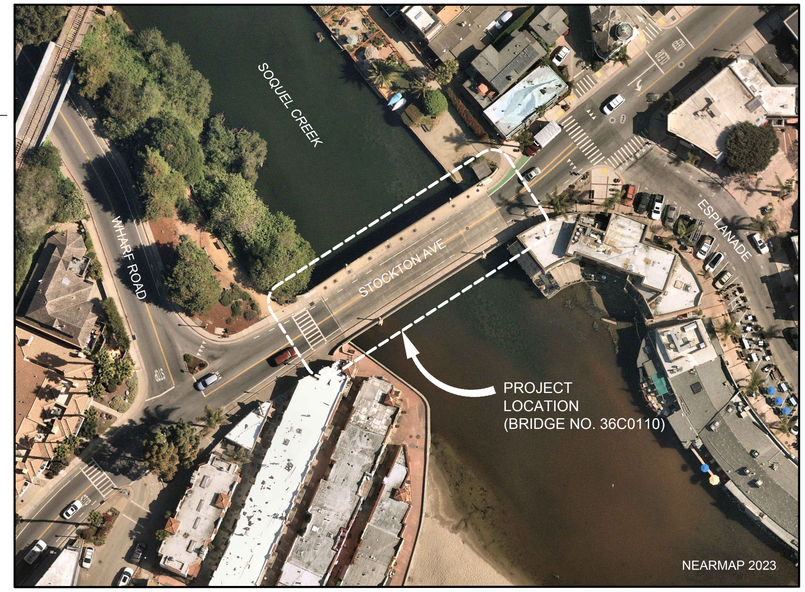
Project Plans

CAPITOLA BRIDGE OVER SOQUEL CREEK
EMERGENCY BRIDGE REPAIRS

CAPITOLA, CALIFORNIA



VICINITY MAP
SCALE: NTS



LOCATION MAP
SCALE: NTS

SHEET INDEX		
SHEET SEQ. NO.	SHEET REF. NO.	SHEET TITLE
1	G-001	TITLE SHEET
2	G-002	GENERAL NOTES, LEGEND, SYMBOLS AND ABBREVIATIONS
3	S-001	BRIDGE REPAIR DETAILS SHEET 1 OF 2
4	S-002	BRIDGE REPAIR DETAILS SHEET 2 OF 2

Mark	Description	Date	Appr

CAPITOLA BRIDGE OVER SOQUEL CREEK
EMERGENCY BRIDGE REPAIRS

TITLE SHEET

Rev: 0
Date: 11-09-23
M&N Project No. 230131
Drawing code:
Drawing Scale:
Plot scale: 1:1 (D SHEET)
Designed by: KA
Dwn by: EP
Ckd by: GD
Reviewed by: GD
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL

moffatt & nichol
2185 N. CALIFORNIA BLVD, SUITE 500
WALNUT CREEK, CA 94596
PHONE: (925) 944-5411

REGISTERED PROFESSIONAL ENGINEER
GARRETT J. DEKKER
No. C77218
EXP. 06-30-25
CIVIL
STATE OF CALIFORNIA

SEAL

Sheet Reference No.
G-001
INDEX: 1 OF 4

File: Q:\WC\230131 Stockton Ave\20 CADD_Active_SheetSet\230131G-001 ; Plotted: 11/9/2023 3:28 PM by PLESHCHUK, ELENA ; Saved: 11/9/2023 3:25 PM by EPLESHCHUK

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

GENERAL NOTES

1. PREPARE AND COORDINATE SCHEDULE OF OPERATIONS WITH THE CITY OF CAPITOLA.
2. VERIFY LOCATIONS OF EXISTING UTILITIES BEFORE BEGINNING ANY CONSTRUCTION OPERATIONS.
3. PROTECT UTILITY VAULT BEHIND THE RETAINING WALL AND OTHER EXISTING UTILITY LINES.
4. DEMOLITION OF EXISTING FEATURES SHALL BE LIMITED TO THE MEMBERS SHOWN ON THE PLANS. THE CONTRACTOR MUST REPAIR AND/OR REPLACE EXISTING FEATURES TO REMAIN THAT ARE DAMAGED BY THE CONTRACTOR.
5. ALL CONSTRUCTION AND REMOVAL MUST CONFORM TO THE CALIFORNIA STANDARD SPECIFICATIONS, DATED 2023.
6. ALL CONTROLLING FIELD DIMENSIONS MUST BE FIELD VERIFIED PRIOR TO ORDERING OR FABRICATING ANY MATERIAL. NOTIFY THE ENGINEER IMMEDIATELY UPON FINDING ANY FIELD CONDITIONS THAT CONFLICT WITH THE INFORMATION ON THESE DRAWINGS. ALL FIELD ADJUSTMENTS MUST BE APPROVED BY THE ENGINEER BEFORE CONSTRUCTION. FAILURE TO DO SO WILL RESULT IN THE CONTRACTOR ASSUMING FULL RESPONSIBILITY FOR ANY REQUIRED REVISIONS OR FIELD MODIFICATIONS AT NO ADDITIONAL COST.
7. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS OR DETAILS ON THE DRAWINGS.
8. FURNISH, INSTALL, AND MAINTAIN ALL WARNING SIGNS AND DEVICES NECESSARY TO SAFEGUARD THE GENERAL PUBLIC AND THE WORK, AND PROVIDE PROPER AND SAFE ROUTING OF VEHICULAR AND PEDESTRIAN TRAFFIC DURING THE PERFORMANCE OF THE WORK. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND SHALL NOT BE LIMITED TO WORKING HOURS.
9. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SHORING AND STRUCTURAL STABILITY DURING ALL PHASES OF CONSTRUCTION.
10. KEEP THE PROJECT SITE IN A NEAT AND ORDERLY CONDITION, FREE OF RUBBISH AND DEBRIS, AT ALL TIMES. THE SITE SHALL BE CLEANED OF DEBRIS AT THE END OF EACH DAY AND AT THE CONCLUSION OF REMOVAL WORK.
11. ALL WORK SHOWN SHALL BE NEW UNLESS OTHERWISE NOTED.
12. DURING CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR JOBSITE SAFETY
13. CONSTRUCT BRIDGE REPAIRS DURING LOW TIDE OR WHEN FLOWS IN SOQUEL CREEK ARE RESTRICTED TO THE MAIN SPAN OF THE BRIDGE. PLACE PROTECTIVE MATS IN THE CHANNEL BOTTOM TO CATCH AND COLLECT DEBRIS DURING WORK ACTIVITIES. REMOVE MATS AT THE END OF EACH WORK SHIFT OR DURING HIGH FLOW EVENTS TO AVOID CONTACT WITH WATER.

CODES AND STANDARDS

1. CALIFORNIA STANDARD SPECIFICATIONS, DATED 2023.
2. CALIFORNIA STANDARD PLANS, DATED 2023.

CONSTRUCTION BEST MANAGEMENT PRACTICES

1. ALL WORK MUST TAKE PLACE DURING DAYLIGHT HOURS (i.e., FROM ONE HOUR BEFORE SUNRISE TO ONE HOUR AFTER SUNSET) AND SUBJECT TO ALL APPROPRIATE MITIGATION MEASURES TO MINIMIZE LIGHTING OF WETLANDS, AND TO AVOID RESOURCE IMPACTS, AS MUCH AS POSSIBLE.
2. ALL CONSTRUCTION AND/OR STAGING AREAS MUST BE DESIGNED TO MINIMIZE IMPACTS TO PUBLIC ACCESS.
3. ALL CONSTRUCTION MATERIALS MUST BE PROPERLY STORED AND CONTAINED SO THAT THESE PRODUCTS WILL NOT SPILL OR OTHERWISE ENTER THE CREEK OR THE CREEK BED.
4. ALL EROSION CONTROL/WATER QUALITY BEST MANAGEMENT PRACTICES TO BE IMPLEMENTED DURING CONSTRUCTION WILL BE IN PLACE PRIOR TO THE START OF CONSTRUCTION AND THEIR LOCATIONS MUST BE NOTED.
5. APPROPRIATE CONTAINMENT METHODS MUST BE USED TO CAPTURE CONSTRUCTION DEBRIS, PARTICULATES, OIL, GREASE, RUST, PAINT, DIRT, AND SPILLS TO PROTECT WATER QUALITY. CONTAINMENT MUST BE IN PLACE PRIOR TO COMMENCEMENT OF CONSTRUCTION AND AT THE END OF THE WORKDAY AS APPROPRIATE.
6. APPROPRIATE DISPOSAL METHODS MUST BE USED.
7. ALL PUBLIC ACCESS MUST BE RESTORED TO PRECONSTRUCTION CONDITION OR BETTER WITHIN THREE DAYS OF COMPLETION OF CONSTRUCTION.

STRUCTURAL NOTES

1. MINIMUM CONCRETE COVER OVER REINFORCING BARS SHALL BE 3", UON.
2. REINFORCEMENT HOOKS AND BENDS SHALL BE STANDARD HOOKS CONFORMING TO THE PROVISIONS OF THE AMERICAN CONCRETE INSTITUTE (ACI) 318-19.
3. REINFORCED CONCRETE: f'c = 3,600 psi; fy = 60,000 psi
4. SOIL BACKFILL: Ø = 34°; y= 120 pcf
5. MATERIAL FOR SPALL REPAIRS TO COMPLY WITH CALTRANS STANDARD SPECIFICATIONS 60-3.05B(2).

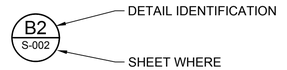
CONSTRUCTION SEQUENCE FOR WALKWAY REPAIR

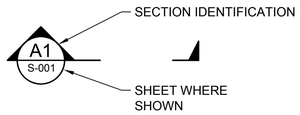
1. CLEAR WALKWAY AND RETAINING WALL OF ANY DEBRIS.
2. CORE THROUGH EXISTING WALKWAY SLAB EVERY 4 FEET ALONG THE LENGTH AND NOTE THE GROUND ELEVATION UNDER THE WALKWAY.
3. PROVIDE GROUND ELEVATIONS TO ENGINEER.
4. ENGINEER TO DETERMINE LIMITS OF REMOVE AND REPLACE WALKWAY SLAB.
5. EXCAVATE MATERIAL NORTH OF RETAINING WALL. PROTECT-IN-PLACE UTILITY VAULT AND ALL UTILITY LINES.
6. REMOVE RETAINING WALL, SAWCUT AND REMOVE PORTION OF WALKWAY SLAB PER ENGINEER'S DIRECTION.
7. BLAST CLEAN AND PAINT EXPOSED STEEL SOLDIER PILE WALL SECTIONS. IF SECTION LOSS IS FOUND UPON BLAST CLEANING, CONTRACTOR TO NOTIFY ENGINEER FOR REPAIR OR REPLACEMENT.
8. NOTIFY ENGINEER OF THE CONDITION OF TIMBER LAGGING. REMOVE AND REPLACE TIMBER LAGGING PER ENGINEER'S DIRECTION.
9. REMOVE LOOSE BACKFILL MATERIAL, PLACE AND COMPACT STRUCTURE BACKFILL TO BOTTOM OF WALKWAY SLAB.
10. CONSTRUCT NEW WALKWAY SLAB AND RETAINING WALL .
11. PLACE BACKFILL NORTH OF THE RETAINING WALL TO RESTORE ORIGINAL GRADE.

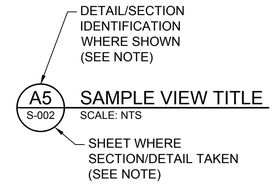
PERMITS

1. ALL WORK MUST BE PERFORMED IN COMPLIANCE WITH THE FOLLOWING PERMITS:
   a. EMERGENCY COASTAL DEVELOPMENT PERMIT (ECDP) G-3-23-0065
   b. WATER QUALITY ORDER NO. 2023-0058-DWQ

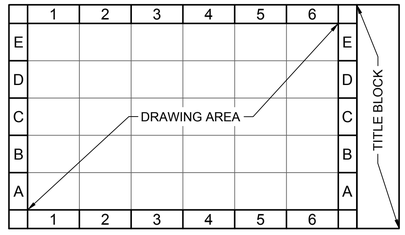
CROSS-REFERENCE LEGEND







NOTE:
LETTER AND NUMBER COMBINATION INDICATE IDENTIFICATION OF SECTION, DETAIL OR VIEW. IDENTIFICATION IS BASED ON THE LOCATION ON THE SHEET WHERE SHOWN. WHEN REFERENCING DRAWING INFORMATION BETWEEN SHEETS BOTH THE IDENTIFICATION AND THE SHEET ARE QUOTED TOGETHER - EITHER IN CALLOUT FORMAT AS SHOWN ABOVE OR IN THE FORM "VIEW NO./SHEET NO." (A1/S-001).



LOCATION ON SHEET
(SEE NOTE)

LEGEND AND SYMBOLS

- INDICATES EXISTING STRUCTURE
- INDICATES NEW STRUCTURE
- INDICATES DIRECTION OF TRAFFIC
- INDICATES DIRECTION OF FLOW

ABBREVIATIONS

APPROX	APPROXIMATE
CL	CENTERLINE
CLR	CLEAR
CONC	CONCRETE
(E)	EXISTING
ELEV	ELEVATION
MAX	MAXIMUM
SPECS	SPECIFICATIONS
STD	STANDARD
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED

Mark	Description	Date	Appr

CAPITOLA BRIDGE OVER SOQUEL CREEK EMERGENCY BRIDGE REPAIRS

GENERAL NOTES, LEGEND, SYMBOLS AND ABBREVIATIONS

Designed by: KA
Drawn by: EP
Cad by: GD
Reviewed by: GD
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
Date: 11-09-23
M&N Project No. 230131
Drawing scale:
Drawing Scale:
Plot scale: 1:1 (D SHEET)
Rev: 0

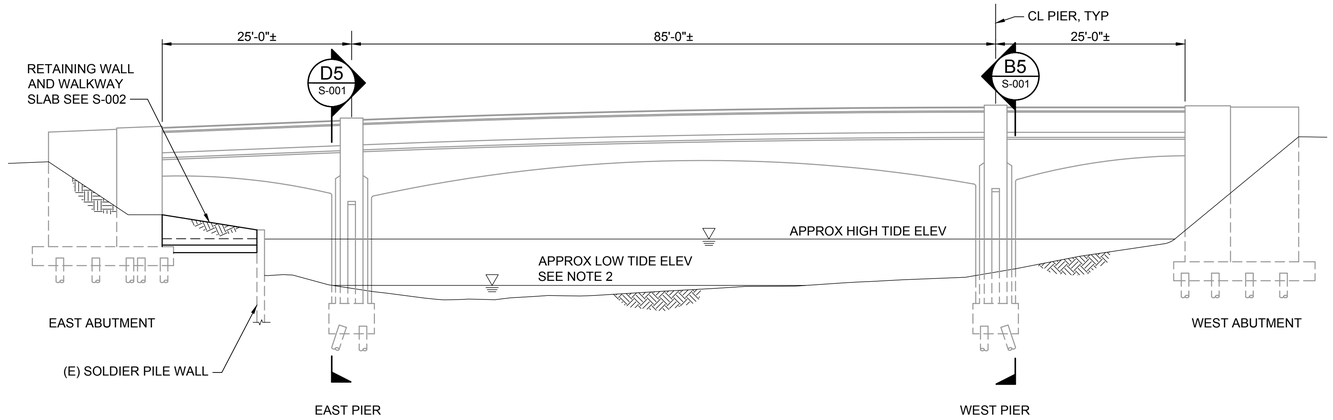
moffatt & nichol
2185 N. CALIFORNIA BLVD., SUITE 500
WALNUT CREEK, CA 94596
PHONE: (925) 944-5411

REGISTERED PROFESSIONAL ENGINEER
GARRETT J. DEKKER
No. C77718
EXP. 06-30-25
CIVIL
STATE OF CALIFORNIA
SEAL

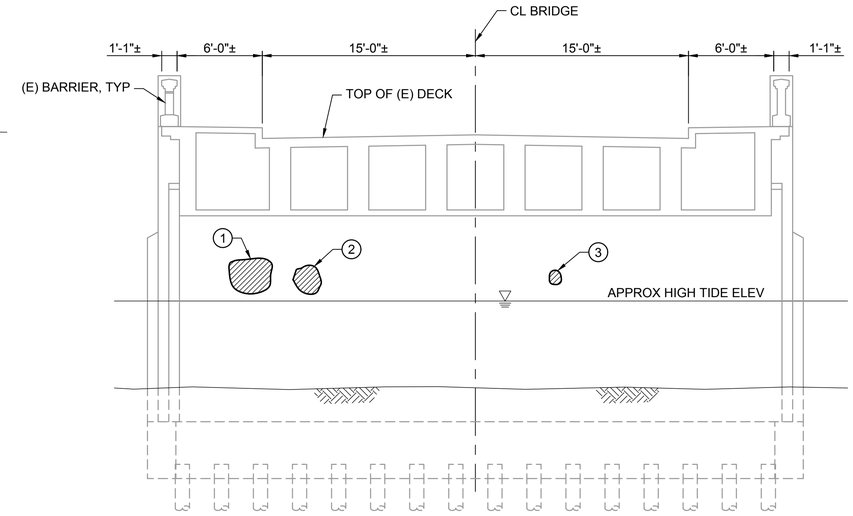
Sheet Reference No.
G-002
INDEX: 2 OF 4

File: Q:\WC\230131 Stockton Ave\20 CADD_Active_SheetSet\230131G-002 - Plotted: 11/9/2023 3:28 PM by: PLESHCHUK, ELENA - Saved: 11/9/2023 3:26 PM by: EPLESHCHUK

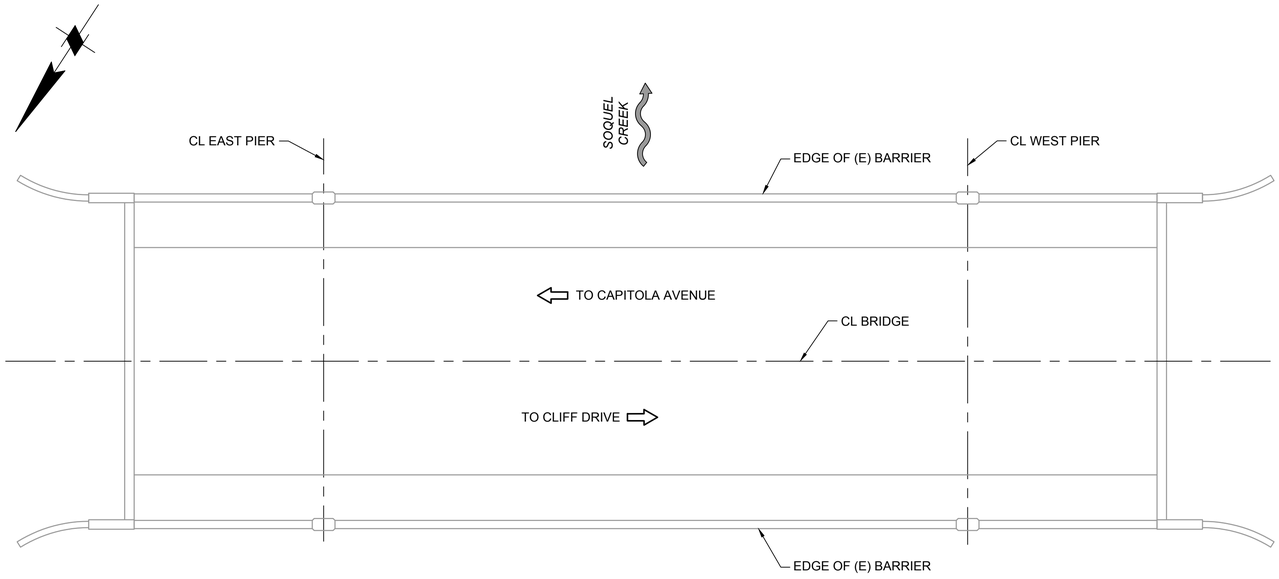
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



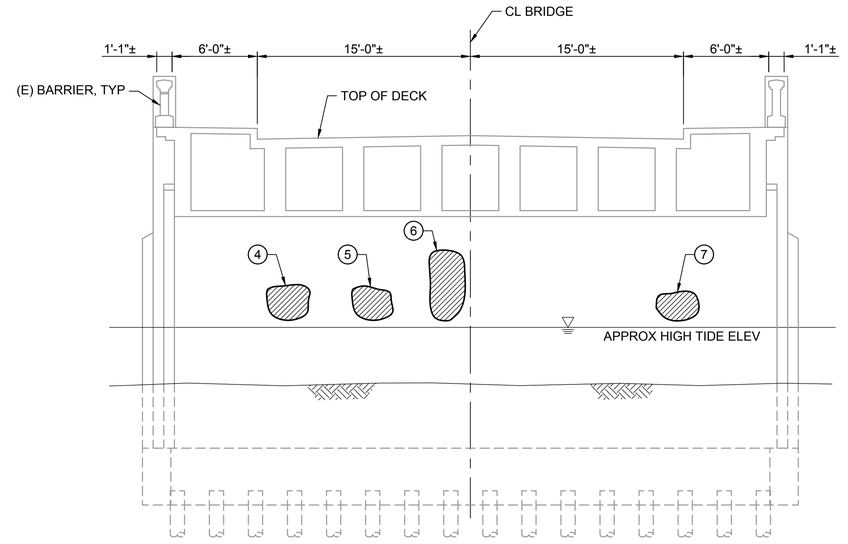
ELEVATION
SCALE: 1" = 10'



D5 S-001 EAST PIER - EAST FACE SECTION
SCALE: 3/16" = 1'-0"

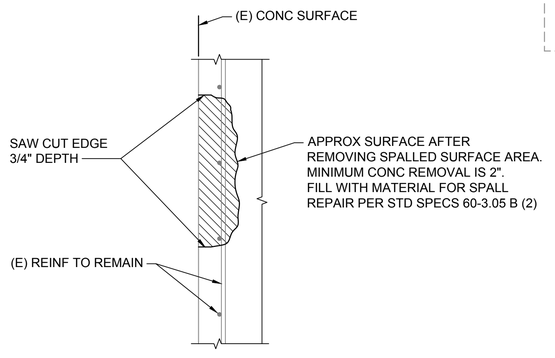


PLAN
SCALE: 1" = 10'



B5 S-001 WEST PIER - WEST FACE SECTION
SCALE: 3/16" = 1'-0"

TABLE OF SPALL REPAIRS (SEE "DETAIL A3/S-001")		
SPALL LOCATION NO.	LOCATION	DESCRIPTION AND APPROXIMATE EXTENT OF REPAIRS
1	EAST PIER EAST FACE	REMOVE UNSOUND CONCRETE, CLEAN EXPOSED REBAR. CLEAN AND PATCH 3'x2.5' SPALL
2		REMOVE UNSOUND CONCRETE, CLEAN EXPOSED REBAR. CLEAN AND PATCH 2'x2' SPALL
3		REMOVE UNSOUND CONCRETE. CLEAN EXPOSED REBAR. CLEAN AND PATCH 1'x1' SPALL
4	WEST PIER WEST FACE	REMOVE UNSOUND CONCRETE. CLEAN EXPOSED REBAR. CLEAN AND PATCH 3'x2.5' SPALL
5		REMOVE UNSOUND CONCRETE. CLEAN EXPOSED REBAR. CLEAN AND PATCH 3'x2.5' SPALL
6		REMOVE UNSOUND CONCRETE. CLEAN EXPOSED REBAR. CLEAN AND PATCH 5'x2.5' SPALL
7		REMOVE UNSOUND CONCRETE. CLEAN EXPOSED REBAR. CLEAN AND PATCH 3'x2' SPALL



A3 S-001 DETAIL - REPAIR SPALLED AREA
SCALE: 1" = 1'-0"

NOTES

1. (E) LIGHT POSTS NOT SHOWN FOR CLARITY.
2. PERFORM BRIDGE REPAIRS DURING LOW TIDE OR WHEN FLOWS IN SOQUEL CREEK ARE RESTRICTED TO THE MAIN SPAIN OF THE BRIDGE.

1'-0" 0'-0" 1'-0" 2'-0"
SCALE: 1"=1'-0"

8'-0" 0'-0" 4'-0" 8'-0"
SCALE: 3/16"=1'-0"

10'-0" 0'-0" 10'-0" 20'-0"
SCALE: 1"=10'

Mark	Description	Date	Appr

CAPITOLA BRIDGE OVER SOQUEL CREEK
EMERGENCY BRIDGE REPAIRS

BRIDGE REPAIR DETAILS
SHEET 1 OF 2

moffatt & nichol
2185 N. CALIFORNIA BLVD., SUITE 500
WALNUT CREEK, CA 94596
PHONE: (925) 944-5411

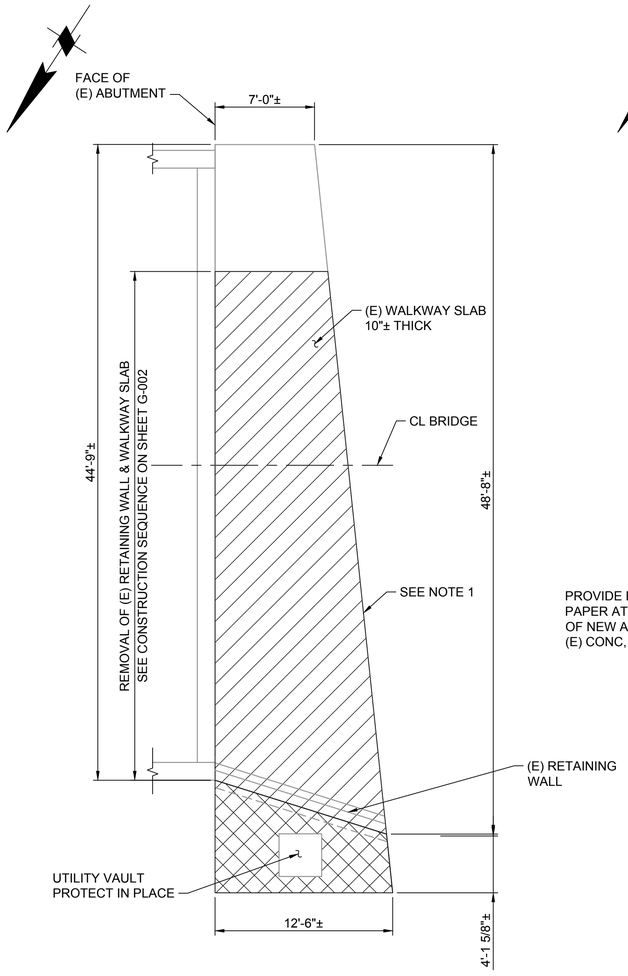
REGISTERED PROFESSIONAL ENGINEER
GARRETT J. DEKKER
No. C77218
EXP. 06-30-25
CIVIL
STATE OF CALIFORNIA
SEAL

Rev.	0
Date:	11-09-23
Designed by:	KA
Dwn by:	EP
Ckd by:	GD
Reviewed by:	GD
Submitted by:	SUBMITTER'S NAME MOFFATT & NICHOL
M&N Project No.	230131
Drawing code:	
Drawing Scale:	
Plot scale:	1:1 (D SHEET)

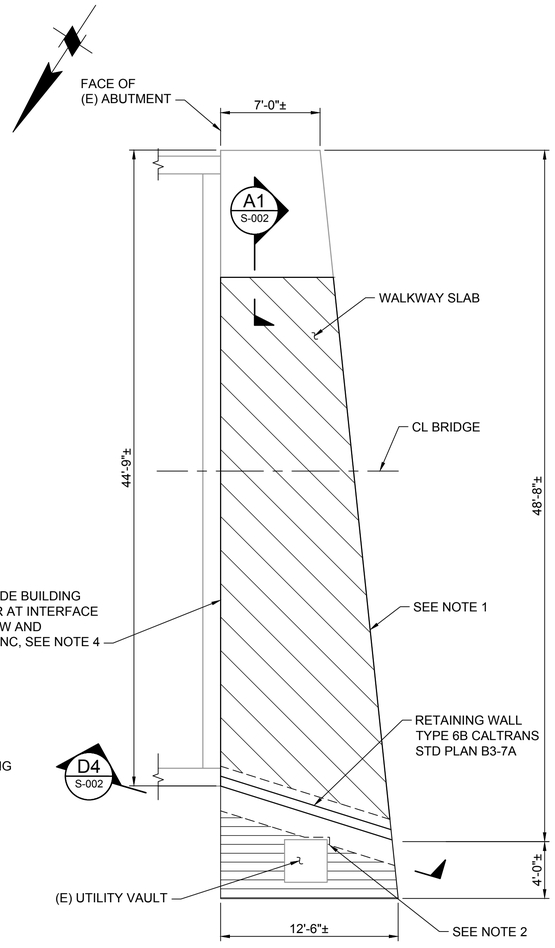
Sheet Reference No.
S-001
INDEX: 3 OF 4

File: Q:\WC\230131 Stockton Ave\20 CADD_Active_Sheet\Set\230131S-001 - Plotted: 11/9/2023 3:28 PM by PLESHCHUK, ELENA - Saved: 11/9/2023 3:27 PM by EPLESHCHUK

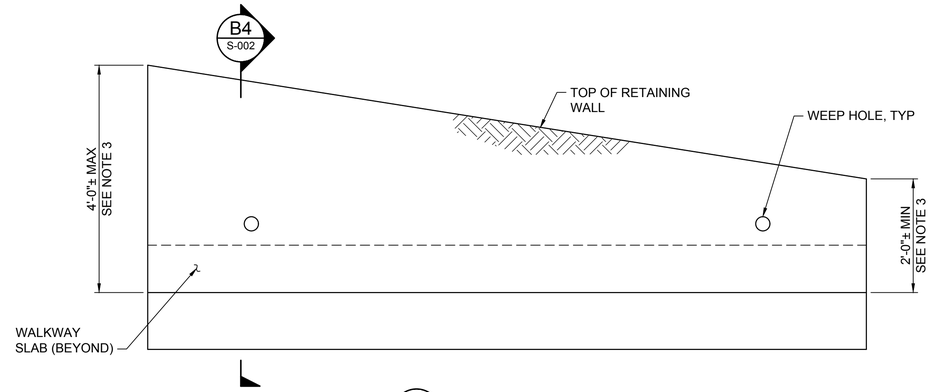
DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING



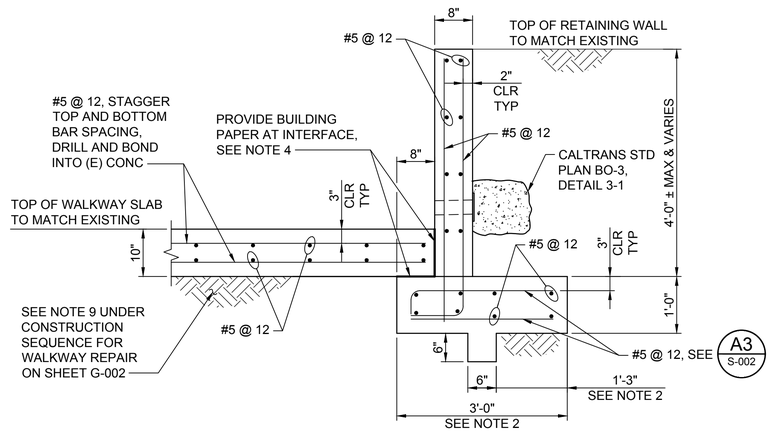
REMOVAL PLAN
SCALE: 3/16" = 1'-0"



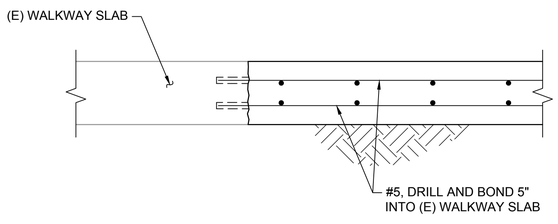
NEW CONSTRUCTION PLAN
SCALE: 3/16" = 1'-0"



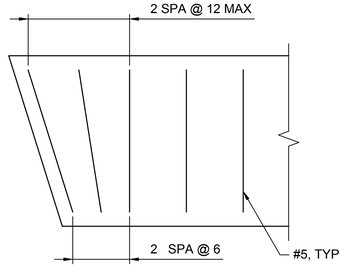
D4 S-002 ELEVATION
SCALE: 3/4" = 1'-0"



B4 S-002 SECTION
SCALE: 3/4" = 1'-0"



A1 S-002 SECTION
SCALE: 1" = 1'-0"



A3 S-002 DETAIL - FOOTING REINFORCEMENT
SCALE: 3/4" = 1'-0"

LEGEND

- INDICATES REMOVAL OF (E) WALKWAY SLAB AND (E) RETAINING WALL
- INDICATES EXCAVATION
- INDICATES BACKFILL BEHIND RETAINING WALL
- INDICATES BACKFILL UNDER WALKWAY SLAB

NOTES

1. (E) STEEL SOLDIER PILE WALL WITH TIMBER LAGGING NOT SHOWN FOR CLARITY.
2. ADJUST EDGE OF FOOTING TO AVOID CONFLICT WITH UTILITY VAULT. SEPARATE UTILITY VAULT FROM FOOTING WITH 1" POLYSTYRENE PER CALTRANS STANDARD PLAN BO-13, DETAIL 13-2.
3. FIELD VERIFY RETAINING WALL HEIGHT FOR ENGINEER'S APPROVAL.
4. BUILDING PAPER TO CONFORM TO CALTRANS STD SPECS 51-5.02F.

1'-0" 0'-0" 1'-0" 2'-0"
SCALE: 1"=1'-0"

2'-0" 0'-0" 1'-0" 2'-0"
SCALE: 3/4"=1'-0"

8'-0" 0'-0" 4'-0" 8'-0"
SCALE: 3/16"=1'-0"

CAPITOLA BRIDGE OVER SOQUEL CREEK
EMERGENCY BRIDGE REPAIRS

BRIDGE REPAIR DETAILS
SHEET 2 OF 2

Rev.	Date	Description	Appr
0			

Date: 11-09-23
MBN Project No. 230131
Drawing code:
Drawing Scale: 1:1 (D SHEET)
Designed by: KA
Dwn by: EP
Ckd by: GD
Reviewed by: GD
Submitted by: SUBMITTER'S NAME MOFFATT & NICHOL
Plot scale:

moffatt & nichol
2185 N. CALIFORNIA BLVD, SUITE 500
WALNUT CREEK, CA 94596
PHONE: (925) 944-5411

REGISTERED PROFESSIONAL ENGINEER
GARRETT J. DEKKER
No. C77718
EXP. 06-30-25
CIVIL
STATE OF CALIFORNIA
SEAL

Sheet
Reference No.
S-002
INDEX: 4 OF 4

File: Q:\WC\230131 Stockton Ave\20 CADD_Active_Sheet\Set\230131S-002 - Plotted: 11/9/2023 3:28 PM by PLESHCHUK, ELENA - Saved: 11/9/2023 3:27 PM by EPLESHCHUK

DRAWING SCALES SHOWN BASED ON 22"x34" DRAWING

Attachment B

Caltrans Historic Bridge Inventory Excerpt

Structure Maintenance & Investigations

Historical Significance - Local Agency Bridges

District 05

Santa Cruz County

Bridge Number	Bridge Name	Location	Historical Significance	Year Built	Year Wid/Ext
36C0098	BRANCIFORTE CREEK	NEAR DAKOTA AVE	5. Bridge not eligible for NRHP	1963	1981
36C0099	SAN LORENZO RIVER	50' S SAN LORENZO BLVD	5. Bridge not eligible for NRHP	1990	
36C0100	SAN LORENZO RIVER	0.1 MI N/O BUENA VISTA DR	5. Bridge not eligible for NRHP	1926	
36C0101	SAN LORENZO RIVER	0.1 MI E STATE RTE 9	5. Bridge not eligible for NRHP	1938	1989
36C0102	SAN LORENZO RIVER	0.8 MI E OF S.R. I	5. Bridge not eligible for NRHP	1968	
36C0103	CABRILLO COLLEGE POC	3.7 MI E OF SR 1	5. Bridge not eligible for NRHP	1962	
36C0104	PAJARO RIVER	0.8 MI S OF S.R. 129	5. Bridge not eligible for NRHP	1994	
36C0105	SAN LORENZO RIVER	0.1 MI W OCEAN ST	5. Bridge not eligible for NRHP	1999	
36C0106	EAST CLIFF DRIVE OH	AT MURRAY ST	5. Bridge not eligible for NRHP	1990	
36C0107	BRANCIFORTE CREEK	0.1 MI N BRANCIFORTE DR	5. Bridge not eligible for NRHP	1939	
36C0108	WOODS LAGOON (GLENN E. COOLIDGE MEMORIAL BRIDGE)	W/O INT/O LUKE AVE	5. Bridge not eligible for NRHP	1963	
36C0109	SOQUEL WHARF ROAD UP	SOUTH OF C.R. #31	5. Bridge not eligible for NRHP	1970	
36C0110	SOQUEL CREEK	AT THE ESPLANADE	2. Bridge is eligible for NRHP	1934	
36C0111	CAPITOLA AVENUE UP	0.1 MI N CLIFF DR	5. Bridge not eligible for NRHP	1970	
36C0112	CORRALITOS CREEK	0.2 MI N FREEDOM BLVD	5. Bridge not eligible for NRHP	1969	
36C0113	APTOS CREEK	TREASURE ISLAND DR	5. Bridge not eligible for NRHP	1937	
36C0114	APTOS OH	AT SUMMER AVE	5. Bridge not eligible for NRHP	1953	1985
36C0116	VALENCIA CREEK	@ BEAR VALLEY ROAD	5. Bridge not eligible for NRHP	1935	2003
36C0117	CASSERLY CREEK TRIBUTARY NO 1	4.1 MI N FREEDOM BLVD	5. Bridge not eligible for NRHP	1915	
36C0118	CASSERLY CREEK TRIBUTARY NO 2	@ TRAVELERS LANE	5. Bridge not eligible for NRHP	1920	
36C0119	LITTLE CREEK	2.8 MI NW OF SR 1	5. Bridge not eligible for NRHP	1940	
36C0122	BRANCH OF CORRALITOS CREEK	0.1 MI WEST FREEDOM BLVD	5. Bridge not eligible for NRHP	1958	
36C0125	LOS CORRALITOS CREEK	EAST OF CORRALITOS	5. Bridge not eligible for NRHP	2002	
36C0126	LOS CORRALITOS CREEK	0.3 MI W OF AMESTI RD	5. Bridge not eligible for NRHP	1936	
36C0127	WEST CLIFF DRIVE OVERHEAD	WEST CLIFF AND BEACH ST	5. Bridge not eligible for NRHP	2001	
36C0128	NEWELL CREEK	0.1 MI E NEWELL CREEK RD	5. Bridge not eligible for NRHP	1958	
36C0129	MAJORS CREEK	0.2 MI W OF SR 1	5. Bridge not eligible for NRHP	1970	
36C0130	LOMPICO CREEK	EAST OF LOMPICO RD	5. Bridge not eligible for NRHP	1940	
36C0131	LOMPICO CREEK	AT DEERWOOD DRIVE	5. Bridge not eligible for NRHP	1940	
36C0132	LOMPICO CREEK	2.1 MI ABOVE ZAYANTE RD	5. Bridge not eligible for NRHP	1954	1998
36C0133	LOVE CREEK	0.1 MI E OF HWY 9	5. Bridge not eligible for NRHP	1944	
36C0134	BEAR CREEK	0.2 MI W BEAR CREEK RD	5. Bridge not eligible for NRHP	1962	
36C0135	BEAR CREEK	0.2 MI W BEAR CREEK RD	5. Bridge not eligible for NRHP	1961	
36C0136	SAN LORENZO RIVER	.1 MI W/O SR 9	5. Bridge not eligible for NRHP	1948	
36C0137	SHINGLE MILL GULCH	2.0 MI N RIDER RD	5. Bridge not eligible for NRHP	1950	
36C0138	LOMPICO CREEK	0.9 MI W ZAYANTE RD	5. Bridge not eligible for NRHP	1949	
36C0139	HARKINS SLOUGH	30' S LARKIN VALLEY RD	5. Bridge not eligible for NRHP	1950	
36C0140	LONE STAR EQUIPMENT ROAD UC	2.1 MI N/O SR 1	5. Bridge not eligible for NRHP	1968	
36C0141	BEAN CREEK	@ EAST ZAYANTE ROAD	5. Bridge not eligible for NRHP	1936	
36C0142	ZAYANTE CREEK	3.2 MI N GRAHAM HILL RD	5. Bridge not eligible for NRHP	1948	
36C0143	ZAYANTE CREEK	3.7 MI N GRAHAM HILL RD	5. Bridge not eligible for NRHP	1955	
36C0144	BOULDER CREEK	BOULDER CRK COUNTRY CLUB	5. Bridge not eligible for NRHP	1959	
36C0145	BRANCIFORTE CREEK	0.2 MI N OF HWY 1	5. Bridge not eligible for NRHP	1971	

Attachment C

NPS Preservation Brief 15: Preservation of Historic Concrete

15 PRESERVATION BRIEFS

Preservation of Historic Concrete

Paul Gaudette and Deborah Slaton

National Park Service
U.S. Department of the Interior
Heritage Preservation Services

Introduction to Historic Concrete

Concrete is an extraordinarily versatile building material used for utilitarian, ornamental, and monumental structures since ancient times. Composed of a mixture of sand, gravel, crushed stone, or other coarse material, bound together with lime or cement, concrete undergoes a chemical reaction and hardens when water is added. Inserting reinforcement adds tensile strength to structural concrete elements. The use of reinforcement contributes significantly to the range and size of building and structure types that can be constructed with concrete.

While early twentieth century proponents of modern concrete often considered it to be permanent, it is, like all materials, subject to deterioration. This Brief provides an overview of the history of concrete and its popularization in the United States, surveys the principal causes and modes of concrete deterioration, and outlines approaches to repair and protection that are appropriate to historic concrete. In the context of this Brief, historic concrete is considered to be concrete used in construction of structures of historical, architectural, or engineering interest, whether those structures are old or relatively new.

Brief History of Use and Manufacture

The ancient Romans found that a mixture of lime putty and pozzolana, a fine volcanic ash, would harden under water. The resulting hydraulic cement became a major feature of Roman building practice, and was used in many buildings and engineering projects such as bridges and aqueducts. Concrete technology was kept alive during the Middle Ages in Spain and Africa. The Spanish introduced a form of concrete to the New World in the first decades of the sixteenth century, referred to as "tapia" or "tabby." This material, a mixture of lime, sand, and shell or stone aggregate mixed with water, was placed between wooden forms, tamped, and allowed to dry in successive layers. Tabby was later used by the English settlers in the coastal southeastern United States.

The early history of concrete was fragmented, with developments in materials and construction techniques occurring on different continents and in various countries. In the United States, concrete was slow in achieving widespread acceptance in building construction and did not begin to gain popularity until the late nineteenth century. It was more readily accepted for use in transportation and infrastructure systems.

The Erie Canal in New York is an example of the early use of concrete in transportation in the United States. The natural hydraulic cement used in the canal construction was processed from a deposit of limestone found in 1818 near Chittenango, southeast of Syracuse. The use of concrete in residential construction was

Figure 1. The Sebastopol House in Seguin, Texas, is an 1856 Greek Revival-style house constructed of lime concrete. Lime concrete or "limecrete" was a popular construction material, as it could be made inexpensively from local materials. By 1900, the town had approximately ninety limecrete structures, twenty of which remain. Photo: Texas Parks and Wildlife Department.

Figure 2. Chatterton House was the home of the post trader at Fort Fred Steel in Wyoming, one of several forts established in the 1860s to protect the Union Pacific Railroad. The walls of the post trader's house were built using stone aggregate and lime, without cement. The use of this material presents special preservation challenges.

publicized in the second edition of Orson S. Fowler's *A Home for All* (1853) which described the advantages of "gravel wall" construction to a wide audience. The town of Seguin, Texas, thirty-five miles east of San Antonio, already had a number of concrete buildings by the 1850s and came to be called "The Mother of Concrete Cities," with approximately ninety concrete buildings made from local "lime water" and gravel (Fig. 1).

Impressed by the economic advantages of poured gravel wall or "lime-grout" construction, the Quartermaster General's Office of the War Department embarked on a campaign to improve the quality of building for frontier military posts. As a result, lime-grout structures were constructed at several western posts soon after the Civil War, including Fort Fred Steele and Fort Laramie, both in Wyoming (Fig. 2). By the 1880s, sufficient experience had been gained with unreinforced concrete to permit construction of much larger buildings. A notable example from this period is the Ponce de Leon Hotel in St. Augustine, Florida.

Extensive construction in concrete also occurred through the system of coastal fortifications commissioned by the federal government in the 1890s for the Atlantic, Pacific, and Gulf coasts. Unlike most concrete construction to that time, the special requirements of coastal fortifications called for concrete walls as much as 20 feet thick, often at sites that were difficult to access. Major structures in the coastal defenses of the 1890s were built of mass concrete with no internal reinforcing, a practice that was replaced by the use of reinforcing bars in fortifications constructed after about 1905.

The use of reinforced concrete in the United States dates from 1860, when S.T. Fowler obtained a patent for a reinforced concrete wall. In the early 1870s, William E. Ward built his own house in Port Chester, New York, using concrete reinforced with iron rods for all structural elements. Despite these developments, such construction remained a novelty until after 1880, when innovations introduced by Ernest L. Ransome made the use of reinforced concrete more practicable. Ransome made many contributions to the development of concrete construction technology, including the use of twisted reinforcing bars to improve bond between the concrete and the steel, which he patented in 1884. Two years later, Ransome introduced the rotary kiln to United States cement production. The new kiln had greater capacity and burned more thoroughly and uniformly, allowing development of a less expensive, more uniform, and more reliable manufactured cement. Improvements in concrete production initiated by Ransom led to a much greater acceptance of concrete after 1900.

The Lincoln Highway Association, incorporated in 1913, promoted the use of concrete in construction of a coast-to-coast roadway system. The goal of the Lincoln Highway Association and highway advocate Henry B. Joy was to educate the country in the need for good roads made of concrete, with an improved Lincoln

Figure 3. The Lincoln Highway Association promoted construction of a high quality continuous hard surface roadway across the country. The Boys Scouts of America installed concrete road markers along the Lincoln Highway in 1928.

Figure 4. The highly ornamental concrete panels on the exterior facade of the Baha'i House of Worship in Wilmette, Illinois, illustrate the work of fabricator John J. Earley, known as "the man who made concrete beautiful."

Figure 5. Following World War II, architects and engineers took advantage of improvements in concrete production, quality control, and advances in precast concrete to design structures such as the Police Headquarters building in Philadelphia, Pennsylvania, constructed in 1961. Photo: Courtesy of the Philadelphia Police Department.

Highway as an example. Concrete "seedling miles" were constructed in remote areas to emphasize the superiority of concrete over unimproved dirt. The Association believed that as people learned about concrete, they would press the government to construct good roads throughout their states. Americans' enthusiasm for good roads led to the involvement of the federal government in road-building and the creation of numbered U.S. routes in the 1920s (Fig. 3).

During the early twentieth century, Ernest Ransome in Beverly, Massachusetts, Albert Kahn in Detroit, and Richard E. Schmidt in Chicago, promoted concrete for use in "Factory Style" utilitarian buildings with an exposed concrete frame infilled with expanses of glass. Thomas Edison's cast-in-place reinforced concrete homes in Union Township, New Jersey (1908), proclaimed a similarly functional emphasis in residential construction. From the 1920s onward, concrete began to be used with spectacular design results: examples include John J. Earley's Meridian Hill Park in Washington, D.C.; Louis Bourgeois' exuberant, graceful Baha'i Temple in Wilmette, Illinois (1920–1953), for which Earley fabricated the concrete (Fig. 4); and Frank Lloyd Wright's Fallingwater near Bear Run, Pennsylvania (1934). Continuing improvements in quality control and development of innovative fabrication processes, such as the Shockbeton method for precast concrete, provided increasing opportunities for architects and engineers. Wright's Guggenheim Museum in New York City (1959); Geddes Brecher Qualls & Cunningham's Police Headquarters building in Philadelphia, Pennsylvania (1961); and Eero Saarinen's soaring terminal building at Dulles International Airport outside Washington, D.C., and the TWA terminal at Kennedy Airport in New York (1962), exemplify the masterful use of concrete achieved in the modern era (Fig. 5).

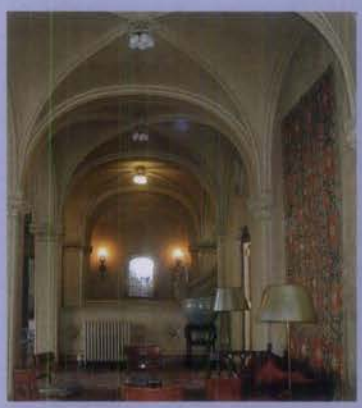
Figure 6. The Bailey Magnet School in Jackson, Mississippi, was designed as the Jackson Junior High School by the firm of N.W. Overstreet & Town in 1936. The streamlined building exemplifies the applicability of concrete to creating a modern architectural aesthetic. Photo: Bill Burris, Burris/Wagnon Architects, P.A.

Figure 7. Detailed bas reliefs as well as sculptures, such as this lion at the Bailey Magnet School, could be used as ornamentation on concrete buildings. Sculptural concrete elements were typically cast in molds.

Throughout the twentieth century, a wide range of architectural and engineering structures were built using concrete as a practical and cost-effective choice—and concrete also became valued for its aesthetic qualities. Cast in place and precast concrete were readily adapted to the Streamlined Moderne style, as exemplified by the Bailey Magnet School in Jackson, Mississippi, designed as the Jackson Junior High School by N.W. Overstreet & Town in 1936 (Figs. 6 and 7). The school is one of many concrete buildings designed and constructed under the auspices of the Public Works Administration. Recreational structures and landscape features also utilized the structural range and unique character of exposed concrete to advantage, as seen in Chicago's Lincoln Park Chess Pavilion, designed by Morris Webster in 1956 (Fig. 8), and the Ira C. Keller Fountain in Portland Oregon, designed by Lawrence Halprin in 1969 (Fig. 9). Concrete was also popular for building interiors, with ornamental features and exposed structural elements recognized as part of the design aesthetic (See Figs. 10 and 11 in sidebar).

Historic Interiors

The expanded use of concrete provided new opportunities to create dramatic spaces and ornate architectural detail on the interiors of buildings, at a significant cost savings over traditional construction practices. The architectural design of the Berkeley City Club in Berkeley, California, expressed Moorish and Gothic elements in concrete on the interior of the building (Fig. 10). Used as a woman's social club, the building was designed by noted California architect Julia Morgan and constructed in 1929. The vaulted ceilings, columns, and ornamental capitals of the lobby and the ornamental arches and beamed ceiling of the "plunge" are all constructed of concrete.



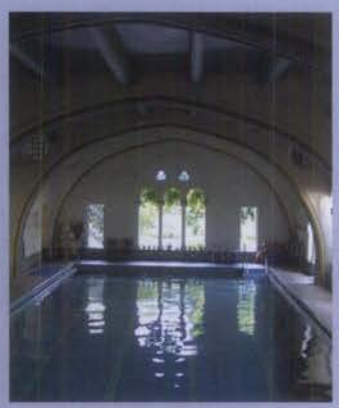


Figure 10. The Berkeley City Club has significant interior spaces and features of concrete construction, including the lobby and pool. Photos: Una Gilmartin (left) and Brian Kehoe (right), Wiss, Janney, Elstner Associates, Inc.

The historic character of a building's interior can also be conveyed in a more utilitarian manner in terms of concrete features and finishes (Fig. 11). The exposed concrete structure—columns, capitals, and drop panels—is an integral part of the character of this old commercial building in Minneapolis. In concrete warehouse and factory buildings of the early twentieth century, exposed concrete columns and formboard finish concrete slab ceilings are common features as seen in this warehouse, now converted for use as a parking garage and shops.

Figure 11. Whether in a circa 1925 office (left) or in a parking garage and retail facility (right), exposed concrete structures help characterize these building interiors. Photo: Minnesota Historical Society (left).

Concrete Characteristics

Concrete is composed of fine (sand) and coarse (crushed stone or gravel) aggregates and paste made of portland cement and water. The predominant material in terms of bulk is the aggregate. Portland cement is the binder most commonly used in modern concrete. It is commercially manufactured by blending limestone or chalk with clays that contain alumina, silica, lime, iron oxide and magnesia, and heating the compounds together to high temperatures. The hydration process that occurs between the portland cement and water results in formation of an alkali paste that surrounds and binds the aggregate together as a solid mass.

The quality of the concrete is dependent on the ratio of water to the binder; binder content; sound, durable, and well-graded aggregates; compaction during placement; and proper curing. The amount of water used in the mix affects the concrete permeability and strength. The use of excess water beyond that required in the hydration process results in more permeable concrete, which is more susceptible to weathering and deterioration. Admixtures are commonly added to concrete to adjust concrete properties such as setting or hardening time, requirements for water, workability, and other characteristics. For example, the advent of air entraining agents in the 1930s provided enhanced durability for concrete.

During the twentieth century, there was a steady rise in the strength of ordinary concrete as chemical processes became better understood and quality control measures improved. In addition, the need to protect embedded reinforcement against corrosion was acknowledged. Requirements for concrete cover over reinforcing steel, increased cement content, decreased water-cement ratio, and air entrainment all contributed to greater concrete strength and improved durability.

Mechanisms and Modes of Deterioration

Causes of Deterioration

Concrete deterioration occurs primarily because of corrosion of the embedded steel, degradation of the concrete itself, use of improper techniques or materials in construction, or structural problems. The causes of concrete deterioration must be understood in order to select an appropriate repair and protection system.

While reinforcing steel has played a pivotal role in expanding the applications of concrete in twentieth century architecture, corrosion of this steel has also caused deterioration in many historic structures. Reinforcing steel embedded in the concrete is normally surrounded by a passivating oxide layer that, when present, protects the steel from corrosion and aids in bonding the steel and concrete. When the concrete's normal alkaline environment (above a pH of 10) is compromised and the steel is exposed to water, water vapor, or high relative humidity, corrosion of the steel reinforcing takes place. A reduction in alkalinity results from carbonation, a process that occurs when the carbon dioxide in the atmosphere reacts with calcium hydroxide and moisture in the concrete. Carbonation starts at the concrete's exposed surface but may extend to the reinforcing steel over time. When carbonation reaches the metal reinforcement, the concrete no longer protects the steel from corrosion.

Figure 8. The Chess Pavilion in Chicago's Lincoln Park was designed by architect Morris Webster and constructed in 1956. The pavilion is a distinctive landscape feature, with its reinforced concrete cantilevered slab that provides cover for chess players.

Figure 9. The Ira C. Keller Fountain in Portland, Oregon, was designed by Lawrence Halprin and constructed in 1969. The fountain is constructed primarily of concrete pillars with formboard textures and surrounding elements, patterned with geometric lines, which facilitate the path of water. Photo: Anita Washko, Wiss, Janney, Elstner Associates, Inc.

Corrosion of embedded reinforcing steel may be initiated and accelerated if calcium chloride was added to the concrete as a set accelerator during original construction to promote more rapid curing. It may also take place if the concrete is later exposed to deicing salts, as may occur during the winter in northern climates. Seawater or other marine environments can also provide large amounts of chloride, either from inadequately washed original aggregate or from exposure of the concrete to seawater.

Corrosion-related damage to reinforced concrete is the result of rust, a product of the corrosion process of steel, which expands and thus requires more space in the concrete than the steel did at the time of installation. This change in volume of the steel results in expansive forces, which cause cracking and spalling of the adjacent concrete (Fig. 12). Other signs of corrosion of embedded steel include delamination of the concrete (planar separations parallel to the surface) and rust staining (often a precursor to spalling) on the concrete near the steel.

Lack of proper maintenance of building elements such as roofs and drainage systems can contribute to water-related deterioration of the adjacent concrete, particularly when concrete is saturated with water and then exposed to freezing temperatures. As water within the concrete freezes, it expands and exerts forces on the adjacent concrete. Repeated freezing and thawing can result in the concrete cracking and delaminating. Such damage appears as surface degradation, including severe scaling and micro-cracking that extends into the concrete. The condition is most often observed near the surface of the concrete but can also eventually occur deep within the concrete. This type of deterioration is usually most severe at joints, architectural details, and other areas with more surface exposure to weather. In the second half of the twentieth century, concrete has utilized entrained air (the incorporation of microscopic air bubbles) to provide enhanced protection against damage due to cyclic freezing of saturated concrete.

The use of certain aggregates can also result in deterioration of the concrete. Alkali-aggregate reactions—in some cases alkali-silica reaction (ASR)—occur when alkalis normally present in cement react with certain aggregates, leading to the development of an expansive crystalline gel. When this gel is exposed to moisture, it expands and causes cracking of the aggregate and concrete matrix. Deleterious aggregates are typically found only in certain areas of the country and can be detected through analysis by an experienced petrographer. Low-alkali cements as well as fly ash are used today in new construction to prevent such reactions where this problem may occur.

Problems Specifically Encountered with Historic Concrete

Materials and workmanship used in the construction of historic concrete structures, particularly those built before the First World War, sometimes present potential sources of problems. For example, where the aggregate consisted of cinder from burned coal or crushed brick,

Figure 12. The concrete lighthouse at the Kilauea Point Light Station, Kilauea, Kauai, Hawaii, was constructed circa 1913. The concrete, which was a good quality, high strength mix for its day, is in good condition after almost one hundred years in service. Deterioration in the form of spalling related to corrosion of embedded reinforcing steel has occurred primarily in areas of higher ornamentation such as projecting bands and brackets (see close-up photo).

the concrete tends to be weak and porous because these aggregates absorb water. Some of these aggregates can be extremely susceptible to deterioration when exposed to moisture and cyclic freezing and thawing. Concrete was sometimes compromised by inclusion of seawater or beach sand that was not thoroughly washed with fresh water, a condition more common with coastal fortifications built prior to 1900. The sodium chloride present in seawater and beach sand accelerates the rate of corrosion of the reinforced concrete.

Another problem encountered with historic concrete is related to poor consolidation of the concrete during its placement in forms, or in molds in the case of precasting. This problem is especially prevalent in highly ornamental units. Early twentieth century concrete was often tamped or rodded into place, similar to techniques used in forming cast stone. Poorly consolidated concrete often contains voids ("bugholes" or "honeycombs"), which can reduce the protective concrete cover over the embedded reinforcing bars, entrap water, and, if sufficiently large and strategically numerous, reduce localized concrete strength. Vibration technology has improved over time and flowability agents are also used today to address this problem.

A common type of deterioration observed in concrete is the effect of weathering from exposure to wind, rain, snow, and salt water or spray. Weathering appears as erosion of the cement paste, a condition more prevalent in northern regions where precipitation can be highly acidic. This results in the exposure of the aggregate particles on the exposed concrete surface. Variations may occur in the aggregate exposure due to differential erosion or dissolution of exposed cement paste. Erosion can also be caused by the mechanical action of water channeled over concrete, such as by the lack of drip grooves in belt courses and sills, and by inadequate drainage. In addition, high-pressure water when used for cleaning can also erode the concrete surface.

In concrete structures built prior to the First World War, concrete was often placed into forms in relatively short vertical lifts due to limitations in lifting and pouring techniques available at the time. Joints between different concrete placements (often termed cold joints or lift lines) may sometimes be considered an important part of the character of a concrete element (Fig. 13). However, wide joints may permit water to infiltrate the concrete, resulting in more rapid paste erosion or freeze-thaw deterioration of adjacent concrete in cold climates.

In the early twentieth century, concrete was sometimes placed in several layers parallel to the exterior surface. A base concrete was first created with formwork and then a more cement rich mortar layer was applied to the exposed vertical face of the

Figure 13. Fort Casey on Admiralty Head, Fort Casey, Washington, was constructed in 1898. The lift lines from placement of concrete are clearly visible on the exterior walls and characterize the finished appearance.

base concrete. The higher cement content in the facing concrete provided a more water-resistant outer layer and finished surface. The application of a cement-rich top layer, referred to in some early concrete publications as "waterproofing," was also used on top surfaces of concrete walls, or as the top layer in sidewalks. With this type of concrete construction, deterioration can occur over time as a result of debonding between layers, and can proceed very rapidly once the protective cement-rich layer begins to break down.

It is common for historic concrete to have a highly variable appearance, including color and finish texture. Different levels of aggregate exposure due to paste erosion are often found in exposed aggregate concrete. This variability in the appearance of historic concrete increases the level of difficulty in assessing and repairing weathered concrete.

Signs of Distress and Deterioration

Characteristic signs of failure in concrete include cracking, spalling, staining, and deflection. Cracking occurs in most concrete but will vary in depth, width, direction, pattern, and location, and can be either active or dormant (inactive). Active cracks can widen, deepen, or migrate through the concrete, while dormant cracks remain relatively unchanged in size. Some dormant cracks, such as those caused by early age shrinkage of the concrete during curing, are not a structural concern but when left unrepaired, can provide convenient channels for moisture penetration and subsequent damage. Random surface cracks, also called map cracks due to their resemblance to lines on a map, are usually related to early-age shrinkage but may also indicate other types of deterioration such as alkali-silica reaction.

Structural cracks can be caused by temporary or continued overloads, uneven foundation settling, seismic forces, or original design inadequacies. Structural cracks are active if excessive loads are applied to a structure, if the overload is continuing, or if settlement is ongoing. These cracks are dormant if the temporary overloads have been removed or if differential settlement has stabilized. Thermally-induced cracks result from stresses produced by the expansion and contraction of the concrete during temperature changes. These cracks frequently occur at the ends or re-entrant corners of older concrete structures that were built without expansion joints to relieve such stress.

Spalling (the loss of surface material) is often associated with freezing and thawing as well as cracking and delamination of the concrete cover over embedded reinforcing steel. Spalling occurs when reinforcing bars corrode and the corrosion by-products expand, creating high stresses on the adjacent concrete, which cracks and is displaced. Spalling can also occur when water absorbed by the concrete freezes and thaws (Fig. 14). In addition, surface spalling or scaling may result from the improper finishing, forming, or other surface

Figures 14. Layers of architectural concrete that have debonded (spalled) from the surface were removed from a historic water tank during the investigation performed to assess existing conditions. Photos: Anita Washko, Wiss, Janney, Elstner Associates, Inc.

phenomena when water-rich cement paste (laitance) rises to the surface. The resulting weak material is vulnerable to spalling of thin layers, or scaling. In some cases, spalling of the concrete can diminish the load-carrying capacity of the structure.

Deflection is the bending or sagging of structural beams, joists, or slabs, and can be an indication of deficiencies in the strength and structural soundness of concrete. This condition can be produced by overloading, corrosion of embedded reinforcing, or inadequate design or construction, such as use of low-strength concrete or undersized reinforcing bars.

Staining of the concrete surface can be related to soiling from atmospheric pollutants or other contaminants, dirt accumulation, and the presence of organic growth. However, stains can also indicate more serious underlying problems, such as corrosion of embedded reinforcing steel, improper previous surface treatments, alkali-aggregate reaction, or efflorescence, the deposition of soluble salts on the surface of the concrete as a result of water migration (Fig. 15).

Planning for Concrete Preservation

The significance of a historic concrete building or structure—including whether it is important for its architectural or engineering design, for its materials and construction techniques, or both—guides decision making about repair and, if needed, replacement methods. Determining the causes of deterioration is also central to the development of a conservation and repair plan. With historic concrete buildings, one of the more difficult challenges is allowing for sufficient time during the planning phase to analyze the concrete, develop mixes, and provide time for adequate aging of mock-ups for matching to the original concrete.

An understanding of the original construction techniques (cement characteristics, mix design, original intent of assembly, type of placement, precast versus cast in place, etc.) and previous repair work performed on the concrete is important in determining causes of existing deterioration and the susceptibility of the structure to potential other types of deterioration. For example, concrete placed in short lifts (individual concrete placements) or constructed in precast segments will have numerous joints that can provide entry points for water infiltration. Inappropriate prior repairs, such as installation of patches using an incompatible material, can affect the future performance of the concrete. Such prior repairs may require corrective work.

As with other preservation projects, three primary approaches are usually considered for historic concrete structures: ***maintenance***, ***repair***, or ***replacement***. Maintenance and repair best achieve the preservation goal of minimal intervention and the greatest retention of existing historic fabric. However, where elements of the building are severely deteriorated or where inherent problems with the material lead to ongoing failures, replacement may be necessary.

During planning, information is gathered through research, visual survey, inspection openings, and laboratory studies. The material should then be reviewed by professionals experienced in concrete deterioration to help evaluate the nature and causes of the concrete problems, to assess both the short-term and long-term effects of the deterioration, and to formulate proper repair approaches.

Condition Assessment

A condition assessment of a concrete building or structure should begin with a review of all available documents related to original construction and prior repairs. While plans and specifications for older concrete buildings are not always available, they can be an invaluable resource and every attempt should be made to find them. They may provide information on the composition of the concrete mix or on the type and location of reinforcing bars. If available, documents related to past repairs should also be reviewed to understand how the repairs were made and to help evaluate their anticipated performance and service life. Archival photographs can also provide a valuable source of information about original construction.

Figure 15. Evidence of moisture movement through concrete is apparent in the form of mineral deposits on the concrete surface. Cyclic freezing and thawing of entrapped moisture, and corrosion of embedded reinforcement, have also contributed to deterioration of the concrete column on this fence at Crocker Field in Fitchburg, Massachusetts, designed by the Olmsted Brothers.

A visual condition survey will help identify and evaluate the extent, types, and patterns of distress and deterioration. The American Concrete Institute offers several useful guides on how to perform a visual condition survey of concrete. Generally, the condition assessment begins with an overall visual survey, followed by a close-up investigation of representative areas to obtain more detailed information about modes of deterioration.

A number of nondestructive testing methods can be used in the field to evaluate concealed conditions. Basic techniques include sounding with a hand-held hammer (or for horizontal surfaces, a chain) to help identify areas of delamination. More sophisticated techniques include impact-echo testing (Fig. 16), ground penetrating radar, pulse velocity, and other methods that characterize concrete thickness and locate voids or delaminations. Magnetic detection instruments are used to locate embedded reinforcing steel and can be calibrated to identify the size and depth of reinforcement. Corrosion measurements can be taken using copper-copper sulfate half-cell tests or linear polarization techniques to determine the probability or rate of active corrosion of the reinforcing steel.

To further evaluate the condition of the concrete, samples may be removed for laboratory study to determine material components and composition, and causes of deterioration. Samples need to be representative of existing conditions but should be taken from unobtrusive locations. Laboratory studies of the concrete may include petrographic evaluation following ASTM C856, *Practice for Petrographic Examination of Hardened Concrete.* Petrographic examination, consisting of microscopical studies performed by a geologist specializing in the evaluation of construction materials, is performed to determine air content, water-cement ratio, cement content, and general aggregate characteristics. Laboratory studies can also include

chemical analyses to determine chloride content, sulfate content, and alkali levels of the concrete; identification of deleterious aggregates; and determination of depth of carbonation. Compressive strength studies can be conducted to evaluate the strength of the existing concrete and provide information for repair work. The laboratory studies provide a general identification of the original concrete's components and aggregates, and evidence of damage due to various mechanisms including cyclic freezing and thawing, alkali-aggregate reactivity, or sulfate attack. Information gathered through laboratory studies can also be used to help develop a mix design for the repair concrete.

Cleaning

As with other historic structures, concrete structures are cleaned for several reasons: to improve the appearance of the concrete, as a cyclical maintenance measure, or in preparation for repairs. Consideration should first be given to whether the historic concrete structure needs to be cleaned at all. If cleaning is required, then the gentlest system that will be effective should be selected.

Three primary methods are used for cleaning concrete: water methods, abrasive surface treatments, and chemical surface treatments. Low-pressure water (less than 200 psi) or steam cleaning can effectively remove surface soiling from sound concrete; however, care is required on fragile or deteriorated surfaces. In addition, water and steam methods are typically not effective in removing staining or severe soiling. Power washing with high-pressure water is sometimes used to clean or remove coatings from sound, high-strength concrete, but high-pressure water washing is generally damaging to and not appropriate for concrete on historic structures.

When used with proper controls and at very low pressures (typically 35 to 75 psi), microabrasive surface treatments using very fine particulates, such as dolomitic limestone powder, can sometimes clean effectively. However, microabrasive cleaning may alter the texture and surface reflectivity of concrete. Some concrete can be damaged even by fine particulates applied at very low pressures.

Figure 16. Impact echo testing is performed on a concrete structural slab to help determine depth of deterioration. In this method, a short pulse of energy is introduced into the structure and a transducer mounted on the impacted surface of the structure receives the reflected input waves or echoes. These waves are analyzed to help identify flaws and deterioration within the concrete.

Chemical surface treatments can clean effectively but may also alter the appearance of the concrete by bleaching the concrete, removing the paste, etching the aggregate, or otherwise altering the surface. Detergent cleaners or mild, diluted acid cleaners may be appropriate for removal of staining or severe soiling. Cleaning products that contain strong acids such as hydrochloric (muriatic) or hydrofluoric acid, which will damage concrete and are harmful to persons, animals, site features, and the environment, should not be used.

For any cleaning process, trial samples should be performed prior to full-scale implementation. The intent of the cleaning program should not be to return the structure to a like new appearance. Concrete can age gracefully, and as long as soiling is not severe or deleterious, many structures can still be appreciated without extensive cleaning.

Methods of Maintenance and Repair

The maintenance of historic concrete often is thought of in terms of appropriate cleaning to remove unattractive dirt or soiling materials. However, the implementation of an overall maintenance plan for a historic structure is the most effective way to help protect historic concrete. For examples, the lack of maintenance to roofs and drainage systems can promote water related damage to adjacent concrete features. The repeated use of deicing salts in winter climates can pit the surface of old concrete and also may promote decay in embedded steel reinforcements. Inadequate protection of concrete walls adjacent to driveways and parking areas can result in the need for repair work later on.

The maintenance of historic concrete involves the regular inspection of concrete to establish baseline conditions and identify needed repairs. Inspection tasks involve monitoring protection systems, including sealant joints, expansion joints, and protective coatings; reviewing existing conditions for development of distress such as cracking and delaminations; documenting conditions observed; and developing and implementing a cyclical repair program.

Sealants are an important part of maintenance of historic concrete structures. Elastomeric sealants, which have replaced traditional oil-resin based caulks for many applications, are used to seal cracks and joints to keep out moisture and reduce air infiltration. Sealants are commonly used at windows and door perimeters, at interfaces between concrete and other materials, and at attachments to or through walls or roofs, such as with lamps, signs, or exterior plumbing fixtures.

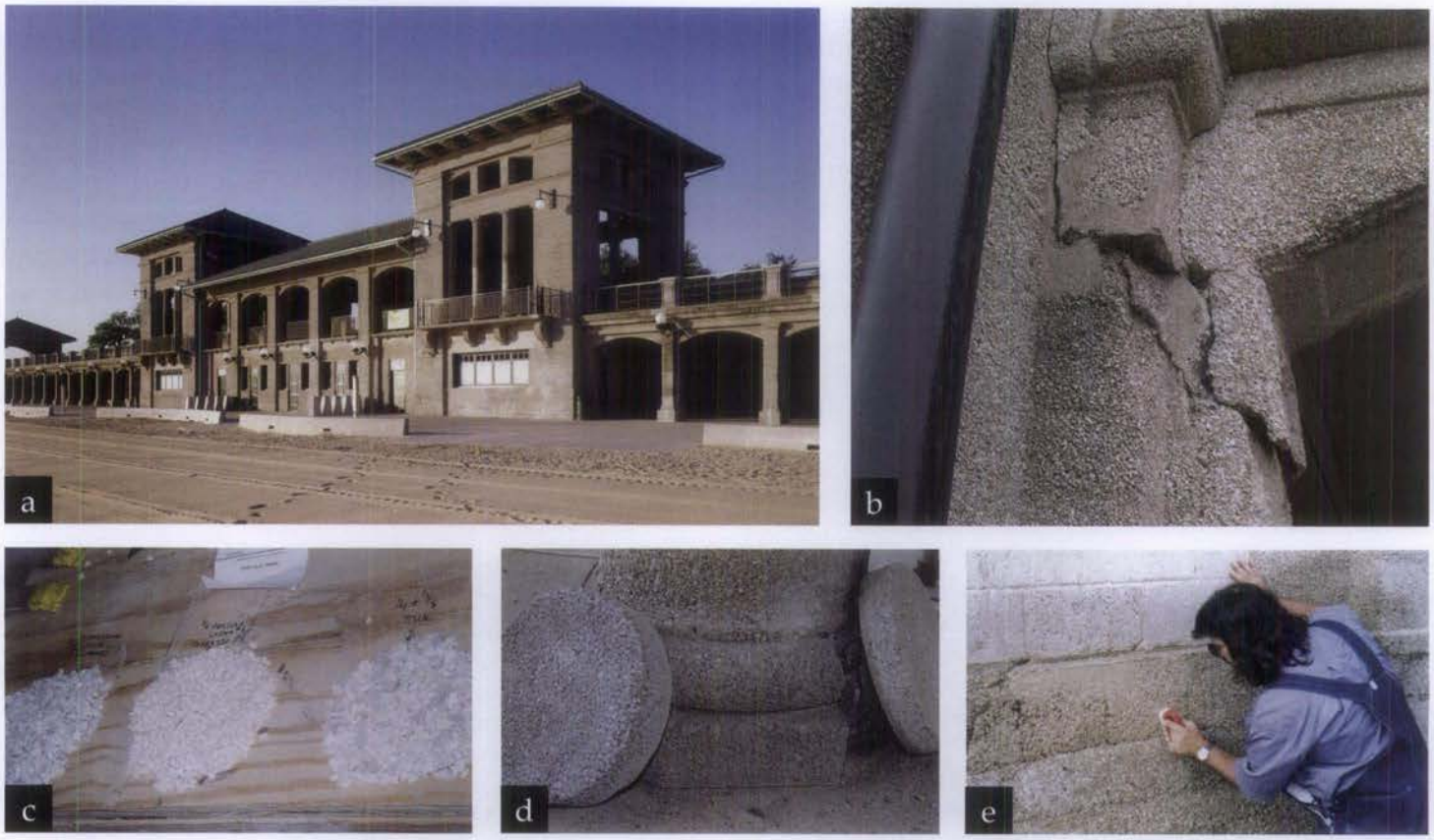


Figure 17. (a) The 63rd Street Beach House was constructed on the shoreline of Chicago in 1919. The highly exposed aggregate concrete of the exterior walls of the beach house was used for many buildings in the Chicago parks as an alternative to more expensive stone construction. Photo: Leslie Schwartz Photography. (b) Concrete deterioration included cracking, spalling, and delamination caused by corrosion of embedded reinforcing steel and concrete damage due to cyclic freezing and thawing. (c) Various sizes and types of aggregates were reviewed for matching to the original concrete materials. (d) Mock-ups of the concrete repair mix were prepared for comparison to the original concrete. Considerations included aggregate type and size, cement color, proportions, aggregate exposure, and surface finish. (e) The craftsman finished the surface to replicate the original appearance in a mock-up on the structure. Here, he used a nylon bristle brush to remove loose paste and expose the aggregate, creating a variable surface to match the adjacent original concrete.

Where used for crack repairs on historic facades, the finished appearance of the sealant application must be considered, as it may be visually intrusive. In some cases, sand can be broadcast onto the surface of the sealant to help conceal the repair.

Urethane and polyurethane sealants are often used to seal joints and cracks in concrete structures, paving, and walkways; these sealants provide a service life of up to ten years. High-performance silicone sealants also are often used with concrete, as they provide a range of movement capabilities and a service life of twenty years or more. Some silicone sealants may stain adjacent materials, which may be a problem with more porous concrete, and may also tend to accumulate dust and dirt. The effectiveness of sealants for sealing joints and cracks depends on numerous factors including proper surface preparation and application. Sealants should be examined as part of routine maintenance inspections, as these materials deteriorate faster than their substrates and must be replaced periodically as a part of cyclical maintenance.

Repair of historic concrete may be required to address deterioration because the original design and construction did not provide for long-term durability, or to facilitate a change in use of the structure. Examples include increasing concrete cover to protect reinforcing steel and reducing water infiltration into the structure by repair of joints. Any such improvements must be thoroughly evaluated for compatibility with the original design and appearance. Care is required in all aspects of historic concrete repair, including surface preparation; installation of formwork; development of the concrete mix design; and concrete placement, consolidation, and curing.

An appropriate repair program addresses existing distress and reduces the rate of future deterioration, which in many cases involves moisture-related issues. The repair program should incorporate materials and methods that are sympathetic to the existing materials in character and appearance, and which provide good long-term performance. In addition, repair materials should age and weather similarly to the original materials. In order to best achieve these goals, concrete repair projects should be divided into three phases: development of trial repair procedures, trial repairs and evaluation, and production repair work.

For any concrete repair project, the process of investigation, laboratory analysis, trial samples, mock-ups, and full-scale repairs allows ongoing refinement of the repair work as well as implementation of quality-control measures. The trial repair process provides an opportunity for the owner, architect, engineer, and contractor to evaluate the concrete mix design and the installation and finishing techniques for the repairs from both technical and aesthetic standpoints. The final repair materials and procedures should match the original concrete in appearance while meeting the established criteria for durability. Information gathered through trial repairs and mock-ups is invaluable in refining the construction documents prior to the start of the overall repair project (Fig. 17).

Surface Preparation

In undertaking surface preparation for historic concrete repair, care must be taken to limit removal of existing material while still providing an appropriate substrate for repairs. This is particularly important where ornamentation and fine details are involved. Preparation for localized repairs usually begins with removal of the loose concrete to determine the general extent of the repair, followed by saw-cutting the perimeter of the repair area. The repair area should extend beyond the area of concrete deterioration to a sufficient extent to provide a sound substrate. When repairing concrete with an exposed aggregate or other special surface texture, a sawcut edge may be too visually evident. To hide the repair edge, techniques such as lightly hand-chipping the edge of the patch may be used to conceal the joint between the original concrete and the new repair material. The depth to which the concrete needs to be removed may be difficult to determine without invasive probing in the repair area. Removal of concrete should typically extend beyond the level of the reinforcing steel, if present, so that the patch encapsulates the reinforcing steel, which provides mechanical attachment for the repair.

If the concrete was originally of lower strength and quality, the assessment of present soundness is more difficult. Deteriorated and unsound concrete is typically removed using pneumatic chipping hammers. Removal of concrete in historic structures is better controlled by using smaller chipping hammers or hand tools. The area of the concrete to be repaired and the exposed reinforcing steel are then cleaned, usually by careful sandblast and air blast procedures applied only within the repair area. Adjacent original concrete surfaces should be protected during this work. In some cases, project constraints such as dust control may limit the ability to thoroughly clean the concrete and steel. For example, it may be necessary to use needle scaling (a small pneumatic impact device) and wire brushing instead of sandblasting.

Supplemental steel may be needed when existing reinforcing steel is severely deteriorated, or if reinforcing steel is not present in repair areas. Exposed existing reinforcing and other embedded steel elements can be cleaned, primed, and painted with a corrosion-inhibiting coating. The patching material should be reinforced and mechanically attached to the existing concrete. Reinforcement materials used in repairs most often include mild steel, epoxy-coated steel, or stainless steel, depending on existing conditions.

Formwork and Molds

Special formwork is needed to recreate ornamental concrete features—which may be complex, in high relief, or architecturally detailed—and to provide special surface finishes such as wood form board textures. Construction of the formwork itself requires particular skill and craftsmanship. Reusable forms can be used for concrete ornamentation that is repeated across a building facade, or precast concrete elements may be used to replace missing or unrepairable architectural features. Formwork for ornamental concrete is often created using a four-step process: a casting of the original concrete is taken; a plaster replica of the unit is prepared; a mold or form is made from the plaster replica; and a new concrete unit is cast. Custom formwork and molds are often the work of specialty companies, such as precasters and cast stone fabricators.

The process of forming architectural features or special surface textures is particularly challenging if early age stripping (removal of formwork early in the concrete curing process) is needed to perform surface treatment on the concrete. Timing for formwork removal is related to strength gain, which in turn is partly dependent on temperature and weather conditions. Early age removal of formwork in highly detailed concrete can lead to damage of the new concrete that has not yet gained sufficient strength through curing.

Selection of Repair Materials and Mix Design

Selection and design of proper repair materials is a critical component of the repair project. This process requires evaluation of the performance, characteristics, and limitations of the repair materials, and may involve laboratory testing of proposed materials and trial repairs. The materials should be selected to address the specific type of repair required and to be compatible with special characteristics of the original concrete. Some modern repair materials are designed to have a high compressive strength and to be impermeable. Even though inherently durable, these newer materials may not be appropriate for use in repairing a low strength historic concrete.

The concrete's durability, or resistance to deterioration, and the materials and methods selected for repair depend on its composition, design, and quality of workmanship. In most cases, a mix design for durable replacement concrete should use materials similar to those of the original concrete mix. Prepackaged materials are often not appropriate for repair of historic concrete. The concrete patching material can be air entrained or polymer-modified if subject to exterior exposure, and should incorporate an appropriate selection of aggregate and cement type, and proper water content and water

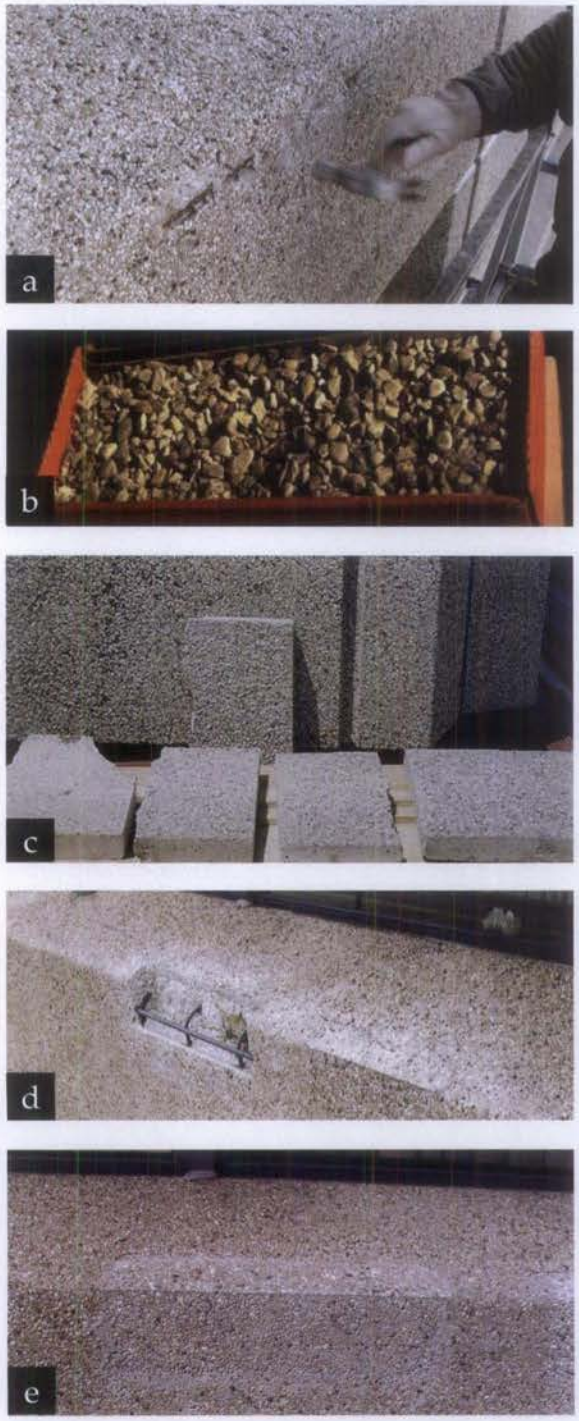


Figure 18. (a) Exposed aggregate precast concrete is sounded with a hammer to detect areas of deterioration. Corrosion of the exposed reinforcing steel bar has led to spalling of the adjacent concrete. (b) Samples of aggregate considered for use in repair concrete are compared to the original concrete materials in terms of size, color, texture, and reflectance. (c) Various sample panels are made using the selected concrete repair mix design for comparison to the original concrete on the building, and the mix design is adjusted based on review of the samples. (d) After removal of the spall, the concrete surface is prepared for installation of a formed patch. (e) Prior to placement of the concrete, a retarding agent is brush-applied to the inside face of the formwork to slow curing at the surface. After the concrete is partially cured, the forms are removed and the surface of the concrete is rubbed to remove some of the paste and expose the aggregate to match the original concrete.

to cement ratio. Some admixtures, including polymer modifiers, may change the appearance of the concrete mix. Design of the concrete patching material should address characteristics required for durability, workability, strength gain, compressive strength, and other performance attributes. During installation of the repair, skilled workmanship is required to ensure proper mixing procedures, placement, consolidation, and curing.

Matching and Repair Techniques for Historic Concrete

Repair measures should be selected that retain as much of the original material as possible, while providing for removal of an adequate amount of deteriorated concrete to provide a sound substrate for a durable repair. The installed repair must visually match the existing concrete as closely as possible and should be similar in other aspects such as compressive strength, permeability, and other characteristics important in the mix design of the concrete (Fig. 18).

Understanding the original construction techniques often provides opportunities in the design of repairs. For example, joints between the new and old concrete can be hidden in changes in surface profile and cold joints. The required patching mix for the concrete to be used in the repair will likely need to be specially designed to replicate the appearance of the adjacent historic concrete. A high level of craftsmanship is required for finishing of historic concrete, in particular to create the sometimes inconsistent finish and variation in the original concrete in contrast to the more even appearance required for most non-historic repairs.

To match the various characteristics of the original concrete, trial mixes should be developed. These mixes need to take into account the types and colors of aggregates and paste present in the original concrete. Different mixes may be needed because of variations in the appearance and composition of the historic concrete. The trials should utilize different forming and finishing techniques to achieve the best possible match to the original concrete. Initial trials should first take place on site but off the structure. The mix designs providing the best match are then installed as trial repairs on the structure, and assessed after they have cured.

Achieving compatibility between repair work and original concrete may be difficult, especially given the variability often present in historic concrete materials and finishes. Formed rather than trowel-applied patch repairs are recommended for durability, as forming permits better ranges of mix ingredients (such as coarse aggregates) and improved consolidation as compared to trowel-applied repairs. Parge coatings usually are not recommended as they do not provide as durable repair as formed concrete. However, in some cases parge coatings may be appropriate to match an original parged surface treatment. Proper placement and finishing of the repair are important to obtain a match with the original concrete. To minimize problems associated with rapid curing of concrete, such as surface cracking, it is important to use proper curing methods and to allow for sufficient time.

Hairline cracks that show no sign of increasing in size may often be left unrepaired. The width of the crack and the amount of movement usually limits the selection of crack repair techniques that are available. Although it is difficult to determine whether cracks are moving or non-moving, and therefore most cracks

should be assumed to be moving, it is possible to repair non-moving cracks by installation of a cementitious repair mortar matching the adjacent concrete. It is generally desirable not to widen cracks prior to the mortar application. Repair mortar containing sand in the mix may be used for wider cracks; unsanded repair mortar may be used for narrower cracks.

When it is desirable to re-establish the structural integrity of a concrete structure involving dormant cracks, epoxy injection repair has proven to be an effective procedure. Such a repair is made by first sealing the crack on both sides of a wall or structural member with epoxy, polyester, wax, tape, or cement slurry, and then injecting epoxy through small holes or ports drilled in the concrete. Once the epoxy in the crack has hardened, the surface sealing material may be removed; however, this type of repair is usually quite apparent. Although it may be possible to inject epoxy without leaving noticeable residue, this process is difficult and, in general, the use of epoxy repairs in visible areas of concrete on historic structures is not recommended.

Active structural cracks (which move as loads are added or removed) and thermal cracks (which move as temperatures fluctuate) must be repaired in a manner that will accommodate the anticipated movement. In some more extreme cases, expansion joints may have to be introduced before crack repairs are undertaken. Active cracks may be filled with sealants that will adhere to the sides of the cracks and will compress or expand during crack movement. The design, detailing, and execution of sealant repairs require considerable attention, or they will detract from the appearance of the historic building. The routing and cleaning of a crack, and installation of an elastomeric sealant to prevent water penetration, is used to address cracks where movement is anticipated. However, unless located in a concealed area of the concrete, this technique is often not acceptable for historic structures because the repair will be visually intrusive (Fig. 19). Other approaches, such as installation of a cementitious crack repair, may need to be considered even though this type of repair may be less effective or have a shorter service life than a sealant repair.

Replacement

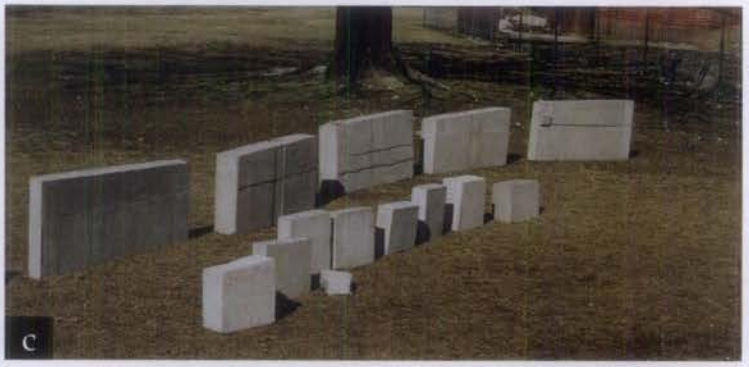
If specific components of historic concrete structures are beyond repair, replacement components can be cast to match historic ones. Replacement of original concrete should be carefully considered and viewed as a method of last resort. In some cases, such as for repeated ornamental units, it may be more cost-effective to fabricate precast concrete units to replace missing elements. The forms created for precast or cast-in-place units can then be used again during future repair projects.

Careful mix formulation, placement, and finishing are required to ensure that replacement concrete units will match the historic concrete. There is often a tendency to make replacement concrete more consistent in appearance than the original concrete. The consistency can be in stark contrast with the variability of the original concrete due to original construction techniques, architectural design, or differential exposure to weather. Trial repairs and mock-ups are used to evaluate the proposed replacement concrete work and to refine construction techniques (Fig 20).

Figure 19. A high-speed grinder ia used to widen a crack in preparation for installation of a sealant. This process is called "routing." After the crack is prepared, the sealant is installed to prevent moisture infiltration through the crack. Although sealant repairs can provide a durable, watertight repair for moving cracks, they tend to be very visible.

Protection Systems

Coatings and Penetrating Sealers. Protection systems such as a penetrating sealers or film forming coating are often used with non-historic structures to protect the concrete and increase the length of the service life of concrete repairs. However, film-forming coatings are often inappropriate for use on a historic structure, unless the structure was coated historically. Film-forming coatings will often change the color and appearance of a surface, and higher build coatings can also mask architectural finishes and ornamental details. For example, the application of a coating on concrete having a formboard finish may hide the wood texture of the surface. Pigmented film-forming coatings are also typically not appropriate for use over exposed aggregate concrete, where the uncoated exposed surface contributes significantly to the historic character of



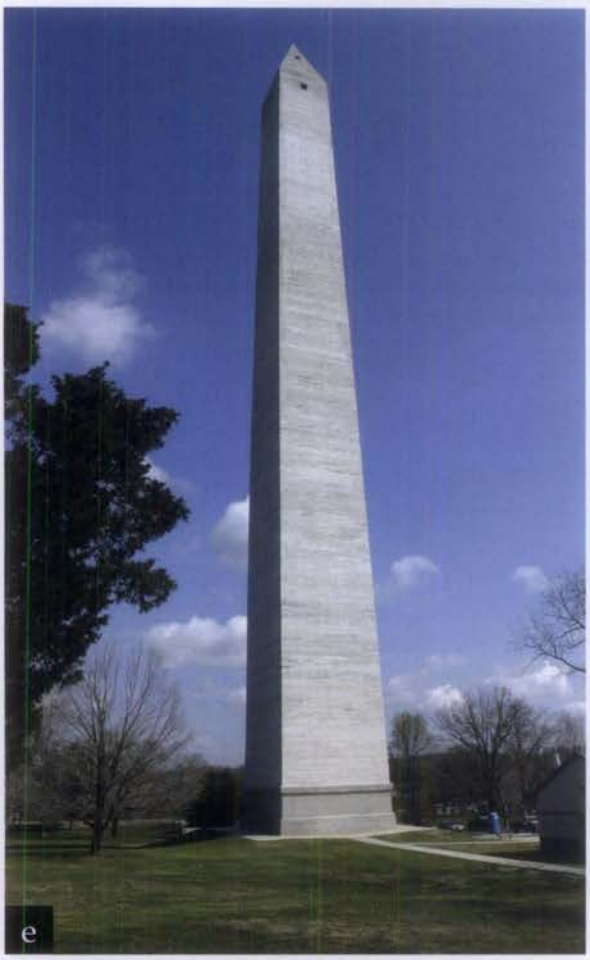


Figure 20. (a) The Jefferson Davis Memorial in Fairview, Kentucky, constructed from 1917–1924, is 351 feet tall and constructed of unreinforced concrete. The walls of the memorial are 8 feet thick at the base and 2 feet thick at the top of the wall. Access to the monument for investigation was provided by rappelling techniques, while ground supported and suspended scaffolding was used to access the exterior during repairs. (b) The concrete was severely deteriorated at isolated locations, with spalling and damage from cyclic freezing and thawing of entrapped water. In addition, previous repairs were at the end of their service life and removal of deteriorated concrete and failed previous repairs was required. Light duty chipping hammers were used to avoid damage to adjacent material when removing deteriorated concrete to the level of sound concrete. (c) Field samples were performed to match the color, finish, and texture of the original concrete. A challenge in matching of historic concrete is achieving variability of appearance. (d) The completed surface after repairs exhibits intentional variability of the concrete surface to match the appearance of the original concrete. Some formwork imperfections that would normally be removed by finishing were intentionally left in place, to replicate the highly variable finish of the original concrete. (e) The Jefferson Davis Memorial after completion of repairs in 2004. Photo e: Joseph Lenzi, Senler, Campbell & Associates, Inc.

concrete. In cases where the color of a substrate needs to be changed, such as to modify the appearance of existing repairs, an alternative to pigmented film-forming coatings is the use of pigmented stains.

Many proprietary clear, penetrating sealers are currently available to protect concrete substrates. These products render fine cracks and pores within the concrete hydrophobic; however, they do not bridge or fill cracks. Clear sealers may change the appearance of the concrete in that treated areas become more visible after rain in contrast to the more absorptive areas of original concrete. Once applied, penetrating sealers cannot be effectively removed and are therefore considered irreversible. They should not be used on historic concrete without thorough prior consideration. However, clear penetrating sealers provide an important means of protection for historic concrete that is not of good quality and can help to avoid more extensive future repairs or replacement. Thus they are sometimes appropriate for use on historic concrete. Once applied, these sealers will require periodic re-application.

Waterproofing membranes are systems used to protect concrete surfaces such as roofs, terraces, plazas, or balconies, as well as surfaces below grade. Systems range from coal tar pitch membranes used on older buildings, to asphalt or urethane-based systems. On historic buildings, membrane systems are typically used only on surfaces that were originally protected by a similar system and surfaces that are not visible from grade. Waterproofing membranes may be covered by roofing, paving, or other architectural finishes.

Laboratory and field testing is recommended prior to application of a protection system or treatment on any concrete structure; testing is even more critical for historic structures because many such treatments are not reversible. As with other repairs, trial samples are important to evaluate the effectiveness of the treatment and to determine whether it will harm the concrete or affect its appearance.

Cathodic Protection. Corrosion is an electrochemical process in which electrons flow between cathodic (positively charged) and anodic (negatively charged) areas on a metal surface; corrosion occurs at the anodes. Cathodic protection is a technique used to control the corrosion of metal by making the whole metal surface the cathode of an electrochemical cell. This technique is used to protect metal structures from corrosion and is also sometimes used to protect steel reinforcement embedded in concrete. For reinforced concrete, cathodic protection is typically accomplished by connecting an auxiliary anode to the reinforcing so that the entire reinforcing bar becomes a cathode. In sacrificial anode (passive) systems, current flows naturally by galvanic action between the less noble anode (such as zinc) and the cathode. In impressed-current (active) systems, current is impressed between an inert anode (such as titanium) and the cathode. Cathodic protection is intended to reduce the rate of corrosion of embedded steel in concrete, which in turn reduces overall deterioration. Protecting embedded steel from corrosion helps to prevent concrete cracking and spalling.

Impressed-current cathodic protection is the most effective means of mitigating steel corrosion and has been used in practical structural applications since the 1970s. However, impressed-current cathodic protection systems are typically the most costly to install and require substantial ongoing monitoring, adjustment, and maintenance to ensure a proper voltage output (protection current) over time. Sacrificial anode cathodic protection dates back to the 1800s, when the hulls of ships were protected using this technology. Today many industries utilize the concept of sacrificial anode cathodic protection for the protection of steel exposed to corrosive environments. It is less costly than an impressed-current system, but is somewhat less effective and requires reapplication of the anode when it becomes depleted.

Re-alkalization. Another technique currently available to protect concrete is realkalization, which is a process to restore the alkalinity of carbonated concrete. The treatment involves soaking the concrete with an alkaline solution, in some cases forcing it into the concrete to the level of the reinforcing steel by passage of direct current. These actions increase the alkalinity of the concrete around the reinforcement, thus restoring the protective alkaline environment for the reinforcement. Like impressed-current cathodic protection methods, it is costly. Other corrosion methods are also available but have a somewhat shorter history of use.

Careful evaluation of existing conditions, the causes and nature of distress, and environmental factors is essential before a protection method is selected and implemented. Not every protection system will be effective on each structure. In addition, the level of intrusion caused by the protection system must be carefully evaluated before it is used on a historic concrete structure.

Summary

In the United States, concrete has been a popular construction material since the late nineteenth century and recently has gained greater recognition as a historic material. Preservation of historic concrete requires a thorough understanding of the causes and types of deterioration, as well as of repair and replacement materials and methods. It is important that adequate time is allotted during the planning phase of a project to provide for trial repairs and mock-ups in order to evaluate the effectiveness and aesthetics of the repairs. Careful design is essential and, as with other preservation efforts, the skill of those performing the work is critical to the success of the repairs. The successful repair of many historic concrete structures in recent years demonstrates that the techniques and materials now available can extend the life of such structures and help ensure their preservation.

Selected Reading

American Concrete Institute. *Guide for Making a Condition Survey of Concrete in Service*. ACI Committee 201, ACI 201.1R-92.

American Concrete Institute. *Guide to Evaluation of Concrete Structures before Rehabilitation*. ACI Committee 364, ACI 364.1R-07.

American Concrete Institute. *Concrete Repair Guide*. ACI Committee 546, ACI 546R-04.

American Concrete Institute. *Guide for Evaluation of Existing Concrete Buildings*. ACI Committee 437, ACI 437R-03.

Childe, H.L. *Manufacture and Uses of Concrete Products and Cast Stone*. London: Concrete Publications Limited, 1930.

Collins, Peter. *Concrete: The Vision of a New Architecture*. New York, New York: Faber and Faber, 1959.

Cowden, Adrienne B., comp. *Historic Concrete: An Annotated Bibliography*. Washington, D.C.: National Park Service, 1993.

Komandant, August E. *Contemporary Concrete Structures*. New York, New York: McGraw Hill, 1972.

Erlemann, Gustav G. "Steel Reinforcing Bar Specification in Old Structures." *Concrete International*, April 1999, 49–50.

Federal Highway Administration. *Guide to Nondestructive Testing of Concrete*. FHWA Publication Number FHWA-SA-97-105.

Gaudette, Paul E. "Special Considerations in Repair of Historic Concrete." *Concrete Repair Bulletin*, January/February 2000, 12–13.

Jester, Thomas C., ed. *Twentieth Century Building Materials*. New York, New York: McGraw-Hill, 1995.

Johnson, Arne P., and Seung Kyoung Lee. "Protection Methods for Historic Concrete at Soldier Field." *Preserve and Play: Preserving Historic Recreation and Entertainment Sites*. Washington, D.C.: Historic Preservation Education Foundation, National Council for Preservation Education, and National Park Service, 2006.

Macdonald, Susan, ed. *Concrete: Building Pathology*. Osney Mead, Oxford, U.K.: Blackwell Science, 2003.

McGovern, Martin S. "A Clear View of Sealers." *Concrete Construction*, January 2000, 53–58.

Morton, W. Brown III, Gary L. Hume, Kay D. Weeks, H. Ward Jandl, and Anne E. Grimmer. *The Secretary of the Interior's Standards for Rehabilitation & Illustrated Guidelines for Rehabilitating Historic Buildings*. Washington, D.C.: National Park Service, 1983, reprinted 1997.

"Repairing Cracks." *Concrete Repair Digest*, August/September 1992, 160–164. Condensed from ACI document 224.1R-93.

Slaton, Deborah. "Cleaning Historic Concrete." *Concrete Repair Bulletin*, January/February 2000, 14–15.

Acknowledgements

Paul Gaudette is an engineer with Wiss, Janney, Elstner Associates, Inc., in Chicago, Illinois. Deborah Slaton is an architectural conservator with Wiss, Janney, Elstner Associates, Inc., in Northbrook, Illinois. All photographs by Paul Gaudette unless otherwise stated. Front cover image: Kyle Normandin, Wiss, Janney, Elstner Associates, Inc.

The authors wish to thank William Bing Coney, author of the first edition of this preservation brief, who served as a peer reviewer for the current edition. In addition, the authors gratefully acknowledge the assistance of the following individuals as peer reviewers of this brief: Arne Johnson and Una Gilmartin, Wiss, Janney, Elstner Associates, Inc.; Robert Joyce, Quality Restorations, Inc.; Susan Macdonald, New South Wales Heritage Office; Miles T. Murray, Restruction Corporation; and Jack Pyburn, OJP/Architect, Inc. Anne E. Grimmer, Chad Randl, and former staff Sharon C. Park, FAIA, of the Technical Preservation Services, National Park Service, offered valuable comments during development of the brief. Charles E. Fisher of the National Park Service was the technical editor for this publication project.

This publication has been prepared pursuant to the National Historic Preservation Act of 1966, as amended, which directs the Secretary of the Interior to develop and make available information concerning historic properties. Comments about this publication should be addressed to: Charles E. Fisher, Technical Preservation Publications Program Manager, Technical Preservation Services—2255, National Park Service, 1849 C Street, NW, Washington, DC 20240. This publication is not copyrighted and can be reproduced without penalty. Normal procedures for credit to the authors and the National Park Service should be provided. The photographs used in this publication may not be used to illustrate other publications without permission of the owners. For more information about the programs of the National Park Service's Technical Preservation Services see our website at http://www.nps.gov/history/hps/tps.htm

ISBN: 978-0-16-078946-5
U.S. Government Printing Office Stock Number: 024-005-01253-2 2007

Attachment D

Caltrans SER Exhibit 6.4: Historic Bridges and Tunnels No Adverse Effects with Standard Conditions

Exhibit 6.4: Historic Bridges and Tunnels No Adverse Effects with Standard Conditions

Table of Contents

Exhibit 6.4: Historic Bridges and Tunnels No Adverse Effects with Standard Conditions

A Finding of No Adverse Effect with Standard Conditions is appropriate when activities or undertakings that involve historic bridges and tunnels[1] are completed in a manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (SOIS) in accordance with the Stipulation X.1.b of the 2014 First Amended Section 106 Programmatic Agreement (106 PA[2]) or the 2015 Public Resources Code 5024 Memorandum of Understanding (5024 MOU[3]), as applicable. Such findings must be reviewed by a Caltrans Professionally Qualified Staff (PQS) Principal Architectural Historian[4].

A finding of No Adverse Effect with Standard Conditions through use of the SOIS (FNAE-SC-SOIS) is appropriate for the activities listed below. A SOIS Action Plan must be developed and approved by Caltrans PQS in order to identify who will monitor the work to ensure it meets the SOIS; see Exhibit 2.6.

The character-defining features (CDFs) of the historic bridge or tunnel need to be identified in order to assess whether/how they will be affected. If the project includes many of the activities listed below, is a full rehabilitation or involves complex bridges or tunnels, it may be necessary to rank the CDFs; see Exhibit 6.1. The ranking process identifies the CDFs that are most important to preserve, helps

---

[1] Historic bridges and tunnels are those that are listed on or eligible for listing on the National Register of Historic Places (National Register), or, for Caltrans-owned bridges and tunnels, those that are registered as or eligible for registration as California Historical Landmaks (CHLs). For purposes of CEQA this includes bridges and tunnels listed in the California Register of Historical Resources or that meet the California Register criteria, registered CHLs and locally designated bridges and tunnels. In the Caltrans Historic Bridge Inventory they are rated Category 1 or 2.

[2] First Amended Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act as it Pertains to the Administration of the Federal-Aid Highway Program in California, effective January 1, 2014.

[3] 2015 Memorandum of Understanding between the California Department of Transportation and the California State Historic Preservation Officer Regarding Compliance with Public Resources Code Section 5024 and Governor's Executive Order W-26-92, addended 2019.

[4] See Attachment 1 of the 106 PA or the 5024 MOU.

prioritize which CDFs to protect when considering project alternatives, and provides guidance in distinguishing between CDFs and historic fabric.

The District submits the FNAE-SC-SOIS to the Caltrans Division of Environmental Analysis (DEA) Cultural Studies Office (CSO) in Headquarters for review. Documented notification of the finding is provided concurrently to any consulting parties, as appropriate, as outlined in the Stipulation X.B.1 of the 106 PA or the 5024 MOU.

The list below is organized first by activities specific to bridges and tunnels, regardless of type or material, followed by activities involving specific materials and structure types. Definitions of certain terms are provided at the end of the document.

Activities and Undertakings that may be Findings of No Adverse Effect with Standard Conditions

Bridge Approach and Adjacent Roadway

- Refer to *Specific Activities by Material* (see below) for additional information.
- In-kind repair, replacement of contributing wingwalls, approach railings and spans.

Deck

- Refer to *Specific Activities by Material* (see below) for additional information.
- Application of waterproof sealant or overlay (e.g., polyester concrete overlay, methacrylate, silane, or polymer).
- Installation of cathodic protection.
- In-kind replacement of the deck.
- Installing skid resistant devices (such as anti-skid studs) to concrete or metal.
- Repair – patching, bonding, and filling voids in timer or metal decks (pot holes and cracks).

Abutments, Bents, Piles, and Piers

- Refer to *Specific Activities by Material* (see below) for additional information.
- In-kind replacement of bent, pile, pier, girder or column and associated bent cap.
- Repair of footing or implementation of measures to address settlement and scour, such as providing a pile, deadman, or shoring.
- Application of waterproof sealant or painting (refer to *Specific Activities by Structure Type or Materials* below for further guidance).
- In-kind patching, bonding, and filling voids in concrete caused by cracks, spalling, or deterioration.
- In-kind repair of steel or timber components.

Sidewalks, Curbs, and Gutters

- Refer to *Specific Activities by Material* (see below) for additional information.
- In-kind repair or replacement sidewalks, curbs, and gutters.

Railings

- Refer to *Specific Activities by Material* (see below) for additional information.

- In-kind repair or replacement of contributing railings.
- Replacement applying the California State Historical Building Code.
- On a case-by-case basis, installation of visually compatible **safety devices** (guardrails, barriers) between roadway and historic railings.

Drainage

- Refer to *Specific Activities by Material* (see below) for additional information.
- In-kind repair or in-kind replacement of drainage system including drains and conduit.

Expansion Joints

- None identified.

Other

- Refer to *Specific Activities by Material* (see below) for additional information.
- Testing or sampling of bridge components.
- In-kind repair or in-kind replacement of utility facilities.
- In-kind repair or in-kind replacement of safety walks and railing, exit stairs, and ladder structures.
- In-kind repair, in-kind replacement, or installation of visually compatible traffic control devices, such as markings (delineators, object markers, colored pavement, temporary barricades, channelizing devices, and island), signs, and traffic signals.
- In-kind repair, in-kind replacement, or installation of visually compatible signs, and safety devices (overhead and changeable message signs).

Specific Activities by Material

Concrete

- Cleaning with water or compressed air with non-destructive method following testing on small area. [5]

[5] Use the gentlest possible treatment that will be effective. Consider the existing condition, appearance, color, and texture of the concrete in determining the best cleaning method; the goal of cleaning is not to return the structure to a like-new appearance. Low-pressure water or compressed air can be effective in removing surface soil. Power washing with high-pressure water can be used to clean or remove coatings from high-strength concrete, but is generally not appropriate for concrete on historic structures. Water and compressed air are not typically effective in removing stains and residue. Detergent cleaners or mild, diluted acid cleaners may be

- In-kind repair (patching, bonding, and filling voids in concrete) after first testing the repair method on a small area to ensure compatible texture and color.
- Removing water stains or residues with non-destructive method following testing on small area.[4]
- Non-destructive graffiti removal.[4, 6]
- In-kind repair or in-kind replacement of anchor bolt.
- Application of sealant or coating to reduce water penetration.[6]
- Application of paint.[7]

Steel

- Repainting bridge with historically compatible color.
- Major or full replacement of deteriorated or missing bolts or rivets.[8]
- In-kind replacement of members (girders, beams, diagonals, and/or stringers).

---

appropriate in this case. Micro-abrasive and chemical surface treatments can be effective but may damage the concrete and alter its appearance, texture, and surface reflectivity. Perform trial samples or testing on small, inconspicuous areas prior to full-scale cleaning. Refer to National Parks Service (NPS) Preservation Brief 15: Preservation of Historic Concrete for further guidance on appropriate cleaning methods for concrete on historic structures.

[6] Sealants and coatings include clear penetrating sealers and clear or pigmented film-forming coatings to reduce water penetration into the substrate. The effects of most sealers and coatings are not reversible and may result in a change in the color, surface texture, surface reflectivity and finish of the original concrete. The effects of sealants and coatings may also reduce breathability overtime, trapping water in the substrate and resulting in damage. If the application of a sealant or coating is necessary, perform trial samples or testing on small, inconspicuous areas. Samples or tests should be reviewed by Caltrans PQS to confirm that the proposed measures are appropriate and consistent with the SOIS.

[7] Generally, concrete should not be painted; however, for graffiti removal it may be appropriate to apply paint in areas immediately adjacent to the roadway that are not subject to excessive moisture. NPS Preservation Brief 38: Removing Graffiti from Historic Masonry provides guidance for removing graffiti from stone, masonry, and concrete. Samples or tests should be reviewed by Caltrans PQS to confirm that the proposed measures are appropriate and comply with the Standards.

[8] Deteriorated bolts or rivets should be replaced in-kind when possible. Deteriorated or missing rivets can be replaced with bolts due to the savings in labor and cost. However, rivets have a distinctly different look than bolts and maintaining this appearance can be paramount to retaining the character-defining features of a bridge. As a result, round “button-head” bolts should be used to replicate the appearance of rivets when appropriate. Button-head ends should face the most visible direction. Locations on the structure with restricted access, including the gusset plate connections, may inhibit use of the tool that installs the specialized button head bolts; in these cases, the button-head bolts should be installed and tightened without the tool to avoid reverse installations that hide the button head. Shop rivets should be used for in-kind replacement members that are being fabricated off-site.

- In-kind replacement of floor beams and systems.
- Installation of braces to replace or strengthen connections.
- In-kind repair or in-kind replacement of rivet heads.

Timber

- Application of non-destructive wood preservatives, fire retardants, and protective finish treatments to existing components.[9]
- Non-destructive graffiti removal.[10]
- In-kind repair or in-kind replacement of deteriorated or damaged members (siding, pile, beam, girder, stringer), connections, and braces.

Masonry

- In-kind repair of decorative features.
- Re-pointing mortar joints to same depth, including the arch barrel.
- In-kind replacement of damaged or deteriorated brick or stone.
- Installation of tie rods.
- Removing water stains or residues with non-destructive method following testing on small area.[11]
- Filling of openings or cracks with grout.
- Non-destructive graffiti removal.[6, 12]
- Application of sealant or coating to reduce water penetration.[12]

---

[9] Work should follow FHWA's Covered Bridge Manual (Publication No. FHWA-HRT-04-098) and Guide for In-Place Treatment of Wood in Historic Covered and Modern Bridges.

[10] No specific guidance is developed for the proper removal of graffiti on historic timber. Protective Finish Treatments are generally addressed in Chapter 10, Issues Related to Wood, in FHWA's Covered Bridge Manual. Non-destructive measures to remove graffiti on historic timber bridges should be tested. Measures should consider the existing condition and appearance of the timber in determining the best removal method. Perform trial samples or testing on small, inconspicuous areas prior to full-scale removal. Samples or tests should be reviewed by Caltrans PQS to confirm that the proposed measures are appropriate and consistent with the SOIS.

[11] Use the gentlest possible treatment that will be effective. Consider the existing condition and appearance of the masonry and mortar in determining the best cleaning method. Perform trial samples or testing on small, inconspicuous areas prior to full-scale cleaning. Samples or tests should be reviewed by Caltrans PQS to confirm that the proposed measures are appropriate and consistent with the Standards. While not specific to historic bridges, NPS Preservation Brief 1: Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings provides further guidance on cleaning historic masonry structures.

[12] Sealants and coatings include clear penetrating sealers and clear or pigmented film-forming coatings to reduce water penetration into the substrate. The effects of most sealers and coatings are not reversible and may result in a change in the color, surface texture, surface reflectivity, and finish of the original masonry. The effects of sealants and coatings may also reduce breathability

- Application of paint.[13]

Specific Activities by Structure Type

Movable

- In-kind repair or in-kind replacement of interior cabinetry and instruments within interior of operational control room.
- In-kind repair or in-kind replacement of deteriorated or damaged mechanical equipment, brakes, cables, and electrical equipment.
- In-kind repair or in-kind replacement of lighting for navigational aids and roadway light fixtures.
- Installation of visually compatible navigational lighting aids and roadway light fixtures.

Tunnels

- Installation of visually compatible lighting, ventilation, mechanical, and communication systems.
- In-kind repair or in-kind replacement of existing safety walks, railings, exit stairs, and ladder structures.

Definitions and References

Approach Slab: Approach slabs provide a smooth transition between a pavement that is generally supported on a yielding medium (soil that is subject to consolidation and settlement) and a structure, which is supported on a relatively unyielding foundation (bridge). See Caltrans Highway Design Manual, Chapter 670 at for details.

Approach Span: The span or spans connecting the abutment with the main span or spans.

overtime, trapping water in the substrate and resulting in damage. If the application of a sealant or coating is necessary, perform trial samples or testing on small, inconspicuous areas. Samples or tests should be reviewed by Caltrans PQS to confirm that the proposed measures are appropriate and consistent with the SOIS.

[13] Generally, masonry should not be painted; however, to address ongoing problems areas that are repeated targets of graffiti, it may be appropriate to apply paint in areas immediately adjacent to the roadway. NPS Preservation Brief 38: Removing Graffiti from Historic Masonry provides guidance for removing graffiti from stone, masonry, and concrete. Samples or tests should be reviewed by Caltrans PQS to confirm that the proposed measures are appropriate and comply with the SOIS.

Beam: A horizontal structure member supporting vertical loads by resisting bending. A girder is a larger beam, especially when made of multiple plates. Deeper, longer members are created by using trusses.

Bent: Part of a bridge substructure comprised of a rigid frame commonly made of reinforced concrete or steel that supports a vertical load and is placed transverse to the length of a structure. Bents are commonly used to support beams and girders. Each vertical member of a bent may be called a column, pier, or pile. The bent stands on top of some type of foundation or footer that is usually hidden below grade. A bent commonly has at least two vertical supports. Another term used to describe a bent is capped pile pier. A support having a single column with bent cap is sometimes called a "hammerhead" pier.

Bent Cap: The horizontal member resting on top of the columns.

Bolt: A fastener fitted with threads and a nut to connect bridge components. Bolts can include “button head,” which describes the style of the bolt head, to replicate the appearance of rivets when appropriate.

Brace: A structural support or member to strengthen and stiffen a structure to resist loads.

Bridge Approach: The part of the bridge that may include portions adjacent roadway along with the approach slab and approach spans, that carries traffic from the land to the main parts of the bridge.

Cathodic Protection: A type of corrosion protection, including cathodic protection measures, are described in Caltrans’ Bridge Memo to Designers, 10-5, Protection of Reinforcement Against Corrosion Due to Chlorides, Acids Sulfates.

Column: Part of a bridge substructure comprised of a vertical, structural element, strong in compression. The column stands on top of some type of foundation or footer that is usually hidden below grade.

Conduit: Any pipe, arch, box, or drain tile through which water is conveyed.

Deadman: A buried object, serving as an anchor, such as cable guard rail guy anchors.

Deck: The roadway portion of a bridge including shoulders. Most bridge decks are constructed as reinforced concrete slabs, but timber decks are still seen in rural areas, and open-grid steel decks are used in some movable bridge designs.

Diagonal: A sloping structural member of a truss or bracing system.

Drainage: Features to remove runoff from the roadway and to convey surface and stream waters originating upstream of the highway to the downstream side. Drainage features are designed to accomplish these functions without causing objectionable backwater, excessive velocities, erosion, or unduly affecting traffic safety. See Chapter 800 in Caltrans Highway Design Manual for details.

Drainage System: A system of underground conduits and collector structures which flow to a single point of discharge.

Fire Protection: Installation of fire extinguishers in the operational control room and machinery room of movable bridges or a fire suppression system on a timber covered bridge. See Chapter H – Bridges in Caltrans Maintenance Manual, Volume 1 for details on fire protection on movable bridges. Fire suppression systems for covered timber bridges are addressed in Chapter 17 of FHWA's Covered Bridge Manual.

Floor Beam: Horizontal members that are placed transversely to the major beams, girders, or trusses; used to support the deck.

Footing: The enlarged lower portion of the substructure or foundation that rests directly on the soil, bedrock, or piles; usually below grade and not visible.

Girder: A horizontal structure member supporting vertical loads by resisting bending. A girder is a larger beam, especially when made of multiple metal plates. The plates are usually riveted or welded together.

Graffiti: Caltrans graffiti removal guidance is addressed in Maintenance Manual Volume 1, Chapter D1 - Litter, Debris, and Graffiti and in California Department of Transportation, DD-39-R1, Deputy Directive for Graffiti Prevention and Removal.

In-kind Repair: See definition and guidance below.

In-kind Replacement: See definition and guidance below.

Load: Weight distribution throughout a structure.

Patching, Bonding, and Filling Voids in Concrete: Repair materials and procedures are addressed in Chapter H – Bridges in Caltrans Maintenance Manual, Volume 1, Section H.08.1.

Pavement Delineation, Signs, and Safety Devices:This may include raised pavement markers, guardrails, permanent signs, and barriers, but only on the traveled way, shoulders, ramps, and auxiliary lanes. This does not include markings or delineation of legends or parking stalls, markings at roadside rest areas, weigh stations, or other public service locations. See Chapter M, Pavement Delineation, Signs, and Safety Devices in Caltrans Maintenance Manual, Volume 1 for details.

Pier: A vertical structure that supports the ends of a multi-span superstructure at a location between abutments. Also see Column and Pile.

Pile: A long column driven deep into the ground to form part of a foundation or substructure. Also see Column and Pier.

Pot Hole: A pit or hole extending into the wearing surface.

Rivet: A metal fastener used in pre-1970 construction; made with a rounded preformed head at one end and installed hot into a predrilled or punched hole; the other end was hammered into a similar shaped head thereby clamping the adjoining parts together.

Scour: Erosion

Shoring: Shoring is generally considered temporary work to provide earth retaining structures or systems. See Caltrans Technical Manual, Trenching and Shoring Manual 2011 at for details.

Spalling: Chipping along the edges, as at joints in concrete pavements and structures.

Stiffener: On plate girders, structural steel shapes, such as an angle, are attached to the web to add intermediate strength.

Stringer: A beam aligned with the length of a span that supports the deck.

Traffic Control Devices: Markings include pavement and curb markings, object markers, delineators, colored pavements, barricades, channelizing devices, and islands used to convey regulations, guidance, or warning to road users. Signs include traffic control devices intended to communicate specific information to road users through a word or symbol. Traffic signals include power-operated control devices by which traffic is warned or directed to take a specific action. See Caltrans Highway Design Manual, Chapter 60, Topic 62 – Definitions, 62.8 Traffic (13), at for details.

Utility Facilities: Pipeline and electrical and communication conduits, which are further described in Caltrans Memo to Designers, 18-2, and Caltrans Memo to Designers, 18-2, Attachment.

Wood Preservatives, Fire Retardants, and Protective Finish Treatments: Issues to consider related to protective treatments are discussed in Chapter 10 of FHWA's Covered Bridge Manual.

In-Kind Repair and In-Kind Replacement Definition and Guidance[14]

Repair

Repair of historic materials begins with the least degree of intervention possible, such as patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading them according to recognized preservation methods.

Repair may include the limited replacement in kind, or with compatible substitute materials, of extensively deteriorated or missing parts of features when there are surviving prototypes. Although using the same kind of material is always the preferred option, substitute material is acceptable if the form and design as well as the substitute material itself convey the visual appearance of the remaining parts of the feature and finish.

Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a character-defining feature, the new feature will match the old in design, color, texture, and where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.[15]

Replacement

Following repair in the hierarchy is replacement of an entire feature with new material because the level of deterioration or damage of materials precludes repair. If the essential form and detailing are still evident so that the physical evidence can be used to re-establish the feature as an integral part of the rehabilitation project, then its replacement is appropriate.

The preferred option is always replacement of the feature in-kind (with the same material). Because this approach may not always be technically or economically feasible, provisions are made to consider the use of a compatible substitute material. In the event that replacement is necessary, the new material should match the material being replaced in composition, design, color, texture, and other visual properties. Substitute materials should be used only on a limited basis and only

[14] Adapted from information provided by the California Office of Historic Preservation, Incentives and Architectural Review Unit, based on the Secretary of the Interior's Standards for the Treatment of Historic Properties.

[15] Secretary of the Interior's Standards for the Treatment of Historic Properties, Standard No. 6

when they will match the appearance and general properties of the historic material and will not damage the historic structure.

When deteriorated, damaged, or lost features of a historic structure need repair or replacement, it is almost always best to use historic materials. Great care must be taken if substitute materials are used on the exteriors of historic structures. Light, moisture, and temperature changes can greatly impair the performance of substitute materials over time. Only after consideration of all options, in consultation with qualified professionals[16] and development of carefully written specifications should this work be undertaken.

Substitute materials

Because the overzealous use of substitute materials can greatly impair the historic character of a historic structure, all preservation options should be explored before substitute materials are used. It is important to remember that the purpose of repairing damaged features and of replacing lost and irreparably damaged ones is both to match visually what was there and to cause no further deterioration. For these reasons it is not appropriate to cover up historic materials with synthetic materials that will alter the appearance, proportions and details of a historic structure and that will conceal future deterioration. In general, four circumstances warrant the consideration of substitute materials:

1) Unavailability of historic materials
2) Unavailability of skilled craftsmen
3) Inherent flaws in the original materials
4) Code required changes

In order to provide an appearance that is compatible with the historic materials, the new material should match the details and craftsmanship of the original as well as the color, surface texture, surface reflectivity and finish of the original material. The closer an element is to the view, the more closely the material and craftsmenship must match the orginal.[17]

[16] Caltrans Professionally Qualified Staff at the Principal Architectural Historian level, experienced fabricators and contractors

[17] NPS Technical Preservation Services "Preservation Brief 16: The Use of Substitute Materials on Historic Building Exteriors."