

City of San Diego

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BIDDING DOCUMENTS



FOR

SCRIPPS MIRAMAR RANCH LIBRARY PARKING EXPANSION

BID NO.: K-23-2061-DBB-3
SAP NO. (WBS/IO/CC): S-00811
CLIENT DEPARTMENT: 1713
COUNCIL DISTRICT: 5
PROJECT TYPE: BD

THIS CONTRACT WILL BE SUBJECT TO THE FOLLOWING:

- THE CITY'S SUBCONTRACTING PARTICIPATION REQUIREMENTS FOR SLBE PROGRAM
- PREVAILING WAGE RATES: STATE FEDERAL
- APPRENTICESHIP

BID DUE DATE:

2:00 PM

March 15, 2023

CITY OF SAN DIEGO'S ELECTRONIC BIDDING SITE, PLANETBIDS

<http://www.sandiego.gov/cip/bidopps/index.shtml>

ENGINEER OF WORK

The engineering Specifications and Special Provisions contained herein have been prepared by or under the direction of the following Registered Engineer:

Don Bloodworth
1) Registered Engineer

12/19/2022
Date

Seal:



Edgar Lozano
2) For City Engineer

12/19/2022
Date

Seal:



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REQUIRED DOCUMENTS SCHEDULE DURING BIDDING AND AWARDING

The Bidder's attention is directed to the City's Municipal Code §22.0807(e), (3)-(5) for important information regarding grounds for debarment for failure to submit required documentation.

The specified Equal Opportunity Contracting Program (EOCP) forms are available for download from the City's web site at:

<http://www.sandiego.gov/eoc/forms/index.shtml>

ITEM	DOCUMENT TO BE SUBMITTED	WHEN DUE	FROM
1.	Bid Bond (PDF via PlanetBids)	At Time of Bid	ALL BIDDERS
2.	Contractors Certification of Pending Actions	At Time of Bid	ALL BIDDERS
3.	Mandatory Disclosure of Business Interests	At Time of Bid	ALL BIDDERS
4.	Debarment and Suspension Certification for Prime Contractors	At Time of Bid	ALL BIDDERS
5.	Debarment and Suspension Certification for Subcontractors, Suppliers & Mfgs	At Time of Bid	ALL BIDDERS
6.	Bid Bond (Original)	By 5PM 1 working days after bid opening	ALL BIDDERS
7.	SLBE Good Faith Effort Documentation	By 5 PM 3 working days after bid opening	ALL BIDDERS
8.	Form AA60 – List of Work Made Available	By 5 PM 3 working days after bid opening with Good Faith Effort (GFE) documentation	ALL BIDDERS
9.	If the Contractor is a Joint Venture: <ul style="list-style-type: none"> • Joint Venture Agreement • Joint Venture License 	Within 10 working days of receipt by bidder of contract forms	AWARDED BIDDER
10.	Payment & Performance Bond; Certificates of Insurance & Endorsements; and Signed Contract Agreement Page	Within 10 working days of receipt by bidder of contract forms and NOI	AWARDED BIDDER
11.	Listing of "Other Than First Tier" Subcontractors	Within 10 working days of receipt by bidder of contract forms	AWARDED BIDDER

NOTICE INVITING BIDS

1. **SUMMARY OF WORK:** This is the City of San Diego's (City) solicitation process to acquire Construction services for **Scripps Miramar Ranch Library Parking Expansion**. For additional information refer to Attachment A.
 2. **FULL AND OPEN COMPETITION:** This solicitation is subject to full and open competition and may be bid by Contractors on the City's approved Prequalified Contractors List. For information regarding the Contractors Prequalified list visit the City's web site: <http://www.sandiego.gov>.
 3. **ESTIMATED CONSTRUCTION COST:** The City's estimated construction cost for this project is **\$3,810,000**.
 4. **BID DUE DATE AND TIME ARE: JANUARY 31, 2023 at 2:00 PM.**
 5. **PREVAILING WAGE RATES APPLY TO THIS CONTRACT:** Refer to Attachment D.
 6. **LICENSE REQUIREMENT:** To be eligible for award of this contract, Prime contractor must possess the following licensing classification: **A**
 7. **SUBCONTRACTING PARTICIPATION PERCENTAGES:** Subcontracting participation percentages apply to this contract.
 - 7.1. The City has incorporated **mandatory** SLBE-ELBE subcontractor participation percentages to enhance competition and maximize subcontracting opportunities. For the purpose of achieving the mandatory subcontractor participation percentages, a recommended breakdown of the SLBE and ELBE subcontractor participation percentages based upon certified SLBE and ELBE firms has also been provided to achieve the mandatory subcontractor participation percentages:

1. SLBE participation	8.7%
2. ELBE participation	11.5%
3. Total mandatory participation	20.2%
 - 7.2. The Bid may be declared non-responsive if the Bidder fails to meet the following requirements:
 - 7.2.1. Include SLBE-ELBE certified subcontractors at the overall mandatory participation percentage identified in this document; OR
 - 7.2.2. Submit Good Faith Effort (GFE) documentation, saved in searchable Portable Document Format (PDF), demonstrating the Bidder made a good faith effort to conduct outreach to and include SLBE-ELBE Subcontractors as required in this solicitation by 5 PM 3 Working Days after the Bid opening if the overall mandatory participation percentage is not met.
- All submittals in searchable PDF shall be submitted electronically within the prescribed time identified in the contract documents via PlanetBids by invitation to the point of contact named in the bid provided by the Contract Specialist to all bidders.**

8. AWARD PROCESS:

- 8.1.** The Award of this contract is contingent upon the Contractor's compliance with all conditions of Award as stated within these documents and within the Notice of Intent to Award.
- 8.2.** Upon acceptance of bids and determination of the apparent low bidder, the City will prepare the contract documents for execution within approximately 21 days of the date of the bid opening. The City will then award the contract upon receipt of properly signed Contract, bonds, and insurance documents.
- 8.3.** This contract will be deemed executed and effective only upon the signing of the Contract by the Mayor or his designee and approval as to form by the City Attorney's Office.
- 8.4.** The low Bid will be determined by the Base Bid.
- 8.5.** Once the low bid has been determined, the City may, at its sole discretion, award the contract for the Base bid alone.

9. SUBMISSION OF QUESTIONS:

- 9.1.** The Director (or Designee) of the Purchasing & Contracting Department is the officer responsible for opening, examining, and evaluating the competitive Bids submitted to the City for the acquisition, construction and completion of any public improvement except when otherwise set forth in these documents. Any questions related to this solicitation shall be submitted to:

RMcMinn@sandiego.gov
- 9.2.** Questions received less than 14 days prior to the date for opening of Bids may not be considered.
- 9.3.** Questions or clarifications deemed by the City to be material shall be answered via issuance of an addendum and posted to the City's online bidding service.
- 9.4.** Only questions answered by formal written addenda shall be binding. Oral and other interpretations or clarifications shall be without legal effect. It is the Bidder's responsibility to be informed of any addenda that have been issued and to include all such information in its Bid.

INSTRUCTIONS TO BIDDERS

1. PREQUALIFICATION OF CONTRACTORS:

- 1.1. Contractors submitting a Bid must be pre-qualified for the total amount proposed, including all alternate items, prior to the date of submittal. Bids from contractors who have not been pre-qualified as applicable and Bids that exceed the maximum dollar amount at which contractors are pre-qualified may be deemed **non-responsive** and ineligible for award.
- 1.2. The completed application must be submitted online no later than 2 weeks prior to the bid opening.
- 1.3. **Joint Venture Bidders Cumulative Maximum Bidding Capacity:** For projects with an engineer's estimate of \$30,000,000 or greater, Joint Ventures submitting bids may be deemed responsive and eligible for award if the cumulative maximum bidding capacity of the individual Joint Venture entities is equal to or greater than the total amount proposed.
 - 1.3.1. Each of the entities of the Joint Venture must have been previously prequalified at a minimum of \$15,000,000.
 - 1.3.2. Bids submitted with a total amount proposed of less than \$30,000,000 are not eligible for Cumulative Maximum Bidding Capacity prequalification. To be eligible for award in this scenario, the Joint Venture itself or at least one of the Joint Venture entities must have been prequalified for the total amount proposed.
 - 1.3.3. Bids submitted by Joint Ventures with a total amount proposed of \$30,000,000 or greater on a project with an engineer's estimate of less than \$30,000,000 are not eligible for Cumulative Maximum Bidding Capacity prequalification.
 - 1.3.4. The Joint Venture designated as the Apparent Low Bidder shall provide evidence of its corporate existence and furnish good and approved bonds in the name of the Joint Venture within 14 Calendar Days of receipt by the Bidder of a form of contract for execution.
- 1.4. Complete information and links to the on-line prequalification application are available at:

<http://www.sandiego.gov/cip/bidopps/prequalification>
- 1.5. Due to the City's responsibility to protect the confidentiality of the contractors' information, City staff will not be able to provide information regarding contractors' prequalification status over the telephone. Contractors may access real-time information about their prequalification status via their vendor profile on [PlanetBids™](#).

2. **ELECTRONIC FORMAT RECEIPT AND OPENING OF BIDS:** Bids will be received in electronic format (eBids) EXCLUSIVELY at the City of San Diego's electronic bidding (eBidding) site, at: <http://www.sandiego.gov/cip/bidopps/index.shtml> and are due by the date, and time shown on the cover of this solicitation.
- 2.1. **BIDDERS MUST BE PRE-REGISTERED** with the City's bidding system and possess a system-assigned Digital ID in order to submit an electronic bid.
- 2.2. The City's bidding system will automatically track information submitted to the site including IP addresses, browsers being used and the URLs from which information was submitted. In addition, the City's bidding system will keep a history of every login instance including the time of login, and other information about the user's computer configuration such as the operating system, browser type, version, and more. Because of these security features, Contractors who disable their browsers' cookies will not be able to log in and use the City's bidding system.
- 2.3. The City's electronic bidding system is responsible for bid tabulations. Upon the bidder's or proposer's entry of their bid, the system will ensure that all required fields are entered. **The system will not accept a bid for which any required information is missing.** This includes all necessary pricing, subcontractor listing(s) and any other essential documentation and supporting materials and forms requested or contained in these solicitation documents.
- 2.4. **BIDS REMAIN SEALED UNTIL BID DEADLINE.** eBids are transmitted into the City's bidding system via hypertext transfer protocol secure (https) mechanism using SSL 128-256 bit security certificates issued from Verisign/Thawte which encrypts data being transferred from client to server. Bids submitted prior to the "Bid Due Date and Time" are not available for review by anyone other than the submitter who has until the "Bid Due Date and Time" to change, rescind or retrieve its proposal should it desire to do so.
- 2.5. **BIDS MUST BE SUBMITTED BY BID DUE DATE AND TIME.** Once the bid deadline is reached, no further submissions are accepted into the system. Once the Bid Due Date and Time has lapsed, bidders, proposers, the general public, and City staff are able to immediately see the results on line. City staff may then begin reviewing the submissions for responsiveness, EOCB compliance and other issues. The City may require any Bidder to furnish statement of experience, financial responsibility, technical ability, equipment, and references.
- 2.6. **RECAPITULATION OF THE WORK.** Bids shall not contain any recapitulation of the Work. Conditional Bids may be rejected as being non-responsive. Alternative proposals will not be considered unless called for.

2.7. BIDS MAY BE WITHDRAWN by the Bidder only up to the bid due date and time.

2.7.1. Important Note: Submission of the electronic bid into the system may not be instantaneous. Due to the speed and capabilities of the user's internet service provider (ISP), bandwidth, computer hardware and other variables, it may take time for the bidder's submission to upload and be received by the City's eBidding system. It is the bidder's sole responsibility to ensure their bids are received on time by the City's eBidding system. The City of San Diego is not responsible for bids that do not arrive by the required date and time.

2.8. ACCESSIBILITY AND AMERICANS WITH DISABILITIES ACT (ADA) COMPLIANCE: To request a copy of this solicitation in an alternative format, contact the Purchasing & Contracting Department, Public Works Division Contract Specialist listed on the cover of this solicitation at least five (5) working days prior to the Bid/Proposal due date to ensure availability.

3. ELECTRONIC BID SUBMISSIONS CARRY FULL FORCE AND EFFECT:

3.1. The bidder, by submitting its electronic bid, acknowledges that doing so carries the same force and full legal effect as a paper submission with a longhand (wet) signature.

3.2. By submitting an electronic bid, the bidder certifies that the bidder has thoroughly examined and understands the entire Contract Documents (which consist of the plans and specifications, drawings, forms, affidavits and the solicitation documents), and that by submitting the eBid as its bid proposal, the bidder acknowledges, agrees to and is bound by the entire Contract Documents, including any addenda issued thereto, and incorporated by reference in the Contract Documents.

3.3. The Bidder, by submitting its electronic bid, agrees to and certifies under penalty of perjury under the laws of the State of California, that the certification, forms and affidavits submitted as part of this bid are true and correct.

3.4. The Bidder agrees to the construction of the project as described in Attachment "A-Scope of Work" for the City of San Diego, in accordance with the requirements set forth herein for the electronically submitted prices. The Bidder guarantees the Contract Price for a period of 120 days from the date of Bid opening. The duration of the Contract Price guarantee shall be extended by the number of days required for the City to obtain all items necessary to fulfill all conditions precedent.

4. BIDS ARE PUBLIC RECORDS: Upon receipt by the City, Bids shall become public records subject to public disclosure. It is the responsibility of the respondent to clearly identify any confidential, proprietary, trade secret or otherwise legally privileged information contained within the Bid. General references to sections of the California Public Records Act (PRA) will not suffice. If the Contractor does not provide applicable case law that clearly establishes that the requested information is exempt from the disclosure requirements of the PRA, the City

shall be free to release the information when required in accordance with the PRA, pursuant to any other applicable law, or by order of any court or government agency, and the Contractor will hold the City harmless for release of this information.

5. CONTRACTOR REGISTRATION AND ELECTRONIC REPORTING SYSTEM:

5.1. **Prior** to the Award of the Contract or Task Order, you and your Subcontractors and Suppliers must register with the City’s web-based vendor registration and bid management system. For additional information go to:

<http://www.sandiego.gov/purchasing/bids-contracts/vendorreg>

5.2. The City may not award the contract until registration of all subcontractors and suppliers is complete. In the event this requirement is not met within the time frame specified in the Notice of Intent to Award letter, the City reserves the right to rescind the Notice of Award / Intent to Award and to make the award to the next responsive and responsible bidder / proposer.

6. JOINT VENTURE CONTRACTORS: Provide a copy of the Joint Venture agreement and the Joint Venture license to the City within 14 Calendar Days after receiving the Contract forms.

7. INSURANCE REQUIREMENTS:

7.1. All certificates of insurance and endorsements required by the contract are to be provided upon issuance of the City’s Notice of Intent to Award letter.

7.2. Refer to sections 5-4, “INSURANCE” of the Supplementary Special Provisions (SSP) for the insurance requirements which must be met.

8. REFERENCE STANDARDS: Except as otherwise noted or specified, the Work shall be completed in accordance with the following standards:

Title	Edition	Document Number
Standard Specifications for Public Works Construction (“The GREENBOOK”) http://www.greenbookspecs.org/	2021	ECPI010122-01
City of San Diego Standard Specifications for Public Works Construction (“The WHITEBOOK”)* https://www.sandiego.gov/ecp/edocref/greenbook	2021	ECPI010122-02
City of San Diego Standard Drawings* https://www.sandiego.gov/ecp/edocref/standarddraw	2021	ECPI010122-03
Citywide Computer Aided Design and Drafting (CADD) Standards https://www.sandiego.gov/ecp/edocref/drawings	2018	PWPI010119-04
California Department of Transportation (CALTRANS) Standard Specifications https://dot.ca.gov/programs/design/ccs-standard-plans-and-standard-specifications	2018	PWPI030119-05

Title	Edition	Document Number
CALTRANS Standard Plans https://dot.ca.gov/programs/design/ccs-standard-plans-and-standard-specifications	2018	PWPI030119-06
California Manual on Uniform Traffic Control Devices Revision 6 (CA MUTCD Rev 6) https://dot.ca.gov/programs/safety-programs/camutcd/camutcd-files	2014	PWPI060121-10
<p>NOTE: *Available online under Engineering Documents and References at: https://www.sandiego.gov/ecp/edocref/</p> <p>*Electronic updates to the Standard Drawings may also be found in the link above</p>		

9. **CITY'S RESPONSES AND ADDENDA:** The City, at its discretion, may respond to any or all questions submitted in writing via the City's eBidding web site in the **form of an addendum**. No other responses to questions, oral or written shall be of any force or effect with respect to this solicitation. The changes to the Contract Documents through addenda are made effective as though originally issued with the Bid. The Bidders shall acknowledge the receipt of Addenda at the time of bid submission.
10. **CITY'S RIGHTS RESERVED:** The City reserves the right to cancel the Notice Inviting Bids at any time, and further reserves the right to reject submitted Bids, without giving any reason for such action, at its sole discretion and without liability. Costs incurred by the Bidder(s) as a result of preparing Bids under the Notice Inviting Bids shall be the sole responsibility of each bidder. The Notice Inviting Bids creates or imposes no obligation upon the City to enter a contract.
11. **CONTRACT PRICING:** This solicitation is for a Lump Sum contract with Unit Price provisions as set forth herein. The Bidder agrees to perform construction services for the City of San Diego in accordance with these contract documents for the prices listed below. The Bidder further agrees to guarantee the Contract Price for a period of 120 days from the date of Bid opening. The duration of the Contract Price guarantee may be extended, by mutual consent of the parties, by the number of days required for the City to obtain all items necessary to fulfill all contractual conditions.
12. **SUBCONTRACTOR INFORMATION:**
- 12.1. **LISTING OF SUBCONTRACTORS.** In accordance with the requirements provided in the "Subletting and Subcontracting Fair Practices Act" of the California Public Contract Code, the Bidder shall provide the **NAME** and **ADDRESS** of each Subcontractor who will perform work, labor, render services or who specially fabricates and installs a portion [type] of the work or improvement, in an amount in excess of 0.5% of the Contractor's total Bid. The Bidder shall also state within the description, whether the subcontractor is a **CONSTRUCTOR, CONSULTANT** or **SUPPLIER**. The Bidder shall state the **DIR REGISTRATION NUMBER** for all subcontractors and shall further state within the description, the **PORTION** of the work which will be performed by each subcontractor under this Contract. The Contractor shall list only one Subcontractor for each portion of the Work. The **DOLLAR VALUE** of the total Bid to be performed shall be stated for all subcontractors listed. Failure to comply with this requirement

may result in the Bid being rejected as **non-responsive** and ineligible for award. The Bidder's attention is directed to the Special Provisions – Section 3-2, "Self-Performance", which stipulates the percent of the Work to be performed with the Bidders' own forces. The Bidder shall list all SLBE, ELBE, DBE, DVBE, MBE, WBE, OBE, SDB, WoSB, HUBZone, and SDVOSB Subcontractors for which Bidders are seeking recognition towards achieving any mandatory, voluntary (or both) subcontracting participation goals.

Additionally, pursuant to California Senate Bill 96 and in accordance with the requirements of Labor Code sections 1771.1 and 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 California Department of Industrial Relations (DIR). **The Bidder shall provide the name, address, license number, DIR registration number of any Subcontractor – regardless of tier** - who will perform work, labor, render services or specially fabricate and install a portion [type] of the work or improvement pursuant to the contract.

12.2. LISTING OF SUPPLIERS. Any Bidder seeking the recognition of Suppliers of equipment, materials, or supplies obtained from third party Suppliers towards achieving any mandatory or voluntary (or both) subcontracting participation goals shall provide, at a minimum, the **NAME, LOCATION (CITY), DIR REGISTRATION NUMBER** and the **DOLLAR VALUE** of each supplier. The Bidder will be credited up to 60% of the amount to be paid to the Suppliers for materials and supplies unless vendor manufactures or substantially alters materials and supplies, in which case, 100% will be credited. The Bidder is to indicate within the description whether the listed firm is a supplier or manufacturer. If no indication is provided, the listed firm will be credited at 60% of the listed dollar value for purposes of calculating the Subcontractor Participation Percentage.

12.3. LISTING OF SUBCONTRACTORS OR SUPPLIERS FOR ALTERNATES. For subcontractors or suppliers to be used on alternate items, bidder shall use the provided "Subcontractors For Alternates" form and shall indicate for each alternate subcontract whether it is an additive or deductive alternate; the subcontractor's name, location, phone number, email address, CA license number, and DIR registration number; whether the subcontractor is a designer, constructor or supplier; the type of work the subcontractor will be performing; and the dollar value of the subcontract for that alternate item. Failure to comply with this requirement may result in the bid being rejected as nonresponsive and ineligible for award.

13. SUBMITTAL OF "OR EQUAL" ITEMS: See Section 4-6, "Trade Names" in The WHITEBOOK and as amended in the SSP.

14. AWARD:

14.1. The Award of this contract is contingent upon the Contractor's compliance with all conditions precedent to Award.

- 14.2.** Upon acceptance of a Bid, the City will prepare contract documents for execution within approximately 21 days of the date of the Bid opening and award the Contract approximately within 7 days of receipt of properly executed Contract, bonds, and insurance documents.
- 14.3.** This contract will be deemed executed and effective only upon the signing of the Contract by the Mayor or his designee and approval as to form the City Attorney's Office.
- 15. SUBCONTRACT LIMITATIONS:** The Bidder's attention is directed to Standard Specifications for Public Works Construction, Section 3-2, "SELF-PERFORMANCE" in The GREENBOOK and as amended in the SSP which requires the Contractor to self-perform not less than the specified amount. Failure to comply with this requirement shall render the bid **non-responsive** and ineligible for award.
- 16. AVAILABILITY OF PLANS AND SPECIFICATIONS:** Contract Documents may be obtained by visiting the City's website: <http://www.sandiego.gov/cip/>. Plans and Specifications for this contract are also available for review in the office of the City Clerk or Purchasing & Contracting Department, Public Works Division.
- 17. ONLY ONE BID PER CONTRACTOR SHALL BE ACCEPTED:** No person, firm, or corporation shall be allowed to make, file, or be interested in more than one (1) Bid for the same work unless alternate Bids are called for. A person, firm or corporation who has submitted a sub-proposal to a Bidder, or who has quoted prices on materials to a Bidder, is not hereby disqualified from submitting a sub-proposal or quoting prices to other Bidders or from submitting a Bid in its own behalf. Any Bidder who submits more than one bid will result in the rejection of all bids submitted.
- 18. SAN DIEGO BUSINESS TAX CERTIFICATE:** The Contractor and Subcontractors, not already having a City of San Diego Business Tax Certificate for the work contemplated shall secure the appropriate certificate from the City Treasurer, Civic Center Plaza, First floor and submit to the Contract Specialist upon request or as specified in the Contract Documents. Tax Identification numbers for both the Bidder and the listed Subcontractors must be submitted on the City provided forms within these documents.
- 19. BIDDER'S GUARANTEE OF GOOD FAITH (BID SECURITY) FOR DESIGN-BID-BUILD CONTRACTS:**
- 19.1.** For bids \$250,000 and above, bidders shall submit Bid Security at bid time. Bid Security shall be in one of the following forms: a cashier's check, or a properly certified check upon some responsible bank; or an approved corporate surety bond payable to the City of San Diego for an amount of not less than 10% of the total bid amount.
- 19.2.** This check or bond, and the monies represented thereby, will be held by the City as a guarantee that the Bidder, if awarded the contract, will in good faith enter into the contract and furnish the required final performance and payment bonds.

- 19.3.** The Bidder agrees that in the event of the Bidder's failure to execute this contract and provide the required final bonds, the money represented by the cashier's or certified check will remain the property of the City; and the Surety agrees that it will pay to the City the damages, not exceeding the sum of 10% of the amount of the Bid, that the City may suffer as a result of such failure.
- 19.4.** At the time of bid submission, bidders must upload and submit an electronic PDF copy of the aforementioned bid security. Whether in the form of a cashier's check, a properly certified check or an approved corporate surety bond payable to the City of San Diego, the bid security must be uploaded to the City's eBidding system. By 5PM, 1 working days after the bid opening date, all bidders must provide the City with the original bid security.
- 19.5.** Failure to submit the electronic version of the bid security at the time of bid submission AND failure to provide the original by 5PM, 1 working days after the bid opening date shall cause the bid to be rejected and deemed **non-responsive**.

Due to circumstances related to Covid-19, until further notice, all original bid bond submittals must be received by 5 PM, 1 working days after bid opening.

Upon circumstances returning to normal business as usual, the original bid bond shall once again be due by 5 PM the day after bid opening.

Original Bid Bond shall be submitted to:
Purchasing & Contracting Department, Public Works Division
1200 3rd Ave., Suite 200, MS 56P
San Diego, California, 92101
To the Attention of the Contract Specialist on the Front Page of this solicitation.

20. AWARD OF CONTRACT OR REJECTION OF BIDS:

- 20.1.** This contract may be awarded to the lowest responsible and reliable Bidder.
- 20.2.** Bidders shall complete ALL eBid forms as required by this solicitation. Incomplete eBids will not be accepted.
- 20.3.** The City reserves the right to reject any or all Bids, to waive any informality or technicality in Bids received, and to waive any requirements of these specifications as to bidding procedure.
- 20.4.** Bidders will not be released on account of their errors of judgment. Bidders may be released only upon receipt by the City within 3 Working Days of the bid opening, written notice from the Bidder which shows proof of honest, credible, clerical error of a material nature, free from fraud or fraudulent intent; and of evidence that reasonable care was observed in the preparation of the Bid.

- 20.5.** A bidder who is not selected for contract award may protest the award of a contract to another bidder by submitting a written protest in accordance with the San Diego Municipal Code.
- 20.6.** The City of San Diego will not discriminate in the award of contracts with regard to race, religion creed, color, national origin, ancestry, physical handicap, marital status, sex or age.
- 20.7.** Each Bid package properly signed as required by these specifications shall constitute a firm offer which may be accepted by the City within the time specified herein.
- 20.8.** The City reserves the right to evaluate all Bids and determine the lowest Bidder on the basis of the base bid and any proposed alternates or options as detailed herein.

21. BID RESULTS:

- 21.1.** The availability of the bids on the City's eBidding system shall constitute the public announcement of the apparent low bidder. In the event that the apparent low bidder is subsequently deemed non-responsive or non-responsible, a notation of such will be made on the eBidding system. The new ranking and apparent low bidder will be adjusted accordingly.
- 21.2.** To obtain the bid results, view the results on the City's web site, or request the results by U.S. mail and provide a self-addressed, stamped envelope. If requesting by mail, be sure to reference the bid name and number. The bid tabulations will be mailed to you upon their completion. The results will not be given over the telephone.

22. THE CONTRACT:

- 22.1.** The Bidder to whom award is made shall execute a written contract with the City of San Diego and furnish good and approved bonds and insurance certificates specified by the City within 14 days after receipt by Bidder of a form of contract for execution unless an extension of time is granted to the Bidder in writing.
- 22.2.** If the Bidder takes longer than 14 days to fulfill these requirements, then the additional time taken shall be added to the Bid guarantee. The Contract shall be made in the form adopted by the City, which includes the provision that no claim or suit whatsoever shall be made or brought by Contractor against any officer, agent, or employee of the City for or on account of anything done or omitted to be done in connection with this contract, nor shall any such officer, agent, or employee be liable hereunder.
- 22.3.** If the Bidder to whom the award is made fails to enter into the contract as herein provided, the award may be annulled and the Bidder's Guarantee of Good Faith will be subject to forfeiture. An award may be made to the next lowest responsible and reliable Bidder who shall fulfill every stipulation embraced herein as if it were the party to whom the first award was made.

- 22.4.** Pursuant to the San Diego City Charter section 94, the City may only award a public works contract to the lowest responsible and reliable Bidder. The City will require the Apparent Low Bidder to (i) submit information to determine the Bidder's responsibility and reliability, (ii) execute the Contract in form provided by the City, and (iii) furnish good and approved bonds and insurance certificates specified by the City within 14 Days, unless otherwise approved by the City, in writing after the Bidder receives notification from the City, designating the Bidder as the Apparent Low Bidder and formally requesting the above mentioned items.
- 22.5.** The award of the Contract is contingent upon the satisfactory completion of the above-mentioned items and becomes effective upon the signing of the Contract by the Mayor or designee and approval as to form by the City Attorney's Office. If the Apparent Low Bidder does not execute the Contract or submit required documents and information, the City may award the Contract to the next lowest responsible and reliable Bidder who shall fulfill every condition precedent to award. A corporation designated as the Apparent Low Bidder shall furnish evidence of its corporate existence and evidence that the officer signing the Contract and bond for the corporation is duly authorized to do so.
- 23. EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE OF WORK:** The Bidder shall examine carefully the Project Site, the Plans and Specifications, other materials as described in the Special Provisions, Section 3-9, "TECHNICAL STUDIES AND SUBSURFACE DATA", and the proposal forms (e.g., Bidding Documents). The submission of a Bid shall be conclusive evidence that the Bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and scope of work, the quantities of materials to be furnished, and as to the requirements of the Bidding Documents Proposal, Plans, and Specifications.
- 24. CITY STANDARD PROVISIONS:** This contract is subject to the following standard provisions. See The WHITEBOOK for details.
- 24.1.** The City of San Diego Resolution No. R-277952 adopted on May 20, 1991 for a Drug-Free Workplace.
- 24.2.** The City of San Diego Resolution No. R-282153 adopted on June 14, 1993 related to the Americans with Disabilities Act.
- 24.3.** The City of San Diego Municipal Code §22.3004 for Contractor Standards.
- 24.4.** The City of San Diego's Labor Compliance Program and the State of California Labor Code §§1771.5(b) and 1776.
- 24.5.** Sections 1777.5, 1777.6, and 1777.7 of the State of California Labor Code concerning the employment of apprentices by contractors and subcontractors performing public works contracts.

24.6. The City's Equal Benefits Ordinance (EBO), Chapter 2, Article 2, Division 43 of The San Diego Municipal Code (SDMC).

24.7. The City's Information Security Policy (ISP) as defined in the City's Administrative Regulation 90.63.

25. PRE-AWARD ACTIVITIES:

25.1. The contractor selected by the City to execute a contract for this Work shall submit the required documentation as specified herein and in the Notice of Intent to Award. Failure to provide the information as specified may result in the Bid being rejected as **non-responsive**.

25.2. The decision that bid is non-responsive for failure to provide the information required within the time specified shall be at the sole discretion of the City.

PERFORMANCE BOND, LABOR AND MATERIALMEN'S BOND

FAITHFUL PERFORMANCE BOND AND LABOR AND MATERIALMEN'S BOND:

Dick Miller, Inc., a corporation, as principal, and The Ohio Casualty Insurance Company, a corporation authorized to do business in the State of California, as Surety, hereby obligate themselves, their successors and assigns, jointly and severally, to The City of San Diego a municipal corporation in the sum of Seven Million Seventy Seven Thousand Seven Hundred Seventy Seven Dollars and Seventy Seven Cents (\$7,077,777.77) for the faithful performance of the annexed contract, and in the sum of Seven Million Seventy Seven Thousand Seven Hundred Seventy Seven Dollars and Seventy Seven Cents (\$7,077,777.77) for the benefit of laborers and materialmen designated below.

Conditions:

If the Principal shall faithfully perform the annexed contract with the City of San Diego, California, then the obligation herein with respect to a faithful performance shall be void; otherwise it shall remain in full force.

If the Principal shall promptly pay all persons, firms and corporations furnishing materials for or performing labor in the execution of this contract, and shall pay all amounts due under the California Unemployment Insurance Act then the obligation herein with respect to laborers and materialmen shall be void; otherwise it shall remain in full force.

The obligation herein with respect to laborers and materialmen shall inure to the benefit of all persons, firms and corporations entitled to file claims under the provisions of Article 2. Claimants, (iii) public works of improvement commencing with Civil Code Section 9100 of the Civil Code of the State of California.

Changes in the terms of the annexed contract or specifications accompanying same or referred to therein shall not affect the Surety's obligation on this bond, and the Surety hereby waives notice of same.

The Surety shall pay reasonable attorney's fees should suit be brought to enforce the provisions of this bond.

The Surety expressly agrees that the City of San Diego may reject any contractor or subcontractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Principal.

The Surety shall not utilize the Principal in completing the improvements and work specified in the Agreement in the event the City terminates the Principal for default.

PERFORMANCE BOND, LABOR AND MATERIALMEN'S BOND (continued)

THE CITY OF SAN DIEGO

APPROVED AS TO FORM

Mara W. Elliott, City Attorney

By: Berric Doringo

By: Dana Farchild

Print Name: Berric Doringo
Deputy Director
Purchasing & Contracting Department

Print Name: Dana Farchild
Deputy City Attorney

Date: 6/15/2023

Date: 6/28/2023

CONTRACTOR

Dick Miller, Inc.

SURETY

The Ohio Casualty Insurance Company

By: Glen Bullock

By: Bart Stewart

Print Name: Glen Bullock

Attorney-In-Fact

Print Name: Bart Stewart

Date: 04/27/2023

Date: April 21, 2023



790 The City Drive South, Ste. 200
Orange, CA 92868

Local Address of Surety

714-634-3311

Local Phone Number of Surety

\$44,392

Premium

024265821

Bond Number

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

CIVIL CODE § 1189

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.

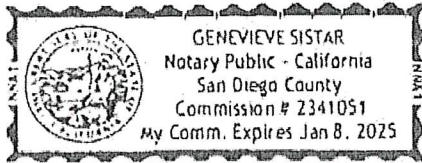
State of California)
County of San Diego)

On April 21, 2023 before me, Genevieve Sistar, Notary Public,
Date Here Insert Name and Title of the Officer
personally appeared Bart Stewart
Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.



Genevieve Sistar

Signature _____
Signature of Notary Public

Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: _____ Document Date: _____
Number of Pages: _____ Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____
 Corporate Officer — Title(s): _____
 Partner — Limited General
 Individual Attorney in Fact
 Trustee Guardian or Conservator
 Other: _____
Signer Is Representing: _____

Signer's Name: _____
 Corporate Officer — Title(s): _____
 Partner — Limited General
 Individual Attorney in Fact
 Trustee Guardian or Conservator
 Other: _____
Signer Is Representing: _____

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

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State of California)
County of San Diego)

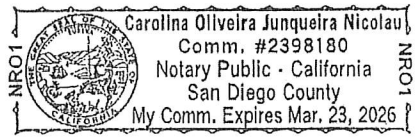
On 4/27/2023 before me, CAROLINA OLIVEIRA JUNQUEIRA NICOLAU, NOTARY PUBLIC ,
Date Here Insert Name and Title of the Officer

personally appeared Glen Bullock
Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.



Signature [Handwritten Signature]
Signature of Notary Public

Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: _____

Document Date: _____ Number of Pages: _____

Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____

Corporate Officer — Title(s): _____

Partner — Limited General

Individual Attorney in Fact

Trustee Guardian or Conservator

Other: _____

Signer Is Representing: _____

Signer's Name: _____

Corporate Officer — Title(s): _____

Partner — Limited General

Individual Attorney in Fact

Trustee Guardian or Conservator

Other: _____

Signer Is Representing: _____



This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

Certificate No: 8206236 - 969556

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Bart Stewart

all of the city of Encinitas state of CA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 3rd day of September, 2021.



Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company
By: David M. Carey, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 3rd day of September, 2021 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



Commonwealth of Pennsylvania - Notary Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2025
Commission number 1128044
Member, Pennsylvania Association of Notaries

By: Teresa Pastella
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII - Execution of Contracts: Section 5. Surety Bonds and Undertakings.

Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 21st day of April, 2023.



By: Renee C. Llewellyn
Renee C. Llewellyn, Assistant Secretary

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.com.

ATTACHMENTS

ATTACHMENT A
SCOPE OF WORK

SCOPE OF WORK

1. SCOPE OF WORK:

Improvement to the Scripps Miramar Ranch Branch Library, that includes and not limited to the expansion of the existing library parking to provide additional parking spaces, improvements of the existing parking, additional driveways entrance, and the upgrade of the existing library driveway entrance with new traffic signals, signs, street crossings, pedestrian ramps and associated Scripps Lake Drive street improvements. New retaining walls are required to be designed, permitted, and installed, along with the import of soil to fill the existing canyon where the parking expansion is planned. New ADA / Code compliances sidewalks, ramps, and signs. New parking lights, drainage, landscaping, and irrigation systems. Mobilization, demobilization, disposal of demolished and excavated material. This Scope of Work shall include and not limited to; Code Required Special Inspections, Traffic Control Permit, BMP, Street Sweeping and Potholing. The work shall be done in two (2) ADA compliant phases, per the City Whitebook Section 6-1.2.1, to allow the library to stay operational during the construction duration. The general contractor shall propose the two (2) phases and need the City's approval prior to proceed. The first phase may be the construction of the new driveway entrance, backfill the canyon, building retaining walls (A & B), and part of the new parking (including its smaller retaining walls, biofiltration basins and others, TYP), and the second phase may be the rest of the project.

1.1. The Work shall be performed in accordance with:

1.1.1. The Notice Inviting Bids and Plans numbered **42220-1-D** through **42220-60A-D**, inclusive.

2. **LOCATION OF WORK:** The location of the Work is as follows:

Appendix E - Location Map.

3. **CONTRACT TIME:** The Contract Time for completion of the Work, including the Plant Establishment Period, shall be **550 Working Days**.

ATTACHMENT B

RESERVED

ATTACHMENT C
EQUAL OPPORTUNITY CONTRACTING PROGRAM

EQUAL OPPORTUNITY CONTRACTING PROGRAM (EOCP)

SECTION A - GENERAL REQUIREMENTS

A. INTRODUCTION.

1. This document sets forth the following specifications:
 - a) The City's general EOCP requirements for all Construction Contracts.
 - b) Special Provisions for Contracts subject to SLBE and ELBE requirements only.
2. Additional requirements may apply for state or federally funded projects.
3. These requirements shall be included as Contract provisions for all Subcontracts.
4. The City specified forms, instructions, and guides are available for download from the EOCP's web site at: <http://www.sandiego.gov/eoc/forms/index.shtml>

B. GENERAL.

1. The City of San Diego promotes equal employment and subcontracting opportunities.
2. The City is committed to ensuring that taxpayer dollars spent on public Contracts are not paid to businesses that practice discrimination in employment or subcontracting.
3. The City encourages all companies seeking to do business with the City to share this commitment.

C. DEFINITIONS.

1. For the purpose of these requirements: Terms "Bid" and "Proposal", "Bidder" and "Proposer", "Subcontractor" and "Subconsultant", "Contractor" and "Consultant", "Contractor" and "Prime Contractor", "Consultant" and "Professional Service Provider", "Suppliers" and "Vendors", "Suppliers" and "Dealers", and "Suppliers" and "Manufacturers" may have been used interchangeably.
2. The following definitions apply:
 - a) **Emerging Business Enterprise (EBE)** - A for-profit business that is independently owned and operated; that is not a subsidiary or franchise of another business and whose gross annual receipts do not exceed the amount set by the City Manager and that meets all other criteria set forth in regulations implementing Municipal Code Chapter 2, Article 2, Division 36. The City Manager shall review the threshold amount for EBEs on an annual basis and adjust as necessary to reflect changes in the marketplace.
 - b) **Emerging Local Business Enterprise (ELBE)** - A Local Business Enterprise that is also an Emerging Business Enterprise.

- c) **Minority Business Enterprise (MBE)** - A certified business that is at least fifty-one percent (51%) owned by one or more minority individuals, or, in the case of a publicly owned business at least fifty-one percent (51%) of the stock is owned by one or more minority individuals; and (2) whose daily business operations are managed and directed by one or more minorities owners. Minorities include the groups with the following ethnic origins: African, Asian Pacific, Asian Subcontinent, Hispanic, Native Alaskan, Native American, and Native Hawaiian.
- d) **Women Business Enterprise (WBE)** - A certified business that is at least fifty-one percent (51%) owned by a woman or women, or, in the case of a publicly owned business at least fifty-one percent (51%) of the stock is owned by one or more women; and (2) whose daily business operations are managed and directed by one or more women owners.
- e) **Disadvantaged Business Enterprise (DBE)** - a certified business that is at least fifty-one percent (51%) owned by socially and economically disadvantaged individuals, or, in the case of a publicly owned business at least fifty-one percent (51%) of the stock is owned by one or more socially and economically disadvantaged individuals; and (2) whose daily business operations are managed and directed by one or more socially and economically disadvantaged owners.
- f) **Disabled Veteran Business Enterprise (DVBE)** - A certified business that is at least fifty-one percent (51%) owned by one or more disabled veterans; and (2) business operations must be managed and controlled by one or more disabled veterans. Disabled Veteran is a veteran of the U.S. military, naval, or air service; the veteran must have a service-connected disability of at least 10% or more; and the veteran must reside in California.
- g) **Other Business Enterprise (OBE)** - Any business which does not otherwise qualify as a Minority, Woman, Disadvantaged, or Disabled Veteran Business Enterprise.
- h) **Small Business Enterprise (SBE)** - A for-profit business that is independently owned and operated; that is not a subsidiary or franchise of another business and whose gross annual receipts do not exceed the amount set by the City Manager and that meets all other criteria set forth in regulations implementing Municipal Code Chapter 2, Article 2, Division 36. The City Manager shall review the threshold amount for SBEs on an annual basis and adjust as necessary to reflect changes in the marketplace. A business certified as a Micro Business (MB) or a Disabled Veteran Business Enterprise (DVBE) by the State of California and that has provided proof of such certification to the City Manager shall be deemed to be an SBE.

- i) **Small Local Business Enterprise (SLBE)** - A Local Business Enterprise that is also a Small Business Enterprise.

D. CITY'S EQUAL OPPORTUNITY COMMITMENT.

1. Nondiscrimination in Contracting Ordinance.

- a) You, your Subcontractors, and Suppliers shall comply with the requirements of the City's Nondiscrimination in Contracting Ordinance, San Diego Municipal Code §§22.3501 through 22.3517.

You shall not discriminate on the basis of race, gender, gender expression, gender identity, religion, national origin, ethnicity, sexual orientation, age, or disability in the solicitation, selection, hiring, or treatment of subcontractors, vendors, or suppliers. You shall provide equal opportunity for Subcontractors to participate in subcontracting opportunities. You understand and agree that the violation of this clause shall be considered a material breach of the Contract and may result in Contract termination, debarment, or other sanctions.

You shall include the foregoing clause in all Contracts between you and your Subcontractors and Suppliers.

- b) **Disclosure of Discrimination Complaints.** As part of its Bid or Proposal, you shall provide to the City a list of all instances within the past 10 years where a complaint was filed or pending against you in a legal or administrative proceeding alleging that you discriminated against your employees, Subcontractors, vendors, or suppliers, and a description of the status or resolution of that complaint, including any remedial action taken.
- c) Upon the City's request, You agree to provide to the City, within 60 Calendar Days, a truthful and complete list of the names of all Subcontractors and Suppliers that you have used in the past 5 years on any of your Contracts that were undertaken within the San Diego County, including the total dollar amount paid by you for each Subcontract or supply Contract.
- d) You further agree to fully cooperate in any investigation conducted by the City pursuant to the City's Nondiscrimination in Contracting Ordinance, Municipal Code §§22.3501 through 22.3517. You understand and agree that violation of this clause shall be considered a material breach of the Contract and may result in remedies being ordered against you up to and including contract termination, debarment, and other sanctions for the violation of the provisions of the Nondiscrimination in Contracting Ordinance. You further understand and agree that the procedures, remedies, and sanctions provided for in the Nondiscrimination in Contracting Ordinance apply only to violations of the Ordinance.

E. EQUAL EMPLOYMENT OPPORTUNITY OUTREACH PROGRAM.

1. You, your Subcontractors, and Suppliers shall comply with the City's Equal Employment Opportunity Outreach Program, San Diego Municipal Code §§22.2701 through 22.2707.

You shall not discriminate against any employee or applicant for employment on any basis prohibited by law. You shall provide equal opportunity in all employment practices. You shall ensure that your Subcontractors comply with this program. Nothing in this section shall be interpreted to hold you liable for any discriminatory practices of your Subcontractors.

You shall include the foregoing clause in all Contracts between you and your Subcontractors and Suppliers.

2. If the Contract is competitively solicited, the selected Bidder shall submit a Work Force Report (Form BB05) within 10 Working Days after receipt by the Bidder to the City for approval as specified in the Notice of Intent to Award letter.
3. The selected Bidder shall submit an Equal Employment Opportunity Plan if a Work Force Report is submitted and if the City determines that there are under-representations when compared to County Labor Force Availability data.
4. If the selected Bidder submits an Equal Employment Opportunity Plan, it shall include the following assurances:
 - a) You shall maintain a working environment free of discrimination, harassment, intimidation, and coercion at all Sites and in all facilities at which your employees are assigned to Work.
 - b) You shall review your EEO Policy annually with all on-Site supervisors involved in employment decisions.
 - c) You shall disseminate and review your EEO Policy with all employees at least once a year, post the policy statement and EEO posters on all company bulletin boards and job sites, and document every dissemination, review, and posting with a written record to identify the time, place, employees present, subject matter, and disposition of meetings.
 - d) You shall review, at least annually, all supervisors' adherence to and performance under the EEO Policy and maintain written documentation of these reviews.
 - e) You shall discuss your EEO Policy Statement with Subcontractors with whom you anticipate doing business, including the EEO Policy Statement in your Subcontracts, and provide such documentation to the City upon request.

- f) You shall document and maintain a record of all Bid solicitations and outreach efforts to and from Subcontractors, contractor associations, and other business associations.
- g) You shall disseminate your EEO Policy externally through various media, including the media of people of color and women, in advertisements to recruit. Maintain files documenting these efforts and provide copies of these advertisements to the City upon request.
- h) You shall disseminate your EEO Policy to union and community organizations.
- i) You shall provide immediate written notification to the City when any union referral process has impeded your efforts to maintain your EEO Policy.
- j) You shall maintain a current list of recruitment sources, including those outreaching to people of color and women, and provide written notification of employment opportunities to these recruitment sources with a record of the organizations' responses.
- k) You shall maintain a current file of names, addresses and phone numbers of each walk-in applicant, including people of color and women, and referrals from unions, recruitment sources, or community organizations with a description of the employment action taken.
- l) You shall encourage all present employees, including people of color and women employees, to recruit others.
- m) You shall maintain all employment selection process information with records of all tests and other selection criteria.
- n) You shall develop and maintain documentation for on-the-job training opportunities, participate in training programs, or both for all of your employees, including people of color and women, and establish apprenticeship, trainee, and upgrade programs relevant to your employment needs.
- o) You shall conduct, at least annually, an inventory and evaluation of all employees for promotional opportunities and encourage all employees to seek and prepare appropriately for such opportunities.
- p) You shall ensure that the company's working environment and activities are non-segregated except for providing separate or single-user toilets and necessary changing facilities to assure privacy between the sexes.

F. SUBCONTRACTING.

1. The City encourages all eligible business enterprises to participate in City contracts as a Contractor, Subcontractor, and joint venture partner with you, your Subcontractors, or your Suppliers. You are encouraged to take positive

steps to diversify and expand your Subcontractor solicitation base and to offer subcontracting opportunities to all eligible business firms including SLBEs, ELBEs, MBEs, WBEs, DBEs, DVBES, and OBEs.

2. For Subcontractor participation level requirements, see the Contract Documents where applicable.
3. For the purposes of achieving the mandatory Subcontractor participation percentages, City percentage calculations will not account for the following:
 - a) "Field Orders" and "City Contingency" Bid items.
 - b) Alternate Bid items.
 - c) Allowance Bid items designated as "EOC Type II".
4. Allowance Bid items designated as "EOC Type I" will be considered as part of the Base Bid and will be included in the percentage calculation.
5. Each joint venture partner shall be responsible for a clearly defined Scope of Work. In addition, an agreement shall be submitted and signed by all parties identifying the extent to which each joint venture partner shares in ownership, control, management, risk, and profits of the joint venture.

G. LISTS OF SUBCONTRACTORS AND SUPPLIERS.

1. You shall comply with the Subletting and Subcontracting Fair Practices Act, Public Contract Code §§4100 through 4113, inclusive.
2. You shall list all Subcontractors who will receive more than 0.5% of the total Bid amount or \$10,000, whichever is greater on the form provided in the Contract Documents (Subcontractors list).
3. The Subcontractors list shall include the Subcontractor's name, telephone number including area code, physical address, Scope of Work, the dollar amount of the proposed Subcontract, the California contractor license number, the Public Works contractor registration number issued pursuant to Section 1725.5 of the Labor Code, and the Subcontractor's certification status with the name of the certifying agency.
4. The listed Subcontractor shall be appropriately licensed pursuant to Contractor License Laws.
5. For Design-Build Contracts, refer to the RFQ and RFP for each Project or Task Order.

H. SUBCONTRACTOR AND SUPPLIER SUBSTITUTIONS.

1. Listed Subcontractors and Suppliers shall not be substituted without the Express authorization of the City or its duly authorized agent.
2. Request for Subcontractor or Supplier substitution shall be made in writing to Purchasing & Contracting Department, Public Works Division, Attention Contract Specialist, 1200 3rd Ave., Suite 200, MS 56P, San Diego, CA 92101 with a copy to the Engineer.

3. The request shall include a thorough explanation of the reason(s) for the substitution, including dollar amounts and a letter from each substituted Subcontractor or Supplier stating that they (the Subcontractors or Suppliers) release all interest in working on the Project and written confirmation from the new Subcontractor or Supplier stating that they agree to work on the Project along with the dollar value of the Work to be performed.
4. Written approval of the substitution request shall be received by you or from the City or its authorized officer prior to any unlisted Subcontractor or Supplier performing Work on the Project.
5. Substitution of Subcontractors and Suppliers without authorization shall subject you to those penalties set forth in Public Contract Code §4110.
6. Requests for Supplier substitution shall be made in writing at least 10 Days prior to the provision of materials, supplies, or services by the proposed Supplier and shall include proof of written notice to the originally listed Supplier of the proposed substitution.
7. A Contractor whose Bid is accepted shall not:
 - a) Substitute a person as Subcontractor or Supplier in place of the Subcontractor or Supplier listed in the original bid, except that the City, or its duly authorized officer, may consent to the substitution of another person as a Subcontractor or Supplier in any of the following situations:
 - i. When the Subcontractor or Supplier listed in the Bid, after having a reasonable opportunity to do so, fails or refuses to execute a written Contract for the scope of work specified in the subcontractor's bid and at the price specified in the subcontractor's bid, when that written contract, based upon the general terms, conditions, plans, and specifications for the project involved or the terms of the subcontractor's written bid, is presented to the subcontractor by the prime contractor.
 - ii. When the listed Subcontractor or Supplier becomes insolvent or the subject of an order for relief in bankruptcy.
 - iii. When the listed Subcontractor or Supplier fails or refuses to perform his or her subcontract.
 - iv. When the listed Subcontractor fails or refuses to meet bond requirements as set forth in Public Contract Code §4108.
 - v. When you demonstrate to the City or its duly authorized officer, subject to the provisions set forth in Public Contract Code §4107.5, that the name of the Subcontractor was listed as the result of an inadvertent clerical error.
 - vi. When the listed Subcontractor is not licensed pursuant to Contractor License Law.

- vii. When the City, or its duly authorized officer, determines that the Work performed by the listed Subcontractor or that the materials or supplies provided by the listed Supplier are substantially unsatisfactory and not in substantial accordance with the Plans and specifications or that the Subcontractor or Supplier is substantially delaying or disrupting the progress of the Work.
 - viii. When the listed Subcontractor is ineligible to work on a public works project pursuant to §§1777.1 or 1777.7 of the Labor Code.
 - ix. When the City or its duly authorized agent determines that the listed Subcontractor is not a responsible contractor.
- b) Permit a Contract to be voluntarily assigned or transferred or allow it to be performed by anyone other than the original Subcontractor, Supplier listed in the original Bid without the consent of the City, or its duly authorized officer.
 - c) Other than in the performance of "Change Orders" causing changes or deviations from the Contract, sublet or subcontract any portion of the Work, or contract for materials or supplies in excess of 0.5% of your total bid or \$10,000, whichever is greater, as to which his or her original Bid did not designate a Subcontractor or Supplier.
8. Following receipt of notice from you of the proposed substitution of a Subcontractor or Supplier, the listed Subcontractor or Supplier who has been so notified shall have 5 Working Days within which to submit written objections to the substitution to the Contract Specialist with a copy to the Engineer. Failure to file these written objections shall constitute the listed Subcontractor or Supplier's consent to the substitution. If written objections are filed, the City shall give notice in writing of at least 5 Working Days to the listed Subcontractor or Supplier of a hearing by the City on your request for substitution.

I. PROMPT PAYMENT.

- 1. You or your Subcontractors shall pay to any subcontractor, not later than 7 Calendar Days of receipt of each progress payment, unless otherwise agreed to in writing, the respective amounts allowed you on account of the Work performed by the Subcontractors, to the extent of each Subcontractor's interest therein. In cases of Subcontractor performance deficiencies, you shall make written notice of any withholding to the Subcontractor with a copy to the Contracts Specialist. Upon correction of the deficiency, you shall pay the Subcontractor the amount previously withheld within 14 Calendar Days after payment by the City.
- 2. Any violation of California Business and Professions Code, §7108.5 concerning prompt payment to Subcontractors shall subject the violating Contractor or

Subcontractor to the penalties, sanctions, and other remedies of that section. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to you or your Subcontractor in the event of a dispute involving late payment or nonpayment by the Prime Contractor, deficient subcontract performance, or noncompliance by a Subcontractor.

J. PROMPT PAYMENT OF FUNDS WITHHELD TO SUBCONTRACTORS.

1. The City will hold retention from you and will make prompt and regular incremental acceptances of portions, as determined by the Engineer, of the Work and pay retention to you based on these acceptances.
2. You or your Subcontractors shall return all monies withheld in retention from a Subcontractor within 30 Calendar Days after receiving payment for Work satisfactorily completed and accepted including incremental acceptances of portions of the Work by the City.
3. Federal law (49CFR26.29) requires that any delay or postponement of payment over 30 Calendar Days may take place only for good cause and with the City's prior written approval. Any violation of this provision by you or your Subcontractor shall subject you or your Subcontractor to the penalties, sanctions, and other remedies specified in §7108.5 of the Business and Professions Code.
4. These requirements shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to you or your Subcontractor in the event of a dispute involving late payment or nonpayment by you, deficient subcontract performance, or noncompliance by a Subcontractor.

K. CERTIFICATION.

1. The City accepts certifications of DBE, DVBE, MBE, SMBE, SWBE, or WBE by any of the following certifying agencies:
 - a) Current certification by the State of California Department of Transportation (CALTRANS) as DBE, SMBE, or SWBE.
 - b) Current MBE, WBE, or DVBE certification from the California Public Utilities Commission.
 - c) DVBE certification is received from the State of California's Department of General Services, Office of Small and Minority Business.
 - d) Current certification by the City of Los Angeles as DBE, WBE, or MBE.
 - e) Subcontractors' valid proof of certification status (copies of MBE, WBE, DBE, or DVBE certifications) shall be submitted as required.

L. CONTRACT RECORDS AND REPORTS.

1. You shall maintain records of all subcontracts and invoices from your Subcontractors and Suppliers for work on this project. Records shall show name, telephone number including area code, and business address of each

Subcontractor, Supplier, and joint venture partner, and the total amount actually paid to each firm. Project relevant records, regardless of tier, may be periodically reviewed by the City.

2. You shall retain all records, books, papers, and documents pertinent to the Contract for a period of not less than 5 years after Notice of Completion and allow access to said records by the City's authorized representatives.
3. You shall submit the following reports using the City's web-based contract compliance (Prism® portal):
 - a. **Monthly Payment.** You shall submit Monthly Payment Reporting by the 10th day of the subsequent month. Incomplete and/or delinquent reporting may cause payment delays, non-payment of invoices, or both.
4. The records maintained under item 1, described above, shall be consolidated into a Final Summary Report, certified as correct by an authorized representative of the Contractor. The Final Summary Report shall include all subcontracting activities and be sent to the EOCP Program Manager prior to Acceptance. Failure to comply may result in assessment of liquidated damages or withholding of retention. The City will review and verify 100% of subcontract participation reported in the Final Summary Report prior to approval and release of final retention to you. In the event your Subcontractors are owed money for completed Work, the City may authorize payment to subcontractor via a joint check from the withheld retention.

EQUAL OPPORTUNITY CONTRACTING PROGRAM (EOCP)

SECTION B - SLBE-ELBE SUBCONTRACTING REQUIREMENTS

THESE SPECIAL PROVISIONS SUPPLEMENT THE POLICIES AND REQUIREMENTS ESTABLISHED BY THE CITY OF SAN DIEGO EQUAL OPPORTUNITY CONTRACTING PROGRAM SPECIFIED IN THE CITY'S GENERAL EOCP REQUIREMENTS.

A. GENERAL.

1. It is the City's policy to encourage greater availability, capacity development, and contract participation by SLBE and ELBE firms in City contracts. This policy is, in part, intended to further the City's compelling interest to stimulate economic development through the support and empowerment of the local community, ensure that it is neither an active nor passive participant in marketplace discrimination, and promote equal opportunity for all segments of the contracting community.
2. The City is committed to maximizing subcontracting opportunities for all qualified and available firms.
3. This policy applies to City-funded construction contracts. Bidders shall be fully informed of this policy as set forth in these specifications. Mandatory or voluntary subcontracting percentages, Bid Discounts, and restricted competitions are specified in the Contract Documents.
4. You shall make subcontracting opportunities available to a broad base of qualified Subcontractors and shall achieve the minimum SLBE-ELBE Subcontractor participation identified for your project.
5. Failure to subcontract the specified minimum (mandatory) percentages of the Bid to qualified available SLBE-ELBE Subcontractors will cause a Bid to be rejected as non-responsive unless the Bidder has demonstrated compliance with the affirmative steps as specified in the City's document titled "Small Local Business (SLBE) Program, INSTRUCTIONS FOR BIDDERS COMPLETING THE GOOD FAITH EFFORT SUBMITTAL" and has submitted documentation showing that all required positive efforts were made prior to the Bid submittal due date. The required Good Faith Effort (GFE) documentation shall be submitted to the Contract Specialist. The instructions for completing the good faith effort submittal can be found on the City's website:
<https://www.sandiego.gov/sites/default/files/legacy/eoc/pdf/slbeinst.pdf>
6. The current list of certified SLBE-ELBE firms and information for completing the GFE submittal can be found on the City's EOC Department website:
<http://www.sandiego.gov/eoc/programs/slbe.shtml>
7. These requirements may be waived, at the City's sole discretion, on projects deemed inappropriate for subcontracting participation.

B.

DEFINITIONS.

1. The following definitions shall be used in conjunction with these specifications:

- a) **Bid Discount** – Additional inducements or enhancements in the bidding process that are designed to increase the chances for the selection of SLBE firms in competition with other firms.
- b) **Commercially Useful Function** – An SLBE-ELBE performs a commercially useful function when it is responsible for the execution of the Work and is carrying out its responsibilities by actually performing, managing, and supervising the Work involved. To perform a commercially useful function, the SLBE-ELBE shall also be responsible, with respect to materials and supplies used on the Contract, for negotiating price, determining quantity and quality, ordering the material, and installing (where applicable) and paying for the material itself.

To determine whether an SLBE-ELBE is performing a commercially useful function, an evaluation will be performed of the amount of Work subcontracted, normal industry practices, whether the amount the SLBE-ELBE firm is to be paid under the contract is commensurate with the Work it is actually performing and the SLBE-ELBE credit claimed for its performance of the Work, and other relevant factors. Specifically, an SLBE-ELBE does not perform a commercially useful function if its role is limited to that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of meaningful and useful SLBE-ELBE participation, when in similar transactions in which SLBE-ELBE firms do not participate, there is no such role performed.

- c) **Good Faith Efforts (GFE)** – Documentation of the Bidder’s intent to comply with SLBE Program goals and procedures included in the City’s SLBE Program, Instructions for Completing Good Faith Effort Submittal available from the City’s EOCP website or the Contract Specialist.
- d) **Independently Owned, Managed, and Operated** – Ownership of a SLBE-ELBE firm shall be direct, independent, and by individuals only. Business firms that are owned by other businesses or by the principals or owners of other businesses that cannot themselves qualify under the SLBE-ELBE eligibility requirements shall not be eligible to participate in the Program. Moreover, the day-to-day management of the SLBE-ELBE firm shall be direct and independent of the influence of any other businesses that cannot themselves qualify under the SLBE-ELBE eligibility requirements.
- e) **Joint Venture** – An association of two or more persons or business entities that is formed for the single purpose of carrying out a single defined business enterprise for which purpose they combine their

capital, efforts, skills, knowledge, or property. Joint ventures shall be established by written agreement to qualify for this program.

- f) **Local Business Enterprise (“LBE”)** – A firm having a Principal Place of Business and a Significant Employment Presence in San Diego County, California that has been in operation for 12 consecutive months and a valid business tax certificate. This definition is subsumed within the definition of Small Local Business Enterprise.
- g) **Minor Construction Program** – A program developed for bidding exclusively among SLBE-ELBE Construction firms.
- h) **Principal Place of Business** – A location wherein a firm maintains a physical office and through which it obtains no less than 50% of its overall customers or sales dollars.
- i) **Protégé** – A firm that has been approved and is an active participant in the City’s Mentor-Protégé Program and that has signed the required program participation agreement and has been assigned a mentor.
- j) **Significant Employee Presence** – No less than 25% of a firm’s total number of employees are domiciled in San Diego County.

C. SUBCONTRACTOR PARTICIPATION.

- 1. For the purpose of satisfying subcontracting participation requirements, only 1st tier SLBE–ELBE Subcontractors will be recognized as participants in the Contract according to the following criteria:
 - a) For credit to be allowed toward a respective participation level, all listed SLBE-ELBE firms shall have been certified by the Bid due date.
 - b) The Subcontractor shall perform a commercially useful function for credit to be allowed toward subcontractor participation levels. The Subcontractor shall be required by you to be responsible for the execution of a distinct element of the Work and shall carry out its responsibility by actually performing and supervising its own workforce.
 - c) If the Bidder is seeking the recognition of materials, supplies, or both towards achieving any mandatory subcontracting participation level, the Bidder shall indicate on Form AA40 – Named Equipment/Material Supplier List with the Bid the following:
 - i. If the materials or supplies are obtained from a SLBE-ELBE manufacturer, the Bidder will receive 100% of the cost of the materials or supplies toward SLBE participation. For the purposes of counting SLBE-ELBE participation, a manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the Contract and of the general character described by the specifications.

- ii. If the materials or supplies are obtained from a SLBE-ELBE supplier, the Bidder will receive 60% of the cost of the materials or supplies toward SLBE participation. For the purposes of counting SLBE-ELBE participation a Supplier is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the Contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a supplier, the firm shall be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. A person may be a supplier in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business if the person both owns and operates distribution equipment for the products. Any supplementing of the suppliers' own distribution equipment shall be by a long-term lease agreement and shall not be on an ad hoc or contract-by-contract basis.
 - iii. If the materials or supplies are obtained from a SLBE-ELBE, which is neither a manufacturer nor a supplier, the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, fees or transportation charges for the delivery of materials or supplies required on a job site will be counted toward SLBE-ELBE participation, provided the fees are reasonable and not excessive as compared with fees customarily allowed for similar services. No portion of the cost of the materials and supplies themselves will be counted toward SLBE-ELBE participation.
- d) If the Bidder is seeking the recognition of SLBE-ELBE Trucking towards achieving any mandatory subcontracting participation level, the Bidder shall indicate it on Form AA35 - List of Subcontractors with the Bid. The following factors will be evaluated in determining the credit to be allowed toward the respective participation level:
- i. The SLBE-ELBE shall be responsible for the management and supervision of the entire trucking operation for which it is getting credit on a particular Contract and there shall not be a contrived arrangement for the purpose of counting SLBE-ELBE participation.
 - ii. The SLBE-ELBE shall itself own and operate at least 1 fully licensed, insured, and operational truck used on the Contract.

- iii. The SLBE-ELBE receives credit for the total value of the transportation services it provides on the Contract using trucks it owns, insures, and operates using drivers it employs.
- iv. The SLBE-ELBE may lease trucks from another SLBE-ELBE firm including an owner-operator who is certified as a SLBE-ELBE. The SLBE-ELBE who leases trucks from another SLBE-ELBE receives credit for the total value of the transportation services the lessee SLBE-ELBE provides on the contract.
- v. The SLBE-ELBE may also lease trucks from a non-SLBE-ELBE firm, including an owner-operator. The SLBE-ELBE who leases trucks from a non-SLBE-ELBE is entitled to credit for the total value of transportation services provided by non-SLBE-ELBE lessees not to exceed the value of transportation services provided by SLBE-ELBE owned trucks on the contract. Additional participation by non-SLBE-ELBE lessees receive credit only for the fee or commission it receives as a result of the lease arrangement.
- vi. A lease shall indicate that the SLBE-ELBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the SLBE-ELBE so long as the lease gives the SLBE-ELBE absolute priority for use of the leased truck.

D. SLBE-ELBE SUBCONTRACTOR PARTICIPATION PERCENTAGES.

1. Contracts valued at \$1,000,000 and above will be considered Major Public Works Contracts and will include a mandatory Subcontractor participation requirement for SLBE-ELBE firms.
 - a) The Bidder shall achieve the mandatory Subcontractor participation requirement or demonstrate GFE.
 - b) The Bidders shall indicate the participation on Forms AA35 - List of Subcontractors and AA40 - Named Equipment/Material Supplier List as applicable regardless of the dollar value.
 - c) An SLBE-ELBE Bidder may count its own participation toward achieving the mandatory goal as long as the SLBE-ELBE Bidder performs 51% of the Contract Price.
2. Contracts Valued over \$500,000 and under \$1,000,000 will also be considered Major Public Works Contracts and will include the mandatory subcontractor participation requirements described above and the following:
 - a) 5% bid discount for SLBE-ELBE firms.
 - b) Non-certified Contractor will receive 5% bid discount if they achieve the specified mandatory Subcontracting participations.

- c) Bid discounts shall not apply if the award will result in a total contract cost of \$50,000 in excess of the apparent lowest Bid.
 - d) In the event of a tie bid between a SLBE-ELBE Bidder and a non-SLBE-ELBE Bidder, the SLBE-ELBE Bidder will be awarded the Contract.
 - e) In the event of a tie bid between a discounted Bid and a non-discounted Bid, the discounted Bid will be awarded the Contract.
3. Contracts valued over \$250,000 up to \$500,000 will be considered Minor Public Works Contracts and will be awarded through a competitive Bid process open only to City certified SLBE-ELBE firms. If there are no bidders or no responsible bidders, the Contract will be made available to all Bidders and will be subject to requirements listed in items 1 and 2 for Major Public Works Contracts above.
 4. Contracts valued at \$250,000 and below will also be considered Minor Public Works Contracts and will be awarded through a competitive bid process open only to City certified ELBEs unless there are less than 2 firms available at which it will be awarded through a competitive process open only to the City certified SLBE-ELBE firms. If there are no bidders or no responsible bidders, the Contract will be made available to all Bidders and subject to requirements listed in items 1 and 2 for Major Public Works Contracts above.

E. JOINT VENTURES.

1. The City may allow for Joint Venture bid discounts on some Contracts. Contracts that allow for Joint Venture bid discounts will be designated in Bid documents. A firm that is bidding or competing for City Contracts may partner with a certified SLBE or ELBE to compete for Contracts as a Joint Venture.
2. A Joint Venture shall be between two entities with the same discipline or license as required by the City. Joint ventures will receive bid discounts depending on the SLBE or ELBE percentage of participation. To be eligible for a discount, a Joint Venture Agreement shall be approved by the City at the time of Bid submittal. The maximum allowable discount shall be 5%. The parties shall agree to enter in the relationship for the life of the projects.
3. Joint Venture shall submit a Joint Venture Management Plan, a Joint Venture Agreement, or both at least 2 weeks prior to the Bid due date. Copies of the Joint Venture applications are available upon request to the Contract Specialist. Each agreement or management plan shall include the following:
 - a) Detailed explanation of the financial contribution for each partner.
 - b) List of personnel and equipment used by each partner.
 - c) Detailed breakdown of the responsibilities of each partner.
 - d) Explanation of how the profits and losses will be distributed.
 - e) Description of the bonding capacity of each partner.
 - f) Management or incentive fees available for any one of the partners (if any).

4. Each Joint Venture partner shall perform a Commercially Useful Function. An SLBE or ELBE that relies on the resources and personnel of a non-SLBE or ELBE firm will not be deemed to perform a Commercially Useful Function.
5. Each Joint Venture partner shall possess licenses appropriate for the discipline for which a proposal is being submitted. If a Joint Venture is bidding on a single trade project, at the time of bid submittal, each Joint Venture partner shall possess the requisite specialty license for that trade bid.
6. The SLBE or ELBE partner shall clearly define the portion of the Work to be performed. This Work shall be of the similar type of Work the SLBE or ELBE partner performs in the normal course of its business. The Joint Venture Participation Form shall specify the Bid items to be performed by each individual Joint Venture partner. Lump sum Joint Venture participation shall not be acceptable.
7. Responsibilities of the SLBE or ELBE Joint Venture Partner:
 - a) The SLBE or ELBE partner shall share in the control, management responsibilities, risks and profits of the Joint Venture in proportion with the level of participation in the project.
 - b) The SLBE or ELBE partner shall perform Work that is commensurate with its experience.
 - c) The SLBE or ELBE partner shall use its own employees and equipment to perform its portion of the Work.
 - d) The Joint Venture as a whole shall perform Bid items that equal or exceed 50% of the Contract Price, excluding the cost of manufactured items, in order to be eligible for a Joint Venture discount.

F. MAINTAINING PARTICIPATION LEVELS.

1. Credit and preference points are earned based on the level of participation proposed prior to the award of the Contract. Once the Project begins you shall achieve and maintain the SLBE-ELBE participation levels for which credit and preference points were earned. You shall maintain the SLBE-ELBE percentages indicated at the Award of Contract and throughout the Contract Time.
2. If the City modifies the original Scope of Work, you shall make reasonable efforts to maintain the SLBE-ELBE participation for which creditor preference points were earned. If participation levels will be reduced, approval shall be received from the City prior to making changes.
3. You shall notify and obtain written approval from the City in advance of any reduction in subcontract scope, termination, or substitution for a designated SLBE-ELBE Subcontractor. Failure to do so shall constitute a material breach of the Contract.
4. If you fail to maintain the SLBE-ELBE participation listed at the time the Contract is awarded and have not received prior approval from the City, the

City may declare you in default and will be considered grounds for debarment under Chapter 2, Article 2, Division 8, of the San Diego Municipal Code.

G. SUBCONTRACTING EFFORTS REVIEW AND EVALUATION.

1. Documentation of your subcontracting efforts will be reviewed by EOCP to verify that you made subcontracting opportunities available to a broad base of qualified Subcontractors, negotiated in good faith with interested Subcontractors, and did not reject any bid for unlawful discriminatory reasons. The EOCP review is based on the federal “Six Good Faith Efforts” model.
2. The GFEs are required methods to ensure that all ELBE and SLBE firms have had the opportunity to compete for the City’s Public Works procurements. The Six Good Faith Efforts, also known as affirmative steps, attract and utilize ELBE and SLBE firms:
 - a) Ensure ELBE firms are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities.
 - b) Make information of forthcoming opportunities available to SLBE-ELBE firms and arrange time for Contracts and establish delivery schedules, where requirements permit, in a way that encourages and facilitates participation by SLBE-ELBE firms in the competitive process. This includes posting solicitations for Bids or proposals to SLBE-ELBE firms for a minimum of 10 Working Days before the Bid or Proposal due date.
 - c) Consider in the contracting process whether firms competing for large Contracts could subcontract with SLBE-ELBE firms.
 - d) Encourage contracting with a consortium of ELBE-SLBE firms when a Contract is too large for one of these firms to handle individually.
 - e) Use the services and assistance of the City’s EOC Office and the SLBE-ELBE Directory.
 - f) If you award subcontracts, require your Subcontractors to take the steps listed above.

H. GOOD FAITH EFFORT DOCUMENTATION.

1. If the specified SLBE-ELBE Subcontractor participation percentages are not met, you shall submit information necessary to establish that adequate GFEs were taken to meet the Contract Subcontractor participation percentages. See the City’s document titled “Small Local Business (SLBE) Program, INSTRUCTIONS FOR BIDDERS COMPLETING THE GOOD FAITH EFFORT SUBMITTAL.” The instructions for completing the good faith effort submittal can be found on the City’s website:

<https://www.sandiego.gov/sites/default/files/legacy/eoc/pdf/slbegfeinst.pdf>

I. SUBCONTRACTOR SUBSTITUTION.

1. Evidence of fraud or discrimination in the substitution of Subcontractors will result in sanctions including assessment of penalty fines, termination of Contract, or debarment. This section does not replace applicable California Public Contract Code.

J. FALSIFICATION OF SUB-AGREEMENT AND FRAUD.

1. Falsification or misrepresentation of a sub-agreement as to company name, Contract amount or actual Work performed by Subcontractors, or any falsification or fraud on the part your submission of documentation and forms pursuant to this program, will result in sanctions against you including assessment of penalty fines, termination of the Contract, or debarment. Instances of falsification or fraud which are indicative of an attempt by you to avoid subcontracting with certain categories of Subcontractors on the basis of race, gender, gender expression, gender identity, religion, national origin, ethnicity, sexual orientation, age, or disability shall be referred to the Equal Opportunity Contracting Program's Investigative Unit for possible violations of Article 2, Division 35 of the City Administrative Code, §§22.3501 et seq. (Nondiscrimination in Contracting).

K. RESOURCES.

1. The current list of certified SLBE-ELBE firms and information for completing the GFE submittal can be found on the City's EOC Department website:
<http://www.sandiego.gov/eoc/programs/slbe.shtml>
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ATTACHMENT D
PREVAILING WAGE

PREVAILING WAGE

1. **PREVAILING WAGE RATES:** Pursuant to San Diego Municipal Code section 22.3019, construction, alteration, demolition, repair and maintenance work performed under this Contract is subject to State prevailing wage laws. For construction work performed under this Contract cumulatively exceeding \$25,000 and for alteration, demolition, repair and maintenance work performed under this Contract cumulatively exceeding \$15,000, the Contractor and its subcontractors shall comply with State prevailing wage laws including, but not limited to, the requirements listed below.
 - 1.1. **Compliance with Prevailing Wage Requirements.** Pursuant to sections 1720 through 1861 of the California Labor Code, the Contractor and its subcontractors shall ensure that all workers who perform work under this Contract are paid not less than the prevailing rate of per diem wages as determined by the Director of the California Department of Industrial Relations (DIR). This includes work performed during the design and preconstruction phases of construction including, but not limited to, inspection and land surveying work.
 - 1.1.1. Copies of such prevailing rate of per diem wages are on file at the City and are available for inspection to any interested party on request. Copies of the prevailing rate of per diem wages also may be found at <http://www.dir.ca.gov/OPRL/DPreWageDetermination.htm>. Contractor and its subcontractors shall post a copy of the prevailing rate of per diem wages determination at each job site and shall make them available to any interested party upon request.
 - 1.1.2. The wage rates determined by the DIR refer to expiration dates. If the published wage rate does not refer to a predetermined wage rate to be paid after the expiration date, then the published rate of wage shall be in effect for the life of this Contract. If the published wage rate refers to a predetermined wage rate to become effective upon expiration of the published wage rate and the predetermined wage rate is on file with the DIR, such predetermined wage rate shall become effective on the date following the expiration date and shall apply to this Contract in the same manner as if it had been published in said publication. If the predetermined wage rate refers to one or more additional expiration dates with additional predetermined wage rates, which expiration dates occur during the life of this Contract, each successive predetermined wage rate shall apply to this Contract on the date following the expiration date of the previous wage rate. If the last of such predetermined wage rates expires during the life of this Contract, such wage rate shall apply to the balance of the Contract.
 - 1.2. **Penalties for Violations.** Contractor and its subcontractors shall comply with California Labor Code section 1775 in the event a worker is paid less than the prevailing wage rate for the work or craft in which the worker is employed. This shall be in addition to any other applicable penalties allowed under Labor Code sections 1720 – 1861.

- 1.3. Payroll Records.** Contractor and its subcontractors shall comply with California Labor Code section 1776, which generally requires keeping accurate payroll records, verifying and certifying payroll records, and making them available for inspection. Contractor shall require its subcontractors to also comply with section 1776. Contractor and its subcontractors shall submit weekly certified payroll records online via the City's web-based Labor Compliance Program. Contractor is responsible for ensuring its subcontractors submit certified payroll records to the City.
- 1.3.1.** Contractor and their subcontractors shall also furnish records specified in Labor Code section 1776 directly to the Labor Commissioner in the manner required by Labor Code section 1771.4.
- 1.4. Apprentices.** Contractor and its subcontractors shall comply with California Labor Code sections 1777.5, 1777.6 and 1777.7 concerning the employment and wages of apprentices. Contractor is held responsible for the compliance of their subcontractors with sections 1777.5, 1777.6 and 1777.7.
- 1.5. Working Hours.** Contractor and their subcontractors shall comply with California Labor Code sections 1810 through 1815, including but not limited to: (i) restrict working hours on public works contracts to eight hours a day and forty hours a week, unless all hours worked in excess of 8 hours per day are compensated at not less than 1½ times the basic rate of pay; and (ii) specify penalties to be imposed on contractors and subcontractors of \$25 per worker per day for each day the worker works more than 8 hours per day and 40 hours per week in violation of California Labor Code sections 1810 through 1815.
- 1.6. Required Provisions for Subcontracts.** Contractor shall include at a minimum a copy of the following provisions in any contract they enter into with a subcontractor: California Labor Code sections 1771, 1771.1, 1775, 1776, 1777.5, 1810, 1813, 1815, 1860 and 1861.
- 1.7. Labor Code Section 1861 Certification.** Contractor in accordance with California Labor Code section 3700 is required to secure the payment of compensation of its employees and by signing this Contract, Contractor certifies that "I am aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this Contract."
- 1.8. Labor Compliance Program.** The City has its own Labor Compliance Program authorized in August 2011 by the DIR. The City will withhold contract payments when payroll records are delinquent or deemed inadequate by the City or other governmental entity, or it has been established after an investigation by the City or other governmental entity that underpayment(s) have occurred. For questions or assistance, please contact the City of San Diego's Prevailing Wage Unit at 858-627-3200.

- 1.9. Contractor and Subcontractor Registration Requirements.** This project is subject to compliance monitoring and enforcement by the DIR. A contractor or subcontractor shall not be qualified to bid on, be listed in a bid or proposal, subject to the requirements of section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, unless currently registered and qualified to perform public work pursuant to Labor Code section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.
- 1.9.1.** 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 non-responsive 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.
- 1.9.2.** 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 for themselves and all listed subcontractors to the City at the time of bid or proposal due date or upon request.
- 1.10. Stop Order.** For Contractor or its subcontractors engaging in the performance of any public work contract without having been registered in violation of Labor Code sections 1725.5 or 1771.1, the Labor Commissioner shall issue and serve a stop order prohibiting the use of the unregistered contractors or unregistered subcontractor(s) on ALL public works until the unregistered contractor or unregistered subcontractor(s) is registered. Failure to observe a stop order is a misdemeanor.
- 1.11. List of all Subcontractors.** The Contractor shall provide the list of subcontractors (regardless of tier), along with their DIR registration numbers, utilized on this Contract prior to any work being performed; and the Contractor shall provide a complete list of all subcontractors with each invoice. Additionally, Contractor shall provide the City with a complete list of all subcontractors (regardless of tier) utilized on this contract within ten working days of the completion of the contract, along with their DIR registration numbers. The City shall withhold final payment to Construction Management Professional until at least thirty (30) days after this information is provided to the City.
- 1.12. Exemptions for Small Projects.** There are limited exemptions for installation, alteration, demolition, or repair work done on projects of \$25,000 or less. The

Contractor shall still comply with Labor Code sections 1720 et. seq. The only recognized exemptions are listed below:

- 1.12.1.** Registration. The Contractor will not be required to register with the DIR for small projects. (Labor Code section 1771.1).
- 1.12.2.** Certified Payroll Records. The records required in Labor Code section 1776 shall be required to be kept and submitted to the City of San Diego, but will not be required to be submitted online with the DIR directly. The Contractor will need to keep those records for at least three years following the completion of the Contract. (Labor Code section 1771.4).
- 1.12.3.** List of all Subcontractors. The Contractor shall not be required to hire only registered subcontractors and is exempt from submitting the list of all subcontractors that is required in section 1.11 above. (Labor code section 1773.3).

ATTACHMENT E
SUPPLEMENTARY SPECIAL PROVISIONS

SUPPLEMENTARY SPECIAL PROVISIONS

The following Supplementary Special Provisions (SSP) modifies the following documents:

1. The **2021 Edition** of the Standard Specifications for Public Works Construction (The "GREENBOOK").
2. The **2021 Edition** of the City of San Diego Standard Specifications for Public Works Construction (The "WHITEBOOK"), including the following:
 - a) General Provisions (A) for all Construction Contracts.

SECTION 1 – GENERAL, TERMS, DEFINITIONS, ABBREVIATIONS, UNITS OF MEASURE, AND SYMBOLS

- 1-2 TERMS AND DEFINITIONS.** To the "WHITEBOOK", item 55, "Normal Working Hours", ADD the following:

Normal Working Hours - Normal Working Hour core periods shall be **7:00 AM – 5:00 PM**, Monday through Friday, inclusive. Saturdays, Sundays, and City Holidays are excluded. Normal Working Hours on Roadways are defined as **8:30 AM - 3:30 PM**. Task Order Normal Working hours shall be defined in the Task or the Traffic Control Permits.

SECTION 2 - SCOPE OF THE WORK

- 2-2 PERMITS, FEES, AND NOTICES.** To the "WHITEBOOK", ADD the following:

2. You shall obtain the following permits:
 - a) Building Permit

SECTION 3 – CONTROL OF THE WORK

- 3-2 SELF-PERFORMANCE.** To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. You shall perform, with your own organization, Contract Work amounting to at least **30%** of the Base Bid.

- 3-9 TECHNICAL STUDIES AND SUBSURFACE DATA.** To the "WHITEBOOK", ADD the following:

5. In preparation of the Contract Documents, the designer has relied upon the following reports of explorations and tests at the Work Site:
 - a) Geotechnical Investigation Report, Dated February 7, 2020 by Kleinfelder.

6. The reports listed above are available for review at the following link:

<https://drive.google.com/drive/folders/1W0IGHm0IIKIEOx9N-FkSF7I7V82gvcNm?usp=sharing>

3-10 **SURVEYING.** To the “GREENBOOK” and “WHITEBOOK”, DELETE in its entirety and SUBSTITUTE with the following:

3-10 **SURVEYING (DESIGN-BID-BUILD).**

3-10.1 **General.**

1. You shall provide all required site layout and general grade checking work not specified in 3-10.2, “Survey Services Provided by City”.
2. Notify the City, in writing, at least 2 Working Days prior to requesting survey services provided by the City.

3-10.2 **Survey Services Provided by City.**

1. Unless otherwise noted, monument perpetuation, including mark-outs, will be performed by the City. Coordination of these services will be your duty, through the Resident Engineer. If, at any time, an existing survey monument is, or will be, destroyed or disturbed during the course of construction you shall notify the Resident Engineer so that the monument is preserved or perpetuated in accordance with state law.
2. The following surveying services, as defined in Cal. Bus. & Prof. Code §8726, shall be provided by the City:
 - a) Locating or establishing a minimum of 4 project geodetic survey control points that provide horizontal and vertical reference values for site feature and structure layout reference locations.
 - b) Locating, establishing, or reestablishing project site boundary lines, survey monuments, right-of-way lines, or easement lines.
 - c) Locating or establishing building design structure locations (building corners or envelope limits) sufficient for structure construction.

3-10.3 **Payment.**

1. The payment for site layout and general grade checking Work, coordination, and preservation of all survey related marks shall be included in the Contract Price.

3-12.1 **General.** To the “WHITEBOOK”, ADD the following:

3. You shall sweep all paved areas within the Work site and all paved haul routes as specified below:
 - a) Every Friday on a weekly basis.

- b) 1 Working Day prior to each rain event.
- c) As directed by the Engineer.

If these requirements would require you to sweep on a Holiday or Weekend, then you shall sweep the next available Working Day prior to that Holiday or Weekend.

3-15.2 Integration of the Work with Separate Contractors. To the "WHITEBOOK", ADD the following:

- 2. The list of Separate Contractors includes:
 - a) Miramar Valves Replacement Project (B-20015) - Julie Adam, Project Manager, 619-533-7412, JAdam@sandiego.gov

3-15.3 Coordination. To the "WHITEBOOK", ADD the following:

- 2. Other adjacent City projects are scheduled for construction for the same time period in the vicinity of the Library parking lot. See **Appendix F - Adjacent Projects Map** for the approximate location. Coordinate the Work with the adjacent projects as listed below:
 - a) Miramar Valves Replacement Project (B-20015) - Julie Adam, Project Manager, 619-533-7412, JAdam@sandiego.gov

SECTION 4 - CONTROL OF MATERIALS

4-3.4 Specialty Inspection Paid for by the Contractor. To the "WHITEBOOK", ADD the following:

- 2. The specialty inspections required are listed as follows:
 - a) Concrete, Steel and Retaining Walls
 - b) Soil Compaction.

4-3.4.1 Payment. To the "WHITEBOOK", item 1, DELETE in its entirety and SUBSTITUTE with the following:

- 1. The payment for the specialty inspection service work shall be included under the bid item for "Construction of Scripps Miramar Ranch Parking Lot Expansion"

4-6 TRADE NAMES. To the "WHITEBOOK", ADD the following:

- 11. You shall submit your list of proposed substitutions for an "equal" item **no later than 5 Working Days after the issuance of the Notice of Intent to Award** and on the City's Product Submittal Form available at:

<https://www.sandiego.gov/ecp/edocref/>

SECTION 5 – LEGAL RELATIONS AND RESPONSIBILITIES

5-4 INSURANCE. To the “GREENBOOK”, DELETE in its entirety and SUBSTITUTE with the following:

5-4 INSURANCE.

1. The insurance provisions herein shall not be construed to limit your indemnity obligations contained in the Contract.

5-4.1 Policies and Procedures.

1. You shall procure the insurance described below, at its sole cost and expense, to provide coverage against claims for loss including injuries to persons or damage to property, which may arise out of or in connection with the performance of the Work by you, your agents, representatives, officers, employees or Subcontractors.
2. Insurance coverage for property damage resulting from your operations is on a replacement cost valuation. The market value will not be accepted.
3. You shall maintain this insurance for the duration of this Contract and at all times thereafter when you are correcting, removing, or replacing Work in accordance with this Contract. Your liabilities under the Contract, e.g., your indemnity obligations, is not deemed limited to the insurance coverage required by this Contract.
4. If you maintain broader coverage or higher limits than the minimums shown below, City requires and shall be entitled to the broader coverage or the higher limits maintained by you. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to City.
5. Your payment for insurance shall be included in the Contract Price you bid. You are not entitled to any additional payment from the City to cover your insurance, unless the City specifically agrees to payment in writing. Do not begin any Work under this Contract or allow any Subcontractors to begin work, until you have provided, and the City has approved, all required insurance.
6. Policies of insurance shall provide that the City is entitled to 30 days advance written notice of cancellation or non-renewal of the policy or 10 days advance written notice for cancellation due to non-payment of premium. Maintenance of specified insurance coverage is a material element of the Contract. Your failure to maintain or renew coverage and to provide evidence of renewal during the term of the Contract may be treated by the City as a material breach of the Contract.

5-4.2 Types of Insurance.

5-4.2.1 Commercial General Liability Insurance.

1. Commercial General Liability Insurance shall be written on the current version of the ISO Occurrence form CG 00 01 07 98 or an equivalent form providing coverage at least as broad.

2. The policy shall cover liability arising from premises and operations, XCU (explosions, underground, and collapse), independent contractors, products/completed operations, personal injury and advertising injury, bodily injury, property damage, and liability assumed under an insured's contract (including the tort liability of another assumed in a business contract).
3. There shall be no endorsement or modification limiting the scope of coverage for either "insured vs. insured" claims or contractual liability. You shall maintain the same or equivalent insurance for at least 10 years following completion of the Work.
4. All costs of defense shall be outside the policy limits. Policy coverage shall be in liability limits of not less than the following:

<u>General Annual Aggregate Limit</u>	<u>Limits of Liability</u>
Other than Products/Completed Operations	\$10,000,000
Products/Completed Operations Aggregate Limit	\$10,000,000
Personal Injury Limit	\$5,000,000
Each Occurrence	\$5,000,000

5-4.2.2 Commercial Automobile Liability Insurance.

1. You shall provide a policy or policies of Commercial Automobile Liability Insurance written on the current version of the ISO form CA 00 01 12 90 or later version or equivalent form providing coverage at least as broad in the amount of \$1,000,000 combined single limit per accident, covering bodily injury and property damage for owned, non-owned, and hired automobiles ("Any Auto").
2. All costs of defense shall be outside the limits of the policy.

5-4.2.3 Workers' Compensation Insurance and Employers Liability Insurance.

1. In accordance with the provisions of California Labor Code section 3700, you shall provide, at your expense, Workers' Compensation Insurance and Employers Liability Insurance to protect you against all claims under applicable state workers' compensation laws. The City, its elected officials, and employees will not be responsible for any claims in law or equity occasioned by your failure to comply with this requirement.
2. Statutory Limits shall be provided for Workers' Compensation Insurance as required by the state of California, and Employer's Liability Insurance with limits of no less than \$1,000,000 per accident for bodily injury or disease.
3. By signing and returning the Contract, you certify that you are aware of the provisions of California's Workers' Compensation laws, including Labor Code section 3700, which requires every employer to be insured against liability for

workers' compensation or to undertake self-insurance, and that you will comply with these provisions before commencing the Work.

5-4.2.4 Contractors Pollution Liability Insurance.

1. You shall procure and maintain at your expense or require your Subcontractor, as described below, to procure and maintain Contractors Pollution Liability Insurance applicable to the Work being performed, with a limit no less than \$2,000,000 per claim or occurrence and \$4,000,000 aggregate per policy period of one year.
2. All costs of defense shall be outside the limits of the policy.
3. You shall obtain written approval from the City for any insurance provided by your Subcontractor instead of you.
4. For approval of a substitution of your Subcontractor's insurance, you shall certify that all activities for which the Contractors Pollution Liability Insurance will provide coverage will be performed exclusively by the Subcontractor providing the insurance. The deductible shall not exceed \$25,000 per claim unless the City has provided prior, written approval.
5. Occurrence based policies shall be procured before the Work commences. Claims Made policies shall be procured before the Work commences, shall be maintained for the Contract Time, and shall include a 12-month extended Claims Discovery Period applicable to this contract or the existing policy or policies that shall continue to be maintained for 12 months after the completion of the Work without advancing the retroactive date.

5-4.2.6 Contractors Builders Risk Property Insurance.

1. You shall provide at your expense, and maintain until Final Acceptance of the Work, a Special Form Builders Risk Policy or Policies. This insurance shall be in an amount equal to the replacement cost of the completed Work (without deduction for depreciation) including the cost of excavations, grading, and filling. The policy or policies limits shall be 100 percent of the value of the Work under this Contract, plus 15 percent to cover administrative costs, design costs, and the costs of inspections and construction management.
2. Insured property shall include material or portions of the Work located away from the Site but intended for use at the Site and shall cover material or portions of the Work in transit. The policy or policies shall include as insured property scaffolding, falsework, and temporary buildings located at the Site. The policy or policies shall cover the cost of removing debris, including demolition.
3. The policy or policies shall provide that all proceeds shall be payable to the City as Trustee for the insured, and shall name the City, the Contractor, Subcontractors, and Suppliers of all tiers as named insured. The City, as Trustee, will collect, adjust, and receive all monies that become due and

payable under the policy or policies, may compromise any and all claims, and will apply the proceeds of this insurance to the repair, reconstruction, or replacement of the Work.

4. Any deductible applicable to the insurance shall be identified in the policy or policies documents. The responsibility for paying the part of any loss not covered because of the deductibles shall be apportioned among the parties, except for the City, as follows: if there is more than one claimant for a single occurrence, then each claimant shall pay a pro-rata share of the per occurrence deductible based upon the percentage of their paid claim to the total paid for insured. The City shall be entitled to 100 percent of its loss. You shall pay the City any portion of the loss not covered because of a deductible; at the same time the proceeds of the insurance are paid to the City as Trustee.
5. Any insured, other than the City, making claim to which a deductible applies shall be responsible for 100 percent of the loss not insured because of the deductible.

5-4.2.8 Architects and Engineers Professional Insurance (Errors and Omissions Insurance).

1. For Contracts with required engineering services, including Design-Build and preparation of engineered Traffic Control Plans (TCP) by you, you shall keep or require all of your employees and Subcontractors, who provide professional engineering services under Contract, to provide to the City proof of Professional Liability coverage with a limit of no less than **\$1,000,000** per claim and **\$2,000,000** aggregate per policy period of one year.
2. You shall ensure the following:
 - a) The policy retroactive date is on or before the date of commencement of the Project.
 - b) The policy will be maintained in force for a period of three years after completion of the Project or termination of the Contract, whichever occurs last. You agree that, for the time period specified above, there will be no changes or endorsements to the policy that affect the specified coverage.
3. If professional engineering services are to be provided solely by the Subcontractor, you shall:
 - a) Certify this to the City in writing, and
 - b) Agree in writing to require the Subcontractor to procure Professional Liability coverage in accordance with the requirements set forth here.

5-4.3 Rating Requirements. Except for the State Compensation Insurance Fund, all insurance required by this Contract shall be carried only by responsible insurance companies with a rating of, or equivalent to, at least "A-, VI" by A.M. Best Company,

that are authorized by the California Insurance Commissioner to do business in the state of California, and that have been approved by the City.

5-4.3.1 Non-Admitted Carriers. The City will accept insurance provided by non-admitted, “surplus lines” carriers only if the carrier is authorized to do business in the state of California and is included on the List of Approved Surplus Lines Insurers (LASLI list).

All policies of insurance carried by non-admitted carriers shall be subject to all of the requirements for policies of insurance provided by admitted carriers described in this Contract.

5-4.4 Evidence of Insurance. You shall furnish the City with original Certificates of Insurance, including all required amendatory endorsements (or copies of the applicable policy language effecting coverage required by this clause), prior to your commencement of Work under this Contract. In addition, The City reserves the right to require complete, certified copies of all required insurance policies, including endorsements, required by these specifications, at any time.

5-4.5 Policy Endorsements.

5-4.5.1 Commercial General Liability Insurance.

5-4.5.1.1 Additional Insured. To the fullest extent permitted by law and consistent with the limiting provisions set forth at California Civil Code section 2782, California Insurance Code section 11580.04, and any applicable successor statutes limiting indemnification of public agencies that bind the City, the policy or policies shall be endorsed to include as an Additional Insured the City and its respective elected officials, officers, employees, agents, and representatives, with respect to liability arising out of:

- i. Ongoing operations performed by you or on your behalf,
- ii. your products,
- iii. your work, e.g., your completed operations performed by you or on your behalf, or
- iv. premises owned, leased, controlled, or used by you.

5-4.5.1.2 Primary and Non-Contributory Coverage. The policy shall be endorsed to provide that the coverage with respect to operations, including the completed operations, if appropriate, of the Named Insured is primary to any insurance or self-insurance of the City and its elected officials, officers, employees, agents and representatives. Further, it shall provide that any insurance maintained by the City and its elected officials, officers, employees, agents and representatives shall be in excess of your insurance and shall not contribute to it.

5-4.5.1.3 Project General Aggregate Limit. The policy or policies shall be endorsed to provide a Designated Construction Project General Aggregate Limit that will apply only to the Work. Only claims payments which arise from the Work shall reduce the Designated Construction Project General Aggregate Limit. The Designated Construction Project

General Aggregate Limit shall be in addition to the aggregate limit provided for the products-completed operations hazard.

5-4.5.2 Workers' Compensation Insurance and Employers Liability Insurance.

5-4.5.2.1 Waiver of Subrogation. The policy or policies shall be endorsed to provide that the insurer will waive all rights of subrogation against the City and its respective elected officials, officers, employees, agents, and representatives for losses paid under the terms of the policy or policies and which arise from Work performed by the Named Insured for the City.

5-4.5.3 Contractors Pollution Liability Insurance Endorsements.

5-4.5.3.1 Additional Insured. To the fullest extent permitted by law and consistent with the limiting provisions set forth at California Civil Code section 2782, California Insurance Code section 11580.04, and any applicable successor statutes limiting indemnification of public agencies that bind the City, the policy or policies shall be endorsed to include as an Additional Insured the City and its respective elected officials, officers, employees, agents, and representatives, with respect to liability arising out of:

- a. Ongoing operations performed by you or on your behalf,
- b. your products,
- c. your work, e.g., your completed operations performed by you or on your behalf, or
- d. premises owned, leased, controlled, or used by you.

5-4.5.3.2 Primary and Non-Contributory Coverage. The policy or policies shall be endorsed to provide that the insurance afforded by the Contractors Pollution Liability Insurance policy or policies is primary to any insurance or self-insurance of the City and its elected officials, officers, employees, agents and representatives with respect to operations including the completed operations of the Named Insured. Any insurance maintained by the City and its elected officials, officers, employees, agents and representatives shall be in excess of your insurance and shall not contribute to it.

5-4.5.3.3 Severability of Interest. For Contractors Pollution Liability Insurance, the policy or policies shall provide that your insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability and shall provide cross-liability coverage.

5-4.5.5 Builders Risk Endorsements.

5-4.5.5.1 Waiver of Subrogation. The policy or policies shall be endorsed to provide that the insurer will waive all rights of subrogation against the City, and its respective elected officials, officers, employees, agents, and representatives for losses paid under the terms of the policy or policies and that arise from Work performed by the Named Insured for the City.

- 5-4.5.5.2 Builders Risk – Partial Utilization.** If the City desires to occupy or use a portion or portions of the Work prior to Acceptance,, the City will notify you, and you shall immediately notify your Builder's Risk insurer and obtain an endorsement that the policy or policies shall not be cancelled or lapse on account of any use or occupancy. You shall obtain the endorsement prior to the City's occupation and use.
- 5-4.6 Deductibles and Self-Insured Retentions.** You shall disclose deductibles and self-insured retentions to the City at the time the evidence of insurance is provided. The City may require you to purchase coverage with a lower retention or provide proof of ability to pay losses and related investigations, claim administration, and defense expenses within the retention. The policy language shall provide, or be endorsed to provide, that the self-insured retention may be satisfied by either the named insured or City.
- 5-4.7 Reservation of Rights.** The City reserves the right, from time to time, to review your insurance coverage, limits, deductibles, and self-insured retentions to determine if they are acceptable to the City. The City will reimburse you, without overhead, profit, or any other markup, for the cost of additional premium for any coverage requested by the Engineer, but not required by this Contract.
- 5-4.8 Notice of Changes to Insurance.** You shall notify the City, in writing, 30 days prior to any material change to the policies of insurance provided under this Contract. This written notice is in addition to the requirements of paragraph 6 of Section 5-4.1.
- 5-4.9 Excess Insurance.** Policies providing excess coverage shall follow the form of the primary policy or policies, including, all endorsements.

SECTION 6 – PROSECUTION AND PROGRESS OF THE WORK

- 6-1.1 Construction Schedule.** To the "WHITEBOOK", ADD the following:
3. Refer to the Sample City Invoice materials in **Appendix D – Sample City Invoice with Cash Flow Forecast** and use the format shown.
 4. The **120 Calendar Day** Plant Establishment Period, and **25 months of** Vegetation Hydroseeding Maintenance, is included in the stipulated Contract Time and shall begin with the acceptance of installation of the vegetation plan in accordance with Section 801-6, "MAINTENANCE AND PLANT ESTABLISHMENT".
- 6-1.2.1 Construction Phasing.** To the "WHITEBOOK", ADD the following:
3. The work shall be done in two ADA compliant (2) phases, to allow the library to stay operational during the construction duration. The general contractor shall propose the (2) phases and need the City's approval prior to proceed. The first phase may be the construction of the new driveway entrance, backfill the canyon, building retaining walls (A & B), and part of the new parking (including its smaller retaining walls, biofiltration basins and others, TYP), and the second phase may be the rest of the project.

4. Do not proceed to the next phase unless the Engineer has accepted the preceding phase.
5. The prime contractor to propose the work phases during the Pre-Construction meeting.

ADD:

6-6.1.1

Environmental Document.

1. The City of San Diego has prepared a **Notice of Exemption** for **Scripps Miramar Ranch Library Parking Expansion (Scripps Miramar Ranch Library)**. Project No. **665541**, as referenced in the Contract Appendix. You shall comply with all requirements of the **Notice of Exemption** as set forth in **Appendix A**.
2. Compliance with the City's environmental document shall be included in the Contract Price, unless separate bid items have been provided.

SECTION 7 – MEASUREMENT AND PAYMENT

7-3.1

General. To the "WHITEBOOK", ADD the following:

3. The Lump Sum Bid item for "**Construction of Scripps Miramar Ranch Parking Lot Expansion**" Improvement to the Scripps Miramar Ranch Branch Library, that includes and not limited to the expansion of the existing library parking to provide additional parking spaces, improvements of the existing parking, additional driveways entrance, and the upgrade of the existing library driveway entrance with new traffic signals, signs, street crossings, pedestrian ramps and associated Scripps Lake Drive street improvements. New retaining walls are required to be designed, permitted, and installed, along with the import of soil to fill the existing canyon where the parking expansion is planned. New ADA / Code compliances sidewalks, ramps, and signs. New parking lights, drainage, landscaping, and irrigation systems. Mobilization, demobilization, disposal of demolished and excavated material. This Scope of Work shall include and not limited to; Code Required Special Inspections, Traffic Control Permit, BMP, Street Sweeping and Potholing. The work shall be done in two (2) ADA compliant phases, per the City Whitebook Section 6-1.2.1, to allow the library to stay operational during the construction duration. The general contractor shall propose the two (2) phases and need the City's approval prior to proceed. The first phase may be the construction of the new driveway entrance, backfill the canyon, building retaining walls (A & B), and part of the new parking (including its smaller retaining walls, biofiltration basins and others, TYP), and the second phase may be the rest of the project.

7-3.11

Compensation Adjustments for Price Index Fluctuations. To the "WHITEBOOK", ADD the following:

5. This Contract **is not** subject to the provisions of The "WHITEBOOK" for Compensation Adjustments for Price Index Fluctuations for paving asphalt.

SECTION 314 – TRAFFIC STRIPING, CURB AND PAVEMENT MARKINGS, AND PAVEMENT MARKERS

314-1 GENERAL. To the "GREENBOOK", ADD the following:

All details and dimensions for pavement markings shall conform to City-approved stencils.

Contractor must obtain City approval from the City's Traffic Engineer or representative for the striping layout prior to applying any permanent striping.

All limit lines/stop bars, crosswalk lines and pavement markings shall be thermoplastic, unless otherwise specified.

All signs purchased and installed by the Contractor shall conform to the standards provided in the latest edition of the California MUTCD, including sign size, shape, color, symbols, retro-reflectivity, vertical and lateral mounting offsets, etc. All sign face reflective sheets shall be high intensity grade with a clear protective overlay film (i.e. anti-graffiti coating).

All sign posts shall be 2"-square, perforated galvanized steel with break-away base, per City of San Diego Regional Standard Drawing No. M-45, unless otherwise specified.

314-2 REMOVAL OF TRAFFIC STRIPING AND CURB AND PAVEMENT MARKINGS.

314-2.1 General. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

You shall remove existing traffic striping and pavement markings by hydro-blasting (water blasting technology). Obliteration with black paint or emulsified asphalt will not be allowed.

Curb markings shall be painted over as specified in the Special Provisions or shown on the Plans.

Conflicting striping and pavement markings shall be removed before the application of new temporary or permanent traffic striping, and curb or pavement markings.

Contractor shall remove the pavement paint stripes, markings and thermoplastic in a way that does not damage the underlying asphalt greater than 1/16" in depth.

314-4.4 Thermoplastic Traffic Striping and Pavement Markings.

314-4.4.4 Application. To the "WHITEBOOK", ADD the following:

Asphalt: The materials shall be applied per method recommended by the manufacturer. The material must be able to be applied without minimum requirements for ambient and road temperatures and without any preheating of the pavement to a specific temperature. The material must be able to be applied without the use of a thermometer. The pavement shall be clean, dry and free of debris. Supplier must enclose application instructions in English and Spanish with each box/package.

Portland Cement Concrete: Same as asphalt except a compatible primer sealer shall be applied before application to assure proper adhesion. Primer sealer must conform to thermoplastic manufacturer specifications.

314-4.4.6 Payment. To the "WHITEBOOK", ADD the following:

6. The contract lump sum price paid for "Construction of Scripps Miramar Ranch Library Parking Lot Expansion " shall be considered as full compensation for furnishing all labor, materials, tools, equipment, incidentals, and for all work involved in painting traffic stripes, pavement markings, signage, reflectors, raised reflective pavement markers, thermoplastic arrows, thermoplastic crosswalks, removal of existing stripes and markings in conflict with the proposed striping plan, if needed, or otherwise called out for removal and temporary striping, complete in place in accordance with the Plans, Standard Specifications and these Special Provisions, and as directed by the resident engineer. The contractor will be responsible for all markings and delineation until such time as street(s) are accepted by the City of San Diego and no additional compensation will be allowed.

SECTION 402 – UTILITIES

402-2 PROTECTION. To the "WHITEBOOK", item 2, ADD the following:

- g) Refer to **Appendix I - Advanced Metering Infrastructure (AMI) Device Protection** for more information on the protection of AMI devices.

402-6 COOPERATION. To the "WHITEBOOK", ADD the following:

1. Notify SDG&E at least **60 Working Days** prior to excavating within 10 feet of SDG&E Underground High Voltage Transmission Power Lines (69 KV and higher).

SECTION 601 - TEMPORARY TRAFFIC CONTROL FOR CONSTRUCTION AND MAINTENANCE WORK ZONES

601-2.1.2 Engineered Traffic Control Plans (TCP). To the "WHITEBOOK", ADD the following:

5. Engineered TCP (2 foot x 3 foot size) shall be required for the following areas:
 - a) Scripps Lake Dr.

601-7 PAYMENT. To the "WHITEBOOK", item 2, DELETE in its entirety and SUBSTITUTE with the following:

2. The payment for Engineered Traffic Control Plans, traffic control Work, and permits shall be included in the Bid item for "Construction of Scripps Miramar Ranch Parking Lot Expansion"

SECTION 700 – MATERIALS

700-1.1 Foundations. To the "WHITEBOOK", ADD the following:

3. This work includes constructing cast-in-drilled-hole pile foundations for traffic signal and lighting standards. Comply with 2018 Caltrans Standard Specifications. Concrete must contain not less than 590 pounds of cementitious material per cubic yard.
4. For standards located in sidewalk areas, the pile foundation must be:
 - a. Placed to final sidewalk grade before the sidewalk is placed.
 - b. Square for the top 4-inches.

Use sleeve nuts on Type 1-A standards. The bottom of the base plate must be flush with finished grade.

700-1.2 Standards, Steel Pedestals, and Posts.

700-1.2.1 General. To the "WHITEBOOK", ADD the following:

3. Standards, steel pedestals, and posts for traffic signal and lighting standards shall conform to the provisions in the 2018 Caltrans Standard Specifications.
4. Steel bolts not designated on the plans as high-strength (HS) or stainless steel shall be for general applications and shall conform to the requirements in ASTM Designation: A307.
5. Anchor bolts shall conform to the requirements in ASTM Designation: F1554, Grade 36. High-strength (HS) anchor bolts shall conform to the requirements in ASTM Designation: F1554, Grade 105.

700-1.3 Conduit. To the "WHITEBOOK", ADD the following:

8. All conduit shall be two inches (2") minimum schedule 80 PVC unless otherwise shown on plans.

700-1.4 Pull Boxes. To the "WHITEBOOK", ADD the following:

6. Pull boxes shall conform to the provisions in 2018 Caltrans Standard Specifications.

ADD:

700-4.9 Led Blank-out Sign.

Blank-Out signs shall be from a Caltrans approved manufacturer.

ADD:

700-5.4 Pedestrian Push Button Assemblies.

1. Pedestrian push buttons shall be Polara Navigator 2-Wire, manufactured by Polara Enterprises, LLC or approved equal with control unit and interconnect board.

700-6.2 LED Cobra Head Luminaire.

700-6.2.1 General. To the "WHITEBOOK", ADD the following:

2. Luminaires shall be General Electric manufactured, model #: ERS1-0-11-D1-40-A- GRAY-L.
3. Where the plans refer to the side tenon detail at the end of the signal mast arm, the applicable tip tenon detail may be substituted.
4. The sign mounting hardware shall be installed at the locations shown on the plans.
5. Handhole reinforcement rings for standards, steel pedestals, and posts shall be continuous around the handholes.

700-8.2.1.3 Discriminator Module. To the "WHITEBOOK", item 10, DELETE in its entirety and SUBSTITUTE with the following:

10. Discriminator module shall be Opticom 764 phase selector or approved equal and shall designed to be compatible and usable with GPS and IR.

SECTION 701 – CONSTRUCTION

701-2 PAYMENT. To "WHITEBOOK", ADD the following:

6. The contract Lump Sum price paid for "**Scripps Miramar Ranch Library Parking Lot Expansion**" shall be considered as full compensation for Improvement to the Scripps Miramar Ranch Branch Library, that includes and not limited to the expansion of the existing library parking to provide additional parking spaces, improvements of the existing parking, additional driveways entrance, and the upgrade of the existing library driveway entrance with new traffic signals, signs, street crossings, pedestrian ramps and associated Scripps Lake Drive street improvements. New retaining walls are required to be designed, permitted, and installed, along with the import of soil to fill the existing canyon where the parking expansion is planned. New ADA / Code compliances sidewalks, ramps, and signs. New parking lights, drainage, landscaping, and irrigation systems. Mobilization, demobilization, disposal of demolished and excavated material. This Scope of Work shall include and not limited to; Code Required Special Inspections, Traffic Control Permit, BMP, Street Sweeping and Potholing. The work shall be done in two (2) ADA compliant phases, per the City Whitebook Section 6-1.2.1, to allow the library to stay operational during the construction duration. The general contractor shall propose the two (2) phases and need the City's approval prior to proceed. The first phase may be the construction of the new driveway entrance, backfill the canyon, building retaining walls (A & B), and part of the new parking (including its smaller retaining walls, biofiltration basins and others, TYP), and the second phase may be the rest of the project.

SECTION 800 – MATERIALS

800-1 **LANDSCAPING MATERIALS.** To the "GREENBOOK", add the following:

800-1.0.1 **Summary.**

- A. Section includes:
 - 1. Organic Soil Amendment

800-1.0.2 **References.**

- A. Methods of Soil Analysis, Part 3 Chemical Methods, Soil Science Society of America, Inc., 1996
 - 1. Methods of Soil Analysis, Part 1, Physical and Mineralogical Methods, Soil Science Society of America, Inc., 1986
 - 2. The University of California, Division of Agricultural Sciences, "Diagnostic Criteria for Plants and Soils" edited by Homer D. Chapman, 1966
 - 3. USDA Agricultural Handbook No. 60, Diagnosis and Improvement of Saline and Alkali

800-1.0.3 **Submittals.**

- A. Product Data: Submit manufacturer's product data and installation instructions. Include required substrate preparation, list of materials, application rate/testing, and permeability rates.
 - 1. Landscaping soil materials data including:
 - a. Sample
 - b. Name, description and product data
 - 2. Landscaping vegetation materials data including:
 - a. Sample
 - b. Name and description of detailed plant seed mixes per schedule on the drawings.
 - c. Name and description of detailed plants per schedule on the drawings.
- B. Verifications: Manufacturer shall submit a letter of verification that the products meet or exceed all physical property, endurance, performance and packaging requirements. Tests should be conducted no more than 120 days prior to the delivery date of the BSM to the project site. Batch-specific test results and certification will be required for projects installing more than 100 cubic yards of BSM.

- C. The applicant shall submit the following to the municipality for approval:
1. A sample of mixed BSM.
 2. Grain size analysis results of the sand component performed in accordance with American Society for Testing and Materials (ASTM) D422, Standard Test Method for Particle Size Analysis of Soils.
 3. Grain size analysis results of sandy loam soil component performed in accordance with ASTM D422., Standard Test Method for Particle Size Analysis of Soils.
 4. Deleted
 5. A description of the equipment and methods used to mix the sand, sandy loam, and compost to produce BSM.
 6. Constant head permeability results of the mixed BSM. Constant head permeability testing in accordance with USDA method 34b permeability, Standard Test Method for Permeability of Granular Soils (Constant Head) should be conducted on a minimum of two samples with a 6-inch mold and vacuum saturation.
 7. Agricultural soil analysis of results for the BSM including nutrient content, soil organic matter, carbon: nitrogen ratio, and soil texture.
 8. Provide the following information about the testing laboratory(ies) including:
 - a. Name of laboratory(ies)
 - b. Contact person(s)
 - c. Address(es)
 - d. Phone contact(s)
 - e. Email address(es)
 - f. Qualifications of laboratory(ies), including use of ASTM and U.S. Department of Agriculture
 - g. (USDA) method of standards
 - h. Soil Science Society of America test methods.
 9. Contractor shall follow recommendations of Soil Report if at variance with this section. The contractor shall provide a plant list to the soils lab. The Soils Report recommendations and quantities shall be specifically for the types of plants as indicated on the planting plan(s) and legend(s).

800-1.0.4 Agricultural Soil Test.

- A. Soil samples shall be submitted to an agricultural soils testing lab. Soil test(s) shall be performed by an agricultural soil testing laboratory. Approved agricultural soil testing laboratories are indicated below:

Wallace Laboratories
365 Coral Circle
El Segundo, CA 90245
Phone: 310 615-0116 Fax: 310 640-6863
<http://www.bettersoils.com>

Soil & Plant Laboratory, Inc.
1594 N. Main Street
Orange, CA 92667
Phone: 714 282-8777 Fax: 714 282-8575
<http://www.soilandplantlaboratory.com>

Fruit Growers Laboratory, Inc.
853 Corporation Street
Santa Paula, CA 93061-0272
Phone: 805 659-0910 Fax: 805 525-4172
<http://www.fglinc.com>

800-1.0.5 Quality Assurance.

- A. Landscape Contractor Qualifications: Subcontractor must demonstrate the following minimum qualifications:
1. Possess a valid California Contractor License Class-27
 2. Demonstrated ability to provide landscape construction work including irrigation and planting work. Provide evidence to indicate successful experience in providing landscape work similar to that specified herein and demonstrate successful experience.
 3. Supervision: On site landscape supervisor must have experience installing irrigation and planting.

800-1.1.2 Class "A" Topsoil. To the "WHITEBOOK", item 4, subsection "e", DELETE in its entirety.

800-1.2.5 Mulch. To the "WHITEBOOK", item 3, subsections "a" and "h", DELETE in its entirety and ADD the following:

Type 1 Mulch

- a. **Organic Soil Amendments.**

For this project, an organic soil amendment shall be incorporated to amend the top 18 inches of soil depth for planting purposes.

Amendments shall be as described herein.

1. Humus material shall have an acid-soluble ash content of no less than 6% and no more than 20%. The organic matter content shall be at least 50% on a dry weight basis.
2. Moisture - 25% to 55% by weight on total basis.
3. The pH of the material shall be between 6 and 7.5.
4. The salt content shall be less than 6 millimho/cm @ 25° C. (ECe less than 6) in a saturated paste extract.
5. Boron content of the saturated extract shall be less than 1.0 part per million.
6. Silicon content (acid-insoluble ash) shall be less than 50%.
7. Chloride shall be specified in the final product.
8. Calcium carbonate shall not be present if to be applied on alkaline soils.
9. Types of acceptable products are composts, manures, mushroom composts, straw, alfalfa, peat mosses etc. low in salts, low in heavy metals, free from weed seeds, free of pathogens and other deleterious materials.
10. Composted wood products are conditionally acceptable [stable humus must be present]. Wood based products are not acceptable which are based on red wood or cedar.
11. Sludge-based materials are not acceptable.
12. Carbon:nitrogen ratio is between 10 and 20:1.
13. SAR (sodium adsorption ratio) less than 5.
14. Seed germination - over 80% germination in saturation extract diluted 1 to 3 in water compared to seeds germinated in deionized water.
15. Germination vigor - equal to or better than seed length for seeds germinated in deionized water.
16. Maturity and stability - Solvita 7 or higher.
17. Molar ratio of ammoniacal nitrogen to nitrate nitrogen less than 2.
18. The compost shall be aerobic without malodorous presence of decomposition products.

19. The maximum particle size shall be 0.5 inch, 80% or more shall pass a No. 4 screen.
20. Maximum total permissible pollutant concentrations in amendment in parts per million on a dry weight basis:

arsenic	12	copper	150	selenium	30
cadmium	15	lead	100	silver	10
chromium	100	mercury	10	vanadium	200
cobalt	50	molybdenum	20	zinc	200
		nickel	100		

21. Conditionally acceptable types include fully composted wood products such as Forest Floor Humus by Aguinaga Fertilizer 949/786-9558 or Washed Steer Humus/WCP33 by Earthworks 951/782-0260 or approved equal. Stable humus must be present. Contractor shall submit Manufacturer's Full Report on product that is less than 6 months old.
22. Pathogens per Class A 40 CFR Section 503.32(a).
23. Product Submittal: Contractor shall request technical analysis on compost from Manufacturer. Analysis shall be a full report inclusive of the information below. Analysis shall be less than 6 months old.
24. Trip Slips: Contractor shall provide Project Engineer with Trip Slips at time of delivery.

b. Type 8 Mulch.

Organic Mulch shall be modestly shredded fir or pine bark with the fines excluded from the mulch. Bark shall knit in a manner to minimize sloughing, floating, or being kicked away but not knit to the extent that there is insufficient soil aeration from a lack of air exchange.

800-2.4.1.4 Air Relief Valve. To the "WHITEBOOK", ADD the following:

2. An Air Relief Valve will not be required on systems where pressure compensating drip emitters with an internal check valve are used.

800-2.4.1.6 Drip Emitter. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. All emitters on a system shall be pressure compensating and designed for direct burial. Point source emitter shall have an internal check valve, have a pressure compensating range of 14.5 to 58 psi and operate at the maximum pressure of 60 psi. Emitter can be installed on-surface or subsurface, regulate flow and provide continuous self-cleaning action during operations. The emitter shall have one barbed outlet port that securely retains 0.160" x 0.220" micro-tubing (by Manufacturer). Emitter shall be inserted directly into

polyethylene blank tubing. Emitter shall have the capability of holding back up to 5' column of water. Emitters shall be color coded by GPH rating.

ADD:

800-2.6 Polyethylene Tubing.

1. Blank polyethylene tubing shall be black and designed for use with point source drip emitters for subsurface installations. Tubing shall be UV Resistant to withstand heat, direct sun and harsh environments.
2. Micro-tubing shall be black, UV and acid resistant polyethylene resin material for use with point source drip emitter barbed outlets and fittings. Micro-tubing shall be .160" interior dimension with 0.220 outside dimension with a 0.030" wall and designed for use with pressure compensating drip emitters.

SECTION 801 – INSTALLATIONS

801-2.3 Finish Grading. To the "WHITEBOOK", Item 2, DELETE in its entirety and substitute with the following:

2. The finish grade adjacent to paving curbs, or headers shall be 3 inches in decomposed granite areas and cobble areas and 2 inches in planting areas.

SECTION 1001 – CONSTRUCTION BEST MANAGEMENT PRACTICES (BMPs)

1001-1 GENERAL. To the "WHITEBOOK", ADD the following:

8. Based on a preliminary assessment by the City, this Contract is subject to **SWPPP**.

1001-2.10 BMP Inspection, Maintenance, and Repair. To the "WHITEBOOK", ADD the following:

5. Maintenance activities shall be documented by the QSP or QSD in the Construction BMP Maintenance Log for projects subject to SWPPP requirements. See **Appendix J - SWPPP Construction BMP Maintenance Log**.

SECTION 1002 – PERMANENT BEST MANAGEMENT PRACTICES (BMPs)

1002-3 PLASTIC LINER.

1002-3 SUBMITTAL. To the "WHITEBOOK" ADD the following:

You shall submit a Manufacturer cut sheet and sample for materials

1002-4 PERFORATED PVC UNDERDRAIN.

ADD:

1002-4.5 Submittal.

You shall submit a Manufacturer cut sheet for materials

1002-5 UNDERDRAIN CLEANOUT.

ADD:

1002-5.5 Submittal.

You shall submit a Manufacturer cut sheet for materials as mentioned in section 1002-5.1 of the Whitebook

1002-6 CHECKDAMS.

ADD:

1002-6.6 Submittal.

You shall submit a Manufacturer cut sheet for materials as mentioned in section 1002-6.1 of the Whitebook

1002-7 BIORETENTION SOIL MEDIA (BSM).

1002-7.1 General. To the "WHITEBOOK", Item 2, DELETE in its entirety and SUBSTITUTE with the following:

- 2. Approval required by City Parks and Recreation Department. The BSM should achieve a long-term, in-place infiltration rate of 5 inches per hour, according to the County of San Diego 2012 Standard Urban Stormwater Mitigation Plan (SUSMP) requirements. BSM should also support plant growth while providing pollutant treatment. In order to achieve these two goals, the BSM should be a mixture of sand, fines, and compost. The following composition includes the measurements for determining the BSM by weight basis:

BSM Composition	Sand	Loamy Sand			Compost
		Sand	Silt	Clay	
Weight	79 - 85%	9 - 15%	3 - 9%	3% max ¹	

Compost by weight results in approximately 2% to 3% organic matter on a dry weight basis for material passing a 2 millimeter screen (soil fraction).

ADD:

1002-7.11 Submittal.

You shall submit a Manufacturer cut sheet for materials as mentioned in section 1002-7.1

1002-8 AGGREGATE MATERIALS FOR BSM DRAINAGE LAYERS.

ADD:

1002-8.3 Submittal.

You shall submit a Manufacturer cut sheet for materials as mentioned in section 1002-8.1

TECHNICALS

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TECHNICAL SPECIFICATIONS
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END OF SECTION

**SECTION 01311
PROJECT COORDINATION**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes procedures and requirements for project coordination.

1.02 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Schedule of Activities
- C. Progress Schedule and Phasing

1.03 RELATED WORK AT SITE

- A. General:
 - 1. Other work that is either directly or indirectly related to scheduled performance of the Work under these Contract Documents, listed henceforth, is anticipated to be performed at Site by others.
 - 2. Coordinate the Work of these Contract Documents with work of others as specified in General Conditions.
 - 3. Include sequencing constraints specified herein as a part of the Schedule of Activities.
- B. Power:
 - 1. Agency and Contact Person: San Diego Gas & Electric, telephone number: 1-800-411-7343.
 - 2. Work to be performed by Contractor:
 - a. Coordinate Contractor's Work with San Diego Gas & Electric.
 - b. Perform Work in accordance with San Diego Gas & Electric.
 - 3. Contractor will be responsible for payment of direct charges of San Diego Gas & Electric.

1.04 WORK SEQUENCING/CONSTRAINTS

- A. Include the following work sequences in the Progress Schedule:
 - 1. Library Access Restrictions
 - 2. Demolition Plan
 - 3. Traffic Control Schedule
 - 4. Bulk Materials Deliveries
 - 5. Electrical Installation and Testing

**SECTION 01311
PROJECT COORDINATION**

1.05 FACILITY OPERATIONS

- A. Continuous operation of Owner's facilities is of critical importance. Schedule and conduct activities to enable existing facilities to operate continuously, unless otherwise specified.
- B. Perform Work continuously during critical connections and changeovers, and as required to prevent interruption of Owner's operations.
- C. When necessary, plan, design, and provide various temporary services, utilities, connections, temporary piping and heating, access, and similar items to maintain continuous operations of Owner's facility.
- D. Do not proceed with Work affecting a facility's operation without obtaining Owner's and Engineer's advance approval of the need for and duration of such Work.
- E. Relocation of Existing Facilities:
 - 1. During construction, it is expected that minor relocations of Work will be necessary.
 - 2. Provide complete relocation of existing structures and Underground Facilities, including piping, utilities, equipment, structures, electrical conduit wiring, electrical duct bank, and other necessary items.
 - 3. Use only new materials for relocated facility. Match materials of existing facility, unless otherwise shown or specified.
 - 4. Perform relocations to minimize downtime of existing facilities.
 - 5. Install new portions of existing facilities in their relocated position prior to removal of existing facilities, unless otherwise accepted by Engineer.

1.06 ADJACENT FACILITIES AND PROPERTIES

- A. Examination:
 - 1. After Effective Date of the Agreement and before Work at Site is started, Contractor, Engineer, and affected property owners and utility owners may have the opportunity to make a thorough examination of pre-existing conditions including existing buildings, structures, and other improvements in vicinity of Work, as applicable, which could be damaged by construction operations.
 - 2. Periodic reexamination shall be jointly performed to include, but not limited to, cracks in structures, settlement, leakage, and similar conditions.
- B. Documentation:
 - 1. Record and submit documentation of observations made on examination inspections.
 - 2. Upon receipt, Engineer will review, sign, and return one record copy of documentation to Contractor to be kept on file in field office.

**SECTION 01311
PROJECT COORDINATION**

3. Such documentation shall be used as indisputable evidence in ascertaining whether and to what extent damage occurred as a result of Contractor's operations, and is for the protection of adjacent property owners, Contractor, and Owner.
 - a. Owner's name, and month and year images were produced.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

- A. Cut, fit, adjust, or patch Work and work of others, including excavation and backfill as required, to make Work complete.
- B. Obtain prior written authorization of Owner before commencing Work to cut or otherwise alter:
 1. Structural or reinforcing steel, structural column or beam, elevated slab, trusses, or other structural member.
 2. Weather-resistant or moisture-resistant elements.
 3. Efficiency, maintenance, or safety of element.
 4. Work of others.
- C. Refinish surfaces to provide an even finish.
 1. Refinish continuous surfaces to nearest intersection.
 2. Refinish entire assemblies.
 3. Finish restored surfaces to such planes, shapes, and textures that no transition between existing work and the Work is evident in finished surfaces.
- D. Restore existing work, Underground Facilities, and surfaces that are to remain in completed Work including concrete-embedded piping, conduit, and other utilities as specified and as shown on Drawings.
- E. Make restorations with new materials and appropriate methods as specified for new Work of similar nature; if not specified, use recommended practice of manufacturer or appropriate trade association.
- F. Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces and fill voids.
- G. Remove specimens of installed Work for testing when requested by Engineer.

**SECTION 01311
PROJECT COORDINATION**

END OF SECTION

**SECTION 01330
SUBMITTAL PROCEDURES**

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes submittal requirements.

1.02 DEFINITIONS

- A. The following definitions apply to the Work of this Section in addition to definitions given in the Front End Contract Documents.
1. Action Submittal: Written and graphic information submitted by Contractor that requires Engineer's approval.
 2. Deferred Submittal: Information submitted by Contractor for portions of design that are to be submitted to permitting Owner for approval prior to installation of that portion of the Work, along with Engineer's review documentation that submittal has been found to be in general conformance with Project's design.
 3. Informational Submittal: Information submitted by Contractor that requires Engineer's review and determination that submitted information is in accordance with the Conditions of the Contract.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Direct submittals to the following contact, unless specified otherwise.
1. City of San Diego – Engineering & Capital Projects
 2. 9573 Chesapeake Dr.
San Diego, CA 92123
Attn: Resident Engineer
- B. Electronic Submittals: Submittals may be made in electronic format.
1. Each submittal shall be an electronic file in Adobe Acrobat Portable Document Format (PDF). Use the latest version available at time of execution of the Agreement.
 2. Electronic files that contain more than 10 pages in PDF format shall contain internal bookmarking from an index page to major sections of the document.
 3. PDF files shall be set to open "Bookmarks and Page" view.
 4. Add general information to each PDF file, including title, subject, author, and keywords.
 5. PDF files shall be set up to print legibly at 8.5 inch by 11 inch, 11 inch by 17 inch, or 22 inch by 34 inch. No other paper sizes will be accepted.
 6. Submit new electronic files for each resubmittal.
 7. Include a copy of the Transmittal of Contractor's Submittal form, located at end of section, with each electronic file.

**SECTION 01330
SUBMITTAL PROCEDURES**

8. Submittals not electronically submitted will be rejected, unless specifically accepted.
9. Provide Owner with authorization to reproduce and distribute each file as many times as necessary for Project documentation.
10. Detailed procedures for handling electronic submittals will be discussed at the preconstruction conference.

C. Transmittal of Submittal:

1. Contractor shall:
 - a. Review each submittal and check for compliance with Contract Documents.
 - b. Stamp each submittal with uniform approval stamp before submitting to Engineer.
 - 1) Stamp to include Project name, submittal number, Specification number, Contractor's reviewer name, date of Contractor's approval, and statement certifying submittal has been reviewed, checked, and approved for compliance with Contract Documents.
 - 2) Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.
2. Complete, sign, and transmit with each submittal package, one Transmittal of Contractor's Submittal form in format approved by Owner.
3. Identify each submittal with the following:
 - a. Numbering and Tracking System:
 - 1) Sequentially number each submittal.
 - 2) Resubmission of submittal shall have original number with sequential alphabetic suffix.
 - b. Specification section and paragraph to which submittal applies.
 - c. Project title and Engineer's project number.
 - d. Date of transmittal.
 - e. Names of Contractor, Subcontractor or Supplier, and manufacturer as appropriate.
4. Identify and describe each deviation or variation from Contract Documents.

D. Format:

1. Do not base Shop Drawings on reproductions of Contract Documents.
2. Package submittal information by individual specification section. Do not combine different specification sections together in submittal package, unless otherwise directed in specification.
3. Present in a clear and thorough manner and in sufficient detail to show kind, size, arrangement, and function of components, materials, and devices, and compliance with Contract Documents.

**SECTION 01330
SUBMITTAL PROCEDURES**

4. Index with labeled tab dividers in orderly manner.
- E. Timeliness: Schedule and submit in accordance Schedule of Submittals, and requirements of individual specification sections.
- F. Processing Time:
 1. Time for review shall commence on Engineer's receipt of submittal.
 2. Engineer will act upon Contractor's submittal and transmit response to Contractor not later than 20 days after receipt, unless otherwise specified.
 3. Resubmittals will be subject to same review time.
 4. No adjustment of Contract Times or Price will be allowed as a result of delays in progress of Work caused by rejection and subsequent resubmittals.
- G. Resubmittals: Clearly identify each correction or change made.
- H. Incomplete Submittals:
 1. Engineer will return entire submittal for Contractor's revision if preliminary review deems it incomplete.
 2. When any of the following are missing, submittal will be deemed incomplete:
 - a. Contractor's review stamp; completed and signed.
 - b. Transmittal of Contractor's Submittal; completed and signed.
 - c. Insufficient number of copies.
- I. Submittals not required by Contract Documents:
 1. Will not be reviewed and will be returned stamped "Not Subject to Review."
 2. Engineer will keep one copy and return submittal to Contractor.

1.04 ACTION SUBMITTALS PROCEDURES

- A. Prepare and submit Action Submittals required by individual specification sections.
- B. Shop Drawings:
 1. Identify and Indicate:
 - a. Applicable Contract Drawing and Detail number, products, units and assemblies, and system or equipment identification or tag numbers.
 - b. Equipment and Component Title: Identical to title shown on Drawings.
 - c. Critical field dimensions and relationships to other critical features of Work. Note dimensions established by field measurement.
 - d. Project-specific information drawn accurately to scale.
 2. Manufacturer's standard schematic drawings and diagrams as follows:
 - a. Modify to delete information that is not applicable to the Work.
 - b. Supplement standard information to provide information specifically applicable to the Work.

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3. Product Data: Provide as specified in individual specifications.
4. Deferred Submittals: See Drawings for list of deferred submittals.
 - a. Contractor-design drawings and product data related to permanent construction.
 - 1) Written and graphic information.
 - 2) Drawings.
 - 3) Cut sheets.
 - 4) Data sheets.
 - 5) Action item submittals requested in individual specification section.
 - b. Prior to installation of indicated structural or nonstructural element, equipment, distribution system, or component or its anchorage, submit required supporting data and drawings for review and acceptance by Engineer. Documentation of review and approval provided on Engineer's comment form, along with completed submittal, will be filed with permitting agency by Owner and approved by permitting agency prior to installation.
5. Foreign Manufacturers: When proposed, include names and addresses of at least two companies that maintain technical service representatives close to Project.

C. Samples:

1. Copies: Two, unless otherwise specified in individual specifications.
2. Preparation: Mount, display, or package Samples in manner specified to facilitate review of quality. Attach label on unexposed side that includes the following:
 - a. Manufacturer name.
 - b. Model number.
 - c. Material.
 - d. Sample source.
3. Manufacturer's Color Chart: Units or sections of units showing full range of colors, textures, and patterns available.
4. Full-size Samples:
 - a. Size as indicated in individual specification section.
 - b. Prepared from same materials to be used for the Work.
 - c. Cured and finished in manner specified.
 - d. Physically identical with product proposed for use.

D. Action Submittal Dispositions: Engineer will review, comment, stamp, and distribute as noted:

1. Approved:
 - a. Contractor may incorporate product(s) or implement Work covered by submittal.

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- b. Distribution: Electronic.
 - 1) One copy furnished to Owner.
 - 2) One copy furnished Resident Project Representative.
 - 3) One copy retained in Engineer's file.
 - 4) Remaining copies returned to Contractor appropriately annotated.
- 2. Approved as Noted:
 - a. Contractor may incorporate product(s) or implement Work covered by submittal, in
 - b. Distribution: Electronic.
 - 1) One copy furnished to Owner.
 - 2) One copy furnished Resident Project Representative.
 - 3) One copy retained in Engineer's file.
 - 4) Remaining copies returned to Contractor appropriately annotated.
- 3. Partial Approval, Resubmit as Noted:
 - a. Make corrections or obtain missing portions and resubmit.
 - b. Except for portions indicated, Contractor may begin to incorporate product(s) or implement Work covered by submittal, in accordance with Engineer's notations.
 - c. Distribution: Electronic.
 - 1) One copy furnished to Owner.
 - 2) One copy furnished Resident Project Representative.
 - 3) One copy retained in Engineer's file.
 - 4) Remaining copies returned to Contractor appropriately annotated.
- 4. Revise and Resubmit:
 - a. Contractor may not incorporate product(s) or implement Work covered by submittal.
 - b. Distribution: Electronic.
 - 1) One copy furnished to Owner.
 - 2) One copy furnished Resident Project Representative.
 - 3) One copy retained in Engineer's file.
 - 4) Remaining copies returned to Contractor appropriately annotated.

1.05 INFORMATIONAL SUBMITTALS PROCEDURES

- A. General:
 - 1. Copies: Submit three copies, unless otherwise indicated in individual specification section.
 - 2. Refer to individual specification sections for specific submittal requirements.
 - 3. Engineer will review each submittal. If submittal meets conditions of the Contract, Engineer will forward copy to appropriate parties. If Engineer determines submittal does not meet conditions of the Contract and is therefore

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considered unacceptable, Engineer will retain one copy and return remaining copy with review comments to Contractor and require that submittal be corrected and resubmitted.

- B. Certificates:
1. General:
 - a. Provide notarized statement that includes signature of entity responsible for preparing certification.
 - b. Signed by officer or other individual authorized to sign documents on behalf of that entity.
 2. Welding: In accordance with individual specification sections.
 3. Installer: Prepare written statements on manufacturer's letterhead certifying installer complies with requirements as specified in individual specification section.
 4. Material Test: Prepared by qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
 5. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency or specified in individual specification sections.
 6. Manufacturer's Certificate of Compliance: In accordance with Section 01610, Common Product Requirements.
 7. Manufacturer's Certificate of Proper Installation: In accordance with individual specification section.
- C. Closeout Submittals: In accordance with Greenbook.
- D. Contractor-design Data (related to temporary construction):
1. Written and graphic information.
 2. List of assumptions.
 3. List of performance and design criteria.
 4. Summary of loads or load diagram, if applicable.
 5. Calculations.
 6. List of applicable codes and regulations.
 7. Name and version of software.
 8. Information requested in individual specification section.
- E. Deferred Submittals: See Drawings for list of deferred submittals.
1. Contractor-design data related to permanent construction:
 - a. List of assumptions.
 - b. List of performance and design criteria.
 - c. Summary of loads or load diagram, if applicable.

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- d. Calculations.
 - e. List of applicable codes and regulations.
 - f. Name and version of design software.
 - g. Factory test results.
 - h. Informational submittals requested in individual specification section.
2. Prior to installation of indicated structural or nonstructural element, equipment, distribution system, or component or its anchorage, submit calculations and test results of Contractor-designed components for review by Engineer. Documentation of review and indication of compliance with general design intent and project criteria provided on Engineer's comment form as meets conditions of the Contract, along with completed submittal, will be filed with permitting agency by Owner, Contractor or Owners Representative and approved by permitting agency prior to installation.
- a. Party responsible for submitting and owning the permit will be determined on a case by case basis.
- F. Manufacturer's Instructions: Written or published information that documents manufacturer's recommendations, guidelines, and procedures in accordance with individual specification section.
- G. Operation and Maintenance Data: As required in Section 01782, Operation and Maintenance Data.
- H. Quality Control Documentation: As required in Section 01451, Contractor Quality Control.
- I. Schedules:
- 1. Schedule of Submittals: Prepare separately or in combination with Progress Schedule as specified:
 - a. Show for each, at a minimum, the following:
 - 1) Specification section number.
 - 1) Identification by numbering and tracking system as specified under Paragraph Transmittal of Submittal.
 - 2) Estimated date of submission to Engineer, including reviewing and processing time.
 - b. On a monthly basis, submit updated Schedule of Submittals to Engineer if changes have occurred or resubmittals are required.
- J. Special Guarantee: Supplier's written guarantee as required in individual specification sections.
- K. Statement of Qualification: Evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of professional land surveyor, engineer, materials testing laboratory, specialty Subcontractor, trade, Specialist, consultant, installer, and other professionals.
- L. Submittals Required by Laws, Regulations, and Governing Agencies:

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1. Promptly submit promptly notifications, reports, certifications, payrolls, and otherwise as may be required, directly to the applicable federal, state, or local governing agency or their representative.
 2. Transmit to Engineer for Owner's records one copy of correspondence and transmittals (to include enclosures and attachments) between Contractor and governing agency.
- M. Test, Evaluation, and Inspection Reports:
1. General: Shall contain signature of person responsible for test or report.
 2. Factory:
 - a. Identification of product and specification section, type of inspection or test with referenced standard or code.
 - b. Date of test, Project title and number, and name and signature of authorized person.
 - c. Test results.
 - d. If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
 - e. Provide interpretation of test results, when requested by Engineer.
 - f. Other items as identified in individual specification sections.
 3. Field:
 - a. As a minimum, include the following:
 - 1) Project title and number.
 - 2) Date and time.
 - 3) Record of temperature and weather conditions.
 - 4) Identification of product and specification section.
 - 5) Type and location of test, Sample, or inspection, including referenced standard or code.
 - 6) Date issued, testing laboratory name, address, and telephone number, and name and signature of laboratory inspector.
 - 7) If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
 - 8) Provide interpretation of test results, when requested by Engineer
 - 9) Other items as identified in individual specification sections.
- N. Training Data: In accordance with individual specification section.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**SECTION 01330
SUBMITTAL PROCEDURES**

END OF SECTION

**SECTION 01451
CONTRACTOR QUALITY ASSURANCE AND CONTROL**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes information on Contractor Quality Assurance and Control.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
1. CQC: Contractor Quality Control
- B. Reference Standards:
1. American Society for Testing and Materials International (ASTM)
 - a. D3740, Evaluation of Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
 - b. E329, Use in the Evaluation of Testing and Inspection Agencies as Used in Construction.

1.03 DEFINITIONS:

1. Contractor Quality Control (CQC): The means by which Contractor ensures that the construction, to include that performed by subcontractors and suppliers, complies with the requirements of the Contract.

1.04 COORDINATION MEETING

- A. After the Preconstruction Conference, but before start of construction, and prior to acceptance of the CQC Plan, schedule a meeting with Construction Manager and Owner to discuss the quality control system.
- B. Develop a mutual understanding of the system details, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite Work, and the interrelationship of Contractor's management and control with the Owner's Quality Assurance.
- C. There may be occasions when subsequent conferences may be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures that may require corrective action by Contractor.

1.05 SUBMITTALS

- A. Informational Submittals:
1. CQC Plan: Submit, not later than 30 days after receipt of Notice to Proceed, as specified herein.
 2. CQC Report: Submit, weekly, an original and one copy in report form.

**SECTION 01451
CONTRACTOR QUALITY ASSURANCE AND CONTROL**

1.06 OWNER'S QUALITY ASSURANCE

- A. Work is subject to Owner's quality assurance inspection and testing at job site locations and at reasonable times before acceptance to ensure strict compliance with the terms of the Contract Documents.
- B. Owner's quality assurance inspections and tests are for the sole benefit of Owner and do not:
 - 1. Relieve Contractor of responsibility for providing adequate quality control measures.
 - 2. Relieve Contractor of responsibility for damage to or loss of the material before acceptance.
 - 3. Constitute or imply acceptance.
 - 4. Affect the continuing rights of Owner after acceptance of the completed Work.
- C. The presence or absence of a quality assurance inspector does not relieve Contractor from any Contract requirement.
- D. Promptly furnish facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by Construction Manager.
- E. Owner may charge Contractor for any additional cost of inspection or test when Work is not ready at the time specified by Contractor for inspection or test, or when prior rejection makes re-inspection or retest necessary. Quality assurance inspections and tests will be performed in a manner that will not unnecessarily delay the Work.

PART 2 - PRODUCTS

2.01 CONTRACTOR QUALITY CONTROL PLAN

- A. General:
 - 1. Plan shall identify personnel, procedures, control, instructions, test, records, and forms to be used.
 - 2. An interim plan for the first 30 days of operation will be considered.
 - 3. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of Work to be started.
 - 4. Work outside of the features of Work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of Work to be started.
- B. Content:
 - 1. Plan shall cover the intended CQC organization for the entire Contract and shall include the following, as a minimum:

SECTION 01451
CONTRACTOR QUALITY ASSURANCE AND CONTROL

- a. Organization: Description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff will implement the three-phase control system (see Article QC Phasing) for aspects of the Work specified.
 - b. CQC Staff: The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a QC function.
 - c. Letters of Authority: A copy of a letter to the CQC System Manager signed by an authorized official of the firm, describing the responsibilities and delegating sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop Work which is not in compliance with the Contract. The CQC System Manager shall issue letters of direction to other various quality control representatives outlining duties, authorities and responsibilities. Copies of these letters will also be furnished to Owner.
 - d. Submittals: Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers and purchasing agents.
 - e. Testing: Control, verification and acceptance testing procedures for each specific test to include the test name, frequency, specification paragraph containing the test requirements, the personnel and laboratory responsible for each type of test, and an estimate of the number of tests required.
 - f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests, including documentation.
 - g. Procedures for tracking deficiencies from identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.
 - h. Reporting procedures, including proposed reporting formats; include a copy of the CQC report form.
- C. Acceptance of Plans: Acceptance of the Contractor's basic and addendum CQC plans is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. Owner reserves the right to require Contractor to make changes in the CQC plan and operations including removal of personnel, as necessary, to obtain the quality specified.
- D. Notification of Changes: After acceptance of the CQC plan, Contractor shall notify Construction Manager, in writing, a minimum of 7 calendar days prior to any proposed change. Proposed changes are subject to acceptance by Construction Manager.

2.02 CONTRACTOR QUALITY CONTROL REPORT

- A. As a minimum, prepare a CQC report for every 7 calendar days. Account for days throughout the life of the Contract. Reports shall be signed and dated by CQC System Manager. Include copies of test reports and copies of reports prepared by QC staff.

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CONTRACTOR QUALITY ASSURANCE AND CONTROL

- B. Maintain current records of quality control operations, activities, and tests performed, including the Work of subcontractors and suppliers.
- C. Records shall be on an acceptable form and shall be a complete description of inspections, the results of inspections, daily activities, tests, and other items, including but not limited to the following:
 - 1. Status of non compliance issued by the Construction Manager.
 - 2. Contractor/subcontractor and their areas of responsibility.
 - 3. Operating plant/equipment with hours worked, idle, or down for repair.
 - 4. Work performed today, giving location, description, and by whom. When a network schedule is used, identify each phase of Work performed each day by activity number.
 - 5. Test and/or control activities performed with results and references to specifications/plan requirements. The control phase should be identified (Preparatory, Initial, Follow-up). List deficiencies noted along with corrective action.
 - 6. Material received with statement as to its acceptability and storage.
 - 7. Identify submittals reviewed, with Contract reference, by whom, and action taken.
 - 8. Offsite surveillance activities, including actions taken.
 - 9. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
 - 10. List instructions given/received and conflicts on Drawings and/or Specifications.
 - 11. Contractor's verification statement.
 - 12. Indicate a description of trades working on the Project; the number of personnel working; weather conditions encountered; and any delays encountered.
 - 13. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in file work and workmanship comply with the Contract.

2.03 QUALITY CONTROL ORGANIZATION

- A. CQC System Manager:
 - 1. Designate an individual within Contractor's organization who will be responsible for overall management of CQC and have the authority to act in CQC matters for the Contractor.
 - 2. CQC System Manager may not perform other duties on the Project.
 - 3. CQC System Manager shall report to the Contractor's project manager or someone higher in the organization. Project manager in this context shall mean the individual with responsibility for the overall quality and production management of the Project.

**SECTION 01451
CONTRACTOR QUALITY ASSURANCE AND CONTROL**

4. CQC System Manager shall be onsite during construction; periods of absence may not exceed 2 weeks at any one time.
 5. Identify an alternate for CQC System Manager to serve with full authority during the System Manager's absence. The requirements for the alternate will be the same as for designated CQC System Manager.
- B. CQC Staff:
1. Designate a CQC staff, available at the Site at times during progress, with complete authority to take any action necessary to ensure compliance with the Contract. CQC staff members shall be subject to acceptance by Construction Manager.
 2. CQC staff shall take direction from CQC System Manager in matters pertaining to QC.
 3. CQC staff must be of sufficient size to ensure adequate QC coverage of Work phases, work shifts, and work crews involved in the construction. These personnel may perform other duties but must be allowed sufficient time to carry out these responsibilities.
 4. The actual strength of the CQC staff may vary during any specific Work period to cover the needs of the Project. If the Owner's Quality Assurance staff believe the Contractor's Quality Control staff is insufficient in number or qualifications, the Owner will require the Contractor to increase and/or otherwise modify the CQC staff at no additional cost to the Owner.
- C. Organizational Changes: Obtain Construction Manager's acceptance before replacing any member of the CQC staff. Requests for changes shall include name, qualifications, duties, and responsibilities of the proposed replacement.

PART 3 - EXECUTION

3.01 GENERAL

- A. Maintain an adequate inspection system and perform such inspections as will ensure that the Work conforms to the Contract Documents.
- B. Maintain complete inspection records and make them available at all times to Owner and Construction Manager.
- C. The quality control system shall consist of plans, procedures, and organization necessary to produce a product that complies with the Contract Documents. The system shall cover construction and demolition operations, both onsite and offsite, including Work by subcontractors, fabricators, suppliers and purchasing agents, and shall be keyed to the proposed construction sequence.

3.02 QUALITY CONTROL PHASING

- A. CQC shall include at least three phases of control to be conducted by CQC System Manager for definable features of Work, as follows:
 1. Preparatory Phase:

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CONTRACTOR QUALITY ASSURANCE AND CONTROL

- a. Notify Owner at least 48 hours in advance of beginning any of the required action of the preparatory phase.
- b. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The CQC System Manager shall instruct applicable CQC staff as to the acceptable level of workmanship required in order to meet Contract requirements.
- c. Document the results of the preparatory phase meeting by separate minutes prepared by the CQC System Manager and attached to the QC report.
- d. Perform prior to beginning Work on each definable feature of Work:
 - 1) Review applicable Contract Specifications.
 - 2) Review applicable Contract Drawings.
 - 3) Verify that materials and/or equipment have been tested, submitted, and approved.
 - 4) Verify that provisions have been made to provide required control inspection and testing.
 - 5) Examine the Work area to verify that required preliminary Work has been completed and is in compliance with the Contract.
 - 6) Perform a physical examination of required materials, equipment, and sample Work to verify that they are on hand, conform to approved Shop Drawing or submitted data, and are properly stored.
 - 7) Review the appropriate activity hazard analysis to verify safety requirements are met.
 - 8) Review procedures for constructing the Work, including repetitive deficiencies.
 - 9) Document construction tolerances and workmanship standards for that phase of the Work.
 - 10) Check to verify that the plan for the Work to be performed, if so required, has been accepted by Construction Manager.

2. Initial Phase:

- a. Accomplish at the beginning of a definable feature of Work:
 - 1) Notify Owner at least 48 hours in advance of beginning the initial phase.
 - 2) Perform prior to beginning Work on each definable feature of Work:
 - a) Review minutes of the preparatory meeting.
 - b) Check preliminary Work to verify compliance with Contract requirements.
 - c) Verify required control inspection and testing.

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- d) Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Comparison with sample panels is appropriate.
 - e) Resolve differences.
 - f) Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
- 3) Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the QC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.
- 4) The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.
3. Follow-up Phase:
- a. Perform daily checks to verify continuing compliance with Contract requirements, including control testing, until completion of the particular feature of Work.
 - b. Daily checks shall be made a matter of record in the CQC documentation and shall document specific results of inspections for features of Work for the day or shift.
 - c. Conduct final follow-up checks and correct deficiencies prior to the start of additional features of Work that will be affected by the deficient Work. Constructing upon or concealing nonconforming Work will not be allowed.
4. Additional Preparatory and Initial Phases: Additional preparatory and initial phases may be conducted on the same definable features of Work as determined by Owner if the quality of ongoing Work is unacceptable; or if there are changes in the applicable QC staff or in the onsite production supervision or work crew; or if work on a definable feature is resumed after a substantial period of inactivity, or if other problems develop.

3.03 SUBMITTAL QUALITY CONTROL

- A. The CQC organization shall be responsible for certifying that submittals are in compliance with the Contract requirements. Contractor may use other forms as approved.

3.04 TESTING QUALITY CONTROL

- A. Testing Procedure:
 - 1. Perform tests specified or required to verify that control measures are adequate to provide a product which conforms to Contract requirements. Perform the following activities and record the following data:
 - a. Verify testing procedures comply with contract requirements.

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- b. Verify facilities and testing equipment are available and comply with testing standards.
 - c. Check test instrument calibration data against certified standards.
 - d. Verify recording forms and test identification control number system, including of the test documentation requirements, have been prepared.
 - e. Documentation
 - 1) Record results of tests taken, both passing and failing, on the CQC report for the date taken.
 - 2) Include specification paragraph reference, location where tests were taken, and the sequential control number identifying the test.
 - 3) Actual test reports may be submitted later, if approved by Construction Manager, with a reference to the test number and date taken.
 - 4) Provide directly to Construction Manager an information copy of tests performed by an offsite or commercial test facility. Test results shall be signed by an Engineer registered in the state where the tests are performed.
 - 5) Failure to submit timely test reports, as stated, may result in nonpayment for related Work performed and disapproval of the test facility for this Contract.
- B. Testing Laboratories: Laboratory facilities, including personnel and equipment, utilized for testing soils, concrete, asphalt and steel shall meet criteria detailed in ASTM D3740 and ASTM E329, and be accredited by the American Association of Laboratory Accreditation (AALA), National Institute of Standards and Technology (NIST), National Voluntary Laboratory Accreditation Program (NVLAP), the American Association of State Highway and Transportation Officials (AASHTO), or other approved national accreditation authority. Personnel performing concrete testing shall be certified by the American Concrete Institute (ACI).

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CONTRACTOR QUALITY ASSURANCE AND CONTROL**

3.05 COMPLETION INSPECTION

- A. CQC System Manager shall conduct an inspection of the Work at the completion of Work or any milestone established by a completion time stated in the Contract.

- B. Punchlist:
 - 1. CQC System Manager shall develop a punchlist of items which do not conform to the Contract requirements.
 - 2. Include punchlist in the CQC report, indicating the estimated date by which the deficiencies will be corrected.
 - 3. CQC System Manager or staff shall make a second inspection to ascertain that deficiencies have been corrected and so notify the Owner.
 - 4. These inspections and any deficiency corrections required will be accomplished within the time stated for completion of the entire Work or increment thereof if the Project is divided into increments by separate completion dates.

END OF SECTION

**SECTION 01453
SPECIAL INSPECTION OBSERVATION AND TESTING**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section covers requirements for Special Inspection, Observation, and Testing required in accordance with Chapter 17 of the 2019 CBC and is in addition to and supplements requirements included in Statement of Special Inspections shown on Drawings.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
1. ASCE: American Society of Engineers
 2. CBC: California Building Code
 3. ICC: International Building Code
 4. ICC-ES: International Code Council Evaluation Service
 5. AHJ: Agency Having Jurisdiction
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work:
1. American Society of Civil Engineers (ASCE): 7, Minimum Design Loads for Buildings and Other Structures.
 2. 2019 California Building Code (CBC) by California Building Standards Commission.
 3. International Code Council (ICC):
 - a. International Building Code (IBC).
 - b. Evaluation Service (ICC-ES) Reports and Legacy Reports.

1.03 SUBMITTALS

- A. Informational Submittals:
1. Contractor's Statement of Responsibility: Form shall be completed by entity responsible for construction of and main seismic-force-resisting system, seismic-resisting component listed in Statement of Special Inspections. Refer to Article Supplements, located at end of section.
 2. Manufacturer's Certificate of Compliance: Form shall be completed by entity responsible for shop fabrication/manufacture of structural load-bearing members and assemblies. Refer to Article Supplements, located at end of section. Form must be submitted no less than 2 weeks prior to commencing fabrication to provide for approval by Authority Having Jurisdiction (AHJ) and scheduling of Special Inspection, where required.

**SECTION 01453
SPECIAL INSPECTION OBSERVATION AND TESTING**

1.04 DEFINITIONS

- A. Agencies and Personnel:
1. Agency Having Jurisdiction (AHJ): Permitting building agency; may be a federal, state, local, or other regional department, or individual including building official, fire chief, fire marshal, chief of a fire prevention bureau, labor department, or health department, electrical inspector; or others having statutory authority. AHJ may be Owner when authorized to be self-permitting by governmental permitting agency or when no governmental agency has authority.
 2. Approved Agency: An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved.
 3. Registered Design Professional in Responsible Charge: An individual who is registered or licensed to practice their respective design profession as defined by statutory requirements of professional registration laws of state or jurisdiction in which Project is to be constructed.
 4. Special Inspector: Qualified person employed by Contractor who will demonstrate competence to the satisfaction of AHJ for inspection of a particular type of construction or operation requiring Special Inspection. Inspector will be Employed and paid for by the Contractor.
- B. Statement of Special Inspections: Detailed written procedure contained on Drawings establishing systems and components subject to Special Inspection, Observation, and Testing during construction, type and frequency of testing, extent and duration of Special Inspection, and reports to be completed and distributed by Special Inspector.
- C. Special Inspection:
1. Special Inspection: Inspection required of materials, installation, fabrication, erection, or placement of components and connections requiring special expertise to ensure compliance with approved Contract Documents and referenced standards.
 2. Special Inspection, Continuous: Full-time observation of work requiring Special Inspection by an approved Special Inspector who is present in area where the Work is being performed.
 3. Special Inspection, Periodic: Part-time or intermittent observation of the Work requiring Special Inspection by an approved Special Inspector who is present in area where the Work has been or is being performed, and at completion of the Work.
- D. Structural Systems and Components:
1. Diaphragm: Component of structural lateral load resisting system consisting of roof, floor, or other membrane or bracing system acting to transfer lateral forces to vertical resisting elements of structure.
 2. Drag Strut or Collector: Component of structural lateral load resisting system consisting of diaphragm or shear wall element that collects and transfers

SECTION 01453
SPECIAL INSPECTION OBSERVATION AND TESTING

diaphragm shear forces to vertical force-resisting elements or distributes forces within diaphragm or shear wall.

3. Seismic-Force-Resisting System: That part of structural lateral load resisting system that has been considered in the design to provide required resistance to seismic forces identified on Drawings.
 4. Shear Wall: Component of structural lateral load resisting system consisting of a wall designed to resist lateral forces parallel to plane of the wall. Unless noted otherwise on Drawings, load-bearing walls with direct in-plane connections to roof and floors shall be considered to be shear walls.
- E. Wind Force Resisting System: That part of the structural system that has been considered in the design to provide required resistance to wind forces identified on Drawings.
- F. Structural Systems and Components:
1. Diaphragm: Component of structural lateral load resisting system consisting of roof, floor, or other membrane or bracing system acting to transfer lateral forces to vertical resisting elements of structure.
 2. Drag Strut or Collector: Component of structural lateral load resisting system consisting of diaphragm or shear wall element that collects and transfers diaphragm shear forces to vertical force-resisting elements or distributes forces within diaphragm or shear wall.
 3. Seismic-Force-Resisting System: That part of structural lateral load resisting system that has been considered in the design to provide required resistance to seismic forces identified on Drawings.
 4. Shear Wall: Component of structural lateral load resisting system consisting of a wall designed to resist lateral forces parallel to plane of the wall. Unless noted otherwise on Drawings, load-bearing walls with direct in-plane connections to roof and floors shall be considered to be shear walls.
- G. Wind Force Resisting System: That part of the structural system that has been considered in the design to provide required resistance to wind forces identified on Drawings.
- H. Nonstructural Components:
1. Architectural Component Supports: Structural members or assemblies of members which transmit loads and forces from architectural systems or components to structure, including braces, frames, struts, and attachments.
 2. Electrical Component Supports: Structural members or assemblies which transmit loads and forces from electrical equipment to structure, including braces, frames, legs, pedestals, and tethers, as well as elements forged or cast as part of component for anchorage.
 3. Mechanical and Plumbing Component Supports: Structural members or assemblies which transmit loads and forces from mechanical or plumbing equipment to structure, including braces, frames, skirts, legs, saddles, pedestals, snubbers, and tethers, as well as elements forged or cast as part of component for anchorage.

**SECTION 01453
SPECIAL INSPECTION OBSERVATION AND TESTING**

- I. Professional Observation:
 - 1. Does not include or waive responsibility for required Special Inspection or inspections by building official.
 - 2. Requirements are indicated on Statement of Special Inspections provided on Drawings.
 - 3. Geotechnical Observation: Visual observation of formational materials exposed during grading and over excavation of selected subgrade bearing surfaces and installation of deep foundation elements by a registered design professional for general conformance to Contract Documents.
 - 4. Structural Observation: Visual observation of structural system(s) by a registered design professional for general conformance to Contract Documents.
 - 5. Observation: Visual observation by registered design professional for general conformance to Contract Documents.

1.05 STATEMENT OF SPECIAL INSPECTIONS REQUIREMENTS

- A. Designated Systems for Inspection:
 - 1. Seismic-force-resisting systems designated under CBC Section 1705 and subject to Special Inspection under Section 1705: See Drawings for basic lateral load resisting systems for each structure and other designated seismic systems.
 - 2. Wind-force-resisting systems designated under CBC Section 1705: None required.
 - 3. Architectural, plumbing, mechanical, and electrical Components subject to Special Inspection under CBC Section 1705.12.5 and 1705.12.6 for Seismic Resistance.
 - 4. As included in Drawings and in support of building permit application, Project-specific requirements were prepared by Registered Design Professional in Responsible Charge.
- B. Statement of Special Inspections:
 - 1. As included on Drawings and in support of building permit application, Project-specific requirements were prepared by Registered Design Professional in Responsible Charge. The following identifies elements of inspection, observation, and testing program to be followed in construction of the Work:
 - a. Designated seismic systems and main seismic force resisting systems and components that are subject to Special Inspection and Structural Observation for lateral load resistance.
 - b. Special Inspection and testing required by CBC Section 1705 and other applicable sections and referenced standards therein.
 - c. Type and frequency of Special Inspection required.
 - d. Type and frequency of testing required.

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SPECIAL INSPECTION OBSERVATION AND TESTING**

- e. Required frequency and distribution of testing and Special Inspection reports to be distributed by Special Inspector to Construction Manager, Design Engineer, Contractor, building official, and Owner.
 - f. Geotechnical Observation to be Performed: Required frequency and distribution of Geotechnical Observation reports by registered design professional to Contractor, building official, and Owner.
- C. Structural Observations to be Performed: Required frequency and distribution of Structural Observation reports by registered design professional to Contractor, building official, and Owner.
- D. Special Inspection and associated testing of shop fabrication and field construction will be performed by an approved accredited independent agency or by Authority Having Jurisdiction's (AHJ) approved, qualified inspection staff.
- E. Contractor will secure and pay for services of agency to perform Special Inspection and associated testing.
- F. Code required Special Inspection with associated testing and Professional Observation, as provided in Statement of Special Inspections on Drawings and further provided in this section, is for benefit of Owner and does not:
- 1. Relieve Contractor of responsibility for providing adequate quality control measures.
 - 2. Relieve Contractor of responsibility for damage to or loss of material before acceptance.
 - 3. Constitute or imply acceptance.
 - 4. Affect continuing rights of Owner after acceptance of completed Work.
- G. The presence or absence of code required Special Inspector and Professional Observer does not relieve Contractor from Contract requirements.
- H. Contractor is responsible for additional costs associated with Special Inspection and Testing and Observation when Work is not ready at time identified by Contractor and Special Inspectors and Professional Observer are onsite, but not able to provide contracted services.
- I. Contractor is responsible for associated costs for additional Special Inspection and Testing and Professional Observation by Special Inspectors and Professional Observers required because of rejection of materials of in place Work that cannot be made compliant to Contract Document without additional inspections and observation and testing.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

- A. Requirements of the Statement of Special Inspections are provided herein.

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Special Inspection Observation and Testing
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SECTION 01453
SPECIAL INSPECTION OBSERVATION AND TESTING

- B. Provide access to shop or Site for Special Inspection and Testing and Professional Observation requirements.
- C. Notify Construction Manager in advance of required Special Inspection and Professional Observation no later than 48 hours prior to date of Special Inspection and Professional Observation.
- D. Provide access for Special Inspector to construction documents.
- E. Retain special inspection records onsite to be readily available for review.
- F. Cooperate with Special Inspector and provide safe access to the Work to be inspected.
- G. Submit Fabricator's Certificates of Compliance for approved fabricators.
- H. Provide reasonable auxiliary services as requested by the Special Inspector. Auxiliary services required include, but not limited to:
 - 1. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests to assist the Special Inspector in performing test/inspections.
 - 2. Providing storage space for the Special Inspector's exclusive use, such as for storing and curing concrete test samples and delivery of samples to testing laboratories.
 - 3. Providing the Special Inspector with access to approved submittals.
 - 4. Providing security and protection of samples and test equipment at the Project Site.
 - 5. Provide samples of materials to be tested in required quantities.
- I. When required by Registered Design Professional in Responsible Charge, provide access for plumbing, mechanical and electrical component inspections for those items requiring certification.
- J. Materials and systems shall be inspected during placement where Continuous Special Inspection is required.
- K. Where Periodic Special Inspection is indicated in the Statement of Special Inspections:
 - 1. Schedule inspections for either during or at completion of their placement or a combination or both.
 - 2. Schedule periodically inspected Work (either inspected during or after its placement) so that corrections can be completed and re-inspected before Work is inaccessible.
 - 3. Sampling a portion of the Work is not allowed. Schedules shall provide for inspection of Work requiring periodic inspection.

**SECTION 01453
SPECIAL INSPECTION OBSERVATION AND TESTING**

3.02 AHJ INSPECTIONS

- A. Schedule AHJ inspections required to fulfill Project permit requirements, including to Building and Fire Department inspections associated with Owner or County Building Permits, Fire Protection Permits and Hazardous Materials Permitting.

3.03 SUPPLEMENTS

- A. The supplements listed below, following “End of Section,” are a part of this Specification
 - 1. Contractor’s Statement of Responsibility.
 - 2. Fabricator’s Certificate of Compliance

**SECTION 01453
SPECIAL INSPECTION OBSERVATION AND TESTING**

CONTRACTOR'S STATEMENT OF RESPONSIBILITY

(Project)

(Name of Contracting Company)

(Business Address)

(_____) _____ (_____) _____
(Telephone) (Fax)

I, (We) hereby certify that I am (we are) aware of the Special Inspection and Testing and Professional Observation requirements contained in Contract Documents for this Project for seismic force-resisting systems and for components including architectural, mechanical, and electrical components as listed in Statement of Special Inspections on Drawings, and that:

1. I, (We) aware of the systems and the requirements of the special inspection and acknowledge our responsibility in the implementation of the Statement of Special Inspections for the construction of the following systems:

Facility	Specification	Lateral Force-Resisting System
Keystone Concrete Retaining Wall	02830	Tiebacks and Anchors, Soil Compaction, CMU Keystone

2. Control of this Work will be exercised to obtain conformance with Contract Documents approved by building official.
3. Procedures within the Contractor's organization to be used for exercising control of the Work, method and frequency of reporting, and distribution of reports required under Statement of Special Inspections for Project are attached to this statement.
4. I, (We) will provide 48-hour notification to Construction Manager and approved inspection agency as required for structural tests and Special Inspection for Project.

**SECTION 01453
SPECIAL INSPECTION OBSERVATION AND TESTING**

5. The following person is hereby identified as exercising control over requirements of this section for the Work designated above:

Name: _____

Qualifications: _____

(Print name and official title of person signing this form)

Signed by: _____

Date: _____

Project Name: _____

**SECTION 01453
SPECIAL INSPECTION OBSERVATION AND TESTING**

FABRICATOR'S CERTIFICATE OF COMPLIANCE

Each approved fabricator that is exempt from Special Inspection of shop fabrication and implementation procedures per Section 2016 CBC must submit Fabricator's Certificate of Compliance at the completion of fabrication.

(Project)

(Fabricator's Name)

(Business Address)

(Certification or Approval Agency)

(Certification Number)

(Date of Last Audit or Approval)

Description of structural members and assemblies that have been fabricated:

I hereby certify that items described above were fabricated in strict accordance with approved construction documents.

(Name and Title) type or print

(Signature and Date)

Attach copies of fabricator's certification or building code evaluation service report and fabricator's quality control manual.

**SECTION 01453
SPECIAL INSPECTION OBSERVATION AND TESTING**

END OF SECTION

**SECTION 01500
TEMPORARY FACILITIES AND CONTROLS**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes requirements for temporary facilities and controls.

1.02 REFERENCES

- A. Abbreviations and Acronyms
1. AAN: American Standards for Nursery Stock
 2. FEMA: Federal Emergency Management Agency
 3. NFPA: National Fire Protection Agency
 4. TIA: Telecommunications Industry Association
 5. USDA: United States Department of Agriculture
- B. Related Specifications
1. Section 01610 – Common Product Requirements.
- C. Reference Standards
1. The following is a list of standards which may be referenced in this section:
 - a. American Association of Nurserymen (AAN): American Standards for Nursery Stock.
 - b. Federal Emergency Management Agency (FEMA).
 - c. National Fire Prevention Association (NFPA): 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.
 - d. Telecommunications Industry Association (TIA); Electronic Industries Alliance (EIA): 568B, Commercial Building Telecommunications Cabling Standard.
 - e. U.S. Department of Agriculture (USDA): Urban Hydrology for Small Watersheds.
 - f. U.S. Weather Bureau: Rainfall-Frequency Atlas of the U.S. for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years.

1.03 SUBMITTALS

- A. The Copies of permits and approvals for construction as required by Laws and Regulations and governing agencies.
- B. Temporary Utility Submittals:
1. Electric power supply and distribution plans.

**SECTION 01500
TEMPORARY FACILITIES AND CONTROLS**

2. Water supply and distribution plans.
 3. Sanitary.
- C. Temporary Construction Submittals:
1. Access Roads: Routes, cross-sections, and drainage facilities.
 2. Parking area plans.
 3. Contractor's field office, storage yard, and storage building plans, including gravel surfaced area.
 4. Fencing and protective barrier locations and details.
 5. Staging area location plan.
- D. Temporary Control Submittals:
1. Dust control plan.
 2. Plan for disposal of waste materials and intended haul routes.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Mobilization
1. Mobilization includes, but is not limited to, these principal items:
 - a. Obtaining required permits.
 - b. Moving Contractor's field office and equipment required for first month operations onto Site.
 - c. Installing temporary construction power, wiring, and lighting facilities.
 - d. Providing onsite Internet service.
 - e. Providing onsite sanitary facilities and potable water facilities as specified and as required by Laws and Regulations, and governing agencies.
 - f. Arranging for and erection of Contractor's work and storage yard.
 - g. Posting OSHA required notices and establishing safety programs and procedures.
 - h. Having Contractor's superintendent at Site full time.
- B. Protection of Work and Authority
1. Comply with Owner's safety rules while on Owner's property.
 2. Keep Owner informed of serious onsite accidents and related claims.
 3. Use of Explosives: No blasting or use of explosives will be allowed onsite.
- C. Vehicular Traffic
1. Traffic Routing Plan: Show sequences of construction affecting use of roadways, time required for each phase of the Work, provisions for decking

SECTION 01500
TEMPORARY FACILITIES AND CONTROLS

over excavations and phasing of operations to provide necessary access, and plans for signing, barricading, and striping to provide passages for pedestrians and vehicles.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 TEMPORARY UTILITIES

- A. Owner will reimburse Contractor fees for permits and utility fees.
- B. Power:
 - 1. No electric power is available at Site. Make arrangements to obtain and pay for electrical power used until final payment and acceptance by Owner, unless otherwise recommended by Engineer at Substantial Completion.
- C. Lighting: Provide temporary lighting to meet applicable safety requirements to allow erection, application, or installation of materials and equipment, and observation or inspection of the Work.
- D. Heating, Cooling, and Ventilating:
 - 1. Provide as required to maintain adequate environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for installation of materials, and to protect materials, equipment, and finishes from damage because of temperature or humidity.
 - 2. Provide adequate forced air ventilation of enclosed areas to cure installed materials, to dispense humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases.
 - 3. Pay costs of installation, maintenance, operation, removal, and fuel consumed.
 - 4. Provide portable unit heaters, complete with controls, oil- or gas-fired, and suitably vented to outside as required for protection of health and property.
 - 5. If permanent natural gas piping is used for temporary heating units, do not modify or reroute gas piping without approval of utility company. Provide separate gas metering as required by utility.
- E. Water:
 - 1. No construction or potable water is available at Site. Make arrangements for and bear costs of providing water required for construction purposes and for drinking by construction personnel during construction.
- F. Sanitary and Personnel Facilities:

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TEMPORARY FACILITIES AND CONTROLS

1. Provide and maintain facilities for Contractor's employees, Subcontractors, and other onsite employers' employees. Service, clean, and maintain facilities and enclosures.

- G. Fire Protection: Furnish and maintain on Site adequate firefighting equipment capable of extinguishing incipient fires. Comply with applicable parts of NFPA 241.

3.02 PROTECTION OF WORK AND PROPERTY

A. General:

1. Perform Work within right-of-way and easements in a systematic manner that minimizes inconvenience to property owners and the public.
2. No residence or business shall be cut off from vehicular traffic, unless special arrangements have been made.
3. Maintain in continuous service existing oil and gas pipelines, underground power, telephone or communication cable, water mains, irrigation lines, sewers, poles and overhead power, and other utilities encountered along line of the Work, unless other arrangements satisfactory to owners of said utilities have been made.
4. Where completion of the Work requires temporary or permanent removal or relocation of existing utility, coordinate activities with owner of said utility and perform work to their satisfaction.
5. Protect, shore, brace, support, and maintain underground pipes, conduits, drains, and other underground utility construction uncovered or otherwise affected by construction operations.
6. Keep fire hydrants and water control valves free from obstruction and available for use at all times.
7. In areas where Contractor's operations are adjacent to or near a utility, such as gas, telephone, television, electric power, water, sewer, or irrigation system, and such operations may cause damage or inconvenience, suspend operations until arrangements necessary for protection have been made by Contractor.
8. Notify property owners and utility offices that may be affected by construction operation at least 45 days in advance: Before exposing a utility, obtain utility owner's permission. Should service of utility be interrupted due to Contractor's operation, notify proper authority immediately. Cooperate with said authority in restoring service as promptly as possible and bear costs incurred.
9. Do not impair operation of existing sewer system. Prevent construction material, pavement, concrete, earth, volatile and corrosive wastes, and other debris from entering sewers, pump stations, or other sewer structures.
10. Maintain original Site drainage wherever possible.

**SECTION 01500
TEMPORARY FACILITIES AND CONTROLS**

- B. Site Security:
 - 1. Erect a temporary security fence for protection of existing facilities. Maintain fence throughout construction period. Obtain Engineer's written permission before removal of temporary security fencing.
 - 2. Provide and maintain additional temporary security fences as necessary to protect the Work and Contractor-furnished products not yet installed.

- C. Signs and Equipment:
 - 1. Conform to requirements of manual published by the California State Department of Transportation.
 - 2. Portable TOW-AWAY-NO STOPPING Signs: Place where approved by police department and City standards.
 - 3. Traffic Cones: Provide to delineate traffic lanes to guide and separate traffic movements.
 - 4. Provide at obstructions, such as material piles and equipment.

- D. Waterways:
 - 1. Keep ditches, culverts, and natural drainages continuously free of construction materials and debris.

3.03 TEMPORARY CONTROLS

- A. Air Pollution Control:
 - 1. Minimize air pollution from construction operations.
 - 2. Burning:
 - a. Of waste materials, rubbish, or other debris will not be permitted on or adjacent to Site.
 - 3. Conduct operations of dumping rock and of carrying rock away in trucks to cause a minimum of dust. Give unpaved streets, roads, detours, or haul roads used in construction area a dust-preventive treatment or periodically water to prevent dust. Strictly adhere to applicable environmental regulations for dust prevention.
 - 4. Provide and maintain temporary dust-tight partitions, bulkheads, or other protective devices during construction to permit normal operation of existing facilities. Construct partitions of plywood, insulating board, plastic sheets, or similar material. Construct partitions in such a manner that dust and dirt from demolition and cutting will not enter other parts of existing building or facilities. Remove temporary partitions as soon as need no longer exists.

3.04 STORAGE YARDS AND BUILDINGS

- A. Coordinate requirements with Section 01610, Common Product Requirements.

**SECTION 01500
TEMPORARY FACILITIES AND CONTROLS**

- B. Temporary Storage Yards: Construct temporary storage yards for storage of products that are not subject to damage by weather conditions.
- C. Temporary Storage Buildings:
 - 1. Provide environmental control systems that meet recommendations of manufacturers of equipment and materials stored.
 - 2. Arrange or partition to provide security of contents and ready access for inspection and inventory.
 - 3. Store combustible materials (paints, solvents, fuels) in a well-ventilated and remote building meeting safety standard.

3.05 PARKING AREAS

- A. Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, Owner's operations, or construction operations.
- B. Provide parking facilities for personnel working on Project. No employee or equipment parking will be permitted on Owner's existing paved areas except as specifically designated for Contractor's use.

3.06 VEHICULAR TRAFFIC

- A. Comply with Laws and Regulations regarding closing or restricting use of public streets or highways. No public or private road shall be closed, except by written permission of proper authority. Ensure the least possible obstruction to traffic and normal commercial pursuits.
- B. Conduct the Work to interfere as little as possible with public travel, whether vehicular or pedestrian.
- C. Whenever it is necessary to cross, close, or obstruct roads, driveways, and walks, whether public or private, provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.
- D. Road Closures: Not permitted without approval of the Owner.
- E. Maintenance of traffic is not required if Contractor obtains written permission from Owner and tenant of private property, or from authority having jurisdiction over public property involved, to obstruct traffic at designated point.
- F. In making street crossings, do not block more than one-half the street at a time. Whenever possible, widen shoulder on opposite side to facilitate traffic flow. Provide temporary surfacing on shoulders as necessary.
- G. Maintain top of backfilled trenches before they are paved, to allow normal vehicular traffic to pass over. Provide temporary access driveways where required. Cleanup operations shall follow immediately behind backfilling.

**SECTION 01500
TEMPORARY FACILITIES AND CONTROLS**

- H. When flaggers and guards are required by regulation or when deemed necessary for safety, furnish them with approved orange wearing apparel and other regulation traffic control devices.
- I. Coordinate traffic routing with that of others working in same or adjacent areas.

3.07 CLEANING DURING CONSTRUCTION

- A. In accordance with “Greenbook” and “Whitebook,” General Conditions, as may be specified in other Specification sections, and as required herein.
- B. Wet down exterior surfaces prior to sweeping to prevent blowing of dust and debris. At least weekly, sweep floors (basins, tunnels, platforms, walkways, roof surfaces), and pick up and dispose of debris.
- C. Provide approved containers for collection and disposal of waste materials, debris, and rubbish. At least weekly, dispose of such waste materials, debris, and rubbish offsite.
- D. At least weekly, brush sweep entry drive, roadways, and other streets and walkways affected by the Work and where adjacent to the Work.

END OF SECTION

**SECTION 01570
TEMPORARY TRAFFIC CONTROL**

PART 1 - GENERAL

1.01 SUMMARY

- A. The Contractor shall comply with the guidance provided by the Local Authorities, the State Department of Transportation, Specification Requirements, Permit Restrictions, and any other Governing Source, when regulating traffic on public roads.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. TCP: Traffic Control Plan
 - 2. CalTrans: California Department of Transportation
- B. Reference Standards
 - 1. CalTrans: California Department of Transportation Standard Specifications

PART 2 - PRODUCTS

2.01 SIGNS, SIGNALS, AND DEVICES

- A. Traffic Control Signs: Per approved TCPs.
- B. Traffic Cones and Drums, Barricades, Flares and Lights: CalTrans Standard Specifications, Section 12.
- C. Flagman Equipment: As required by "The Whitebook" Part 6.

2.02 TRAFFIC CONTROL IN DEVICES PUBLIC ROADWAYS

- A. The Contractor shall furnish, install, and maintain the traffic control devices as shown on the TCP Permit, and additional traffic control devices as may be required to ensure the safe movement of vehicles and pedestrians, and to provide for the safety of construction workers. The Contractor shall maintain existing traffic control signs and traffic signals in their proper location on temporary mounting supports until permanent signs or signals are restored. The Contractor shall use signs, delineators, barricades, etc., as per the latest State of California, "Manual of Traffic Controls for Construction and Maintenance Work Zones." The name of the Contractor or vendor who owns the traffic control devices shall be clearly noted on each device.
- B. Barricades used at night shall be equipped with flashing lights. Signs intended to be used during hours of darkness shall be reflectorized with a material that has a smooth, sealed outer surface, or illuminated to show approximately the same shape and color day and night. Internally or externally illuminated signs shall be used where there is significant interference from extraneous light sources and

**SECTION 01570
TEMPORARY TRAFFIC CONTROL**

reflectorized signs will not be effective. External light sources shall be properly shielded to protect drivers from glare. Street or highway lighting is not regarded as meeting the requirements for sign illumination.

- C. Traffic controls shall be in accordance with Traffic Control Plans of the San Diego Regional Standard Drawings, and current CalTrans Standard Specification, Section 12, and shall conform to the following unless otherwise shown on the TCP Permit.

PART 3 - EXECUTION

3.01 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and Owner's operations.
- B. Monitor parking of construction personnel's vehicles. No personal vehicles will be permitted beyond the designated construction parking area. Maintain vehicular access to and through parking areas.
- C. Prevent parking on or adjacent to access roads or in non-designated areas.

3.02 FLAGPERSONS

- A. Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

3.03 HAUL ROUTES AND SITE ACCESS

- A. Confine construction traffic to designated haul routes.
- B. Provide traffic control at critical areas of haul routes to regulate traffic and to minimize interference with public traffic.
- C. If construction is to be performed in phases, Work shall be completed in each phase prior to beginning Work on the next phase. Equipment, material, or debris shall not be stored or remain in the public right-of-way without prior approval by the Construction Manager.
 - 1. Travel lanes shall be twelve (12) feet wide, minimum. For lane closures on roadways with bike lanes, the rightmost travel lane shall be fourteen (14) feet wide, minimum. Flashing arrow boards shall be used when the posted speed is forty (40) mph or more, or when curvature of the roadway limits visibility.
 - 2. The Contractor shall maintain cross traffic and turning moves at the intersections.
 - 3. Trenches shall be backfilled or trench-plated at the end of each Work day. An asphalt ramp shall be placed around each trench plate to prevent the plate from being dislodged. Upon completion of excavation backfill, the Contractor shall provide a satisfactory surface for traffic.

**SECTION 01570
TEMPORARY TRAFFIC CONTROL**

4. The Contractor shall repair or replace traffic control devices (including traffic signs, striping, pavement markers, pavement markings, legends, curb markings, loop detectors, traffic signal equipment, etc.) damaged or removed as a result of operations and not designated for removal. Repairs and replacements shall be equal to existing improvements. Loop detectors shall be replaced within three (3) Working days of completion of underground Work.
5. The Contractor may use the parking lane while working next to the curb. The Contractor shall post "Tow-Away/No Parking" signs twenty-four hours in advance for temporary parking removal. Signs shall indicate specific days, dates, and times of restrictions.
6. The Contractor shall provide for a safe four (4) foot wide pedestrian walkway along entire length of construction area.
7. Access to private property shall be maintained to the greatest extent practicable. The Contractor shall minimize the time duration that a driveway must be closed, and shall minimize inconvenience to driveway users. When no other alternative exists and a driveway or pedestrian access must be closed, the Contractor shall notify the property owner or occupant a minimum of five (5) Working days prior to closure, and shall explain to the property owner or occupant when the closure shall start and duration of the closure. The Construction Manager shall approve the format of the notice prior to its issuance.
8. The Contractor shall post signs notifying the public a minimum of five (5) Working days prior to closure of streets.
9. The Contractor shall maintain full width of traffic lanes of the existing roadway during non-Working hours and on Saturday, Sunday, designated holidays, and when construction operations are not actively in progress on Working days. The Contractor shall keep the streets in and adjacent to the construction area clean. Streets shall be swept before washing.
10. When constructing a new roadway, the Contractor shall install and maintain equipment required by the TCPs until the new roadway is accepted by Owner.

D. The Contractor shall notify the following agencies a minimum of two (2) Working days prior to excavation, construction, or traffic control affecting the agencies:

- | | | |
|-------------------------------|-------------------------|----------------------|
| 1. Fire Department Dispatch | Street or alley closure | 858-573-1300 |
| 2. Police Traffic Division | Street or alley closure | 858-495-7800 |
| 3. Waste Management Dept. | Refuse collection | 858-694-7000 |
| 4. Street Division/Electrical | Traffic signals | 619-527-7500 |
| 5. *San Diego Transit | Bus stops | 619-238-0100,ext.424 |
| 6. Underground Service Alert | Any excavation | 1-800-422-4133 |

*Notify five (5) working days in advance.

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TEMPORARY TRAFFIC CONTROL**

- E. The Construction Manager will observe these traffic control measures in operation and reserves the right to make or request changes as field conditions warrant. If changes are requested and as directed in writing by the Construction Manager, the Contractor shall call the Engineering Traffic Control Section (619-533-4443) and shall make an appointment to request a revision to the TCP Permit. Such changes shall supersede the original TCP Permit.

3.04 REMOVAL

- A. Remove equipment and devices when no longer required.
- B. Repair damage caused by installation.
- C. Remove post settings.

END OF SECTION

**SECTION 01610
COMMON PRODUCT REQUIREMENTS**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes requirements for items included in the contract documents.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
1. AHJ: Authority Having Jurisdiction
 2. F: Fahrenheit
 3. NFPA: National Fire Protection Association
 4. NEC: National Electrical Code
 5. NSF: National Sanitation Foundation
 6. ANSI: American National Standards Institute

1.03 DEFINITIONS

- A. Products:
1. New items for incorporation in the Work, or taken from previously purchased stock, and may also include existing materials or components required for reuse.
 2. Includes the terms material, equipment, machinery, components, subsystem, system, hardware, software, and terms of similar intent and is not intended to change meaning of such other terms used in Contract Documents, as those terms are self-explanatory and have well recognized meanings in construction industry.
 3. Items identified by manufacturer's product name, including make or model designation, indicated in manufacturer's published product literature, that is current as of the date of the Contract Documents.

1.04 DELIVERY, STORAGE, HANDLING, PROTECTION, AND INSPECTION

- A. When practical, factory assemble products. Mark or tag separate parts and assemblies to facilitate field assembly. Cover machined and unpainted parts that may be damaged by the elements with strippable protective coating.
- B. Package products to facilitate handling and protect from damage during shipping, handling, and storage. Mark or tag outside of each package or crate to indicate its purchase order number, bill of lading number, contents by name, name of Project and Contractor, equipment number, and approximate weight. Include complete packing list and bill of materials with each shipment.
- C. Extra Materials, Special Tools, Test Equipment, and Expendables:
1. Furnish as required by individual Specifications.

**SECTION 01610
COMMON PRODUCT REQUIREMENTS**

2. Schedule:
 - a. Ensure that shipment and delivery occurs concurrent with shipment of associated equipment.
 - b. Transfer to Owner shall occur immediately subsequent to Contractor's acceptance of equipment from Supplier.
 3. Packaging and Shipment:
 - a. Package and ship extra materials and special tools to avoid damage during long term storage in original cartons insofar as possible, or in appropriately sized, hinged-cover, wood, plastic, or metal box.
 - b. Prominently displayed on each package, the following:
 - 1) Manufacturer's part nomenclature and number, consistent with Operation and Maintenance Manual identification system.
 - 2) Applicable equipment description.
 - 3) Quantity of parts in package.
 - 4) Equipment manufacturer.
 - c. Deliver materials to Site.
 4. Replace extra materials and special tools found to be damaged or otherwise inoperable at time of transfer to Owner.
- D. Request a minimum 7-day advance notice of shipment from manufacturer. Upon receipt of manufacturer's advance notice of shipment, promptly notify Engineer of anticipated date and place of arrival.
- E. Factory Test Results: Reviewed and accepted by Engineer before product shipment as required in individual Specification sections.
- F. Deliver products in accordance with accepted current Progress Schedule and coordinate to avoid conflict with the Work and conditions at Site. Deliver anchor bolts and templates sufficiently early to permit setting prior to placement of structural concrete.
- G. Deliver products in undamaged condition, in manufacturer's original container or packaging, with identifying labels intact and legible. Include on label, date of manufacture and shelf life, where applicable.
- H. Unload products in accordance with manufacturer's instructions for unloading or as specified. Record receipt of products at Site. Promptly inspect for completeness and evidence of damage during shipment.
- I. Remove damaged products from Site and expedite delivery of identical new undamaged products, and remedy incomplete or lost products to provide that specified, so as not to delay progress of the Work.
- J. Handle and store products in accordance with manufacturer's written instructions and in a manner to prevent damage. Store in storage yards or sheds. Provide manufacturer's recommended maintenance during storage, installation, and until products are accepted for use by Owner.

**SECTION 01610
COMMON PRODUCT REQUIREMENTS**

- K. Manufacturer's instructions for material requiring special handling, storage, or protection shall be provided prior to delivery of material.
- L. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to ensure that products are maintained under specified conditions, and free from damage or deterioration. Keep running account of products in storage to facilitate inspection and to estimate progress payments for products delivered, but not installed in the Work.
- M. Store electrical, instrumentation, and control products, and equipment with bearings in weather-tight structures maintained above 60 degrees F. Protect electrical, instrumentation, and control products, and insulate against moisture, water, and dust damage. Connect and operate continuously space heaters furnished in electrical equipment.
- N. Store fabricated products above ground on blocking or skids, and prevent soiling or staining. Store loose granular materials in well-drained area on solid surface to prevent mixing with foreign matter. Cover products that are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.
- O. Store finished products that are ready for installation in dry and well-ventilated areas. Do not subject to extreme changes in temperature or humidity.
- P. After installation, provide coverings to protect products from damage due to traffic and construction operations. Remove coverings when no longer needed.
- Q. Hazardous Materials: Prevent contamination of personnel, storage area, and Site. Meet requirements of product specification, codes, and manufacturer's instructions.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Provide manufacturer's standard materials suitable for service conditions, unless otherwise specified in the individual Specifications.
- B. Where product specifications include a named manufacturer, with or without model number, and also include performance requirements, named manufacturer's products must meet the performance specifications.
- C. Like items of products furnished and installed in the Work shall be end products of one manufacturer and of the same series or family of models to achieve standardization for appearance, operation and maintenance, spare parts and replacement, manufacturer's services, and implement same or similar process instrumentation and control functions in same or similar manner.
- D. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.
- E. Provide interchangeable components of the same manufacturer, for similar components, unless otherwise specified.

**SECTION 01610
COMMON PRODUCT REQUIREMENTS**

- F. Equipment, Components, Systems, and Subsystems: Design and manufacture with due regard for health and safety of operation, maintenance, and accessibility, durability of parts, and shall comply with applicable OSHA, state, and local health and safety regulations.
- G. Regulatory Requirement: Coating materials shall meet federal, state, and local requirements limiting the emission of volatile organic compounds and for worker exposure.
- H. Safety Guards: Provide for belt or chain drives, fan blades, couplings, or other moving or rotary parts. Cover rotating part on sides. Design for easy installation and removal. Use 16-gauge or heavier; galvanized steel, aluminum coated steel, or galvanized or aluminum coated 1/2-inch mesh expanded steel. Provide galvanized steel accessories and supports, including bolts. For outdoors application, prevent entrance of rain and dripping water.
- I. Authority Having Jurisdiction (AHJ):
 - 1. Provide the Work in accordance with NFPA 70, National Electrical Code (NEC). Where required by the AHJ, material and equipment shall be labeled or listed by a nationally recognized testing laboratory or other organization acceptable to the AHJ in order to provide a basis for approval under NEC.
 - 2. Materials and equipment manufactured within the scope of standards published by Underwriters Laboratories, Inc. shall conform to those standards and shall have an applied UL listing mark.
- J. Equipment Finish:
 - 1. Provide manufacturer's standard finish and color, except where specific color is indicated.
 - 2. If manufacturer has no standard color, provide equipment with finish as approved by Owner.
- K. Special Tools and Accessories: Furnish to Owner, upon acceptance of equipment, accessories required to place each item of equipment in full operation. These accessory items include, but are not limited to, adequate oil and grease (as required for first lubrication of equipment after field testing), light bulbs, fuses, hydrant wrenches, valve keys, handwheels, chain operators, special tools, and other spare parts as required for maintenance.
- L. Components and Materials in Contact with Water for Human Consumption: Comply with the requirements of the Safe Drinking Water Act and other applicable federal, state, and local requirements. Provide certification by manufacturer or an accredited certification organization recognized by the Authority Having Jurisdiction that components and materials comply with the maximum lead content standard in accordance with NSF/ANSI 61 and NSF/ANSI 372.
 - 1. Use or reuse of components and materials without a traceable certification is prohibited.

**SECTION 01610
COMMON PRODUCT REQUIREMENTS**

2.02 DESIGN REQUIREMENTS

- A. Where Contractor design is specified, design of installation, systems, equipment, and components, including supports and anchorage, shall be in accordance with provisions of latest edition of the California Building Code (CBC).

2.03 ENVIRONMENTAL REQUIREMENTS

- A. Altitude: Provide materials and equipment suitable for installation and operation under rated conditions at 700 feet above sea level.
- B. Provide equipment and devices installed outdoors or in unheated enclosures capable of continuous operation within an ambient temperature range of 32 degrees F to 110 degrees F.

2.04 FABRICATION AND MANUFACTURE

- A. General:
 - 1. Manufacture parts to U.S.A. standard sizes and gauges.
 - 2. Two or more items of the same type shall be identical, by the same manufacturer, and interchangeable.
 - 3. Design structural members for anticipated shock and vibratory loads.
 - 4. Use 1/4-inch minimum thickness for steel that will be submerged, wholly or partially, during normal operation.
 - 5. Modify standard products as necessary to meet performance Specifications.
- B. Lubrication System:
 - 1. Require no more than weekly attention during continuous operation.
 - 2. Convenient and accessible; oil drains with bronze or stainless steel valves and fill-plugs easily accessible from the normal operating area or platform.
 - 3. Locate drains to allow convenient collection of oil during oil changes without removing equipment from its installed position.
 - 4. Provide constant-level oilers or oil level indicators for oil lubrication systems.
 - 5. For grease type bearings, which are not easily accessible, provide and install stainless steel tubing; protect and extend tubing to convenient location with suitable grease fitting.

2.05 SOURCE QUALITY CONTROL

- A. Where Specifications call for factory testing to be witnessed by Engineer, notify Engineer not less than 14 days prior to scheduled test date, unless otherwise specified.
- B. Calibration Instruments: Bear the seal of a reputable laboratory certifying instrument has been calibrated within the previous 12 months to a standard endorsed by the National Institute of Standards and Technology (NIST).

**SECTION 01610
COMMON PRODUCT REQUIREMENTS**

- C. Factory Tests: Perform in accordance with accepted test procedures and document successful completion.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Inspect materials and equipment for signs of pitting, rust decay, or other deleterious effects of storage. Do not install material or equipment showing such effects. Remove damaged material or equipment from the Site and expedite delivery of identical new material or equipment. Delays to the Work resulting from material or equipment damage that necessitates procurement of new products will be considered delays within Contractor's control.

3.02 MANUFACTURER'S CERTIFICATE OF COMPLIANCE

- A. When so specified, a Manufacturer's Certificate of Compliance, a copy of which is attached to this section, shall be completed in full, signed by entity supplying the product, material, or service, and submitted prior to shipment of product or material or execution of the services.
- B. Engineer may permit use of certain materials or assemblies prior to sampling and testing if accompanied by accepted certification of compliance.
- C. Such form shall certify proposed product, material, or service complies with that specified. Attach supporting reference data, affidavits, and certifications as appropriate.
- D. May reflect recent or previous test results on material or product, if acceptable to Engineer.

3.03 INSTALLATION

- A. Equipment Drawings show general locations of equipment, devices, and raceway, unless specifically dimensioned.
- B. No shimming between machined surfaces is allowed.
- C. Install the Work in accordance with NECA Standard of Installation, unless otherwise specified.
- D. Repaint painted surfaces that are damaged prior to equipment acceptance.
- E. Do not cut or notch any structural member or building surface without specific approval of Engineer.
- F. Handle, install, connect, clean, condition, and adjust products in accordance with manufacturer's instructions, and as may be specified. Retain a copy of manufacturers' instruction at Site, available for review at times.
- G. For material and equipment specifically indicated or specified to be reused in the Work:

**SECTION 01610
COMMON PRODUCT REQUIREMENTS**

1. Use special care in removal, handling, storage, and reinstallation to assure proper function in the completed Work.
2. Arrange for transportation, storage, and handling of products that require offsite storage, restoration, or renovation. Include costs for such Work in the Contract Price.

3.04 ADJUSTMENT AND CLEANING

- A. Perform required adjustments, tests, operation checks, and other startup activities.

3.05 SUPPLEMENTS

- A. The supplement listed below, following "End of Section," is part of this specification.
 1. Form: Manufacturer's Certificate of Compliance.

**SECTION 01610
COMMON PRODUCT REQUIREMENTS**

MANUFACTURER'S CERTIFICATE OF COMPLIANCE

OWNER: _____ PRODUCT, MATERIAL, OR SERVICE
PROJECT NAME: _____ SUBMITTED: _____
PROJECT NO: _____

Comments: _____

I hereby certify that the above-referenced product, material, or service called for by the Contract for the named Project will be furnished in accordance with applicable requirements. I further certify that the product, material, or service are of the quality specified and conform in respects with the Contract requirements and are in the quantity shown.

Date of Execution: _____, 20 _____

Manufacturer: _____

Manufacturer's Authorized Representative (*print*): _____

(Authorized Signature)

**SECTION 01610
COMMON PRODUCT REQUIREMENTS**

END OF SECTION

**SECTION 01782
OPERATION AND MAINTENANCE DATA**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes detailed information for the preparation, submission, and Engineer's review of Operations and Maintenance (O&M) Data, as required by individual Specification sections.

1.02 DEFINITIONS

- A. Preliminary Data: Initial and subsequent submissions for Engineer's review.
- B. Final Data: Engineer-accepted data, submitted as specified herein.
- C. Maintenance Operation: As used on Maintenance Summary Form is defined to mean any routine operation required to ensure satisfactory performance and longevity of equipment. Examples of typical maintenance operations are lubrication, belt tensioning, adjustment of pump packing glands, and routine adjustments.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Sequencing and Scheduling
 - 1. Equipment and System Data:
 - a. Preliminary Data:
 - (1) Do not submit until Shop Drawing for equipment or system has been reviewed and approved by Engineer.
 - (2) Submit prior to shipment date.
 - b. Final Data: Submit Instructional Manual Formatted data not less than 30 days prior to installation of equipment or system equipment or system field functional testing. Submit Compilation Formatted and Electronic Media Formatted data prior to Substantial Completion of Project.
 - 2. Materials and Finishes Data:
 - a. Preliminary Data: Submit at least 15 days prior to request for final inspection.
 - b. Final Data: Submit within 10 days after final inspection.
- B. Data Format
 - 1. Prepare preliminary data in the form of an instructional manual. Prepare final data on electronic media.
 - 2. Instructional Manual Format:
 - a. Binder: Commercial quality, permanent, three-ring or three-post binders with durable plastic cover.
 - b. Size: 8-1/2 inches by 11 inches, minimum.

**SECTION 01782
OPERATION AND MAINTENANCE DATA**

- c. Cover: Identify manual with typed or printed title "OPERATION AND MAINTENANCE DATA" and list:
 - (1) Project title.
 - (2) Designate applicable system, equipment, material, or finish.
 - (3) Identity of separate structure as applicable.
 - (4) Identify volume number if more than one volume.
 - (5) Identity of general subject matter covered in manual.
 - (6) Identity of equipment number and Specification section.
 - d. Spine:
 - (1) Project title.
 - (2) Identify volume number if more than one volume.
 - e. Title Page:
 - (1) Contractor name, address, and telephone number.
 - (2) Subcontractor, Supplier, installer, or maintenance contractor's name, address, and telephone number, as appropriate.
 - (a) Identify area of responsibility of each.
 - (b) Provide name and telephone number of local source of supply for parts and replacement.
3. Table of Contents:
- a. Neatly typewritten and arranged in systematic order with consecutive page numbers.
 - b. Identify each product by product name and other identifying numbers or symbols as set forth in Contract Documents.
 - c. Paper: 20-pound minimum, white for typed pages.
 - d. Text: Manufacturer's printed data, or neatly typewritten.
 - e. Three-hole punch data for binding and composition; arrange printing so that punched holes do not obliterate data.
 - f. Material shall be suitable for reproduction, with quality equal to original.
 - g. Photocopying of material will be acceptable, except for material containing photographs.
4. Final Compilation Electronic Media Format:
- a. Portable Document Format (PDF):
 - (1) After preliminary data has been found to be acceptable to Engineer, submit Operation and Maintenance data in PDF format on flash drive.
 - (2) Files to be exact duplicates of Engineer-accepted preliminary data. Arrange by specification number and name.

**SECTION 01782
OPERATION AND MAINTENANCE DATA**

- (3) Files to be fully functional and viewable in most recent version of Adobe Acrobat.

1.04 SUBMITTALS

A. Informational:

1. Data Outline: Submit two copies of a detailed outline of proposed organization and contents of Final Data prior to preparation of Preliminary Data.
2. Preliminary Data:
 - a. Submit two copies for Engineer's review.
 - b. If data meets conditions of the Contract:
 - 1) One copy will be returned to Contractor.
 - 2) One copy will be forwarded to Resident Project Representative.
 - 3) One copy will be retained in Engineer's file.
 - c. If data does not meet conditions of the Contract:
 - 1) Copies will be returned to Contractor with Engineer's comments (on separate document) for revision.
 - 2) Engineer's comments will be retained in Engineer's file.
 - 3) Resubmit two copies revised in accordance with Engineer's comments.
3. Final Data: Submit two copies in format specified herein.

1.05 DATA FOR EQUIPMENT AND SYSTEMS

A. Content for Each Unit (or Common Units) and System:

1. Product Data:
 - a. Include only those sheets that are pertinent to specific product.
 - b. Clearly annotate each sheet to:
 - 1) Identify specific product or part installed.
 - 2) Identify data applicable to installation.
 - 3) Delete references to inapplicable information.
 - c. Function, normal operating characteristics, and limiting conditions.
 - d. Performance curves, engineering data, nameplate data, and tests.
 - e. Complete nomenclature and commercial number of replaceable parts.
 - f. Original manufacturer's parts list, illustrations, detailed assembly drawings showing each part with part numbers and sequentially numbered parts list, and diagrams required for maintenance.
 - g. Spare parts ordering instructions.

SECTION 01782
OPERATION AND MAINTENANCE DATA

- h. Where applicable, identify installed spares and other provisions for future work (e.g., reserved panel space, unused components, wiring, terminals).
2. As-installed, color-coded piping diagrams.
3. Charts of valve tag numbers, with the location and function of each valve.
4. Drawings: Supplement product data with Drawings as necessary to clearly illustrate:
 - a. Format:
 - 1) Provide reinforced, punched, binder tab; bind in with text.
 - 2) Reduced to 8-1/2 inches by 11 inches, or 11 inches by 17 inches folded to 8-1/2 inches by 11 inches.
 - 3) Where reduction is impractical, fold and place in 8-1/2-inch by 11-inch envelopes bound in text.
 - 4) Identify Specification section and product on Drawings and envelopes.
 - b. Relations of component parts of equipment and systems.
 - c. Control and flow diagrams.
 - d. Coordinate drawings with Project record documents to assure correct illustration of completed installation.
5. Instructions and Procedures: Within text, as required to supplement product data.
 - a. Format:
 - 1) Organize in consistent format under separate heading for each different procedure.
 - 2) Provide logical sequence of instructions for each procedure.
 - 3) Provide information sheet, including:
 - a) Proper procedures in event of failure.
 - b) Instances that might affect validity of guarantee or Bond.
 - b. Installation Instructions: Including alignment, adjusting, calibrating, and checking.
 - c. Operating Procedures:
 - 1) Startup, break-in, routine, and normal operating instructions.
 - 2) Test procedures and results of factory tests where required.
 - 3) Regulation, control, stopping, and emergency instructions.
 - 4) Description of operation sequence by control manufacturer.
 - 5) Shutdown instructions for both short and extended duration.
 - 6) Summer and winter operating instructions, as applicable.
 - 7) Safety precautions.

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OPERATION AND MAINTENANCE DATA**

- 8) Special operating instructions.
 - d. Maintenance and Overhaul Procedures:
 - 1) Routine maintenance.
 - 2) Guide to troubleshooting.
 - 3) Disassembly, removal, repair, reinstallation, and re-assembly.
 - 6. Guarantee, Bond, and Service Agreement
- B. Content for Each Electric or Electronic Item or System:
- 1. Description of Unit and Component Parts:
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data, nameplate data, and tests.
 - c. Complete nomenclature and commercial number of replaceable parts.
 - d. Interconnection wiring diagrams, including control and lighting systems.
 - 2. Circuit Directories of Panelboards:
 - 3. Electrical service.
 - 4. Control requirements and interfaces.
 - 5. Communication requirements and interfaces.
 - 6. List of electrical relay settings, and control and alarm contact settings.
 - 7. Electrical interconnection wiring diagram, including as applicable, single-line, three-line, schematic and internal wiring, and external interconnection wiring.
 - 8. As-installed control diagrams by control manufacturer.
 - 9. Operating Procedures:
 - a. Routine and normal operating instructions.
 - b. Startup and shutdown sequences, normal and emergency.
 - c. Safety precautions.
 - d. Special operating instructions.
 - 10. Maintenance Procedures:
 - a. Routine maintenance.
 - b. Guide to troubleshooting.
 - c. Adjustment and checking.
 - d. List of relay settings, control and alarm contact settings.
 - 11. Manufacturer's printed operating and maintenance instructions.
 - 12. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
- C. Maintenance Summary:

**SECTION 01782
OPERATION AND MAINTENANCE DATA**

1. Compile individual Maintenance Summary for each applicable equipment item, respective unit or system, and for components or sub-units.
2. Format:
 - a. Use Maintenance Summary Form bound with this section or electronic facsimile of such.
 - b. Each Maintenance Summary may take as many pages as required.
 - c. Use only 8-1/2-inch by 11-inch size paper.
 - d. Complete using typewriter or electronic printing.
3. Include detailed lubrication instructions and diagrams showing points to be greased or oiled; recommend type, grade, and temperature range of lubricants and frequency of lubrication.
4. Recommended Spare Parts:
 - a. Data to be consistent with manufacturer's Bill of Materials/Parts List furnished in O&M manuals.
 - b. "Unit" is the unit of measure for ordering the part.
 - c. "Quantity" is the number of units recommended.
 - d. "Unit Cost" is the current purchase price.

1.06 DATA FOR MATERIALS AND FINISHES

- A. Content for Architectural Products, Applied Materials, and Finishes:
 1. Manufacturer's data, giving full information on products:
 - a. Catalog number, size, and composition.
 - b. Color and texture designations.
 - c. Information required for reordering special-manufactured products.
 2. Instructions for Care and Maintenance:
 - a. Manufacturer's recommendation for types of cleaning agents and methods.
 - b. Cautions against cleaning agents and methods that are detrimental to product.
 - c. Recommended schedule for cleaning and maintenance.
- B. Content for Moisture Protection and Weather Exposed Products:
 1. Manufacturer's data, giving full information on products:
 - a. Applicable standards.
 - b. Chemical composition.
 - c. Details of installation.
 2. Instructions for inspection, maintenance, and repair.

**SECTION 01782
OPERATION AND MAINTENANCE DATA**

1.07 SUPPLEMENTS

- A. The supplements listed below, following “End of Section,” are part of this Specification.
1. Forms: Maintenance Summary Form.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

**SECTION 01782
OPERATION AND MAINTENANCE DATA**

MAINTENANCE SUMMARY FORM

PROJECT: _____ CONTRACT NO.: _____

1. EQUIPMENT ITEM _____

2. MANUFACTURER _____

3. EQUIPMENT/TAG NUMBER(S) _____

4. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) _____

5. NAMEPLATE DATA (hp, voltage, speed, etc.) _____

6. MANUFACTURER'S LOCAL REPRESENTATIVE

a. Name _____ Telephone No. _____

b. Address _____

7. MAINTENANCE REQUIREMENTS

Maintenance Operation Comments	Frequency	Lubricant (If Applicable)
List briefly each maintenance operation required and refer to specific information in manufacturer's standard maintenance manual, if applicable. (Reference to manufacturer's catalog or sales literature is not acceptable.)	List required frequency of each maintenance operation.	Refer by symbol to lubricant required.

**SECTION 01782
OPERATION AND MAINTENANCE DATA**

8. RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY.

Part No.	Description	Unit	Quantity	Unit Cost

Note: Identify parts provided by this Contract with two asterisks.

**SECTION 01782
OPERATION AND MAINTENANCE DATA**

END OF SECTION

**SECTION 01881
ANCHORING AND BRACING**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section covers requirements for anchorage and bracing of equipment, distribution systems, and other structural and nonstructural components required in accordance with the California Building Code (CBC), for seismic, wind, gravity, soil, and operational loads.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. AISC: American Institute of Steel Construction
 - 2. ASCE: American Society for Civil Engineers
 - 3. CBC: California Building Code
 - 4. AHJ: Authority Having Jurisdiction
 - 5. ICC-ES: International Code Council Evaluations Service Inc.
- B. Related Specifications:
 - 1. Section 01610 "Common Product Requirements"
 - 2. Section 01453 "Special Inspection, Observation, and Testing"
 - 3. Section 01451 "Contractor Quality Control"
- C. Referenced Standards:
 - 1. American Institute of Steel Construction (AISC) 360, Specification for Structural Steel Buildings.
 - 2. American Society of Civil Engineers (ASCE): ASCE 7, Minimum Design Loads for Buildings and Other Structures.
 - 3. California Building Code (CBC).

1.03 DEFINITIONS

- A. Authority Having Jurisdiction (AHJ): Permitting building agency; may be a federal, state, local, or other regional department, or individual including building official, fire chief, fire marshal, chief of a fire prevention bureau, labor department, or health department, electrical inspector; or others having statutory authority. AHJ may be Owner when authorized to be self-permitting by governmental permitting agency or when no governmental agency has authority.
- B. Designated Seismic System: Architectural, electrical, and mechanical system or their components for which component importance factor is greater than 1.0.

1.04 SUBMITTALS

- A. Action Submittals
 - 1. Shop Drawings:

**SECTION 01881
ANCHORING AND BRACING**

- a. List of architectural, mechanical, and electrical equipment requiring Contractor-designed anchorage and bracing, unless specifically exempted.
- b. Manufacturers' engineered seismic and non-seismic hardware product data sealed by a civil or structural engineer registered in the State of California.
- c. Attachment assemblies' drawings including seismic attachments; include connection hardware, braces, and anchors or anchor bolts for nonexempt components, equipment, and systems.
- d. Submittal will be rejected if proposed anchorage method would create excessive stress to supporting member. Revise anchorages and strengthen structural support to eliminate overstressed condition.

B. Informational Submittals:

1. Anchorage and Bracing Calculations: For attachments, braces, and anchorages, include CBC and Project-specific criteria, in addition to manufacturer's specific criteria used for design; sealed by a civil or structural engineer registered in the State of California.
2. Manufacturer's hardware installation requirements.

C. Manufacturer Warranty Information

1.05 SOURCE QUALITY CONTROL

- A. Provide all other specified, regulatory required, or required repair verification inspection and testing that is not listed in Statement of Special Inspections in accordance with Section 01 451 Contractor Quality Control.
- B. Provide Source Quality Control for welding and hot-dip galvanizing of anchors.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Design and construct attachments and supports transferring seismic and non- seismic loads to structure of materials and products suitable for application and in accordance with design criteria shown on Drawings and nationally recognized standards.
- B. Provide anchor bolts of the size, minimum embedment, and spacing designated in calculations submitted by Contractor and accepted by Engineer.
- C. Provide post-installed anchors of the size, minimum embedment, and spacing designated in calculations submitted by Contractor and accepted by Engineer. Post-installed anchors shall have a current ICC-ES Report for use in cracked concrete and for short-term and long-term loads including wind and earthquake.
- D. Do not use powder-actuated fasteners or sleeve anchors for seismic attachments and anchorage where resistance to tension loads is required. Do not use expansion anchors, other than undercut anchors, for non-vibration isolated mechanical equipment rated over 10 horsepower.

**SECTION 01881
ANCHORING AND BRACING**

2.02 DESIGN AND PERFORMANCE REQUIREMENTS

A. General:

1. Anchorage and bracing systems shall be designed by a qualified professional engineer registered in the State of California.
2. Design anchorage and bracing of architectural, mechanical, and electrical components and systems in accordance with this section, unless a design is specifically provided within Contract Documents or where exempted hereinafter.
3. Design attachments, braces, and anchors for equipment, components, and distribution systems to structure for gravity, seismic, wind, and operational loading.
4. Anchor and brace piping and ductwork, whether exempt or not exempt for this section, so that lateral or vertical displacement does not result in damage or failure to essential architectural, mechanical, or electrical equipment.
5. Architectural Components: Includes, but are not limited to, nonstructural walls and elements, partitions, cladding and veneer, access flooring, signs, cabinets, suspended ceilings, and glass in glazed curtain walls and partitions.
6. Provide supplementary framing where required to transfer anchorage and bracing loads to structure.
7. Adjust equipment pad sizes or provide additional anchorage confinement reinforcing to provide required anchorage capacities.
8. Design anchorage and bracing for:
 - a. Equipment and components that weigh more than 400 pounds and has a center of mass located 4 feet or more above adjacent finished floor.
 - b. Equipment weighing more than 20 pounds that is mounted to the wall or roof/ceiling suspended.
 - c. Mechanical and electrical components that are not provided with flexible connections between components and associated ductwork, piping, or conduit.
 - d. Distribution systems that weigh more than 5 pounds per foot that are wall mounted or ceiling/roof suspended.
9. Design seismic anchorage and bracing for Designated Seismic Systems regardless of weight or mounting height.
 - a. Component Importance Factor:
 - 1) Per Section 01610 – Common Product Requirements.
10. For components exempted from design requirements of this section, provide bolted, welded, or otherwise positively fastened attachments to supporting structure.

B. Design Loads:

1. Gravity: Design anchorage and bracing for self-weight and superimposed loads on components and equipment.
2. Wind: Design anchorage and bracing for wind criteria provided in Section 01610 – Common Product Requirements and on General Structural Notes on Drawings for exposed architectural components and exterior and wind- exposed mechanical and

SECTION 01881 ANCHORING AND BRACING

electrical equipment. Alternately, manufacturer certification may be provided for components such as roofing and flashing to verify attachments meet Project-specific design criteria.

3. Operational:
 - a. For loading supplied by equipment manufacturer for CBC required load cases.
 - b. Loads may include equipment vibration, torque, thermal effects, effects of internal contents (weight and sloshing), water hammer, and other load-inducing conditions.
 - c. Locate braces to minimize vibration to or movement of structure.
 - d. For anchors with designated capacities for vibratory loading per manufacturer's ICC-ES report.
4. Seismic:
 - a. Design anchorage and bracing for criteria listed in Section 01610 Common Product Requirements

C. Seismic Design Requirements:

1. Nonstructural Components: Design as nonbuilding structures for components with weights greater than or equal to 25 percent of effective seismic weight of overall structure.
2. Analyze local region of body of nonstructural component for load transfer of anchorage attachment if component $I_p = 1.5$.
3. The following are exempt from requirements for provision of seismic anchorages and bracing, in addition to those items specifically exempted in ASCE 7, Part 13.5 for architectural components and Part 13.6 for electrical and mechanical equipment:
 - a. Furniture, except storage cabinets and bookshelves over 6 feet tall.
 - b. Temporary or movable equipment.
4. Provide support drawings and calculations for electrical distribution components if any of the following conditions apply:
 - a. I_p is equal to 1.5 and conduit diameter is greater than 2.5-inch trade size.
 - b. I_p is equal to 1.5 and the total weight of bus duct, cable tray, or conduit supported by trapeze assemblies exceeds 10 pounds per foot.
 - c. Supports are cantilevered up from floor.
 - d. Supports include bracing to limit deflection and are constructed as rigid welded frames.
 - e. Attachments utilize spot welds, plug welds, or minimum size welds as defined by AISC.
5. Provide support drawings and calculations for electrical distribution components if any of the following conditions apply:
 - a. Conduit diameter is greater than 2.5-inch trade size.
 - b. Total weight of bus duct, cable tray, or conduit supported by trapeze assemblies exceeds 10 pounds per foot.

**SECTION 01881
ANCHORING AND BRACING**

PART 3 - EXECUTION

3.01 GENERAL

- A. Make attachments, bracing, and anchorage in such a manner that component lateral force is transferred to lateral force resisting system of structure through a complete load path.
- B. Design, provide, and install overall seismic anchorage system to provide restraint in directions, including vertical, for each component or system so anchored.
- C. Provide snubbers in each horizontal direction and vertical restraints for components mounted on vibration isolation systems where required to resist overturning.
- D. Provide piping anchorage that maintains design flexibility and expansion capabilities at flexible connections and expansion joints.
 - 1. Piping and ductwork suspended more than 12 inches below supporting structure shall be braced for seismic effects to avoid significant bending of hangers and their attachments.
- E. Anchor tall and narrow equipment such as motor control centers and telemetry equipment at base and within 12 inches from top of equipment, unless approved otherwise by Engineer.
- F. Do not attach architectural, mechanical, or electrical components to more than one element of a building structure at a single restraint location where such elements may respond differently during a seismic event. Do not make such attachments across building expansion and contraction joints.

3.02 INSTALLATION

- A. Do not install components or their anchorages or restraints prior to review and acceptance by Engineer and AHJ.
- B. Notify Engineer upon completion of installation of seismic restraints in accordance with Section 01453 Special Inspection, Observation, and Testing.

3.03 FIELD QUALITY ASSURANCE AND QUALITY CONTROL

- A. Contractor-Furnished Quality Assurance, in accordance with 2019 CBC requirements, is provided in Statement of Special Inspections Plan on Drawings. Contractor responsibilities and related information are included in Section 01453 Special Inspection, Observation, and Testing.
- B. Provide any other specified, regulatory required, or required repair verification inspection and testing that is not listed in Statement of Special Inspections in accordance with Section 01451 Contractor Quality Control.

END OF SECTION

**SECTION 01911
TESTING, INTEGRATION, AND STARTUP**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes requirements for testing integration and startup.

1.02 DEFINITIONS

- A. Acceptance Testing: A contractually required, specific and measurable test 01453 "Special Inspection Observation and Testing, to demonstrate a system or facility performs to its intended function (e.g., flow amounts, duration and quality criteria are met). Major defects are resolved at this point.
- B. Controls Integrator: Entity who is responsible for the programming of the MRPS controls systems.
- C. Commissioning:
1. The disciplined and systematic process of assuring that all components, subsystems and systems of a constructed unit are designed, installed, tested and operated in conformance with the design intent, and functional intent and operational requirements herein.
 2. This includes:
 - a. Proof testing of design intent using static check sheets, dynamic check sheets and defined procedures to ensure compliance with design drawings, data sheets and specifications.
 - b. Achieving a smooth and safe transition from an inert state to a completely tested, clean, leak tight, operable and safe unit ready for start-up and performance testing.
- D. Components: Individual items of equipment or portions of the Work that when combined with other components make up subsystems or systems. Components may be minor items such as pressure gauges, or they may be significant items such as pump motors.
- E. Contract Documents: Construction Contract, Specifications and Drawings.
- F. Factory Acceptance Testing (FAT): Testing required to be conducted at the fabricator's/manufacturer's/vendor's off-site locations, witnessed or unwitnessed. Includes all such testing, regardless of the specific descriptive title used for said testing in the Contract Documents.
- G. Final Completion: Refer to the Contract Requirements and Supplementary Provisions
- H. Functional Testing: A test of a given component, subsystem or system to confirm its operation meets specifications and Contract requirements. Often a prerequisite to Acceptance Testing.

**SECTION 01911
TESTING, INTEGRATION, AND STARTUP**

- I. Manufacturer's Installation Inspection: Preliminary inspection conducted by Manufacturer or Manufacturer's accepted representative to confirm proper installation of components, systems, and sub-systems.
- J. Startup: The act of starting or operating a component, subsystem or system and testing its functionality and performance against defined metrics.
- K. Systems: A group of related components, equipment or subsystems that perform a defined function or set of functions within a facility.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Contractor startup personnel
 - 1. Contractor shall provide personnel, both supervisory and from the applicable trades, who are experienced in startup, testing, and commissioning for the execution of the work described in these Contract Documents.
 - 2. Controls Integrator: Assigned duties are those specifically required to plan and execute the installation, interconnection, integration, and startup of the various control devices, panels, components, systems, and subsystems.

1.04 SUBMITTALS

- A. Startup and test plans
 - 1. The Contractor shall develop specific plans for the testing of elements of the Facility. These plans shall outline the detailed sequence of activities necessary to confirm the proper operation of every component, system, and subsystem.
 - 2. Test plans will be prepared for each phase of startup where testing is required including, but not limited to the following:
 - a. Factory acceptance testing.
 - b. Manufacturer's installation inspection.
 - c. Electrical functional testing.
 - 3. Contractor shall submit the completed test reports as part of the Startup Results Submittal.
- B. Action Submittals:
 - 1. Startup Personnel Qualifications: The qualifications submittal for the Startup Manager and Project Integrator shall be provided at the Preconstruction Conference.
 - 2. Startup and Test Plans: Submitted within 60 days after Notice to Proceed.
 - 3. Factory Acceptance Test Plans.
 - 4. Startup and Testing Schedule:
 - a. Schedule shall be a snapshot of the overall Project Schedule.

**SECTION 01911
TESTING, INTEGRATION, AND STARTUP**

- b. Schedule may not be a separate schedule from overall Project Schedule.
 - c. Schedule shall be submitted in hard copy and electronic version.
5. Startup Results Submittal:
- a. Include the following:
 - 1) Results documentation from Factory Acceptance Testing.
 - 2) Completed test plans (endorsed by Construction Manager and Contractor).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL STARTUP AND TESTING REQUIREMENTS

- A.
- B. The Engineer and Construction Manager shall be solely responsible for determining the party responsible for conducting corrective actions and for determining the party responsible for delays.
- C. Facility Startup Meetings: Schedule with Owner to discuss test schedule, test methods, materials, facilities operations interface, and Owner involvement.
- D. Provide temporary valves, gauges, piping, test equipment and other materials and equipment required for testing and startup.
- E. Contractor will:
 - 1. Provide water, power, and other items as required for startup, unless otherwise indicated.
 - 2. .

3.02 MANUFACTURER'S INSTALLATION INSPECTION

- A. When Contractor has completed installation of components, systems, or subsystems, they shall schedule a manufacturer inspection. This manufacturer or approved manufacturer's representative shall certify that the component, system, or subsystem is properly installed and that testing of the component, system, or subsystem may commence.
- B. Preparation:
 - 1. Complete installation before testing.
 - 2. Furnish qualified manufacturers' representatives, when required by individual Specification sections.

**SECTION 01911
TESTING, INTEGRATION, AND STARTUP**

3. Obtain and submit from equipment manufacturer's representative Manufacturer's Certificate of Installation Form, when required by individual Specification sections.
4. Cleaning and Checking: Prior to beginning functional testing:
 - a. Calibrate testing equipment in accordance with manufacturer's instructions.
 - b. Inspect and clean equipment, devices, connected piping, and structures to ensure they are free of foreign material.
 - c. Lubricate equipment in accordance with manufacturer's instructions.
 - d. Turn rotating equipment by hand when possible to confirm that equipment is not bound.
 - e. Open and close valves by hand and operate other devices to check for binding, interference, or improper functioning.
 - f. Check power supply to electric-powered equipment for correct voltage.
 - g. Adjust clearances and torque.
 - h. Test piping for leaks.
5. Ready-to-test determination will be by Engineer and Construction Manager based at least on the following:
 - a. Acceptable Operation and Maintenance Data.
 - b. Notification by Contractor of equipment readiness for testing.
 - c. Receipt of Manufacturer's Certificate of Proper Installation, if so specified.
 - d. Adequate completion of work adjacent to, or interfacing with, equipment to be tested, including Membrane Equipment System.
 - e. Availability and acceptability of manufacturer's representative, when specified, to assist in testing of respective equipment.
 - f. Satisfactory fulfillment of other specified manufacturer's responsibilities.
 - g. Equipment and electrical tagging complete.
 - h. Delivery of spare parts and special tools.

3.03 WITNESSING AND SUPERINTENDENCE

- A. The Engineer, Owner, Construction Manager, and others as necessary shall be allowed to witness testing conducted during any phase of startup.
- B. The Contractor shall maintain overall superintendence of the Work during phases of startup.
- C. The Contractor shall promptly and permanently repair damage to any portion of the Work during startup and testing.
 1. Repair work shall be performed by the manufacturer or with manufacturer's approved published methods.

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TESTING, INTEGRATION, AND STARTUP**

- D. The Contractor shall perform scheduled maintenance in strict compliance with manufacturers' published procedures and with products acceptable to manufacturers.
- E. Authorized representatives of equipment suppliers or manufacturers shall certify that corrective actions for defects, malfunctions, faulty equipment operation, calibration, adjustment, or related flaws are complete and acceptable.
- F. The Contractor shall keep on 24-hour local standby and provide crews, materials, and equipment required to repair, replace adjust, balance, modify and provide other services as may be required to immediately correct failures or malfunctions of any kind.

END OF SECTION

SECTION 02274 GEOTEXTILES

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish geotextiles, complete and in place, in accordance with the Contract Documents.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. ASTM: American Society for Testing and Materials International
 - 2. SSPWC: Standard Specifications for Public Works Construction
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
- C. Standard References: See Front End Contract Documents. Additional standards specific to this Section are listed below. Except as otherwise indicated, the current editions of the following apply to the work of this Section.
 - 1. ASTM:
 - a. ASTM D 3786 Standard Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics - Diaphragm Bursting Strength Tester Method
 - b. ASTM D 3787 Standard Test Method for Bursting Strength of Knitted Goods - Constant-Rate-of-Travel (CRT) Ball Burst Test
 - c. ASTM D 4355 Standard Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
 - d. ASTM D 4491 Standard Test Method for Water Permeability of Geotextiles by Permittivity
 - e. ASTM D 4533 Test Method for Trapezoid Tearing Strength of Geotextiles
 - f. ASTM D 4632 Standard Test Method for Grab Breaking Load and Elongation of Geotextile
 - g. ASTM D 4751 Test Method for Determining the Apparent Opening Size of a Geotextile
 - h. ASTM D 4833 Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
 - i. ASTM D 4884 Standard Test Method for Seam Strength of Sewn Geotextiles

**SECTION 02274
GEOTEXTILES**

j. ASTM D 4886 Standard Test Method for Abrasion Resistance of Geotextiles (Sand Paper/Sliding Block Method)

2. Federal Standard No. 751a: Stitches, Seams, and Stitching's

1.03 DEFINITIONS

A. The following definitions apply to the Work of this Section in addition to definitions given in the Front End Contract Documents:

1. Fabric: Geotextile, a permeable geosynthetic comprised solely of textiles.
2. Minimum Average Roll Value (MinARV): Minimum of series of average roll values representative of geotextile provided.
3. Maximum Average Roll Value (MaxARV): Maximum of series of average roll values representative of geotextile provided.
4. Nondestructive Sample: Sample representative of finished geotextile, prepared for testing without destruction of geotextile.
5. Overlap: Distance measured perpendicular from overlapping edge of one sheet to underlying edge of adjacent sheet.
6. Seam Efficiency: Ratio of tensile strength across seam to strength of intact geotextile, when tested according to ASTM D 4884.

1.04 ADMINISTRATIVE REQUIREMENTS

A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

A. Product Data:

1. Manufacturer material specifications and product literature.
2. Installation drawings showing geotextile sheet layout, location of seams, direction of overlap, and sewn seams.
3. Description of proposed method of geotextile deployment, sewing equipment, sewing methods, and provisions for holding geotextile temporarily in place until permanently secured.
4. Manufacturer Warranty Information.

B. Sampling and Test Compliance:

1. Sampling and test compliance shall be in accordance with SSPWC Subsection 213-3.

C. Certifications:

1. A manufacturer's certificate shall be provided to the Construction Manager in accordance with SSPWC Subsection 213-3.

**SECTION 02274
GEOTEXTILES**

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."
- B. Protected and identify Geotextile in accordance with SSPWC Subsection 213-2.
- C. Storage and handling shall comply with SSPWC Subsection 213-2 and as indicated herein.

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

1.09 WARRANTY

- A. Manufacturer Warranty
 - 1. Warranty installed equipment to be free from defects in material and workmanship for 1 years.

PART 2 - PRODUCTS

2.01 MANUFACTURES

- A. Tencate
- B. DuPont
- C. Geo-Fabrics
- D. Or Equal

2.02 NONWOVEN GEOTEXTILE

- A. Nonwoven geotextiles shall comply with SSPWC Subsection 213-5.
- B. The minimum unseamed sheet width shall be 6 feet.
- C. The nominal weight per square yard shall be 3 to 16 ounces.
- D. Physical properties of non-woven geotextiles shall conform to Type 90N as identified in SSPWC Table 213-5.2 (A).

SECTION 02274 GEOTEXTILES

2.03 SEWING THREAD

- A. Sewing thread shall be polypropylene, polyester, or Kevlar thread with durability equal to or greater than durability of geotextile sewn.

2.04 SECURING PINS

- A. Securing pins shall be 316 stainless steel rods or bars conforming to the following requirements:
 - 1. 3/16-inch diameter.
 - 2. Pointed at one end; head on other end sufficiently large to retain washer.
 - 3. Minimum length: 12 inches.
- B. Steel washers for securing pins shall conform to the following requirements:
 - 1. Outside diameter: not less than 1.5 inches.
 - 2. Inside diameter: 1/4 inch.
 - 3. Thickness: 1/8 inch.
- C. Steel wire staples shall conform to the following requirements:
 - 1. U shaped.
 - 2. 10 gauge.
 - 3. Minimum 6 inches long.

PART 3 - EXECUTION

3.01 GENERAL

- A. Notify the Construction Manager's before geotextiles are placed.
- B. Do not place geotextiles before obtaining the Construction Manager's approval of the underlying materials.
- C. Geotextiles shall be placed free of tension, folds, wrinkles, or creases.

3.02 GEOTEXTILES FOR TRENCH DRAINS

- A. Geotextiles for trench drains shall be placed in accordance with SSPWC Subsection 300-8.1.

3.03 GEOTEXTILES FOR EROSION CONTROL

- A. Geotextiles for erosion control shall be placed in accordance with SSPWC Subsection 300-9.1.

**SECTION 02274
GEOTEXTILES**

3.04 GEOTEXTILES FOR SUBGRADE ENHANCEMENT

- A. Geotextiles for subgrade enhancement shall be placed in accordance with SSPWC Subsection 300-10.1.

3.05 REPAIRING GEOTEXTILE

- A. Repair or replace torn, punctured, flawed, deteriorated, or otherwise damaged geotextile.
- B. Repair damaged geotextile by placing patch of undamaged geotextile over damaged area plus at least 18-inches in directions beyond damaged area.
- C. Remove interfering material as necessary to expose damaged geotextile for repair.
- D. Sew patches or secure them with pins and washers, or by other means approved by Construction Manager.

3.06 REPLACING CONTAMINATED GEOTEXTILE

- A. Protect geotextile from contamination that would interfere, in Construction Manager's opinion, with its intended function.
- B. Remove and replace contaminated geotextile with clean geotextile.

END OF SECTION

SECTION 02410 DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes requirements for demolition, modification, relocation, renovation, and salvaging.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. AHRI: Air Conditioning, Heating, and Refrigeration Institute
 - 2. ANSI: American National Standards Institute
 - 3. OSHA: Occupational Safety and Health Administration
 - 4. EPA: Environmental Protection Agency
 - 5. CFR: Code of Federal Regulations
 - 6. ACM: Asbestos-containing material.
 - 7. SSWPC: Standard Specifications for Public Works Construction
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
- C. Standard References: See Front End Contract Documents. Additional standards specific to this Section are listed below. Except as otherwise indicated, the current editions of the following apply to the work of this Section.
 - 1. AHRI:
 - a. Guideline K, Containers for Recovered Non-flammable Fluorocarbon Refrigerants.
 - 2. ANSI:
 - a. A10.6, Safety Requirements for Demolition Operations.
 - 3. OSHA:
 - a. U.S. Code of Federal Regulations (CFR) Title 29 Part 1926—Occupational Safety and Health Regulations for Construction.
 - b. 29 CFR 1926 Subpart T
 - 4. EPA:
 - a. U.S. Code of Federal Regulations (CFR), Title 40:
 - (1) Part 61 - National Emission Standards for Hazardous Air Pollutants.
 - (2) Part 82 - Protection of Stratospheric Ozone.

**SECTION 02410
DEMOLITION**

(3) Part 273 - Standards for Universal Waste Management.

1.03 DEFINITIONS

- A. The following definitions apply to the Work of this Section in addition to definitions given in Front End Contract Documents:
1. Demolition: Dismantling, razing, destroying, or wrecking of any fixed building or structure or any part thereof. Demolition also includes removal of pipes, manholes tanks, conduit, and other underground facilities, whether as a separate activity or in conjunction with construction of new facilities.
 2. Modify: Provide necessary material and labor to modify an existing item to the condition indicated or specified.
 3. Relocate: Remove, protect, clean and reinstall equipment, including electrical, instrumentation, and ancillary components required to make the equipment fully functional, to the new location identified on the Drawings.
 4. Renovation: Altering a facility or one or more facility components in any way.
 5. Salvage/Salvageable: Remove and deliver, to the specified location(s), the equipment, building materials, or other items so identified to be saved from destruction, damage, or waste; such property to remain that of Owner. Unless otherwise specified, title to items identified for demolition shall revert to Contractor.
 6. Universal Waste Lamp: In accordance with 40 CFR 273, the bulb or tube portion of an electric lighting device, examples of which include, but are not limited to, fluorescent, high-intensity discharge, neon, mercury vapor, high-pressure sodium, and metal halide lamps.
 7. Universal Waste Thermostat: A temperature control device that contains metallic mercury in an ampule attached to a bimetal sensing element, and mercury-containing ampules that have been removed from these temperature control devices in compliance with the requirements of 40 CFR 273.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."
- B. The Work of this Specification must not commence until Contractor's Demolition/Renovation Plan has been approved by Engineer.
- C. Include the Work of this Specification in the progress schedule.

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Demolition/Renovation Plan

SECTION 02410 DEMOLITION

- a. Submit 30 days before demolition begins
 - b. Detailed description of methods and equipment to be used for each operation.
 - c. Sequence of operations, including coordination with other work in progress.
 - d. Procedures for removal and disposition of materials specified to be salvaged.
 - e. Disconnection schedule of utility services.
 - f. Permits required for disposal/recycling of materials.
- C. Copies of notifications, authorizations and permits required to perform the Work.

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."
- B. Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the General Conditions, Contractor's safety requirements shall conform to ANSI A10.6.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 EXISTING FACILITIES TO BE DEMOLISHED OR RENOVATED

- A. Structures:
 - 1. Sidewalks, curbs, gutters and streetlight bases shall be removed as indicated.
- B. Utilities and Related Equipment:
 - 1. Existing underground utilities, storm water inlet to be protected.
 - 2. Notify Owner or appropriate utilities to turn off affected services at least 48 hours before starting demolition activities.
 - 3. Remove existing utilities as indicated and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by Engineer.

SECTION 02410 DEMOLITION

4. When utility lines are encountered that are not indicated on the Drawings, notify Owner prior to further work in that area.
 5. Maintain existing irrigation operation schedule.
- C. Paving and Slabs:
1. Remove concrete and asphaltic concrete paving and slabs.
 2. Provide neat sawcuts at limits of pavement removal as indicated.
- D. Patching:
1. Where removals leave holes and damaged surfaces exposed in the finished Work, patch and repair to match adjacent finished surfaces as to texture and finish.
 2. Where new Work is to be applied to existing surfaces, perform removals and patching in a manner to produce surfaces suitable for receiving new Work.
 3. Patching shall be as specified and indicated, and shall include:
 4. Fill holes and depressions left as a result of removals in existing concrete.

3.02 PROTECTION

- A. Dust and Debris Control:
1. Prevent the spread of dust and debris to occupied portions of the site and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution.
 2. Vacuum and dust the Work area daily.
 3. Sweep pavements as often as necessary to control the spread of debris that may result in foreign object damage potential to vehicular traffic.
- B. Existing Work:
1. Survey the site and examine the Drawings and Specifications to determine the extent of the Work before beginning any demolition or renovation.
 2. Take necessary precautions to avoid damage to existing items scheduled to remain in place, to be reused, or to remain the property of Owner; any Contractor-damaged items shall be repaired or replaced as directed by Engineer.
 3. Provide temporary weather protection during interval between removal of existing exterior surfaces and installation of new to ensure that no water leakage or damage occurs to structure or interior areas of existing building.
 4. Ensure that structural elements are not overloaded as a result of or during performance of the Work. Responsibility for additional structural elements or increasing the strength of existing structural elements as may be required as a result of any Work performed under this Contract shall be that of the Contractor. Repairs, reinforcement, or structural replacement must have Engineer approval.
 5. Do not overload pavements.

SECTION 02410 DEMOLITION

- C. Weather Protection: For portions of the building scheduled to remain, protect building materials and equipment from weather at all times.
- D. Trees: Protect trees within the Site that might be damaged during demolition and are indicated to be left in place, by a 6 foot-high fence. The fence shall be securely erected a minimum of 5 feet from the trunk of individual trees or follow the outer perimeter of branches or clumps of trees. Any tree designated to remain that is damaged during the Work shall be replaced in kind, as approved by the Engineer.
- E. Facilities:
 - 1. Protect electrical and mechanical services and utilities. Where removal of existing utilities and pavement is specified or indicated, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities.
 - 2. Floors, roofs, walls, columns, pilasters, and other structural elements that are designed and constructed to stand without lateral support or shoring and are determined by Contractor to be in stable condition, shall remain standing without additional bracing, shoring, or lateral support until demolished, unless directed otherwise by the Engineer.
 - 3. Protect facility elements not scheduled for demolition.
 - 4. Provide interior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished and adjacent facilities.
- F. Protection of Personnel:
 - 1. During demolition, continuously evaluate the condition of the structure being demolished and take immediate action to protect personnel working in and around the demolition site.
 - 2. Provide temporary barricades and other forms of protection to protect Owner's personnel and the general public from injury due to demolition Work.
 - 3. Provide protective measures as required to provide free and safe passage of Owner's personnel and the general public to occupied portions of the structure.

3.03 RELOCATIONS

- A. Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Clean items to be relocated prior to reinstallation, to the satisfaction of Owner. Repair items to be relocated which are damaged or replace damaged items with new undamaged items as approved by Engineer.

3.04 BACKFILL

- A. Reuse demo/excavated materials on site if they meet the classification listed in Whitebook Section 1002-8.2, i.e., excavated cobbles can be washed and used in the Biofiltration basins.
- B. Do not use demolition debris as backfill material.

**SECTION 02410
DEMOLITION**

- C. Fill excavations, open trenches and other hazardous openings to existing ground level or foundation level of new construction.

3.05 TITLE TO MATERIALS

- A. Salvaged materials will remain the property of Owner.
- B. Items designated to be removed shall become the property of Contractor.
- C. Title to equipment and materials resulting from demolition is vested in the Contractor upon approval by Owner of Contractor's Demolition/Renovation Plan, and the resulting authorization by Owner to begin demolition.

3.06 DISPOSITION OF MATERIAL

- A. Do not remove equipment and materials without approval of Contractor's Demolition/Renovation Plan by Owner.
- B. Salvage material to the maximum extent possible.
- C. Repair or replace, at the discretion of Owner, items damaged during removal or storage.
- D. Remove salvaged items designated as the property of Owner in a manner to prevent damage.
- E. Repair or replace, at the discretion of Owner, items damaged during removal or storage.
- F. Deliver salvaged items that are designated as the property of Owner to a storage site as directed on the Site.
- G. Owner will not be responsible for the condition or loss of, or damage to, property scheduled to become Contractor's property after Owner's authorization to begin demolition. Materials shall not be viewed by prospective purchasers or sold on the site.
- H. Owner will not be responsible for the condition or loss of, or damage to, such property after authorization to begin demolition.
- I. Store salvaged items as approved by Owner and remove them from Owner's property before completion of the Contract. Materials and equipment shall not be either viewed by prospective purchasers or sold on the site.

3.07 UNSALVAGEABLE MATERIAL

- A. Concrete, masonry, and other noncombustible material, except concrete permitted to remain in place, shall be disposed of in the following manner and location.
 - 1. Miramar Landfill and Recycling Center- 5180 Convoy Street, San Diego, or equal.

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DEMOLITION**

- B. Vegetation, woody material, brush and other combustible material that is acceptable at local Green Waste Facilities, except material permitted to remain in place, shall be disposed of in the following manner and location.
 - 1. Miramar Landfill and Recycling Center- 5180 Convoy Street, San Diego, or equal

3.08 CLEANUP

- A. Debris and rubbish shall be removed from basement and similar excavations. Debris and rubbish shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply.

END OF SECTION

**SECTION 02510
ASPHALT CONCRETE PAVEMENT AND BASE**

PART 1 - GENERAL

1.01 SUMMARY

- A. The Contractor shall provide asphalt concrete pavement, cement-treated base, and associated materials in accordance with the Contract Documents.
- B. Parking Lot shall be paved with asphalt concrete over cement-treated base, concrete, or full-depth asphalt concrete in accordance with City of San Diego Standard Drawings.
- C. Scripps Lake Drive will be cold milled per plans and finished in accordance with City of San Diego Standard Drawings.

1.02 REFERENCES

- A. Abbreviations and Acronyms
 - 1. SSWPC: Standard Specifications for Public Works Construction
- B. Standard References: See Front End Contract Documents.

1.03 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. The Contractor shall submit, in writing, materials testing reports, job-mix formulas, and other pertinent information satisfactory to the Construction Manager, demonstrating that materials and methods Contractor proposes to use will comply with the provisions of this Section.
- C. Suitability Tests of Proposed Materials: For materials not produced by a supplier currently authorized by the City Materials and Testing Lab, tests for conformance with the Specifications shall be performed before start of the Work. The samples shall be identified to show the name of the material, aggregate source, name of the supplier, contract number, and the segment of the Work where the material represented by the sample is to be used. Results of tests shall be submitted to the Construction Manager for approval. Materials to be tested shall include aggregate base, coarse and fine aggregate for paving mixtures, mineral filler, and asphalt binder.
- D. Submit samples to the City Materials and Testing Lab or other Owner authorized lab.

**SECTION 02510
ASPHALT CONCRETE PAVEMENT AND BASE**

- E. Certification and test records of proposed materials showing that they meet the applicable requirements.

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."
- B. Testing to be conducted by a lab approved by the City Materials and Testing Lab.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

1.09 WARRANTY

- A. Manufacturer Warranty:
 - 1. Warranty installed equipment to be free from defects in material and workmanship for 1 year from date of final acceptance of Project by the Owner.

PART 2 - PRODUCTS

2.01 AGGREGATE BASE

- A. Materials for aggregate base shall be crushed rock and rock dust complying with SSPWC Subsection 200-2.

2.02 TACK COAT

- A. The tack coat material shall comply with SSPWC Subsection 302-5.4

2.03 ASPHALT CONCRETE

- A. Type II or III, Class C2 complying with comply with SSPWC Subsection 203-6.
- B. Except as noted below, asphalt concrete shall comply with SSPWC Subsection 203-6. Where construction of the pavement is to be accomplished in a single course, Class C2 grading shall be used.
- C. Where construction consists of two or more courses, the surface course shall be Class C2 grading, and the lower courses shall be Class B3 grading.
- D. Unless otherwise specified, paving asphalt of viscosity grade AR 4000 shall be used for Type III asphalt concrete, and AR 8000 shall be used for asphalt concrete dikes.

**SECTION 02510
ASPHALT CONCRETE PAVEMENT AND BASE**

2.04 CEMENT-TREATED BASE

- A. Materials for cement-treated base shall conform to the requirements of SSPWC Subsection 301-3.3, including Regional Supplement Amendments.

2.05 PAVEMENT MARKING PAINT

- A. Pavement marking paint shall comply with SSPWC Subsection 203-8.

2.06 SOIL STERILANT

- A. Soil sterilant or chemical weed control agent shall be a commercial product manufactured specifically to sterilize the subgrade soil to prevent the growth of weeds, plants or any type of vegetation.

PART 3 - EXECUTION

3.01 SUBGRADE PREPARATION

- A. The subgrade shall be prepared as specified in SSPWC as applicable to roadways and embankments. Redwood headers measuring 2-inch by 4-inch shall be firmly staked in the proper positions along edges other than those where the pavement is to be placed against existing concrete or paved surfaces.

3.02 CEMENT-TREATED BASE

- A. Cement-treated base shall be installed where indicated and to the thickness indicated. Construction of the cement-treated base shall comply with SSPWC Subsection 301-3.3.

3.03 TACK COAT

- A. A tack coat shall be applied in accordance with the requirements of SSPWC Subsection 302-5.4. Work shall be performed by craftsmen qualified in the fabrication of architectural metal work. Exposed surfaces shall be free from defects or other surface blemishes. Dimensions and conditions shall be verified in the field in advance. Joints, junctions, miters, and butting sections shall be precision-fitted, with no gaps occurring between sections, and surfaces shall be flush and aligned.

3.04 ASPHALT CONCRETE

- A. Asphalt concrete paving shall be constructed in accordance with SSPWC Subsection 302-5.
- B. Existing asphalt pavement that has been gouged, marred or scarred during construction shall be repaired by the Contractor in accordance with SSPWC Subsection 302-5.10. The repair shall consist of asphalt patching and/or seal and sand.

**SECTION 02510
ASPHALT CONCRETE PAVEMENT AND BASE**

- C. Repairs. Repairs of asphalt pavement shall be as determined at the sole discretion of the Construction Manager.
- D. Unless provisions are made in the Bid, payment for trench resurfacing, repairs and replacement of surface improvements damaged, displaced or removed as a result of the Contractor's operation shall be included in the Bid and no separate payment will be made.

3.05 TRENCH RESURFACING

- A. Trench resurfacing for asphalt concrete surfaced streets shall conform to City of San Diego Standard Drawing SDG-107.
- B. Trench resurfacing for Portland cement concrete surfaced streets shall conform to City of San Diego Standard Drawing SDG-108.

3.06 TRAFFIC MARKING

- A. Application of paint shall comply with SSPWC Subsection 314.

END OF SECTION

**SECTION 02617
REINFORCED CONCRETE PIPE**

PART 1 - GENERAL

1.01 SUMMARY

- A. The Contractor shall provide reinforced concrete pipe and perform all appurtenant work.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. ASTM: American Society for Testing and Materials
 - 2. SSWPC: Standard Specifications for Public Works Construction
- B. Except as otherwise indicated in this Section, the Contractor shall comply with the latest adopted edition of the Standard Specifications for Public Works Construction together with the latest adopted editions of the Regional and City of San Diego Supplement Amendments.
- C. Reference Standards: Except as otherwise indicated, the current editions of the following apply to the Work of this Section:
 - 1. American Society for Testing and Materials (ASTM)
 - 2. ASTM C 76 Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
 - 3. ASTM C 150 Specification for Portland Cement
 - 4. ASTM C 361 Specification for Reinforced Concrete Low-Head Pressure Pipe
 - 5. ASTM D 412 Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension
 - 6. ASTM D 2240 Test Method for Rubber Property - Durometer Hardness

1.03 DEFINITIONS

- A. The following definitions apply to the Work of this Section in addition to definitions given in the Front End Contract Documents:

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. The following shall be submitted:
 - 1. Manufacturer's design drawings indicating, at relative scale, concrete covers, reinforcement placements and joint assembly design. Submittals shall also

**SECTION 02617
REINFORCED CONCRETE PIPE**

include the design pipe size, D-load (test load expressed in pounds-force per linear foot per foot of diameter), cement type, concrete strength and steel areas.

2. Shop drawings showing dimensions and details of pipe joints, fittings, fitting specials, valves and appurtenances.
3. Detailed layout, spool or fabrication drawings showing pipe spools, spacers, adapters, connectors, fittings, and pipe supports.
4. A certified affidavit of compliance for all pipe and other products or materials furnished under this Section, as specified in the reference standards and the following supplemental requirements:
 - a. Three-edge-bearing strength (D-load) test reports.

B. Test Results: The Contractor shall furnish the results of all tests as specified in ASTM C76 and as indicated herein.

C. Manufacturer Warranty Information

1.06 QUALITY ASSURANCE

A. Factory Inspection and Testing

1. Inspection: Pipe shall be subject to inspection at the place of manufacture in accordance with the provisions of the applicable referenced standards and as supplemented by the requirements herein. The Contractor shall notify the Construction Manager in writing of the manufacturing starting date not less than 14 calendar days before the start of any phase of pipe manufacture.
2. Access During Inspection: During the manufacture of the pipe, the Construction Manager and the Owner-designated inspectors shall be given access to all areas where manufacturing is in process and shall be permitted to make all inspections necessary to confirm compliance with the Specifications.
3. Tests: Unless otherwise indicated, all materials used in the manufacture of the pipe shall be tested in accordance with the requirements of the applicable referenced standards. The Contractor shall allow Owner-designated inspectors the option to witness all testing conducted by the Contractor; provided, that the Contractor's schedule is not delayed for the convenience of the Owner-designated inspectors. In addition to those tests specifically required, the Construction Manager may request additional samples of any material for testing by the Owner. The additional samples shall be furnished at no additional cost to the Owner.
4. Product Testing: In addition, pipe shall be tested at the factory for D-load bearing strength in compliance with SSPWC Subsection 207-2.9.2.
5. Marking: Pipe that has successfully passed the required inspection and testing program will be marked with the seal of the manufacturer or designated inspectors.

**SECTION 02617
REINFORCED CONCRETE PIPE**

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Pipe and fittings shall be carefully handled and protected against damage to lining and coating on interior and exterior surfaces, impact shocks, and free fall.
- B. Handling and Storage: The Contractor shall handle the pipe using wide slings, padded cradles, or other devices acceptable to the Construction Manager that are designed and constructed to prevent damage to the pipe. Chains, hooks, or other equipment which might damage the pipe will not be permitted. Pipe less than 60-inches diameter may be stacked 2 high; provided, each section is supported by resilient material to prevent accidental rolling. Other pipe handling equipment and methods shall be acceptable to the Construction Manager.
- C. Strutting: Adequate strutting shall be provided on all specials, fittings, and straight pipe to avoid damage to the pipe and fittings during handling, storage, hauling, and installation.
- D. Delivery to the Job Site: Pipe that bears the seal of the designated inspectors shall be delivered to the job site. Any pipe that does not bear the seal of the designated inspectors shall be removed from the job site at no expense to the Owner.

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

1.09 WARRANTY

- A. Manufacturer Warranty:
 - 1. Warranty installed equipment to be free from defects in material and workmanship for 1 year from date of final acceptance of Project by the Owner.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Reinforced concrete pipe shall conform to the requirements of SSPWC Subsection 207-2 and ASTM C 76 as modified below:
 - 1. Pipe wall thickness shall comply with SSPWC 207-2.3.4. In no case shall pipe be less than that specified under ASTM C 76 provisions for Class III, Walls "B", or "C." Wall "A" shall not be accepted.
 - 2. Minimum protective cover of concrete over the inner reinforcement cage shall be 13 inches.

2.02 MATERIALS

- A. Materials shall comply with Section 6 of ASTM C 76 as modified below.

**SECTION 02617
REINFORCED CONCRETE PIPE**

- B. Cement: Cement used in the manufacture of reinforced concrete pipe shall be Type II in conformance with ASTM C 150.
- C. Admixtures: No admixture shall be used unless otherwise specified or accepted by the Construction Manager.

2.03 JOINTS

- A. Joint assembly design shall be Carnegie bell and spigot steel joint or reinforced concrete raised or flush bell concrete joint incorporating a fully retained single rubber gasket in accordance with ASTM C 361 and as shown.
- B. Joints shall be designed so as to be self-centering. Unless otherwise specified, joints in reinforced concrete pipe shall be of the tongue and groove mortar type of joint and as shown.

PART 3 - EXECUTION

3.01 GENERAL

- A. Materials Reinforced concrete pipe shall be installed in accordance with the requirements of SSPWC Subsection 306-1.2 and as indicated herein.
- B. Where necessary to raise or lower the pipe due to unforeseen obstructions or other causes, the Construction Manager may direct a change in the alignment or the grades. Such change shall be made by the deflection of joints, by the use of bevel adapters, or by the use of additional fittings. However, in no case shall the deflection in the joint exceed the maximum deflection recommended by the pipe manufacturer. No joint shall be misfit any amount which will be detrimental to the strength and integrity of the finished joint.
- C. Line and Grade Tolerance: Each section of pipe shall be laid in the order and position shown on the laying schedule. Unless indicated otherwise, the pipe shall be laid to the design line and grade, within approximately one inch plus or minus. No tolerance is permitted on pipes designed for zero slope.
- D. Curved Alignments: Where curved alignments are indicated, deflecting the joints will be allowed only in accordance with the written instructions of the pipe manufacturer and these specifications. Where a smaller radius of curvature is required than can be accommodated by deflecting the joints, sections of pipe with beveled ends may be laid unless fabricated bends are indicated. Maximum joint deflection and maximum bevel for different pipe sizes and joint designs shall be in accordance with the pipe manufacturer's recommendations and these specifications.
- E. Cutting and machining of the pipe shall only be in accordance with the pipe manufacturer's standard procedures for this operation. Pipe shall not be cut by any method that may fracture the pipe, produce ragged, uneven edges, or otherwise impair the condition of the pipe.

**SECTION 02617
REINFORCED CONCRETE PIPE**

- F. The Contractor shall install all pipe, fittings, closure pieces, bends, reducers, wyes, tees, crosses, outlets, manifolds, and other steel plate specials, bolts, nuts, gaskets, jointing materials, and all other appurtenances as indicated and as required to provide a complete and workable installation. No pipe or appurtenance shall be installed when the interior or exterior surfaces show cracks or other defects that may be harmful as determined by the Construction Manager. Damaged interior and exterior surfaces shall be repaired to the satisfaction of the Construction Manager, or a new undamaged pipe or appurtenance shall be provided.
- G. Pipe laying operations shall be stopped, and dewatering operations shall be adjusted to prevent the pipe from floating due to water entering the trench from any source. The Contractor shall reinstall all affected pipe to its specified condition and grade.
- H. Foreign matter or dirt shall be removed from the interior of the pipe before lowering into position in the trench. Pipe shall be kept clean during and after laying. Openings in the pipe line shall be closed with water tight expandable type sewer plugs or PVC test plugs at the end of each day's operation or whenever the pipe openings are left unattended. The use of burlap, wood, or other similar temporary plugs will not be permitted.
- I. Immediately before placing each section of pipe in final position for jointing, the bedding shall be checked for firmness and uniformity of surface.
- J. Pipe shall be laid directly on the bedding material. No blocking will be permitted and the bedding shall form a continuous, solid bearing for the full length of the pipe. Excavate to facilitate removal of handling devices after the pipe is laid. Bell holes shall be formed at the ends of the pipe to prevent point loading at the bells or couplings and to facilitate placement of grout bands. Excavation shall be adequate to permit access to the joints for bonding operations and for application of coating on field joints.
- K. Pipe sections shall be placed with the bell end upgrade.
- L. Except for short runs which may be permitted by the Construction Manager, sections of pipe shall be laid in a sequence moving in an upgrade direction on grades exceeding 10 percent. Pipe which is laid in a downgrade direction shall be blocked and held in place until sufficient support is furnished by the following pipes to prevent movement and shall comply with Section 6 of ASTM C 76.

END OF SECTION

**SECTION 02650
STEEL PIPE (CML&C)**

PART 1 - GENERAL

1.01 SUMMARY

- A. This section describes materials, fabrication, installation and testing of Cement Mortar Lined and Coated Steel Pipe.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
1. ASTM: American Society for Testing and Materials
 2. SSWPC: Standard Specifications for Public Works Construction
 3. ANSI: American National Standards Institute
 4. AWWA: American Water Works Association
 5. CML&C: Cement Mortar Lined and Coated
- B. Standard References: See Front End Contract Documents

1.03 DEFINITIONS

- A. The definitions given in the Front-End Contract Documents apply to this work.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures".
- B. Deferred Submittals: The submittal for this Section will be a deferred submittal as described in Section 01330 "Submittal Procedures".
- C. Shop Drawings:
1. Piping layout drawings showing location and dimensions of pipe and fittings. Include laying lengths of valves, meters, and other equipment which determine piping dimensions. Label or number each fitting or piece of pipe and provide the following information for each item:
 - a. Materials of construction, including references to industry standards being met (i.e., ASTM, ANSI, AWWA, etc.)
 - b. Inside diameter, steel wall thickness, internal design pressure (cement-mortar lining and coating thicknesses) for each class of pipe to be furnished.
 - c. Order of installation and closure locations for length adjustment and for construction convenience
 - d. Pipe invert station and elevation of each change of grade and alignment

**SECTION 02650
STEEL PIPE (CML&C)**

- e. Elements of curves and bends, both in horizontal and vertical alignment, including elements of the resultant true angular deflections in cases of combined curvature.
- f. Paint primer type and thickness where joints and other cement-mortar holdbacks occur
- g. Call out types and sizes, and dimensions of grooved-end collars, flanges, reinforcing collars, wrapper plates, and crotch plates
- h. Limits of each reach of field-welded joints and of concrete encasement
- i. Locations of manholes and other points of access
- j. Location of valves and other mechanical equipment
- k. Locations of bulkheads/plug for field hydrostatic testing of pipeline

D. Fabrication Information:

- 1. Pipe wall construction details which indicate the type and thickness of cylinder; the position, type, size, and area of reinforcement; manufacturing tolerances; maximum angular joint deflection limitations; and other pertinent information required for the manufacture and installation of the product.
- 2. Welded joint details shall be submitted for joint types, including beveled ends for alignment conformance and deep bell or butt strap joints required for control of temperature stresses.
- 3. Pipe Fabricator's Credentials: Submit the credentials of the pipe manufacturer/fabricator. Credentials shall include reference names, telephone numbers, and descriptions of projects for pipe conforming to AWWA C200 that is of similar diameter, length, and wall thickness to the pipe in this project. Project description shall include length, diameter, wall thickness, steel metallurgy, location of facility where pipe was manufactured/fabricated, and names of key plant personnel responsible for the manufacturing process. Submit names and qualifications of current plant personnel to be responsible for manufacture of the pipe in this project. To demonstrate ability to meet the schedule requirements of this project, submit project descriptions and manufacturing/fabrication schedules for other currently contracted pipe projects at the Fabricator's plant.
- 4. Manufacturer's written Quality Assurance/Control Program.
- 5. Materials: Material lists and steel reinforcement schedules which include and describe materials to be used. Metallurgical test reports for steel proposed for use on the project. Submit chemical and physical test reports from each heat of steel that indicate the steel conforms to the Specifications.

E. Line Layout Information:

- 1. Line layout and marking diagrams compatible with the requirements of AWWA M11 and which indicate the specific number of each pipe and fitting and the location of each pipe and the direction of each fitting in the completed line. In addition, the line layouts shall include: the pipe station and centerline elevation at changes in grade or horizontal alignment; the station and centerline elevation to which the bell end of each pipe will be laid; elements of curves and bends, both in horizontal and vertical alignment.

**SECTION 02650
STEEL PIPE (CML&C)**

2. Details and locations of closures for length adjustment, temporary access manways, vents, and weld lead pass holes as indicated and as required for construction convenience.
3. Drawings showing the location and details of bulkheads for hydrostatic testing of the pipeline, and details for removal of test bulkheads and repair of the lining.

F. Welding Information:

1. Information regarding location, type, size, and extent of welds with reference called out for Welding Procedure Specifications numbers shall be shown on the shop drawings. The shop drawings shall distinguish between shop and field welds. Shop drawings shall indicate by welding symbols or sketches the details of the welded joints, and the preparation of parent metal required to make them.
2. Written welding procedures for shop and field welds, including Welding Procedure Specifications and Procedure Qualification Records.
3. Written nondestructive testing procedure specifications, and nondestructive testing personnel qualifications for shop and field welds.
4. Current welder performance qualifications shall be submitted for each welder used before the welder performs any Work either in the shop or field.
5. Submit the credentials of the Contractor's certified welding inspectors and quality control specialist for review before starting any welding in the shop or field. The credentials shall include, but not be limited to, American Welding Society QC 1 Certification.
6. Submit nondestructive testing data for each shop-welded and field welded joint. This data shall include testing on each weld joint, including re-examination of repaired welds, using radiographic, magnetic particle, dye penetrant examination, ultrasonic, or air test examination methods specified. Test data shall be reviewed and signed by the welding inspector(s).
7. Submit a welder log for field and shop welding. Log shall list welders to be used for the Work and the types of welds each welder is qualified to perform.
8. Submit a welding map showing the sequence of welds for field welds.
9. Submit a written weld repair procedure for each type of shop and field weld proposed for use on the Project.
10. Submit a written rod control procedure for shop and field operations demonstrating how the Contractor intends to maintain rods in good condition throughout the Work. The rod control procedure shall also demonstrate how the Contractor intends to ensure that the proper rods are used for each weld.
11. Handling and Support Information: Detail drawings indicating the type, number and other pertinent details of the slings, strutting and other methods proposed for pipe support and handling during manufacturing, transport, and installation. Calculations supporting the handling and support system design shall be submitted. Drawings and calculations shall be sealed by a registered professional engineer.

G. Control of Temperature Stresses:

**SECTION 02650
STEEL PIPE (CML&C)**

1. Submit proposed sequencing of events to control temperature stresses in the pipe wall during installation before starting of any field welding.
 2. Submit the proposed sequencing of events or special techniques to minimize distortion of the steel as may result from shop welding procedures.
 3. Submit plan for monitoring pipeline temperatures.
- H. Certifications: Furnish a certified affidavit of compliance for pipe and other products, materials, or related work provided under this Section, as specified in ANSI/AWWA C200, C205, C206, and C602, respectively, and the following supplemental requirements:
1. Compliance with the additional requirements included in the Contract Documents.
 2. Physical and chemical properties of steel.
 3. Hydrostatic test reports.
 4. Results of production weld tests.
 5. Sand, cement, and mortar tests.
 6. Rubber gasket tests.
 7. Pipe temperature complies with Specifications before pouring pipe zone material, and before and during welding temperature control joints (including supporting data).
 8. All welds were performed in conformance with these documents.

1.06 OPERATION AND MAINTENANCE INFORMATION

- A. Certifications: Furnish a certification stating that pipe, special fittings, and other products or materials furnished under this Section comply with ANSI/AWWA C200, C203, and C205. Additionally, furnish certified reports of the following tests:
1. Physical and chemical properties of steel.
 2. Hydrostatic test reports.
 3. Results of production weld tests.
- B. Expenses incurred in making samples for certification of tests shall be borne by the Contractor.

1.07 QUALITY ASSURANCE

- A. Inspection: Pipe, linings, welds, coatings, and related work shall be subject to inspection at the place of manufacture and/or the place the Work is performed in accordance with the provisions of ANSI/AWWA C200, C205, C206, and C602 and C215, as applicable, as supplemented by the requirements herein. Notify the Construction Manager in writing not less than 14 calendar days before the start of any phase of the pipe manufacture, welding, lining, coating, testing, or field operations.

**SECTION 02650
STEEL PIPE (CML&C)**

- B. Testing: Except as modified herein, materials used in the manufacture of the pipe shall be tested in accordance with the requirements of ANSI/AWWA C200, C205, C206, and C602, as applicable.
- C. After the joint configuration is completed and before lining with cement-mortar, if applicable, each length of pipe of each diameter and pressure class shall be shop-tested and certified to a pressure of at least 80 percent of the yield strength of the pipe steel. Test pressure shall be maintained for a minimum of 5 minutes. Any leaks shall be repaired, and the pipe retested.
- D. Production weld tests as required in ANSI/AWWA C200, except weld tests shall be conducted on each 5000 feet of production welds at a minimum, and at least one set of tests per operator per work shift shall be performed.
- E. Cost of Testing: Perform said material tests at no additional cost to the City. The Construction Manager shall have the right to witness testing conducted by the Contractor; provided, that the Contractor's schedule is not delayed for the convenience of the Construction Manager.
- F. Samples: In addition to those tests specifically required, the Construction Manager may request additional samples of any material including mixed concrete and lining and coating samples for testing by the City. The additional samples shall be furnished at no additional cost to the City.
- G. Welding Procedure Specifications: welding procedures used to fabricate and install pipe shall be in accordance with the ASME Boiler and Pressure Vessel Code (PVC) for shop welds and ANSI/AWS D1.1 for field welds. Written welding procedures shall be required for welds, both shop and field. Welds qualified per the ASME PVC shall include Supplementary Essential Variables for notch tough welding. provisions of ANSI/AWS D1.1 pertaining to notch tough welding shall apply.
- H. Welder Performance Qualifications: welding shall be done by skilled welders, welding operators, and tackers who have adequate qualifications in the methods and materials to be used. Welders shall be qualified by the Contractor under the provisions of ASME PVC for shop welds and ANSI/AWS D1.1 for field welds. Furnish material and bear the expense of qualifying welders.
- I. Shop Nondestructive Testing: Nondestructive testing shall be performed for various weld categories as specified below. Testing shall include submitting written documentation of procedures in accordance with Section V, and acceptance criteria shall be in accordance with Section VIII of the ASME Boiler and Pressure Vessel Code.
 - 1. Butt Joint Welds: Spot radiographically examine pipe in accordance with Paragraph UW 52 of the ASME Boiler and Pressure Vessel Code Section VIII, Division 1. If, in the opinion of the CONSTRUCTION MANAGER, the welds cannot readily be radiographed, they shall be 100 percent ultrasonically examined.
 - 2. Fillet Welds: 100 percent examine fillet welds using the magnetic particle inspection method.
 - 3. Groove Welds: 100 percent ultrasonically examine groove welds that cannot be readily radiographically spot examined.

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STEEL PIPE (CML&C)**

4. All Welds: Contractor's certified welding inspector shall 100 percent visually examine welds as a minimum.
 5. In addition to weld tests hereinbefore specified, doubler pads shall be air tested as stated in AWWA C206
- J. Pipe Manufacturer/Fabricator: The manufacturer or fabricator of the pipe shall be qualified to fabricate pipes of similar diameters and wall thicknesses required for the Work and shall have the manufacturing capability to meet the schedule requirements of this project. This requirement shall apply to the fabrication plant facility and responsible personnel, not to the firm which owns the facility or employs the personnel.
- K. Costs of Factory Inspection: The Contractor shall be responsible for costs associated with inspection and testing of materials, products, or equipment at the place of manufacture. This shall include costs for travel, meals, lodging, car rental, and 10 minutes per day of long-distance phone calls to San Diego for the City-designated inspector as required to complete such inspections or observations, exclusive of travel days, if the place of manufacture, fabrication and factory testing is more than 50 miles outside the geographical limit of the City. If the manufacturing plant operates a double shift, the costs of an additional City-designated inspector shall be included in the inspection costs. At the option of the OWNER, full-time inspection will continue for the length of the manufacturing period. If the manufacturing period exceeds three consecutive weeks, the expenses of one 2-day trip per month by the OWNER's supervisor shall be included. The Contractor shall not be responsible for salary or salary-related costs of the OWNER-designated inspectors and supervisors.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Pipe and fittings shall be carefully handled and protected against damage to lining and coating on interior and exterior surfaces, impact shocks, and free fall.
- B. Pipe shall not be placed directly on rough ground but shall be supported in a manner which will protect the pipe against injury whenever stored at the trench site or elsewhere. No pipe shall be installed when the lining or coating/interior or exterior surfaces show cracks or other damage that may be harmful as determined by the Construction Manager. Damaged lining and coating/interior and exterior surfaces, shall be repaired to the satisfaction of the Construction Manager, or a new undamaged pipe shall be furnished.
- C. Handling and Storage: The pipe shall be handled by use of wide slings, padded cradles, or other devices, designed, and constructed to prevent damage to the pipe coating/exterior. The use of chains, hooks, or other equipment which might injure the pipe coating/exterior will not be permitted. Stockpiled pipe shall be suitably supported and shall be secured to prevent accidental rolling and to avoid contact with mud, water, or other deleterious materials. Stockpiled pipe shall be supported on sand or earth berms free of rock exceeding 3-inches in diameter. The ends of pipe shall be securely bulkheaded or otherwise sealed during transport to the jobsite. pipe handling equipment and methods shall be acceptable to the Construction Manager.
- D. Strutting: Adequate strutting (stulling) shall be provided on specials, fittings, and straight pipe to avoid damage or distortion to the pipe and fittings during handling, storage, hauling, and installation. The following requirements shall apply:

**SECTION 02650
STEEL PIPE (CML&C)**

1. The strutting shall be placed as soon as practicable after the pipe is fabricated or the mortar lining has been applied and shall remain in place while the pipe is loaded, transported, unloaded, installed, and backfilled at the jobsite.
 2. The strutting materials, size and spacing shall be the responsibility of the Contractor and shall be adequate to prevent deflection and support the earth backfill plus any greater loads which may be imposed by the backfilling and compaction equipment. One strut shall be placed vertical oriented with the top of pipe. One set of struts shall be set 2-feet from each end of each pipe section and at a maximum interval of 15-feet in-between
 3. Any pipe damaged during handling, hauling, storage, or installation due to improper strutting shall be repaired or replaced.
- E. Delivery to the Job Site: Pipe that bears the seal of the designated inspectors shall be delivered to the job site. Any pipe that does not bear the seal of the designated inspectors shall be removed from the job site at no expense to the Owner.

1.09 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

1.10 WARRANTY

- A. Manufacturer Warranty:
1. Warranty installed equipment to be free from defects in material and workmanship for 1 year from date of final acceptance of Project by the Owner.

PART 2 - PRODUCTS

2.01 STEEL PIPE

- A. Steel pipe, linings and coatings shall conform to ANSI/AWWA C200, C205, C209, C210, C213, C214 and C602, as applicable, subject to the following supplemental requirements. The pipe shall be of the diameter and wall thickness shown, shall be furnished complete with welded joints, as indicated in the Contract Documents. For pipe larger than 24-inches in diameter, the inside diameter after lining shall not be less than the nominal diameter indicated unless otherwise shown. Pipe 24-inches in diameter and smaller may be provided in standard outside diameters.
- B. Markings: Legibly mark pipes and specials in accordance with the laying schedule and marking diagram. Each pipe shall be numbered in sequence and said number shall appear on the laying schedule and marking diagram in its proper location for installation. special pipe sections and fittings shall be marked at each end with top field centerline. The word "top" shall be painted or marked on the outside top spigot of each pipe section.
- C. Laying Lengths: Maximum pipe laying lengths shall not be limited unless specifically required by the Drawings. The Contractor shall select lengths to accommodate the operation.

**SECTION 02650
STEEL PIPE (CML&C)**

- D. Lining: The pipe lining shall have smooth dense interior surfaces and shall be free from fractures, excessive interior surface crazing and roughness.
- E. Cathodic Protection System: Cathodic protection systems shall be applied to pipelines as shown on the City Standard Drawings.
- F. Closures and Correction Pieces: Closures and correction pieces shall be provided as required so that closures may be made due to different headings in the pipe laying operation and so that correction may be made to adjust the pipe laying to conform to pipe stationing indicated. The locations of correction pieces and closure assemblies shall be shown on the pipe layout diagrams and shall be subject to the Construction Manager's review. Any change in location or number of said items shall be approved by the Construction Manager.

2.02 MATERIALS

- A. Cement: Cement for mortar shall conform to the requirements of ANSI/AWWA C205; provided, that cement for mortar coating shall be Type V, and mortar lining shall be Type II or V, per ASTM C 150.
- B. Steel Pipe and Specials: Minimum yield point of steel shall be 38,000 psi and steel shall be as specified below.
 - 1. Steel coils shall be made from the continuous cast process or continuous cast slabs, fully killed, fine-grain practice conforming to the physical and chemical characteristics of ASTM A 516 Grade 70. For sheet steel, the maximum allowable thickness variation shall be 0.010-inch under or over the nominal thickness.
 - 2. Steel plate shall be fully killed, conform to ASTM A 20, and be manufactured to fine grain practice conforming to the physical and chemical characteristics of ASTM A 516 Grade 70. For plate steel, the maximum allowable thickness variation shall be 0.010 inch under or over the nominal thickness.
- C. Pipe shall be manufactured as fabricated pipe per AWWA C200 as modified herein. Pipe sections shall be fabricated by either of the following methods:
 - 1. Pipe sections may be spirally welded or fabricated from short cylindrical courses joined circumferentially by complete penetration butt joint welds with not more than two longitudinal seams per course. Longitudinal seams shall be staggered on both sides of the pipe.
 - 2. Pipe sections may be rolled or pressed from no more than three sheets the full length of the pipe and welded with no more than three longitudinal seams. Patching inserts, overlays, or pounding out of dents will not be permitted. Repair of notches or laminations on second ends will not be permitted. Damaged ends shall be removed as a cylinder and the section end properly prepared. Distorted or flattened lengths shall be rejected. A buckled section shall be replaced as a cylinder.
- D. Charpy Tests:
 - 1. General. Steel used in production manufacturing of pipe and specials shall be tested for notch toughness using Charpy V Notch tests per ASTM A 370. The

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test acceptance for full size specimens (10 mm by 10 mm size) shall be 25-foot pounds at a test temperature of 30 degrees F; tests shall include three impact specimens and shall be conducted in the direction transverse to the final direction of rolling. Subsize specimens taken from steel less than 7/16-inch thickness shall be tested for acceptance at reduced values per Table 6 of ASTM A 370.

2. Plate: Charpy tests shall be conducted on each plate as required in ASTM A 20.
3. Coils: Charpy tests shall be conducted on the first 500 tons of steel by testing each coil as follows:
 - a. Tests shall include representative sampling of steel thicknesses required for the Work.
 - b. Each coil shall be tested by taking coupons from the outer, middle, and inner wrap of the coil. Middle coil coupons may be taken from the ends of full-length pipes that are closest to the middle of the coil.
 - c. Coils that do not meet the above Charpy acceptance criteria shall not be used in production of pipe.
 - d. After the initial 500 tons, conduct one test per heat of coil on the outer wrap only.

2.03 DESIGN OF PIPE

- A. Steel pipe shall be manufactured, tested, inspected, and marked according to applicable requirements of this Section and, except as hereinafter modified, shall conform to ANSI/AWWA C200.
- B. Pipe Dimensions: Pipe shall be of the diameter and wall thickness shown on the Drawings.
- C. Joint Design: Unless otherwise shown, the standard field joint for steel pipe shall be a double-welded (fully circumferential) lap joint. Mechanically coupled, or flanged joints shall be provided where indicated on the Drawings. Butt-strap joints shall be used only where required for closures or where indicated. The joints furnished shall have the same or higher-pressure rating as the abutting pipe. Lap joints prepared for field welding shall be in accordance with ANSI/AWWA C200. The method used to form, shape and size bell ends shall be such that the physical properties of the steel are not substantially altered. Unless otherwise approved by the Construction Manager, bell ends shall be formed by an expanding press or by the pipe being moved axially over a die in such a manner as to stretch the steel plate beyond its elastic limit to form a truly round bell of suitable diameter and shape. The ends shall not be rolled. Faying surfaces of the bell and spigot shall be essentially parallel, but in no case shall the bell slope vary more than 2 degrees from the longitudinal axis of the pipe.
- D. Lining and Coating: Field lining will only be allowed where specifically indicated on the Drawings. Shop-applied interior linings and exterior coatings shall be held back from the ends of the pipe as indicated or as otherwise acceptable to the Construction Manager. Holdback areas for welded joints, butt straps, and bell and spigot joint rings for rubber-gasketed joints shall be thoroughly cleaned and given a shop coat of rust-inhibitive primer. The surface preparation and primer shall be compatible with the intended liquid epoxy finish coating.

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- E. Joint Stops: The pipe manufacturer shall tack weld four metal tabs at equal intervals around the inside circumference of the bell ends of welded pipe to indicate the location at which the spigot end has reached maximum penetration into the bell. These tabs shall be removed before welding the inside of the joint.
- F. Temperature Control Lap Joint: A special longer bell end (temperature control lap joint) shall be provided at a maximum spacing of 300-feet to account for movement of the installed pipe due to temperature changes. The pipe manufacturer shall determine the length required for the longer bell as defined by the Contractor's pipe laying procedures and the location of the special bell. Minimum temperature control lap joint length shall be as shown on the Drawings.
- G. Shop Fit Test
 - 1. To ensure that joints may be fully assembled and that excessive annular space between spigots and bells does not exist, and that the pipe meets the requirements of AWWA C200, the pipe fabricator shall perform a shop fit test on a minimum of five joints. The joints to be tested shall be selected by the Construction Manager based on pipe measurements.
 - 2. The shop fit test shall join the pipe ends in the shop with the proposed adjacent pipe end.
 - 3. Record the actual annular space, with the data to include as a minimum:
 - a. Maximum space at any point.
 - b. Minimum space at any point.
 - c. Space at 90-degree intervals--top, bottom, and spring line on both sides.
 - 4. The pipe ends shall be match marked after shop assembly.

2.04 CEMENT-MORTAR LINING

- A. Cement-Mortar Lining for Shop Application: Except as otherwise required, interior surfaces of steel pipe, fittings, and specials shall be cleaned and lined in the shop with cement-mortar lining applied centrifugally in conformity with ANSI/AWWA C205. During the lining operation and thereafter, the pipe section shall be maintained in a round condition by suitable bracing or strutting. The lining machines shall be of a type that has been used successfully for similar work and shall be approved by the Construction Manager. Every precaution shall be taken to prevent damage to the lining. If lining is damaged or found faulty at the delivery site, or after installation, the damaged or unsatisfactory portions shall be replaced with lining conforming to these Specifications at no additional cost to the City.
- B. Lining Thickness: The minimum lining thickness shall be 3/4-inch. Buried steel pipe specials at sleeve couplings shall be coated with fusion bonded epoxy.
- C. Lining Holdback: The pipe shall be left bare where field joints occur as indicated. Ends of the linings shall be left square and uniform. Feathered or uneven edges will not be permitted.
- D. Defects: Defective linings, as determined by the Construction Manager, shall be removed from the pipe wall, and shall be replaced to the full thickness required. Defective linings shall be cut back to a square shoulder to avoid feather edged joints.

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Temperature and shrinkage cracks in the mortar less than 1/16-inch wide need not be repaired. Pipe, specials, or fittings with cracks wider than 1/16-inch shall be rejected.

- E. Repairs: The progress of the application of mortar lining shall be regulated in order that hand work, including the repair of defective areas is cured in accordance with the provisions of ANSI/AWWA C205. Cement-mortar for patching shall be the same materials as the mortar for shop or machine lining, except that a finer grading of sand and mortar richer in cement shall be used when field inspection indicates that such mix will improve the finished lining of the pipe.
- F. Materials: Unless otherwise indicated, steel pipe shall be mortar lined. The materials and design of in-place cement-mortar lining shall be in accordance with ANSI/AWWA C602 and the following supplementary requirements:
 - 1. Pozzolanic material shall not be used in the mortar mix.
 - 2. Admixtures shall contain no calcium chloride.
 - 3. The minimum lining thickness shall be as indicated for shop-applied cement-mortar lining and finished inside diameter after lining shall be as indicated.
 - 4. Temperature and shrinkage cracks in the mortar less than 1/16-inch wide need not be repaired. Pipe, specials, or fittings with mortar cracks wider than 1/16-inch shall be rejected.
- G. Protection of Pipe Lining/Interior: For pipe and fittings with plant-applied cement-mortar linings, provide a polyethylene or other suitable bulkhead on the ends of the pipe and on special openings to prevent drying out of the lining. bulkheads shall be substantial enough to remain intact during shipping and storage until the pipe is installed.

2.05 EXTERIOR COATING OF PIPE

- A. Coating of Buried Piping: Buried steel pipe shall be coated with a cement-mortar coating. The coating shall be reinforced with a spiral wire reinforcement or welded wire fabric in accordance with ANSI/AWWA C205. The welded wire fabric shall be securely fastened to the pipe with welded clips or strips of steel. The wire spaced 2-inches on centers shall extend circumferentially around the pipe. The ends of reinforcement strips shall be lapped 4-inches and the free ends tied or looped to assure continuity of the reinforcement. Buried steel pipe at sleeve couplings shall be coated with fusion bonded epoxy.
- B. Coating of Buried Pipe or Fittings Passing through Structure Walls: Unless otherwise indicated, exterior surfaces of buried pipe or fittings passing through structure walls shall be cement-mortar coated from the center of the wall or from the wall flange to the end of the underground portion of the applicable pipe or fitting.
- C. Joint Diapers: Joint diapers shall be provided for buried pipe with rigid mortar protective coat as described herein. Grout bands or heavy-duty diapers for protection of joints on cement-mortar coated pipe shall be polyethylene foam-lined fabric with steel strapping of sufficient strength to hold the fresh mortar, resist rodding of the mortar and allow excess water to escape. The foam plastic shall be 100 percent closed cell, chemically inert, insoluble in water and resistant to acids alkalis and solvents, and shall be Dow Chemical Company, Ethafoam 222, or equal. The fabric backing of joint diapers shall be cut and sewn into strips wide enough to overlap shop-coated areas

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by 4-inches on either side. Strips shall have slots for the steel strapping on the outer edges. The polyethylene foam shall be cut into strips wide enough to match the uncoated field joint area and slit to a thickness of 1/4-inch which will expose a hollow or open cell surface on one side. The foam liner shall be attached to the fabric backing with the open or hollow cells facing towards the pipe. The foam strip shall cover the full interior circumference of the grout band with sufficient length to permit an 8-inch overlap of the foam at or near the top of the pipe joint. Splices to provide continuity of the material will be permitted. The polyethylene foam material shall be protected from direct sunlight.

- D. Liquid Epoxy Protective Coating: The exterior surfaces of buried pipe and fittings that are not protected by the cathodic protection system shall receive a minimum 25-mil thick, 100 percent solids, liquid epoxy coating. The coating may be applied on freshly placed, partially cured, or cured cement-mortar coating. Surface preparation and application shall be in accordance with the manufacturer's printed instructions. The liquid epoxy protective coating shall be Amercoat 1972B or equal.

2.06 CATHODIC PROTECTION

- A. Provide cathodic protection per City Standard Drawing SDW-133 and SDW-183..

PART 3 - EXECUTION

3.01 INSTALLATION OF PIPE

- A. Repair: pipe damaged before Substantial Completion shall be repaired or replaced by the Contractor at no additional cost to the Owner.
- B. Inspection: Inspect each pipe and fitting to ensure that there are no damaged portions of the pipe. Remove or smooth out any burrs, gouges, weld splatter or other small defects before laying the pipe.
- C. Foreign Substances: Before placement of pipe in the trench, each pipe or fitting shall be thoroughly cleaned of any foreign substance, which may have collected thereon and shall be kept clean at times thereafter. For this purpose, the openings of pipes and fittings in the trench shall be closed during any interruption to the Work.
- D. Lifting Points: Lifting points shall be no closer than the 1/3 and 2/3 points along the length of the section. Contractor shall be responsible for selecting lifting points that when used, do not result in damage to the pipe.
- E. Excavation: Excavations shall be made as needed to facilitate removal of handling devices after the pipe is laid. Excavation shall be made as needed outside the normal trench section at field joints to permit adequate access to the joints for field connection operations and for application of coating on field joints.
- F. Alignment and Grade Changes: Where necessary to raise or lower the pipe due to unforeseen obstructions or other causes so long as appropriate slope is maintained to allow for drainage, the Construction Manager may change the alignment and/or the grades. Such change shall be made by the deflection of joints, using beveled joint rings, or using additional fittings. However, in no case shall the deflection in the joint exceed 75 percent of the maximum deflection recommended by the pipe manufacturer or the amount that results in more than a 1/8-inch gap at the weld location, whichever

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is less. No joint shall be misfit any amount which will be detrimental to the strength and water tightness of the finished joint.

- G. Laying Direction: Except for short runs which may be permitted by the Construction Manager, pipes shall be laid uphill on grades exceeding 10 percent. Pipe which is laid on a downhill grade shall be blocked and held in place until sufficient support is furnished by the following pipe to prevent movement. bends shall be properly installed as shown.
- H. Struts: Pipe struts shall be left in place until backfilling operations have been completed for pipe 42-inches in diameter and larger. Struts in pipe smaller than 42-inches may be removed immediately after laying, provided, that the deflection of the pipe during and after backfilling does not exceed that specified. After the backfill has been placed, the struts shall be removed by the Contractor and shall remain the property of the Contractor. Struts shall not be removed with a torch or any other method that may damage the pipe lining or coating. The parent pipe material shall not be nicked, gouged, or damaged during strut removal. repairs of gouges or nicks in the parent material shall be made using 3/32-inch maximum diameter E 6010 welding electrodes with a maximum heat input of 5.6 kJ per inch. Tack welds, stull metal, weld splatter, slag, and burrs that remain attached to the parent metal surface after cutting shall be ground to within 1/32-inch of the parent metal. Grinding shall not penetrate the parent metal. The Contractor shall notify the Construction Manager before grinding. Following grinding, pipe surfaces at the tack weld shall be visually inspected for defects. defects deeper than 1/16-inch shall be repaired by welding in accordance with ANSI/AWSD.1.1 and AWWA/ANSI C206. inspection work shall be performed by a certified welding inspector.
- I. Bulkheads
1. Before shipment of pipe with cement mortar lining the lining shall be wetted then a suitable bulkhead shall be attached to each end of the pipe section. This bulkhead shall remain in place and in good condition through transit to the Project.
 2. During construction the openings of all pipe and specials where the pipe and specials have been cement-mortar lined in the shop shall be protected with suitable bulkheads to maintain a moist atmosphere and to prevent unauthorized access by persons, animals, water or any undesirable substance. The bulkheads shall be so designed to prevent drying out of the interior of the pipe. Introduce water into the pipe as needed to keep the mortar moist where moisture has been lost due to damaged bulkheads.
- J. Pipe Cleanup: As pipe laying progresses, keep the pipe interior free of debris. Completely clean the interior of the pipe of sand, dirt, mortar splatter and any other debris following completion of pipe laying and any necessary interior repairs before testing and disinfecting the completed pipeline.
- K. Installation Tolerances: Each section of pipe shall be laid in the order and position shown on the laying diagram and the following requirements:
1. Each section of pipe having a nominal diameter less than 48 inches shall be laid to line and grade, within plus or minus 2 inches horizontal deviation and plus or minus 1-inch vertical deviation.

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2. Each section of pipe having nominal diameter 48 inches and larger shall be laid to line and grade, within plus or minus 5 percent of diameter horizontal deviation and plus or minus 2.5 percent of diameter vertical deviation.
3. In addition to the horizontal and vertical tolerances above, lay the pipe so that no high or low points other than those on the laying diagram are introduced.
4. Pipe deflection, after backfilling but before installation of field-applied cement mortar lining, if applied, shall not exceed 2.25 percent for flexible coated pipe and 1.5 percent for cement mortar coated pipe. Deflection shall be measured by the difference in vertical inside diameter in the installed pipe and the manufactured pipe.
5. Pipe not conforming to these criteria, or which otherwise impact the ability to complete the Work shall be removed and reinstalled in full conformance with the Contract Documents at no additional cost to the OWNER.
6. Protection of Pipe: At locations where the Contractor proposes to cross the installed pipeline with heavy equipment, precautions as approved by the Construction Manager shall be taken to protect the pipe from damage. Acceptable precautions include backfilling the pipe trench as necessary to protect the pipe, concrete encasing the pipe, and placing steel plating over the pipe. Any damage to the pipe caused by the Contractor's operation or his equipment shall be repaired at no additional cost to the City.

3.02 WELDED JOINTS

A. Welding Procedures, Welding Qualifications, and Testing:

1. Field welding procedures, welders, welding operators, and tackers shall be qualified in accordance with AWS D1.1 and as defined in Section 3 of ANSI/AWWA C206 or ANSI/AWWA C200, as applicable. qualifications shall be in accordance with all-position pipe tests as defined in Section 5 of AWS D1.1.
2. For field welding, the welder qualification testing shall be performed at the site. Previous qualifications will not be accepted. The Contractor shall obtain the services of an independent testing laboratory to perform the welder qualification onsite. Copies of test data and certifications shall be provided to the Construction Manager. costs for welder qualification testing shall be at no increased cost to the Owner.
3. Upon completion of each field-welded joint, the welding operator shall mark his regularly assigned identification number and the last two numbers of the year in which the Work was completed, or the Contractor may have a records system that traces a welder's work completion to a specific joint. Steel stamping directly on piping will not be permitted unless "low stress" die stamps, such as interrupted dot or round nose types, are used.
4. All field lap welds will be inspected by magnetic particle or dye penetration methods. Field butt welds will be inspected in accordance with the requirements of API 1104 by the radiographic method and the acceptance criteria of API 1104. Magnetic particle testing is not required for seal welds.
5. Double welded lap joints shall be air tested in the presence of the Construction Manager. Repairs and retesting shall be required if any loss of pressure occurs.

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6. The Contractor shall inform the Construction Manager before completed weld joints are to be backfilled so that the joint may be inspected. The Contractor shall assume costs of exposing backfilled joints for inspection when backfilling preceded the inspection.
 7. Personnel performing visual inspection of welds shall be qualified and currently certified as Certified Welding Inspectors in accordance with AWS QC1, Standard for Qualification and Certification of Welding Inspectors. Personnel performing nondestructive tests shall be qualified and certified to the requirements of SNT TC 1A.
 8. The Construction Manager may also order nondestructive testing by an independent testing laboratory in addition to any testing specified herein. Except as otherwise specified herein, costs for the independent testing laboratory to inspect and test field welds will be paid for by the City. If the weld is defective, the inspection costs shall be paid for by the Contractor. Defective welds shall be repaired and retested at the Contractor's expense.
 9. Test reports of laboratory tests shall be submitted as provided in the quality control section.
- B. Space for Inspection: Where exterior welds are performed, adequate space shall be provided for welding and inspection of the joints.
- C. Lap Welded Joints: During installation of welded steel pipe in either straight alignment or on curves, the pipe shall be laid so that at any point around the circumference of the joint there is a minimum lap as shown on the Drawings.
- D. Butt Straps: Where used or required, shall be as shown on the Drawings.
- E. Welding: After the pipe and pipe joint are properly positioned in the trench, the Contractor shall weld and provide external joint protection for joints except the special temperature control lap joint hereinafter specified. The length of pipe between special temperature control joints shall be backfilled to at least one foot above the top of the pipe as hereinafter specified. The special temperature control joints shall be welded after the pipe is backfilled to at least one foot above the top of the pipe for the full distance between the temperature control joints upstream and downstream. Joint protection shall be provided for special temperature control joints after completion of the joint welds and tests as specified. Care shall be exercised during the initial backfilling to prevent movement of the pipe and to prevent any backfill material from being deposited on the special temperature control joint.
- F. Shading: To control temperature stresses, the unbackfilled joint areas of the pipe shall be shaded from the direct rays of the sun using properly supported awnings, umbrellas, tarpaulins, or other suitable materials for a minimum period of 2 hours before the beginning of the welding operation and until the weld has been completed. Shading materials at the joint area shall not rest directly on the pipe but shall be supported to allow air circulation around the pipe. Shading of the pipe joints need not be performed when the ambient air temperature is below 45 degrees F.
- G. Welding: Before backfilling or beginning the welding procedure, any tack welds or joint stops used to position the pipe during laying shall be removed. Any annular space between the faying surfaces of the bell and spigot shall be equally distributed around

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the circumference of the joint by shimming, jacking, or other suitable means. The weld shall then be made in accordance with ANSI/AWWA C206. Where more than one pass is required, dirt, slag, and flux shall be removed before the succeeding bead is applied.

- H. Testing of Joints: The pipeline joints shall be tested as specified herein.
- I. Coating Joint Spaces: Following tests of the joint, the exterior joint spaces shall be coated in accordance with the Specifications after which backfilling may be completed.
- J. Joints: The pipe ends shall be cut straight on joints where butt straps are used for realignment, adjustment, or deflection, and fillet welds shall be made as indicated.
- K. Repair of Welds: welds that are defective shall be repaired by the Contractor to meet the requirements of this Section at no additional cost to the City. Defects in welds or defective welds shall be removed, and that section of the joint shall then be rewelded. Only sufficient removal of defective material that is necessary to correct the defect is required. After the repair is made, the joint shall be checked by repeating the original test procedure. Welds deficient in size shall be repaired by adding weld metal.

3.03 JOINT COATING AND LINING

- A. General: The interior and exterior joint recesses shall be thoroughly wiped clean and water, loose scale, dirt, and other foreign material shall be removed from the inside surface of the pipe. The grout for joint coating and lining shall be cement grout in accordance with Section 03315 - Grout except that the composition shall be one part cement to two parts sand and sufficient water for dry-pack consistency.
- B. Coating of Joints for Cement-Mortar Coated Pipe: After the completion of joint testing and cleaning, joints shall be coated as follows:
 - 1. After the pipe has been laid, the joint welded and cleaned, and after sufficient backfill has been placed between the joints to hold the pipe securely in place, the outside annular space between pipe sections shall be filled with grout formed using a diaper.
 - 2. The grout space before filling shall be flushed with water so that the surface of the joint to be in contact with the grout will be thoroughly moistened when the grout is poured.
 - 3. The joint shall be filled with grout by pouring from one side only and shall be rodded with a wire or other flexible rod or vibrated so that the grout completely fills the joint recess by moving down one side of the pipe, around the bottom of the pipe and up the opposite side.
 - 4. Pouring and rodding the grout shall be continued to allow completion of the filling of the entire joint recess in one operation. Care shall be taken to leave no unfilled space.
 - 5. Grouting of the outside joint spaces shall be kept as close behind the laying of the pipe as possible except that in no case shall grouting be closer than three joints of the pipe being laid.

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6. The grout band (diaper) shall be centered over the joint space with approximately equal widths extending over each pipe end and securely attached to the pipe with the steel straps.
 7. After filling the exterior joint space with grout, the flaps shall be closed and overlapped in a manner that fully encloses the grout with polyethylene foam, as applicable. The grout band shall remain in position on the pipe joint.
- C. Joint Lining: After the backfill has been completed to final grade, the interior joint recess of shop-lined pipe shall be filled with grout, tightly packed into the joint recess, and troweled flush with the interior surface. excess shall be removed.
1. At no point shall there be an indentation or projection of the grout exceeding 1/16-inch.
 2. With pipe smaller than 24-inches in diameter, before the spigot is inserted into the bell, the bell shall be daubed with grout containing one part cement to two parts sand.
 3. The spigot end then shall be forced to the bottom of the bell and excess mortar on the inside of the joint shall be swabbed out.

3.04 FIELD TESTING

- A. All double welded lap joints shall be pressure tested to a minimum of 40-psi air pressure for a period of 10 minutes per AWWA C206. No air leakage will be allowed.
- B. Any joints which leak shall be repaired and retested.

3.05 CONNECTIONS TO EXISTING SYSTEM

- A. Coordinate with the City, plan for the shutdown of the existing pipelines, and make the connections between the new and the existing pipelines.

3.06 SITE RESTORATION

- A. Replace damaged pavement, curbs, gutters, and sidewalks, shrubs, and trees as indicated in SSPWC Subsection 306-1.5.2.

3.07 WARNING AND LOCATOR TAPE

- A. Install continuous plastic marking tape along the pipeline at the depth and location shown on the Drawings.

END OF SECTION

**SECTION 02830
MECHANICALLY STABILIZED EARTH RETAINING WALL**

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnishing and installing modular retaining wall units to the lines and grades designated on the construction drawings and as specified herein.
- B. Preparing foundation soil, furnishing and installing leveling pad or footing, unit fills and backfill to the lines and grades designated on the construction drawings.
- C. Furnishing and installing appurtenant materials required for construction of the retaining wall(s) as shown on the construction drawings.
- D. Submission of the proprietary design information, engineering calculations, material lists and design certifications as required herein, on the construction drawings or in the special conditions to the contract.
- E. Contractor will provide needed testing and to include the testing cost in the base bid.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. AASHTO: American Association of State Highway and Transportation Officials
 - 2. AHJ: Authority Having Jurisdiction
 - 3. ASTM: American Society for Testing and Materials
 - 4. NCMA: National Concrete Masonry Association
- B. Related work specified elsewhere see City Standard Specifications
- C. Reference documents
 - 1. American Association of State Highway and Transportation Officials (AASHTO)
 - a. AASHTO M288 Geotextile Specification for Highway Applications
 - b. AASHTO Standard Specifications for Highway Bridges
 - c. National Concrete Masonry Association (NCMA)
 - d. NCMA Design Manual for Segmental Retaining Walls, Second Edition, Second Printing (1997)
 - e. NCMA SRWU-2 Determination of Shear Strength Between Segmental Concrete Units

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2. American Society for Testing and Materials (ASTM)
 - a. C90 Hollow Load Bearing Masonry Units
 - b. C140 Sampling and Testing Concrete Masonry Units
 - c. C145 Solid Load Bearing Concrete Masonry Units
 - d. C31 Method of Making and Curing Concrete Compressive and Flexural Test Specimens in the Field
 - e. C33 Specification for Concrete Aggregates
 - f. C39 Method of Test for Compressive Strength of Molded Concrete Cylinders
 - g. C92 Methods of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
 - h. C94 Specifications for Ready-Mixed Concrete
 - i. C138 Unit Weight, Yield and Air Content of Concrete
 - j. C143 Method of Test for Slump of Portland Cement Concrete
 - k. C150 Specifications for Portland Cement
 - l. C172 Standard Method for Sampling Fresh Concrete
 - m. C173 Method of Test for Air Content of Freshly Mixed Concrete by The Volumetric Method C192 Method of Making and Curing Concrete Test Specimens in the Laboratory
 - n. C231 Method of Test for Air Content of Freshly Mixed Concrete by The Pressure Method C260 Specification for Air-Entraining Admixture for Concrete
 - o. C309 Specification for Liquid Membrane-Forming Compounds for Curing Concrete
 - p. C330 Standard Specifications for Light Weight Aggregate for Structural L Concrete
 - q. C494 Specification for Chemical Admixtures for Concrete

1.03 SUBMITTALS

- A. Samples of products used in the work of this section. If units are of such size to make submission impractical, adequate examples of finish and material shall be provided.
- B. Latest edition of manufacturer's specifications for proposed materials, and method of installation and list of materials proposed for use.
- C. Electronic copy of shop drawings and calculations, signed and sealed by the retaining wall Design Engineer of record, manufacturers engineer, for walls showing overall dimensions, reinforcing, foundations, soil reinforcement, drainage systems,

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MECHANICALLY STABILIZED EARTH RETAINING WALL**

backfill, appurtenances to be provided and coordination with items not provided as part of the wall system.

- D. Submit required materials and drawings to the AHJ within 60 days prior to commencing wall construction. Prior to submittal, the design shall be certified by the Manufacturer's engineer who must be a professional engineer registered in the state of California.
- E. The design shall incorporate factors of safety for sliding, bearing, overturning, slope stability and design uncertainties as recommended in the geotechnical investigation and required by the NCMA unless specifically waived or modified in writing by Owner.
- F. The design shall incorporate factors of safety and be designed for all dead loads and live loads including but not limited to, vehicles, pedestrians, fence (life safety loading), crash barrier (life safety loading), luminaires, and tree planters.
- G. Laboratory Tests demonstrating conformance of import fill materials with the properties listed in these plans.

1.04 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.06 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Deferred Submittals: The submittal for this Section will be a deferred submittal as described in Section 01330 "Submittal Procedures."
- C. Manufacturer Warranty Information

1.07 QUALITY ASSURANCE

- A. Any specific testing or inspection services required by the retaining wall design shall be provided by the general contractor as noted in Section 01453 Special Inspection, Observation and Testing.
- B. Construction of a mockup of adequate size to illustrate the finish and construction techniques may be required, at a location acceptable to the Owner, for any wall system with which the Owner is not familiar or for which unique design modifications are proposed.

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MECHANICALLY STABILIZED EARTH RETAINING WALL**

1.08 DELIVERY, STORAGE, AND HANDLING

A. See Section 01610 "Common Product Requirements."

1.09 SITE CONDITIONS

A. See Section 01451 "Contractor Quality Control."

1.10 WARRANTY

A. Manufacturer Warranty

1. Warranty installed equipment to be free from defects in material and workmanship for 1 year from date of final acceptance of Project by the Owner.

PART 2 - PRODUCTS

2.01 MANUFACTURED UNITS

A. Retaining wall units, reinforcing and accessories shall be supplied as specified in the manufacture's submissions. Units produced under a license from an approved proprietary system shall be manufactured in a facility meeting requirements of the licensing system with adequate capacity to supply the product to the site in a timely manner. Materials shall be stored as required to prevent damage and staining.

Proprietary Earth Retaining System	Supplier Contact Information	Product Description
Landmark Reinforced Soil Wall System	Anchor Wall System, Inc. 2525 Costero Magestuoso San Clemente, CA 92673 Phone: 949-363-6663 Dsandri@Anchorwall.Com	Geogrid soil reinforcement with modular concrete block facing at 4-degree battler or vertical (LRFD/LFD/ASD)
Vendura Segmental Retaining Wall System	Soil Retention Products 2501 State Street Carlsbad, CA 92008 Phone: 800-346-7995 Soilretention.Com	Geogrid soil reinforcement with plantable concrete block facing at 14-degree finished face (LRFD/LFD/ASD)
MESA	Tensar International Corporation 2500 Northwind Prkwy, Suite 500 Alpharetta, GA 30009 Phone: 770-344 -2000 www.Tensarcorp.Com	Geogrid soil reinforcement with modular concrete block facing at 4-degree battler or vertical (LRFD/LFD/ASD)

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ARES	Tensar International Corporation 2500 Northwind Prkwy, Suite 500 Alpharetta, GA 30009 Phone: 770-344 -2000 www.Tensarcorp.Com	Geogrid soil reinforcement with 9 ft wide by 5 ft high concrete face panels (LRFD/LFD/ASD)
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NOTE: Geogrids (lengths and elevations) shall meet the minimum ratio shown in these plans and shall be designed by the manufacturer's engineer and further specified in the approved shop drawings. Material shall be stored as required to protect from damage until used. Leveling pads leveling pad material shall consist of compacted sand, gravel, crushed rock or leveling concrete as shown on the construction drawings and or shop drawings.

2.02 DESIGN BASIS

- A. This plan was developed based on the following design assumptions.
- B. Geogrid Mirafi 8XT or equivalent is used as reinforcement.

Soil parameters:

Soil type	Unit weight	Friction angle	Cohesion
Reinforced soil-Import	120 pcf and 130 pcf	34°	0 Psf
Retained soil	125 pcf	28°	0 Psf
Foundation soil (effective)	120 pcf	30°	0 Psf

Factored bearing resistance:

Static @ b=19 ft, 13.0 ksf	Seismic @ b=19 ft, 10.2 ksf
Static @ b=38 ft, 25.9 ksf	Seismic @ b=38 ft, 19.3 ksf

- C. The Keystone Standard III or equivalent blocks are used the properties of the connection and facing of the blocks are based on the testing results including "connection evaluation" dated 1/10/2012 and "NCMA SRWALL 4.0 Program Data" dated 1/10/2012 provided by Keystone.
- D. Live Load Surcharge, 240 psf in Prelim Geotechnical Report for traffic load.
- E. Peak Ground Acceleration: PGA, 0.2g.

2.03 FILL AND BACKFILL

<u>RETAINED FILL</u>	
Minimum Friction Angle:	28 Degrees
Maximum Placed Unit Weight:	125 pcf

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<u>REINFORCED FILL-IMPORTED (CLEAN, CRUSHED/ ANGULAR GRANULAR FILL)</u>	
Minimum Friction Angle:	34 Degrees
Maximum Placed Unit Weight:	130 pcf
Minimum Placed Unit Weight:	120 pcf
Sieve Size	Percent Passing (%)
1-Inch	100
No. 4	50-80
No. 40	0-30
No. 200	0-15
Maximum Expansion Index	5
<u>UNIT DRAINAGE FILL (CHIMNEY DRAIN FILL)</u>	
Sieve Size	Percent Passing (%)
1-Inch	100
3/4-Inch	75-100
No. 4	0-10
No. 200	0-5

2.04 HEIGHT LIMITATIONS

- A. Walls greater than thirty (30) inches in height shall be provided with fall protection safety railings and comply with federal, state and local codes.
- B. Walls adjacent to a vehicular traffic application shall be provided with guardrail per plan to prevent vehicular traveling over the top of a wall. A guardrail or similar barrier shall also be provided to protect a wall that is closer than four (4) feet from the face of a curb barrier.
- C. Wall embedment depth to be determined by loading conditions, as shown on the plans unless greater depth is required.
- D. Any deviations beyond these requirements must be approved by the Civil Engineer.

PART 3 - EXECUTION

3.01 EXCAVATION

- A. Contractor shall excavate to the lines and grades required, over-excavation and/or recompaction shall be performed as required to produce the specified bearing conditions.

3.02 LEVELING PADS AND FOUNDATION

- A. Leveling pads and foundations (reinforced soil width), unit installation, cap installation, installation of geogrid and/or other anchor materials and installation of

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accessories and appurtenances shall be carried out according to the manufacturer's recommendations and the approved drawings.

- B. If soft or pliant soil condition exist at the time of construction, deeper excavation and compaction of native foundation soils may be required to achieve a stable base for leveling pads and foundations. Leveling pads and foundations should be observed by the geotechnical engineers prior to placement of keystone blocks.
- C. Most foundation soil leveling and settlement should be realized during placement and compaction of wall backfill. However, provision should be made (such as use of surface monuments) to monitor settlement prior to placement of overlying pavement.

3.03 FIELD QUALITY CONTROL

- A. If compaction requirements, embedment of reinforcing or other conditions are not met at any time during the construction process. Contractor shall remove and reconstruct deficient areas to obtain proper conditions at no additional cost to Owner.
- B. Independent testing laboratory, as hired by the general contractor, shall promptly prepare test reports and distribute to Owner. In the event any test performed fails to meet these requirements. Owner's by the Contractor's independent testing laboratory.
- C. Costs related to retesting due to failures shall be paid for by the contractor at no additional expense to Owner. Owner reserves the right to employ an independent testing laboratory and to direct any testing that is deemed necessary.
- D. Contractor shall provide free access to site for inspection and testing activities.

END OF SECTION

**SECTION 03100
CONCRETE FORMWORK**

PART 1 - GENERAL

1.01 SUMMARY

- A. Furnish concrete formwork, bracing, shoring, supports, and false work, in accordance with the Contract Documents.
- B. Furnishing, erection, and removal of forms.
- C. Shoring and bracing of formwork.
- D. Setting of embedded items and pipe sleeves for mechanical and electrical work under direction of respective trade.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. CBC: California Building Code
 - 2. SSPWC: Standard Specifications for Public Works Construction
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
 - 1. Section 03200 Reinforcement Steel
 - 2. Section 03280 Joints in Site Work Concrete
 - 3. Section 03300 Cast-in-Place Concrete
 - 4. Section 03310 Cast-in-Place Site Work Concrete
 - 5. Section 03620 Grouting
- C. Standard References: See Front End Contract Documents. Additional standards specific to this Section are listed below. Except as otherwise indicated, the current editions of the following apply to the work of this Section:
 - 1. PS 1 U.S. Product Standard for Concrete Forms, Class I
 - 2. PS 20 American Softwood Lumber Standard
 - 3. ACI 117 Standard Tolerances for Concrete Construction and Materials
 - 4. ACI 347 Recommended Practice for Concrete Formwork

1.03 DEFINITIONS

- A. The following definitions apply to the Work of this Section in addition to definitions given in the Front End Contract Documents:

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CONCRETE FORMWORK**

1. Abrasive: Material used for abrasive blast-cleaning, such as sand, grit, or shot.
2. Abrasive Blast Cleaning: Cleaning/surface preparation by abrasive propelled at high speed.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. The Contractor shall, in accordance with the requirements in Section 01330 Submittals, submit detailed drawings of the false work proposed to be used. Such drawings shall be in sufficient detail to indicate the general layout, sizes of members, anticipated stresses, grade of materials to be used in the false work, means of protecting existing construction which supports false work, and typical soil conditions. Shoring and false work design drawings and calculations shall be stamped and signed by a professional engineer registered in the State of California.
- B. The Contractor shall, in accordance with the requirements in Section 01330 Submittals, submit the following.
 1. Form ties and related accessories, including taper tie plugs, if taper ties are used.
 2. Form gaskets.
- C. The Contractor shall provide concrete construction joints and expansion joints of the types and locations indicated on the Drawings. The Contractor shall submit shop drawings showing the proposed location and type of required construction for any joints not shown on the Drawings, and the sequence of forming and concrete placing operations.
- D. Forms and false work to support the roof and floor slabs shall be designed for the total dead load, plus a live load of 50 psf (minimum). The minimum design load for combined dead and live loads shall be 100 psf.
- E. Manufacturer Warranty Information

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."
- B. The Contractor shall comply with the requirements of California Division of Occupational Health and Safety Construction Safety Orders Section 1717 and OSHA Part 1926, Section 1926.701 that apply to the Work of this Section. The Contractor shall prepare and maintain at least one copy of the required drawings at the site. Design of the structures shown on the Drawings does not include any allowance or consideration for imposed construction loads. The Contractor shall provide forms, shoring and falsework adequate for imposed live and dead loads,

SECTION 03100 CONCRETE FORMWORK

including equipment, height of concrete drop, concrete and foundation pressures, stresses, lateral stability, and other safety factors during construction.

- C. Tolerances: The Contractor shall employ formwork complying with ACI 347 Guide to Formwork for Concrete, except as exceeded by the requirements of regulatory agencies, or as otherwise indicated or specified. The Contractor shall design and construct formwork to produce finished concrete conforming to tolerances given in ACI 117.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

1.09 WARRANTY

- A. Manufacturer Warranty
 - 1. Warranty installed equipment to be free from defects in material and workmanship for 1 year from date of final acceptance of Project by the Owner.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Except as otherwise expressly accepted by the Construction Manager, lumber brought on the job site for use as forms, shoring, or bracing shall be new material. Forms shall be smooth surface forms and shall be of the following materials:
 - 1. Walls: Steel or plywood panel
 - 2. Columns: Steel, plywood or fiber glass
 - 3. Roof and floor: Plywood
 - 4. Other work: Steel panels, plywood or tongue and groove lumber
- B. Form materials which may remain or leave residues on or in the concrete shall be classified as acceptable for potable water use by the Environmental Protection Agency within 30 days of application or use.

2.02 FORM AND FALSE WORK MATERIALS

- A. Materials for concrete forms, formwork, and false work shall conform to the following requirements:
 - 1. Lumber shall be Douglas Fir or Southern Yellow Pine, construction grade or better, in conformance with U.S. Product Standard PS 20.

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CONCRETE FORMWORK**

2. Plywood for concrete formwork shall be new, waterproof, synthetic resin bonded, exterior type Douglas Fir or Southern Yellow Pine plywood manufactured especially for concrete formwork and shall conform to the requirements of PS 1 for Concrete Forms, Class I, and shall be edge sealed.
3. Form materials shall be metal, wood, plywood, or other approved material that will not adversely affect the concrete and will facilitate placement of concrete to the shape, form, line, and grade shown. Metal forms shall be an approved type that will accomplish such results. Wood forms for surfaces to be painted shall be Medium Density Overlaid plywood, MDO Ext. Grade.

2.03 FORM TIES

- A. Form ties with integral water stops shall be provided with a plastic cone or other suitable means for forming a conical hole to insure that the form tie may be broken off back of the face of the concrete. The maximum diameter of removable cones for rod ties, or of other removable form-tie fasteners having a circular cross-section, shall not exceed 1 1/2 inches; and such fasteners shall be such as to leave holes of regular shape for reaming. Form ties shall be Burke Penta-Tie system by The Burke Company; Richmond Snap-Tys by the Richmond Screw Anchor Company; or equal.
- B. Form ties for water-retaining structures shall have integral water stops. Removable taper ties may be used when approved by the Construction Manager. A preformed neoprene or polyurethane tapered plug sized to seat at the center of the wall shall be inserted in the hole left by the removal of the taper tie. Use Burke Taper-Tie System by The Burke Company; Taper-Ty by the Richmond Screw Anchor Company; or equal.

2.04 FORM COATING

- A. Non-grainraising and nonstaining resin or polymer type that will not leave residual matter on surface of concrete or adversely effect bonding to concrete of paint, plaster, mortar, protective coatings, waterproofing or other applied materials. Coatings containing mineral oils, paraffins, waxes or other nondrying ingredients, are not permitted. For concrete surfaces contacting portable stored water, use only coatings and form-release agents that are completely nontoxic.

2.05 FORM JOINT SEALERS

- A. For joints between form panels, use resilient foam rubber strips, non-hardening plastic-type caulking compound free of oil, or waterproof pressure-sensitive plastic tape of minimum 8 mil thickness and 2 inches width. For form tie holes, use rubber plugs, plastic caulking compound, or equal.

**SECTION 03100
CONCRETE FORMWORK**

PART 3 - EXECUTION

3.01 GENERAL

- A. Forms to confine the concrete and shape it to the required lines shall be used wherever necessary. The Contractor shall assume full responsibility for the adequate design of forms, and any forms which are unsafe or inadequate in any respect shall promptly be removed from the Work and replaced at no increased cost to the Owner. The Contractor shall provide worker protection from protruding reinforcement bars in accordance with applicable safety codes. A sufficient number of forms of each kind shall be provided to permit the required rate of progress to be maintained. The design and inspection of concrete forms, false work, and shoring shall comply with applicable local, state and Federal regulations. Plumb and string lines shall be installed before concrete placement and shall be maintained during placement. Such lines shall be used by Contractor's personnel and by the Construction Manager and shall be in sufficient number and properly installed. During concrete placement, the Contractor shall continually monitor plumb and string line form positions and immediately correct deficiencies.
- B. Concrete forms shall conform to the shape, lines, and dimensions of members as called for on the Drawings, and shall be substantial, free from surface defects, and sufficiently tight to prevent leakage. Forms shall be properly braced or tied together to maintain their position and shape under a load of freshly placed concrete. If adequate foundation for shores cannot be secured, trussed supports shall be provided.
- C. Unless otherwise indicated, exterior corners in concrete members shall be provided with 3/4-inch chamfers. Re-entrant corners in concrete members shall not have fillets unless otherwise indicated.

3.02 FORM DESIGN

- A. Forms shall be true in every respect to the required shape and size, shall conform to the established alignment and grade, and shall be of sufficient strength and rigidity to maintain their position and shape under the loads and operations incident to placing and vibrating the concrete. Suitable and effective means shall be provided on forms for holding adjacent edges and ends of panels and sections tightly together and in accurate alignment so as to prevent the formation of ridges, fins, offsets, or similar surface defects in the finished concrete. Plywood, 5/8-inch and greater in thickness, may be fastened directly to studding if the studs are spaced close enough to prevent visible deflection marks in the concrete. The forms shall be tight so as to prevent the loss of water, cement and fines during placing and vibrating of the concrete. Specifically, the bottom of wall forms that rest on concrete footings or slabs shall be provided with a gasket to prevent loss of fines and paste during placement and vibration of concrete. Such gasket may be a 1 to 1 1/2-inch diameter polyethylene rod held in position to the underside of the wall form. Adequate clean-out holes shall be provided at the bottom of each lift of forms. The size, number, and location of such clean-outs shall be as acceptable to the Construction Manager. Whenever concrete cannot be placed

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from the top of a wall form in a manner that meets the requirements of the Contract Documents, form windows shall be provided in the size and spacing needed to allow placement of concrete to the requirements of Section 03300 Cast-in-Place Concrete. The size, number, and location of such form windows shall be as acceptable to the Construction Manager.

3.03 CONSTRUCTION

- A. Vertical Surfaces: Vertical surfaces of concrete members shall be formed, except where placement of the concrete against the ground is shown. Not less than 1 inch of concrete shall be added to the thickness of the concrete member as shown where concrete is permitted to be placed against trimmed ground in lieu of forms. Such permission will be granted only for members of comparatively limited height and where the character of the ground is such that it can be trimmed to the required lines and will stand securely without caving or sloughing until the concrete has been placed.
- B. Construction Joints: Concrete construction joints will not be permitted at locations other than those shown or specified, except as may be acceptable to the Construction Manager. When a second lift is placed on hardened concrete, special precautions shall be taken in the way of the number, location, and tightening of ties at the top of the old lift and bottom of the new to prevent any unsatisfactory effect whatsoever on the concrete. Pipe stubs and anchor bolts shall be set in the forms where required.
- C. Form Ties:
 - 1. Embedded Ties: Holes left by the removal of form tie cones shall be reamed with suitable toothed reamers so as to leave the surface of the holes clean and rough before being filled with mortar as specified for "Finish of Concrete Surfaces" in Section 03300 Cast-in-Place Concrete. Wire ties for holding forms will not be permitted. No form-tying device or part thereof, other than metal, shall be left embedded in the concrete. Ties shall not be removed in such manner as to leave a hole extending through the interior of the concrete members. The use of snap-ties which cause spalling of the concrete upon form stripping or tie removal will not be permitted. If steel panel forms are used, rubber grommets shall be provided where the ties pass through the form in order to prevent loss of cement paste. Where metal rods extending through the concrete are used to support or to strengthen forms, the rods shall remain embedded and shall terminate not less than 1 inch back from the formed face or faces of the concrete.
 - 2. Removable Ties: Where taper ties are approved for use, the larger end of the taper tie shall be on the wet side of walls in water retaining structures. After the taper tie is removed, the hole shall be thoroughly cleaned and roughened for bond. A precast neoprene or polyurethane tapered plug shall be located at the wall centerline. The hole shall be completely filled with non-shrink grout for water bearing and below-grade walls. The hole shall be completely filled with non-shrink or regular cement grout for above-grade walls which are dry on both sides. Exposed faces of walls shall have the

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outer 2 inches of the exposed face filled with a cement grout which shall match the color and texture of the surrounding wall surface.

D. Embedded Items:

1. Before the placement of concrete within the forms, each trade having embedded items, including water stops within the forms and affected by the pour, shall certify that items are properly located and braced. This certification shall be provided by the Contractor to the Construction Manager at least 24 hours in advance of placement.

3.04 EMBEDDED PIPING AND ROUGH HARDWARE

- A. The Contractor shall consult with trades which require openings for the passage of pipes, conduits and other inserts, and properly and accurately install the necessary pipe sleeves, anchors, or other required inserts, and properly size the equipment pads. The Contractor shall reinforce openings as indicated and required. The Contractor shall locate conduits or pipes so as not to reduce the strength of the construction, and in no case, place pipes, other than conduits, in a slab 4-1/2 inches or less in thickness. The Contractor shall not embed conduit having an outside diameter greater than 1/3 of the thickness of the slab in a concrete slab, nor place conduit below bottom reinforcing steel or over top reinforcing steel. Conduits may be embedded in walls, provided they are not larger in outside diameter than 1/3 the thickness of the wall, are not spaced closer than three diameters on center, and do not impair the strength of the structure. The Contractor shall support embedded pipes and conduits independently from reinforcing steel in a manner to prevent metallic contact, and thereby, prevent electrolytic deterioration. The Contractor shall place embedded pipes and conduits as nearly as possible to the center line of the concrete section. The Contractor shall submit conduit, piping and other wall penetrations, reinforcements and anchor bolt sizing and locations for review and approval.

3.05 REMOVAL OF FORMS

- A. Careful procedures for the removal of forms shall be strictly followed, and this Work shall be done with care so as to avoid injury to the concrete. No heavy loading on green concrete will be permitted. In the case of roof slabs and above-ground floor slabs, forms for supported slab, but not shoring, shall remain in place until test cylinders for the roof concrete attain a minimum compressive strength of 75 percent of the 28 day strength specified in Section 03300 Cast-in-Place Concrete; provided, that no forms shall be disturbed or removed under an individual panel or unit before the concrete in the adjacent panel or unit has attained 75 percent of the specified 28 day strength and has been in place for a minimum of 7 days. The time required to establish said strength shall be as determined by the Construction Manager who will make several test cylinders for this purpose from concrete used in the first group of roof panels placed. If the time so determined is more than the 7 day minimum, then that time shall be used as the minimum length of time. Forms for vertical walls and columns shall remain in place at least 3 days after the concrete has been placed. Forms for parts of the

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Work not specifically mentioned herein shall remain in place for periods of time as determined by the Construction Manager.

3.06 REUSE OF FORMS

- A. Forms may be reused only if in good condition and only if acceptable to the Construction Manager. Light sanding between uses will be required wherever necessary to obtain uniform surface texture on exposed concrete surfaces. Exposed concrete surfaces are defined as surfaces which are permanently exposed to view. In the case of forms for the inside wall surfaces of hydraulic/ water retaining structures, unused tie rod holes in forms shall be covered with metal caps or shall be filled by other methods acceptable to the Construction Manager.

3.07 MAINTENANCE OF FORMS

- A. Forms shall be maintained in good condition, particularly as to size, shape, strength, rigidity, tightness, and smoothness of surface. Forms, when in place, shall conform to the established alignment and grades. Before concrete is placed, the forms shall be thoroughly cleaned. The form surfaces shall be treated with a non-staining mineral oil or other lubricant acceptable to the Construction Manager. Any excess lubricant shall be satisfactorily removed before placing the concrete. Where field oiling of forms is required, the Contractor shall perform the oiling at least 2 weeks in advance of their use. Care shall be exercised to keep oil off the surfaces of steel reinforcement and other metal items to be embedded in concrete.

3.08 FALSE WORK

- A. The Contractor shall be responsible for the design, engineering, construction, maintenance, and safety of false work, including staging, walkways, forms, ladders, and similar appurtenances, which shall equal or exceed the applicable requirements of the provisions of the OSHA Safety and Health Standards for Construction, and the requirements of the California Division of Industrial Safety.

3.09 REMOVAL OF SHORING AND FALSE WORK

- A. The Contractor shall not remove shoring and false work until 21 days after concrete placement, or concrete has attained at least 90 percent of the 28 day design compressive strength as demonstrated by control test cylinders, but not sooner than 14 days.

3.10 LOAD RESTRICTION

- A. The Contractor shall not impose construction, equipment or permanent loads on columns, supported slabs, or supported beams until concrete has attained the 28 day design compressive strength.

END OF SECTION

**SECTION 03200
REINFORCEMENT STEEL**

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide concrete reinforcement steel, welded wire fabric, couplers, concrete inserts, wires, clips, supports, chairs, spacers, and other accessories, complete, in accordance with the Contract Documents.
- B. Work Included in this Section. Principal items are:
 - 1. Furnishing and placing bar and mesh reinforcing for cast-in-place concrete.
 - 2. Furnishing reinforcing steel bars for masonry, including delivery to the site.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. ASTM: American Society for Testing and Materials
 - 2. ACI: American Concrete Institute
 - 3. AWS: American Welding Society
 - 4. CBC: California Building Code
 - 5. CRSI MSP: Concrete Reinforcing Steel Institute Manual of Standard Practice
 - 6. SSPWC: Standard Specifications for Public Works Construction
 - 7. WRI: Welding Research Institute
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
 - 1. Section 03100 Concrete Formwork
 - 2. Section 03280 Joints in Site Work Concrete
 - 3. Section 03300 Cast-in-Place Concrete
 - 4. Section 03310 Cast-in-Place Site Work Concrete
 - 5. Section 03620 Grout
- C. Standard References: See Front End Contract Documents. Additional standards specific to this Section are listed below. Except as otherwise indicated, the current editions of the following apply to the work of this Section:
 - 1. ACI 315 Details and Detailing of Concrete Reinforcement
 - 2. ACI 318 Building Code Requirements for Structural Concrete
 - 3. ASTM A 82 Specification for Steel Wire, Plain, for Concrete Reinforcement

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4. ASTM A 185 Specification for Welded Steel Wire Fabric, Plain, for Concrete Reinforcement
5. ASTM A 615 Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
6. ASTM A 706 Specification for Low-Alloy Steel Deformed Bars for Concrete Reinforcement.
7. ASTM A 775 Specification for Epoxy-Coated Reinforcing Steel Bars
8. AWS D1.4 Structural Welding Code - Reinforcing Steel
9. CRSI MSP Concrete Reinforcing Steel Institute Manual of Standard Practice
10. WRI Manual of Standard Practice for Welded Wire Fabric

1.03 DEFINITIONS

- A. The following definitions apply to the Work of this Section in addition to definitions given in the Front End Contract Documents:
 1. Abrasive: Material used for abrasive blast-cleaning, such as sand, grit, or shot.
 2. Abrasive Blast Cleaning: Cleaning/surface preparation by abrasive propelled at high speed.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Shop Drawings
 1. Details of the concrete reinforcement steel and concrete inserts shall be submitted at the earliest possible date after receipt of the Notice to Proceed.
 2. Bending diagrams: Show the actual lengths of bars, to the nearest inch, measured to the intersection of the extensions (tangents for bars of circular cross section) of the outside surface.
 3. Placing lists/Diagram: Indicate the dimensions of each bar splice.
 4. Drawings of reinforcement steel before fabrication.
- C. Manufacturer Warranty Information

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."

**SECTION 03200
REINFORCEMENT STEEL**

- B. Field or Site Samples:
1. If requested by the Construction Manager, the Contractor shall furnish samples from each heat of reinforcement steel delivered in a quantity adequate for testing.
 2. Costs of initial tests will be paid by the Owner as a part of this bid item.
 3. Costs of additional tests due to material failing initial tests shall be paid by the Contractor.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

1.09 WARRANTY

- A. Manufacturer Warranty
1. Warranty installed equipment to be free from defects in material and workmanship for 1 year from date of final acceptance of Project by the Owner.

PART 2 - PRODUCTS

2.01 REINFORCEMENT STEEL

- A. Reinforcement steel for cast-in-place reinforced concrete construction shall conform to the following requirements:
1. Bar reinforcement shall conform to the requirements of ASTM A 615 for Grade 60 Billet Steel Reinforcement or as otherwise indicated.
 2. Welded reinforcement, specifically detailed or otherwise indicated, shall be low-alloy grade 60 deformed bars conforming to the requirements of ASTM A 706.
 3. Welded wire fabric reinforcement shall conform to the requirements of ASTM A 185 and the details indicated; provided, that welded wire fabric with longitudinal wire of W4 size wire and smaller shall be either provided in flat sheets or in rolls with a core diameter of not less than 10 inches; and provided further, that welded wire fabric with longitudinal wires larger than W4 size shall be provided in flat sheets only.
 4. Spiral reinforcement shall be cold-drawn steel wire conforming to the requirements of ASTM A 82.
 5. Tie wire shall be Annealed Steel, 14 gauge minimum.
- B. Accessories:

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REINFORCEMENT STEEL**

1. Accessories shall include necessary chairs, slab bolsters, concrete blocks, tie wires, dips, supports, spacers, and other devices to position reinforcement during concrete placement.
 2. Bar supports shall meet the requirements of the CRSI Manual of Standard Practice, Chapter 3, including special requirements for supporting epoxy coated reinforcing bars.
 3. Wire bar supports shall be CRSI Class 1 for maximum protection with a 1/8 inch minimum thickness of plastic coating which extends at least 2 inch from the concrete surface. Plastic shall be gray in color.
 4. Concrete blocks (dobies), used to support and position reinforcement steel, shall have the same or higher compressive strength as specified for the concrete in which it is located. Wire ties shall be embedded in concrete block bar supports.
- C. Epoxy coating for reinforcing and accessories, where indicated, shall conform to ASTM A 775.

2.02 MECHANICAL COUPLERS

- A. Mechanical couplers shall not be used.

2.03 WELDED SPLICES

- A. Welded splices shall not be used.

2.04 EPOXY GROUT

- A. Epoxy for grouting reinforcing bars shall be specifically formulated for such application, for the moisture condition, application temperature, and orientation of the hole to be filled.
- B. Epoxy grout shall meet the requirements found in Section 03620 "Grout."

PART 3 - EXECUTION

3.01 GENERAL

- A. Reinforcement steel, welded wire fabric, couplers, and other appurtenances shall be fabricated, and placed in accordance with the requirements of the California Building Code and the supplementary requirements indicated herein.

3.02 FABRICATION AND DELIVERY

- A. The Contractor shall conform to CRSI MSP, Chapters 6 and 7, except as otherwise indicated or specified. The Contractor shall bundle reinforcement and tag with suitable identification to facilitate sorting and placing, and transport and store at site so as not to damage material. The Contractor shall keep a sufficient supply of tested, approved, and proper reinforcement at site to avoid delays.

**SECTION 03200
REINFORCEMENT STEEL**

- B. Bending and Forming: The Contractor shall bend bars of indicated size and accurately form in accordance with the requirements of ACI 315 and ACI 318 to shapes and lengths indicated on drawings and required by methods not injurious to materials. The Contractor shall not heat reinforcement for bending. Bars with kinks or bends not scheduled will be rejected.
- C. Fabricating tolerance: Fabrication of reinforcing bars shall meet the requirements of ACI 117.

3.03 PLACING

- A. Reinforcement steel shall be accurately positioned and shall be supported and wired together to prevent displacement, using annealed iron wire ties or suitable clips at intersections. Reinforcement steel shall be supported by concrete, plastic or metal supports, spacers or metal hangers which are strong and rigid enough to prevent any displacement of the reinforcement steel. Where concrete is to be placed on the ground, supporting concrete blocks shall be used, in sufficient numbers to support the bars without settlement, but in no case shall such support be continuous. Concrete blocks used to support reinforcement steel shall be tied to the steel with wire ties which are embedded in the blocks. For concrete over formwork, the Contractor shall furnish concrete, metal, plastic, or other acceptable bar chairs and spacers.
- B. Limitations on the use of bar support materials shall be as follows:
 - 1. Concrete Dobies: Permitted at locations except where architectural finish is required.
 - 2. Wire Bar Supports: Permitted only at slabs over dry areas, interior dry wall surfaces, and exterior wall surfaces.
 - 3. Plastic Bar Supports: Permitted at locations except on grade.
- C. Tie wires shall be bent away from the forms in order to provide the specified concrete coverage.
- D. Bars additional to those shown which may be found necessary or desirable by the Contractor for the purpose of securing reinforcement in position shall be provided by the Contractor at no additional cost to the Owner.
- E. Unless otherwise specified, reinforcement placing tolerances shall be within the limits specified in Section 7.5 of ACI 318 except where in conflict with the requirements of the CBC.
- F. Bars may be moved as necessary to avoid interference with other reinforcement steel, conduits, or embedded items. If bars are moved more than one bar diameter, or enough to exceed the above tolerances, the resulting arrangement of bars shall be subject to the approval of the Construction Manager.
- G. Welded wire fabric reinforcement placed over horizontal forms shall be supported on slab bolsters. Slab bolsters shall be spaced not more than 30 inches on

SECTION 03200 REINFORCEMENT STEEL

centers, shall extend continuously across the entire width of the reinforcement mat, and shall support the reinforcement mat in the plane indicated.

- H. Welded wire fabric placed over the ground shall be supported on wired concrete blocks (dobies) spaced not more than 3 feet on centers in any direction. The construction practice of placing welded wire fabric on the ground and hooking into place in the freshly placed concrete shall not be used.
- I. Epoxy coated reinforcing bars shall be stored, transported, and placed in such a manner as to avoid chipping of the epoxy coating. Non-abrasive slings made of nylon and similar materials shall be used. Specially coated bar supports shall be used. Chips or cracks in the epoxy coating shall be repaired with a compatible epoxy repair material prior to placing concrete.
- J. Accessories supporting reinforcing bars shall be spaced such that there is no deflection of the accessory from the weight of the supported bars. When used to space the reinforcing bars from wall forms, the forms and bars shall be located so that there is no deflection of the accessory when the forms are tightened into position.

3.04 SPLICES

- A. Splicing shall be in accordance with ACI-318, unless otherwise noted on Drawings.
- B. Vertical Bars. Except as specifically detailed or otherwise indicated, splicing of vertical bars in concrete is not permitted, except at the indicated or approved horizontal construction joints or as otherwise specifically detailed.
- C. Horizontal Bars. Except as specifically detailed or otherwise indicated, splicing of horizontal bars in concrete is not permitted.
- D. Mechanical Couplers. Use of mechanical couplers is not permitted.
- E. Welding: Welding of reinforcing bars is not permitted.

3.05 ADDITIONAL REINFORCING

- A. The Contractor shall provide additional reinforcing bars at sleeves and openings as indicated on Drawings.

3.06 WELDED WIRE MESH

- A. The Contractor shall install necessary supports and chairs to hold the wire mesh in place during concrete pours. The Contractor shall straighten mesh to lay in a flat plane and bend mesh as shown or required to fit work. The Contractor shall provide laps of no less than one complete mesh, unless otherwise detailed, and shall tie every other wire at laps. Roll mesh is not acceptable.

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REINFORCEMENT STEEL**

3.07 EMBEDMENT OF DRILLED REINFORCING STEEL DOWELS

A. Hole Preparation:

1. The hole diameter shall be as recommended by the epoxy manufacturer but shall be no larger than 0.25 inch greater than the diameter of the outer surface of the reinforcing bar deformations.
2. The depth of the hole shall be as recommended by the epoxy manufacturer to fully develop the bar but shall not be less than 12 bar diameters, unless noted otherwise.
3. The hole shall be drilled by methods which do not interfere with the proper bonding of epoxy.
4. Existing reinforcing steel in the vicinity of proposed holes shall be located prior to drilling. The location of holes to be drilled shall be adjusted to avoid drilling through or nicking any existing reinforcing bars.
5. The hole shall be blown clean with clean, dry compressed air to remove dust and loose particles.
6. Epoxy shall be injected into the hole through a tube placed to the bottom of the hole. The tube shall be withdrawn as epoxy is placed but kept immersed to prevent formation of air pockets. The hole shall be filled to a depth that insures that excess material will be expelled from the hole during dowel placement.
7. Dowels shall be twisted during insertion into the partially filled hole so as to guarantee full wetting of the bar surface with epoxy. The bar shall be inserted slowly enough to avoid developing air pockets.

END OF SECTION

**SECTION 03280
JOINTS IN SITE WORK CONCRETE**

PART 1 - GENERAL

1.01 SUMMARY

- A. The work of this section shall include expansion joints, construction joints, weakened plane control joints and contact joints.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
1. ASTM: American Society for Testing and Materials International
 2. CBC: California Building Code
 3. SSPWC: Standard Specifications for Public Works Construction
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
1. Section 03100 "Concrete Formwork"
 2. Section 03310 "Cast-in-Place Site Work Concrete"
- C. Standard References: See Front End Contract. Additional standards specific to this Section are listed below. Except as otherwise indicated, the current editions of the following apply to the work of this Section:
1. ASTM:
 - a. ASTM D 1751 Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types)
 - b. ASTM D 994 Preformed Expansion Joint Filler for Concrete (Bituminous Type)

1.03 DEFINITIONS

- A. The following definitions apply to the Work of this Section in addition to definitions given in the Front End Contract:

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Shop Drawings:

**SECTION 03280
JOINTS IN SITE WORK CONCRETE**

1. Placement shop drawings showing the location and type of joints.
 2. Catalog cuts and samples of the preformed expansion joint filler material, including complete product data.
- C. Certifications:
1. Manufacturer's certification indicating that the preformed expansion joint material meets or exceeds the requirements of the Specifications.
- D. Manufacturer Warranty Information.

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

1.09 WARRANTY

- A. Manufacturer Warranty
1. Warranty installed equipment to be free from defects in material and workmanship for 1 year from date of final acceptance of Project by the Owner.

PART 2 - PRODUCTS

2.01 PREMOLDED JOINT FILLER

- A. Premolded joint filler shall be in conformance with SSPWC Subsection 201-3.2 and shall be either Preformed Expansion Joint Filler (ASTM D994) or Nonextruding and Resilient Filler (ASTM D 1751) as indicated on plans.
- B. Limit Joint filler to ¼" width.

2.02 STEEL BARS AND DOWELS

- A. Steel bars used in construction joints or contact joints shall conform to SSPWC Subsection 201-2.2.

2.03 CONCRETE CURING COMPOUND

- A. Curing compound shall comply with SSPWC Subsection 201-4.

SECTION 03280
JOINTS IN SITE WORK CONCRETE

PART 3 - EXECUTION

3.01 EXPANSION JOINTS

- A. Expansion joints in concrete pavement shall be constructed in accordance with SSPWC Subsection 302-6.5.3 except that the configuration of the joint shall be as indicated on the drawings.
- B. Expansion joints in concrete curbs, sidewalk and gutter shall comply with SSPWC Subsection 303-5.4.2 except that the joint configuration shall be as indicated on the drawings.

3.02 CONSTRUCTION JOINTS

- A. Construction joints in concrete pavement shall comply with SSPWC Subsection 302-6.5.2.

3.03 WEAKENED PLANE CONTROL JOINTS

- A. Weakened plane joints in concrete pavement shall comply with SSPWC Subsection 302-6.5.4 except that the configuration of the joint shall be as indicated on the drawings.
- B. Weakened plane joints in concrete curbs, sidewalks and gutters shall comply with SSPWC Subsection 303-5.4.3 except that the joint configuration shall be as indicated on the drawings.

3.04 CONTACT JOINTS

- A. Contact joints in concrete pavement shall be made by placing fresh concrete against hardened concrete.
- B. Asphalt Contact joints in concrete pavement shall be made by placing fresh concrete against hardened concrete.
- C. A moisture barrier consisting of curing compound conforming to SSPWC Subsection 201-4 shall be applied to the face of any contact joint and allowed to dry prior to placing fresh concrete against that joint face.
- D. This provision is also applicable to existing Portland cement concrete pavement not constructed as part of the Work performed under the contract.
- E. Application rate shall be as specified in SSPWC Subsection 302-6.6 for the compound used.

**SECTION 03280
JOINTS IN SITE WORK CONCRETE**

END OF SECTION

**SECTION 03300
CAST-IN-PLACE CONCRETE**

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide finished structural concrete, complete, in accordance with the Contract Documents.
- B. Structural Concrete: Concrete to be used in cases except where noted otherwise in the Contract Documents.
- C. Lean Concrete: Concrete to be used for thrust blocks, anchor blocks, pipe trench cut-off blocks and cradles, where the preceding items are detailed on the Drawings as unreinforced. Concrete to be used as protective cover for dowels intended for future connection.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. ACI: American Concrete Institute
 - 2. ASTM: American Society for Testing and Materials
 - 3. CBC: California Building Code
 - 4. NSF: National Science Foundation
 - 5. SSPWC: Standard Specifications for Public Works Construction
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
 - 1. Section 03100 Concrete Formwork
 - 2. Section 03200 Reinforcement Steel
 - 3. Section 03280 Joints in Sitework Concrete
 - 4. Section 03310 Cast-In-Place Site Work Concrete
 - 5. Section 03620 Grouting
- C. Standard References: See Front End Contract Documents. Additional standards specific to this Section are listed below. Except as otherwise indicated, the current editions of the following apply to the work of this Section:
 - 1. Federal Specifications:
 - a. UU-B-790A (1) (2) Building Paper, Vegetable Fiber (Kraft, Water-proofed, Water Repellant and Fire Resistant)

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CAST-IN-PLACE CONCRETE

2. ACI:
 - a. ACI 117 Standard Tolerances for Concrete Construction and Materials
 - b. ACI 214 Recommended Practice for Evaluation of Strength Test Results of Concrete
 - c. ACI 301 Specifications for Structural Concrete for Buildings
 - d. ACI 304R Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete
 - e. ACI 305R Hot Weather Concreting
 - f. ACI 306 Cold Weather Concreting
 - g. ACI 309 Consolidation of Concrete
 - h. ACI 315 Details and Detailing of Concrete Reinforcement
 - i. ACI 318 Building Code Requirements for Reinforced Concrete
 - j. ACI 350 Environmental Engineering Concrete Structures
3. ASTM:
 - a. ASTM C 31 Practice for Making and Curing Concrete Test Specimens in the Field
 - b. ASTM C 33 Specification for Concrete Aggregates
 - c. ASTM C 39 Test Method for Compressive Strength of Cylindrical Concrete Specimens
 - d. ASTM C 40 Test Method for Organic Impurities in Fine Aggregates for Concrete
 - e. ASTM C 42 Test Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 - f. ASTM C 88 Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
 - g. ASTM C 94 Specification for Ready-Mixed Concrete
 - h. ASTM C 136 Test Method for Sieve Analysis of Fine and Coarse Aggregates
 - i. ASTM C 138 Test Method for Unit Weight, Yield, and Air Content of Concrete
 - j. ASTM C 143 Test Method for Slump of Hydraulic Cement Concrete
 - k. ASTM C 150 Specification for Portland Cement
 - l. ASTM C 156 Test Method for Water Retention by Concrete Curing Materials
 - m. ASTM C 157 Test Method for Length Change of Hardened Hydraulic Cement Mortar and Concrete
 - n. ASTM C 171 Specification for Sheet Materials for Curing Concrete

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- o. ASTM C 192 Practice for Making and Curing Concrete Test Specimens in the Laboratory
- p. ASTM C 231 Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
- q. ASTM C 260 Specification for Air-Entraining Admixtures for Concrete
- r. ASTM C 289 Test Method for Potential Reactivity of Aggregates (Chemical Method)
- s. ASTM C 309 Specifications for Liquid Membrane-Forming Compounds for Curing Concrete
- t. ASTM C 494 Specification for Chemical Admixtures for Concrete
- u. ASTM C 1077 Practice for Laboratories Testing Concrete and Concrete Aggregates for use in Construction & Criteria for Laboratory Evaluation
- v. ASTM D 1751 Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types)
- w. ASTM D 2419 Test Method for Sand Equivalent Value of Soils and Fine Aggregate
- x. ASTM E 119 Method for Fire Tests of Building Construction and Materials
- y. NSF/ANSI 61 Drinking Water System Components – Health Effects, NSF International

1.03 DEFINITIONS

- A. Hydraulic Structure: Concrete structures for the containment, treatment, or transmission of water, or other fluids. A hydraulic structure encompasses its component parts including, but not limited to, the walls, floor slabs, columns, column foundations, beams, drop panels, roof structure and other ancillary structural components.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."
- B. Delivery Tickets:
 - 1. Where ready-mix concrete is used, the Contractor shall furnish delivery tickets at the time of delivery of each load of concrete.
 - 2. Each ticket shall show the state certified equipment used for measuring and the total quantities, by weight, of cement, sand, each class of aggregate, admixtures, and the amounts of water in the aggregate added at the batching plant, and the amount allowed to be added at the site for the specific design mix.

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3. In addition, each ticket shall state the mix number, total yield in cubic yards, and the time of day, to the nearest minute, corresponding to the times when the batch was dispatched, when it left the plant, when it arrived at the site, when unloading began, and when unloading was finished.

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Deferred Submittals: The submittal for this Section will be a deferred submittal as described in Section 01330 "Submittal Procedures."
- C. Product Information
 1. Mix Designs:
 - a. Submit preliminary concrete mix designs which show the proportions and gradations of materials proposed and 28-day compression test reports for each class and type of concrete specified herein.
 - b. Shrinkage test reports shall be submitted for concrete used in hydraulic structures.
 - c. The mix designs shall be checked and certified to conform to these specifications by an independent testing laboratory acceptable to the Construction Manager to be in conformance with these Specifications.
 - d. Costs related to such checking and testing shall be borne by the Contractor at no increased cost to the Owner.
 2. Mill tests for cement.
 3. Materials and methods for curing.
- D. Manufacturer Warranty Information
- E. Certificates:
 1. Cement and concrete admixtures shall be NSF 61 certified. NSF 61 certificates of compliance shall be provided as submittals.
 2. Admixture certification. Chloride ion content must be included.
 3. Aggregate gradation and certification.

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."
- B. Tests on component materials and for compressive strength and shrinkage of concrete will be performed as specified herein. Test for determining slump will be in accordance with the requirements of ASTM C 143.
- C. Field Compression Tests:

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1. Compression test specimens will be taken during construction from the first placement of each class of concrete specified herein and at intervals thereafter as selected by the Construction Manager to ensure continued compliance with these Specifications. Each set of test specimens will be a minimum of five cylinders.
 2. Compression test specimens for concrete shall be made in accordance with section 9.2 of ASTM C 31. Specimens shall be 6 inch diameter by 12 inch high cylinders.
- D. Evaluation and Acceptance of Concrete:
1. Evaluation and acceptance of the compressive strength of concrete shall be according to the requirements of ACI 318, Chapter 5 "Concrete Quality," and as specified herein.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

1.09 WARRANTY

- A. Warranty installed equipment to be free from defects in material and workmanship for 1 year from date of final acceptance of Project by the Owner.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

- A. General:
1. Materials shall be delivered, stored, and handled so as to prevent damage by water or breakage. Only one brand of cement shall be used. Cement reclaimed from cleaning bags or leaking containers shall not be used. Cement shall be used in the sequence of receipt of shipments.
- B. Materials furnished for the Work shall comply with the requirements of Sections 201, 203, and 204 of ACI 301, as applicable.
- C. Storage of materials shall conform to the requirements of Section 2.5 of ACI 301 or the SSPWC.
- D. Materials for concrete shall conform to the following requirements:
1. Cement shall be standard brand Portland cement conforming to ASTM C 150 for Type II/V, including Table 2 optional requirements. A minimum of 85 percent of cement by weight shall pass a 325 screen. A single brand of

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cement shall be used throughout the Work, and before its use, the brand shall be acceptable to the Construction Manager. The cement shall be suitably protected from exposure to moisture until used. Cement that has become lumpy shall not be used. Sacked cement shall be stored in such a manner so as to permit access for inspection and sampling. Certified mill test reports, including fineness, for each shipment of cement to be used shall be submitted to the Construction Manager if requested regarding compliance with these Specifications.

2. Water for mixing and curing shall be potable, clean, and free from objectionable quantities of silty organic matter, alkali, salts and other impurities. The water shall be considered potable, for the purposes of this Section only, if it meets the requirements of the local governmental agencies. Agricultural water with high total dissolved solids concentration (over 1,000 mg/l) shall not be used.
3. Aggregates shall be obtained from pits acceptable to the Construction Manager, shall be nonreactive, and shall conform to ASTM C 33. Maximum size of coarse aggregate shall be as specified herein. Lightweight sand for fine aggregate will not be permitted.
4. Coarse aggregates shall consist of clean, hard, durable gravel, crushed gravel, crushed rock or a combination thereof. The coarse aggregates shall be prepared and handled in two or more size groups for combined aggregates with a maximum size greater than 3/4-inch. When the aggregates are proportioned for each batch of concrete the two size groups shall be combined. See the Paragraph in Part 2 entitled "Trial Batch and Laboratory Tests" for the use of the size groups.
5. Fine aggregates shall be natural sand or a combination of natural and manufactured sand that are hard and durable. When tested in accordance with ASTM D 2419, the sand equivalency shall not be less than 75 percent for an average of three samples, nor less than 70 percent for an individual test. Gradation of fine aggregate shall conform to ASTM C 33, with 15 to 30 percent passing the number 50 screen and 5 to 10 percent passing the number 100 screen. The fineness modulus of sand used shall not be over 3.00.
6. Combined aggregates shall be well graded from coarse to fine sizes, and shall be uniformly graded between screen sizes to produce a concrete that has optimum workability and consolidation characteristics. Where a trial batch is required for a mix design, the final combined aggregate gradations will be established during the trial batch process.
7. When tested in accordance with ASTM C 33, the ratio of silica released to reduction in alkalinity shall not exceed 1.0.
8. When tested in accordance with ASTM C 33, the fine aggregate shall produce a color in the supernatant liquid no darker than the reference standard color solution.
9. When tested in accordance with ASTM C 33, the coarse aggregate shall show a loss not exceeding 42 percent after 500 revolutions, or 10.5 percent after 100 revolutions.

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10. When tested in accordance with ASTM C 33, the loss resulting after five cycles shall not exceed 10 percent for fine or coarse aggregate when using sodium sulfate.

- E. Ready-mix concrete shall conform to the requirements of ASTM C 94.
- F. Admixtures: Admixtures shall be compatible and by a single manufacturer capable of providing qualified field service representation. Admixtures shall be used in accordance with manufacturer's recommendations. If the use of an admixture is producing an inferior end result, discontinue use of the admixture. Admixtures shall not contain thiocyanates nor more than 0.05 percent chloride ion, and shall be nontoxic after 30 days.
- a. Air-entraining agent meeting the requirements of ASTM C 260, shall be used. Sufficient air-entraining agent shall be used to provide a total air content of 3 to 5 percent. The Owner reserves the right, at any time, to sample and test the air-entraining agent received on the job. The air-entraining agent shall be added to the batch in a portion of the mixing water. The solution shall be batched by means of a mechanical batcher capable of accurate measurement. Air content shall be tested at the point of placement. Air entraining agent shall be Darex II by W.R. Grace; AEA-92 by Euclid Chemical Company; or equal.
 - b. Set controlling and water reducing admixtures: Admixtures may be added at the Contractor's option to control the set, effect water reduction, and increase workability. The addition of an admixture shall be at no increase in cost to the Owner. The use of an admixture shall be subject to acceptance by the Construction Manager. Admixtures specified herein shall conform to the requirements of ASTM C 494. The required quantity of cement shall be used in the mix regardless of whether or not an admixture is used.
2. Concrete shall not contain more than one water reducing admixture. Concrete containing an admixture shall be first placed at a location determined by the Construction Manager.
3. Set controlling admixture shall be either with or without water-reducing properties. Where the air temperature at the time of placement is expected to be consistently over 80 degrees F, a set retarding admixture such as:
- a. Eucon Retarder by Euclid Chemical Company;
 - b. Daratard 17 by W.R. Grace
 - c. Or equal.
4. Where the air temperature at the time of placement is expected to be consistently under 40 degrees F, a noncorrosive set accelerating admixture such as:
- a. Plastocrete 161FL by Sika Corporation
 - b. Pozzutec 20 by Master Builders

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- c. Daraset by W.R. Grace
- d. Or equal
- 5. Normal range water reducer shall conform to ASTM C 494, Type A. WRDA 64 by W.R. Grace; Eucon WR-91 by Euclid Chemical Company; or equal. The quantity of admixture used and the method of mixing shall be in accordance with the Manufacturer's instructions and recommendations.
- 6. High range water reducer shall conform to ASTM C 494, Type F or G. ADVA 190 by W.R. Grace; Eucon 1037 by Euclid Chemical Company; or equal. High range water reducer shall be added to the concrete after other ingredients have been mixed and initial slump has been verified. No more than 14 ounces of water reducer per sack of cement shall be used. Water reducer shall be considered as part of the mixing water when calculating water cement ratio.
- 7. If the high range water reducer is added to the concrete at the job site, it may be used in conjunction with the same water reducer added at the batch plant. Concrete shall have a slump of 3 inches + 2 inch before adding the high range water reducing admixture at the job site. The high range water reducing admixture shall be accurately measured and pressure injected into the mixer as a single dose by a qualified technician. A standby system shall be provided and tested before each day's operation of the job site system.
- 8. Concrete shall be mixed at mixing speed for a minimum of 30 mixer revolutions after the addition of the high range water reducer.
- 9. Flyash: Flyash shall conform to the requirements of ASTM C618, Class F and Loss of Ignition shall not exceed 4 percent. Flyash, as a percent by weight of total cementitious materials, shall not exceed 15 percent.

2.02 CURING MATERIALS

- A. Curing compounds shall be white pigmented and resin based. Sodium silicate compounds shall not be allowed. Concrete curing compound shall be Kurez by Euclid Chemical Company; L&M Cure R by L&M Construction Chemicals; MB-429 by Master Builders; or equal. Water based resin curing compounds shall be used only where local air quality regulations prohibit the use of a solvent based compound. Water based curing compounds shall be L&M Cure R-2 by L&M Construction Chemicals; Aqua-Cure by Euclid Chemical Company; Masterkure-W by Master Builders; or equal.
- B. Polyethylene sheet for use as concrete curing blanket shall be white, and shall have a nominal thickness of 6 mils. The loss of moisture when determined in accordance with the requirements of ASTM C 156 shall not exceed 0.055 grams per square centimeter of surface.
- C. Polyethylene-coated waterproof paper sheeting for use as concrete curing blanket shall consist of white polyethylene sheeting free of visible defects, uniform in appearance, having a nominal thickness of 2 mils and permanently bonded to waterproof paper conforming to the requirements of Federal Specification UU B 790A (1) (2). The loss of moisture, when determined in accordance with the

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requirements of ASTM C 156, shall not exceed 0.055 gram per square centimeter of surface.

- D. Polyethylene-coated burlap for use as concrete curing blanket shall be 4 mils thick, white opaque polyethylene film impregnated or extruded into one side of the burlap. Burlap shall weigh not less than 9 ounces per square yard. The loss of moisture, when determined in accordance with the requirements of ASTM C 156, shall not exceed 0.055 gram per square centimeter of surface.
- E. Curing mats for use in Curing Method 6 as specified herein, shall be heavy shag rugs or carpets or cotton mats quilted at 4 inches on center. Curing mats shall weigh a minimum of 12 ounces per square yard when dry.
- F. Evaporation retardant shall be a material such as Confilm as manufactured by Master Builders; Eucobar as manufactured by Euclid Chemical Company; or equal.

2.03 NONWATERSTOP JOINT MATERIALS

- A. Materials for nonwaterstop joints in concrete shall conform to the following requirements:
 - 1. Preformed joint filler shall be a nonextruding, resilient, bituminous type conforming to the requirements of ASTM D 1751.
 - 2. Elastomeric joint sealer shall conform to the requirements of the City Standards.
 - 3. Mastic joint sealer shall be a material that does not contain evaporating solvents; that will tenaciously adhere to concrete surfaces; that will remain permanently resilient and pliable; that will not be affected by continuous presence of water and will not in any way contaminate potable water; and that will effectively seal the joints against moisture infiltration even when the joints are subject to movement due to expansion and contraction. The sealer shall be composed of special asphalts or similar materials blended with lubricating and plasticizing agents to form a tough, durable mastic substance containing no volatile oils or lubricants and shall be capable of meeting the test requirements set forth hereinafter, if testing is required by the Construction Manager.

2.04 MISCELLANEOUS MATERIALS

- A. Dampproofing agent shall be an asphalt emulsion, such as Hydrocide 600 by Sonneborn; Damp-proofing Asphalt Coating by Euclid Chemical Company; Sealastic by W. R. Meadows Inc., or equal.
- B. Bonding agents shall be epoxy adhesives conforming to the following products for the applications specified and be NSF approved when in contact with potable water:
 - 1. For bonding freshly-mixed, plastic concrete to hardened concrete:

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- a. Sikadur 32 Hi Mod Epoxy Adhesive, as manufactured by Sika Corporation
 - b. Concrevice Liquid (LPL), as manufactured by Master Builders
 - c. BurkEpoxy MV as manufactured by The Burke Company
 - d. Or equal.
2. For bonding hardened concrete or masonry to steel:
- a. Sikadur 31 Hi Mod Gel as manufactured by Sika Corporation
 - b. BurkEpoxy NS as manufactured by The Burke Company
 - c. Concrevice Paste (LPL) as manufactured by Master Builders
 - d. or equal.

2.05 CONCRETE DESIGN REQUIREMENTS

A. Mix Design:

1. General: Concrete shall be composed of cement, admixtures, aggregates and water. These materials shall be of the qualities specified. The exact proportions in which these materials are to be used for different parts of the Work will be determined during the trial batch. In general, the mix shall be designed to produce a concrete capable of being deposited so as to obtain maximum density and minimum shrinkage and, where deposited in forms, to have good consolidation properties and maximum smoothness of surface. In mix designs, the percentage of sand of the total weight of fine and coarse aggregate shall not exceed 41 for hydraulic structures or 50 for other structures, unless noted otherwise. The aggregate gradations shall be formulated to provide fresh concrete that will not promote rock pockets around reinforcing steel or embedded items. The proportions shall be changed whenever necessary or desirable to meet the required results at no additional cost to the Owner. Changes shall be subject to review by the Construction Manager.
2. Water-Cement Ratio and Compressive Strength: The minimum compressive strength and cement content of concrete shall be not less than that specified in the following tabulation.

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<u>Type of Work</u>	<u>Min 28-Day Compressive Strength (psi)</u>	<u>Max Size Aggregate (in)</u>	<u>Minimum Cement per cu. yd. (lb)</u>	<u>Max W/C Ratio (by weight)</u>
<u>Structural Concrete:</u>				
Roof, floor slabs, columns, walls and other concrete items in water-bearing structures and vaults	4,500	1	658	0.42
Floor slabs, columns, walls, footings and other concrete items not specified elsewhere	4,000	1	564	0.45
Pea Gravel Mix. Thin sections and areas with congested reinforcing, at the Contractor's option and with the written approval of the Construction Manager for the specific location	4,000	3/8	752	0.40
<u>Other Concretes:</u>				
Sitework concrete	3,000	1	470	0.50
Lean concrete	2,500	1-1/2"	376	0.60

Note: The Contractor is cautioned that the limiting parameters specified above are not a mix design. Additional cement or water reducing agent may be required to achieve workability demanded by the Contractor's construction methods and aggregates. The Contractor is responsible for any costs associated with furnishing concrete with the required workability.

3. Adjustments to Mix Design: The mixes used shall be changed whenever such change is necessary or desirable to secure the required strength, density, workability, and surface finish and the Contractor shall be entitled to no additional compensation because of such changes.

B. Consistency

1. The quantity of water entering into a batch of concrete shall be just sufficient, with a normal mixing period, to produce a concrete which can be worked properly into place without segregation, and which can be compacted by the vibratory methods herein specified to give the desired density, impermeability and smoothness of surface. The quantity of water shall be changed as necessary, with variations in the nature or moisture content of

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the aggregates, to maintain uniform production of a desired consistency. The consistency of the concrete in successive batches shall be determined by slump tests in accordance with ASTM C 143. The slumps shall be as follows:

<u>Part of Work</u>	<u>Slump (in)</u>
Concrete, unless note otherwise	3 inches + 1 inch
With high range water reducer added	6 inches + 2 inches
Pea gravel mix	7 inches + 2 inches
Ductbanks	5 inches + 1 inch

C. Trial Batch and Laboratory Tests

1. Before placing any concrete, a testing laboratory approved by the Construction Manager and hired by the Contractor will prepare a trial batch of each class of structural concrete, based on the preliminary concrete mixes submitted by the Contractor. During the trial batch the aggregate proportions may be adjusted by the testing laboratory using the two coarse aggregate size ranges to obtain the required properties. If one size range produces an acceptable mix, a second size range need not be used. Such adjustments shall be considered refinements to the mix design and shall not be the basis for extra compensation to the Contractor. Concrete shall conform to the requirements of this Section, whether the aggregate proportions are from the Contractor's preliminary mix design, or whether the proportions have been adjusted during the trial batch process. The trial batch will be prepared using the aggregates, cement and admixture proposed for the project. The trial batch materials shall be of a quantity such that the testing laboratory can obtain 3 drying shrinkage, and six compression test specimens from each batch. The cost of not more than three laboratory trial batch tests for each specified concrete strength will be borne by the Owner but the Contractor shall furnish and deliver the materials in steel drums at no cost. Any additional trial batch testing required shall be performed by the Contractor at no additional cost to the Owner.
2. The determination of compressive strength will be made by testing 6 inch diameter by 12 inch high cylinders; made, cured and tested in accordance with ASTM C 192 and ASTM C 39. Three compression test cylinders will be tested at 7 days and 3 at 28 days. The average compressive strength for the three cylinders tested at 28 days for any given trial batch shall not be less than 125 percent of the specified compressive strength.
3. A sieve analysis of the combined aggregate for each trial batch shall be performed according to the requirements of ASTM C 136. Values shall be given for percent passing each sieve.
4. In lieu of trial batch and laboratory tests specified in this Section, the Contractor may submit previously-designed, tested, and successfully-used concrete mixes, using materials similar to those intended for this project,

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together with a minimum of three certified test reports of the 28-day strength of the proposed concrete mix.

D. Shrinkage Limitation

1. The maximum concrete shrinkage for specimens cast in the laboratory from the trial batch, as measured at 21-day drying age or at 28-day drying age shall be 0.036 percent or 0.042 percent, respectively. Use a mix design for construction that has first met the trial batch shrinkage requirements. Shrinkage limitations apply only to structural concrete used as part of a hydraulic structure.
2. The maximum concrete shrinkage for specimens cast in the field shall not exceed the trial batch maximum shrinkage requirement by more than 20 percent.
3. If the required shrinkage limitation is not met during construction, take any or the following actions, at no additional cost to the Owner, for securing the specified shrinkage requirements. These actions may include changing the source or aggregates, cement and/or admixtures; reducing water content; washing of aggregate to reduce fines; increasing the number of construction joints; modifying the curing requirements; or other actions designed to minimize shrinkage or the effects of shrinkage.

E. Measurement of Cement and Aggregate

1. The amount of cement and of each separate size of aggregate entering into each batch of concrete shall be determined by direct weighing equipment acceptable to the Construction Manager.

2. Weighing Tolerances:

<u>Material</u>	<u>Percent of Total Weight</u>
Cement	1
Aggregates	3
Admixtures	3

F. Measurement of Water

1. The quantity of water entering the mixer shall be measured by a suitable water meter or other measuring device of a type acceptable to the Construction Manager and capable of measuring the water in variable amounts within a tolerance of one percent. The water feed control mechanism shall be capable of being locked in position so as to deliver constantly any specified amount of water to each batch of concrete. A positive quick-acting valve shall be used for a cut-off in the water line to the mixer. The operating mechanism must be such that leakage will not occur when the valves are closed.

2.06 READY MIXED CONCRETE

- A. At the Contractor's option, ready-mixed concrete may be used meeting the requirements as to materials, batching, mixing, transporting, and placing as

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specified herein and in accordance with ASTM C 94, including the following supplementary requirements.

- B. Ready-mixed concrete shall be delivered to the site of the Work, and discharge shall be completed within one hour after the addition of the cement to the aggregates or before the drum has been revolved 250 revolutions, whichever is first.
- C. Truck mixers shall be equipped with electrically-actuated counters by which the number of revolutions of the drum or blades may be readily verified. The counter shall be of the resettable, recording type, and shall be mounted in the driver's cab. The counters shall be actuated at the time of starting mixers at mixing speeds.
- D. Each batch of concrete shall be mixed in a truck mixer for not less than 70 revolutions of the drum or blades at the rate of rotation designated by the manufacturer of equipment. Additional mixing, if any, shall be at the speed designated by the manufacturer of the equipment as agitating speed. Materials including mixing water shall be in the mixer drum before actuating the revolution counter for determining the number of revolution of mixing.
- E. Truck mixers and their operation shall be such that the concrete throughout the mixed batch as discharged is within acceptable limits of uniformity with respect to consistency, mix, and grading. If slump tests taken at approximately the 1/4 and 3/4 points of the load during discharge give slumps differing by more than one inch when the specified slump is 3 inches or less, or if they differ by more than 2 inches when the specified slump is more than 3 inches, the mixer shall not be used on the Work unless the causing condition is corrected and satisfactory performance is verified by additional slump tests. Mechanical details of the mixer, such as water measuring and discharge apparatus, condition of the blades, speed of rotation, general mechanical condition of the unit, and clearance of the drum, shall be checked before a further attempt to use the unit will be permitted.
- F. Each batch of ready-mixed concrete delivered at the job site shall be accompanied by a delivery ticket furnished to the Construction Manager in accordance with Subsection 03300-1.4B.
- G. The use of non-agitating equipment for transporting ready-mixed concrete will not be permitted. Combination truck and trailer equipment for transporting ready-mixed concrete will not be permitted. The quality and quantity of materials used in ready-mixed concrete and in batch aggregates shall be subject to continuous inspection at the batching plant by the Construction Manager.

PART 3 - EXECUTION

3.01 PROPORTIONING AND MIXING

- A. Proportioning: Proportioning of the concrete mix shall conform to the requirements of Chapter 3 "Proportioning" of ACI 301.

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- B. Mixing: Mixing of concrete shall conform to the requirements of Chapter 7 of said ACI 301 Specifications.
- C. Slump: Maximum slumps shall be as specified herein.
- D. Retempering: Retempering of concrete or mortar which has partially hardened shall not be permitted.

3.02 PREPARATION OF SURFACES FOR CONCRETING

- A. General: Earth surfaces shall be thoroughly wetted by sprinkling, before the placing of any concrete, and these surfaces shall be kept moist by frequent sprinkling up to the time of placing concrete thereon. The surface shall be free from standing water, mud, and debris at the time of placing concrete.
- B. Joints in Concrete: Concrete surfaces upon or against which concrete is to be placed, where the placement of the concrete has been stopped or interrupted so that, as determined by the Construction Manager, the new concrete cannot be incorporated integrally with that previously placed, are defined as construction joints. The surfaces of horizontal joints shall be given a compacted, roughened surface for good bond. The joint surfaces shall be cleaned of laitance, loose or defective concrete, foreign material, and roughened to a minimum 1/4-inch amplitude. Such cleaning and roughening shall be accomplished by hydroblasting or sandblasting (exposing aggregate) followed by thorough washing. Pools of water shall be removed from the surface of construction joints, and the joint surface shall be coated with an epoxy-bonding agent, unless indicated otherwise, before the new concrete is placed.
- C. Placing Interruptions: When placing of concrete is to be interrupted long enough for the concrete to take a set, the working face shall be given a shape by the use of forms or other means, that will secure proper union with subsequent Work; provided that construction joints shall be made only where acceptable to the Construction Manager.
- D. Embedded Items: No concrete shall be placed until formwork, installation of parts to be embedded, reinforcement steel, and preparation of surfaces involved in the placing have been completed and accepted by the Construction Manager at least 4 hours before placement of concrete. Surfaces of forms and embedded items that have become encrusted with dried grout from concrete previously placed shall be cleaned of such grout before the surrounding or adjacent concrete is placed.
- E. Inserts or other embedded items shall conform to the requirements herein.
- F. Reinforcement, anchor bolts, sleeves, inserts, and similar items shall be set and secured in the forms where shown or by shop drawings and shall be acceptable to the Construction Manager before any concrete is placed. Accuracy of placement is the responsibility of the Contractor.

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- G. Casting New Concrete Against Old: Where concrete is to be cast against old concrete (any concrete which is greater than 60 days of age), the surface of the old concrete shall be thoroughly cleaned and roughened by hydro-blasting or sandblasting (exposing aggregate). The joint surface shall be coated with an epoxy bonding agent unless indicated otherwise by the Construction Manager.
- H. No concrete shall be placed in any structure until water entering the space to be filled with concrete has been properly cut off or has been diverted by pipes, or other means, and carried out of the forms, clear of the Work. No concrete shall be deposited underwater nor shall the Contractor allow still water to rise on any concrete until the concrete has attained its initial set. Water shall not be permitted to flow over the surface of any concrete in such manner and at such velocity as will injure the surface finish of the concrete. Pumping or other necessary dewatering operations for removing ground water, if required, will be subject to the review of the Construction Manager.
- I. Corrosion Protection: Pipe, conduit, dowels, and other ferrous items required to be embedded in concrete construction shall be so positioned and supported before placement of concrete that there will be a minimum of 2 inches clearance between said items and any part of the concrete reinforcement. Securing such items in position by wiring or welding them to the reinforcement will not be permitted.
- J. Openings for pipes, inserts for pipe hangers and brackets, and the setting of anchors shall, where practicable, be provided for during the placing of concrete.
- K. Anchor bolts shall be accurately set and shall be maintained in position by templates while being embedded in concrete.
- L. Cleaning: The surfaces of metalwork to be in contact with concrete shall be thoroughly cleaned of dirt, grease, loose scale and rust, grout, mortar, and other foreign substances immediately before the concrete is placed.

3.03 HANDLING, TRANSPORTING, AND PLACING

- A. General: Placing of concrete shall conform to the applicable requirements of Chapter 8 of ACI 301 and the requirements of this Section. No aluminum materials shall be used in conveying any concrete.
- B. Nonconforming Work or Materials: Concrete which upon or before placing is found not to conform to the requirements specified herein shall be rejected and immediately removed from the Work. Concrete which is not placed in accordance with these Specifications, or which is of inferior quality, shall be removed and replaced at no additional expense to the Owner.
- C. Unauthorized Placement: No concrete shall be placed except in the presence of duly authorized representative of the Construction Manager. The Contractor shall notify the Construction Manager in writing at least 24 hours in advance of placement of any concrete.

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- D. Placement in Wall Forms: Concrete shall not be dropped through reinforcement steel or into any deep form, nor shall concrete be placed in any form in such a manner as to leave accumulation of mortar on the form surfaces above the placed concrete. In such cases, some means such as the use of hoppers and, if necessary, vertical ducts of canvas, rubber, or metal shall be used for placing concrete in the forms in a manner that it may reach the place of final deposit without separation. In no case shall the free fall of concrete exceed 4 feet below the ends of ducts, chutes, or buggies. Concrete shall be uniformly distributed during the process of depositing and in no case after depositing shall any portion be displaced in the forms more than 6 feet in horizontal direction. Concrete in forms shall be deposited in uniform horizontal layers not deeper than 2 feet; and care shall be taken to avoid inclined layers or inclined construction joints except where such are required for sloping members. Each layer shall be placed while the previous layer is still soft. The rate of placing concrete in forms shall not exceed 5 feet of vertical rise per hour. Sufficient illumination shall be provided in the interior of forms so that the concrete at the places of deposit is visible from the deck or runway.
- E. Conveyor Belts and Chutes: Ends of chutes, hopper gates, and other points of concrete discharge throughout the Contractor's conveying, hoisting and placing system shall be so designed and arranged that concrete passing from them will not fall separated into whatever receptacle immediately receives it. Conveyor belts, if used, shall be of a type acceptable to the Construction Manager. Chutes longer than 50 feet will not be permitted. Minimum slopes of chutes shall be such that concrete of the specified consistency will readily flow in them. If a conveyor belt is used, it shall be wiped clean by a device operated in such a manner that none of the mortar adhering to the belt will be wasted. Conveyor belts and chutes shall be covered.
- F. Placement in Slabs: Concrete placed in sloping slabs shall proceed uniformly from the bottom of the slab to the top, for the full width of the placement. As the Work progresses, the concrete shall be vibrated and carefully worked around the slab reinforcement, and the surface of the slab shall be screeded in an up-slope direction.
- G. Temperature of Concrete: The temperature of concrete when it is being placed shall be not more than 90 degrees F nor less than 55 degrees F for sections less than 12 inches thick nor less than 50 degrees for other sections. Concrete ingredients shall not be heated to a temperature higher than that necessary to keep the temperature of the mixed concrete, as placed, from falling below the specified minimum temperature. When the temperature of the concrete is 85 degrees F or above, the time between the introduction of the cement to the aggregates and discharge shall not exceed 45 minutes. If concrete is placed when the weather is such that the temperature of the concrete would exceed 90 degrees F, the Contractor shall employ effective means, such as precooling of aggregates and mixing water using ice or placing at night, as necessary to maintain the temperature of the concrete, as it is placed, below 90 degrees F. The Contractor shall be entitled to no additional compensation on account of the foregoing requirements.

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- H. Cold Weather Placement:
1. Placement of concrete shall conform to ACI 306.1 Standard Specification for Cold Weather Concreting, and the following.
 2. Remove snow, ice and frost from the surfaces, including reinforcement, against which concrete is to be placed. Before beginning concrete placement, thaw the subgrade to a minimum depth of 6 inches. Reinforcement and embedded items shall be warmed to above 32 degrees F before concrete placement.
 3. Maintain the concrete temperature above 50 degrees F for at least 3 days after placement.
- I. Hot Weather Placement:
1. Placement of concrete shall conform to ACI 305R Hot Weather Concreting, and the following.
 2. Only set retarding admixture shall be used in concrete when air temperature is expected to be consistently over 80 degrees F.
 3. The maximum temperature of concrete shall not exceed 90 degrees F immediately before placement.
 4. From the initial placement to the curing state, concrete shall be protected from the adverse effect of high temperature, low humidity, and wind.

3.04 PUMPING OF CONCRETE

- A. General: If the pumped concrete does not produce satisfactory end results, discontinue the pumping operation and proceed with the placing of concrete using conventional methods.
- B. Pumping Equipment: The pumping equipment must have two cylinders and be designed to operate with one cylinder only in case the other one is not functioning. In lieu of this requirement, the Contractor may have a standby pump on the site during pumping.
- C. The minimum diameter of the hose (conduits) shall be in accordance with ACI 304.2R.
- D. Pumping equipment and hoses (conduits) that are not functioning properly, shall be replaced.
- E. Aluminum conduits for conveying the concrete shall not be permitted.
- F. Field Control: Concrete samples for slump, air content, and test cylinders will be taken at the placement (discharge) end of the line.

3.05 ORDER OF PLACING CONCRETE

- A. The order of placing concrete in parts of the Work shall be acceptable to the Construction Manager. In order to minimize the effects of shrinkage, the concrete

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shall be placed in units as bounded by construction joints shown. The placing of units shall be done by placing alternate units in a manner such that each unit placed shall have cured at least 7 days for hydraulic structures and 3 days for other structures before the contiguous unit or units are placed, except that the corner sections of vertical walls shall not be placed until the two adjacent wall panels have cured at least 14 days for hydraulic structures and 7 days for other structures.

- B. Alternative of substitute method of placing concrete for hydraulic structures shall not be accepted, except as follows:
 - 1. Roof slabs: The 7-day curing time required between placement of adjacent slabs may be reduced to 5 days only after placement of at least 20 percent of the roof slabs and if the drying shrinkage tests have complied with the field cast specimen shrinkage limitations and if in the opinion of the Engineer no detrimental cracking has occurred. This procedure shall not take precedence over the requirements for removal of forms.
- C. The surface of the concrete shall be level whenever a run of concrete is stopped. To ensure a level, straight joint on the exposed surface of walls, a wood strip at least 3/4-inch thick shall be tacked to the forms on these surfaces. The concrete shall be carried about 1/2-inch above the underside of the strip. About one hour after the concrete is placed, the strip shall be removed and any irregularities in the edge formed by the strip shall be leveled with a trowel and laitance shall be removed.

3.06 TAMPING AND VIBRATING

- A. As concrete is placed in the forms or in excavations, it shall be thoroughly settled and compacted, throughout the entire depth of the layer which is being consolidated, into a dense, homogeneous mass, filling corners and angles, thoroughly embedding the reinforcement, eliminating rock pockets, and bringing only a slight excess of water to the exposed surface of concrete during placement. Vibrators shall be Group 3 (per ACI 309) high speed power vibrators (8,000 to 12,000 rpm) of an immersion type in sufficient number and with (at least one) standby units as required. Group 2 vibrators may be used only at specific locations when accepted by the Construction Manager.
- B. Care shall be used in placing concrete around waterstops. The concrete shall be carefully worked by rodding and vibrating to make sure that air and rock pockets have been eliminated. Where flat-strip type waterstops are placed horizontally, the concrete shall be worked under the waterstops by hand, making sure that air and rock pockets have been eliminated. Concrete surrounding the waterstops shall be given additional vibration, over and above that used for adjacent concrete placement to assure complete embedment of the waterstops in the concrete.
- C. Concrete in walls shall be internally vibrated and at the same time rammed, stirred, or worked with suitable appliances, tamping bars, shovels, or forked tools until it completely fills the forms or excavations and closes snugly against surfaces. Subsequent layers of concrete shall not be placed until the layers

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previously placed have been worked thoroughly as specified. Vibrators shall be provided in sufficient numbers, with standby units as required, to accomplish the results herein specified within 15 minutes after concrete of the prescribed consistency is placed in the forms. The vibrating head shall be kept from contact with the surfaces of the forms. Care shall be taken not to vibrate concrete excessively or to work it in any manner that causes segregation of its constituents.

3.07 FINISHING CONCRETE SURFACES

- A. General: Surfaces shall be free from fins, bulges, ridges, offsets, honeycombing, or roughness of any kind, and shall present a finished, smooth, continuous hard surface. Allowable deviations from plumb or level and from the alignment, profiles, and dimensions shown are defined as tolerances and are specified in Part 1, herein. These tolerances are to be distinguished from irregularities in finish as described herein. Aluminum finishing tools shall not be used.
- B. Formed Surfaces: Treatment is required after form removal except for curing, repair of defective concrete, and treatment of surface defects. Exposed surfaces shall be sacked and rubbed in accordance with paragraph 3.8B of this section. Where architectural finish is required, it shall be as specified or as shown.
1. Surface holes larger than 1/2-inch in diameter or deeper than 1/4-inch are defined as surface defects in basins and exposed walls.
- C. Unformed Surfaces: After proper and adequate vibration and tamping, unformed top surfaces of slabs, floors, walls, and curbs shall be brought to a uniform surface with suitable tools. Immediately after the concrete has been screeded, it shall be treated with a liquid evaporation retardant. The retardant shall be used again after each Work operation as necessary to prevent drying shrinkage cracks. The classes of finish specified for unformed concrete surfaces are designated and defined as follows:
1. Finish U1 - Sufficient leveling and screeding to produce an even, uniform surface with surface irregularities not to exceed 3/8-inch. No further special finish is required.
 2. Finish U2 - After sufficient stiffening of the screeded concrete, surfaces shall be float finished with wood or metal floats or with a finishing machine using float blades. Excessive floating of surfaces while the concrete is plastic and dusting of dry cement and sand on the concrete surface to absorb excess moisture will not be permitted. Floating shall be the minimum necessary to produce a surface that is free from screed marks and is uniform in texture. Surface irregularities shall not exceed 1/4-inch. Joints and edges shall be tooled where shown or as determined by the Construction Manager.
 3. Finish U3 - After the floated surface (as specified for Finish U2) has hardened sufficiently to prevent excess of fine material from being drawn to the surface, steel troweling shall be performed with firm pressure such as will flatten the sandy texture of the floated surface and produce a dense, uniform surface free from blemishes, ripples, and trowel marks. The finish shall be smooth and free of irregularities.

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4. Finish U4 - Steel trowel finish (as specified for Finish U3) without local depressions or high points. In addition, the surface shall be given a light hairbroom finish with brooming perpendicular to drainage unless otherwise shown. The resulting surface shall be rough enough to provide a nonskid finish.

D. Unformed surfaces shall be finished according to the following schedule:

UNFORMED SURFACE FINISH SCHEDULE

<u>Area</u>	<u>Finish</u>
Grade slabs and foundations to be covered with concrete or fill material	U1
Floors to be covered with grouted tile or topping grout	U2
Slabs which are water bearing with slopes 10 percent and less	U3
Sloping slabs which are water bearing with slopes greater than 10 percent	U4
Slabs not water bearing	U4
Slabs to be covered with built-up roofing	U2
Interior slabs and floors to receive architectural finish	U3
Top surface of walls	U3

3.08 ARCHITECTURAL FINISH

A. General: Architectural finishes shall be required only where specifically called out on the Drawings. In other cases, the paragraph above, entitled Finishing Concrete Surfaces, shall apply.

1. Immediately after the forms have been stripped, the concrete surface shall be inspected and any poor joints, voids, rock pockets, or other defective areas shall be repaired and form-tie holes filled as indicated herein.
2. Architectural finishes shall not be applied until the concrete surface has been repaired as required and the concrete has cured at least 14 days.
3. Architecturally treated concrete surfaces shall conform to the accepted sample required herein in texture, color, and quality. It shall be the Contractor's responsibility to maintain and protect the concrete finish.

B. Smooth Concrete Finish:

1. The concrete surface shall be wetted, and a grout shall be applied with a brush. The grout shall be made by mixing one part Portland cement and one part of fine sand that will pass a No. 16 sieve with sufficient water to give it

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the consistency of thick paint. The cement used in said grout shall be 1/2 gray and 1/2 white Portland cement, as determined by the Construction Manager. White Portland cement shall be Atlas white, or equal. Calcium chloride in the amount of 5 percent by volume of the cement shall be used in the brush coat. The freshly applied grout shall be vigorously rubbed into the concrete surface with a wood float filling small air holes. After the surface grout had been removed with a steel trowel, the surface shall be allowed to dry and, when dry, shall be vigorously rubbed with burlap to remove surface grout so that there is no visible paint-like film of grout on the concrete. The entire cleaning operation for any area shall be completed the day it is started, and no grout shall be left on the surface overnight.

2. Cleaning operations for any given day shall be terminated at panel joints. It is essential that the various operations be carefully timed to secure the desired effect which is a light-colored concrete surface of uniform color and texture without any appearance of a paint or grout film.
3. In the event that improper manipulation results in an inferior finish, rub such inferior areas with carborundum bricks.
4. Before beginning any of the final treatment on exposed surfaces, treat in a satisfactory manner a trial area of at least 200 square feet in some inconspicuous place selected by the Construction Manager and shall preserve said trial area undisturbed until the completion of the job.

C. Sandblasted Concrete Finish:

1. Sandblasting shall be done in a safe manner acceptable to local authorities and per OSHA requirements. The sandblasting shall be a light sandblast to remove laitance and to produce a uniform fine aggregate surface texture with approximately 1/32 to 1/16 inch of surface sandblasted off. Corners, patches, form panel joints, and soft spots shall be sandblasted with care.
2. A 3 square foot sample panel of the sandblasted finish shall be provided by the Contractor for acceptance by the Construction Manager before starting the sandblasting Work. The sample panel shall include a corner, plugs, and joints and shall be marked after approval. Other sandblasting shall be equal in finish to the sample panel.
3. Protection against sandblasting shall be provided on surfaces and materials not requiring sandblasting but within or adjacent to areas being sandblasted. After sandblasting, the concrete surfaces shall be washed with clean water and excess sand removed.

3.09 CURING AND DAMPPROOFING

- A. General: Concrete shall be cured for not less than 14 days after placing, in accordance with the methods specified herein for the different parts of the Work, and described in detail in the following paragraphs:

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<u>Surface to be Cured or Dampproofed</u>	<u>Method</u>
Unstripped forms	1
Wall sections with forms removed	6
Construction joints between footings and walls, and between floor slab and columns	2
Encasement concrete and thrust blocks	3
Concrete surfaces not specifically provided for elsewhere in this Paragraph	4
Floor slabs on grade	5
Slabs not on grade	6

- B. Method 1: Wooden forms shall be wetted immediately after concrete has been placed and shall be kept wet with water until removed. If steel forms are used the exposed concrete surfaces shall be kept continuously wet until the forms are removed. If forms are removed within 14 days of placing the concrete, curing shall be continued in accordance with Method 6, herein.
- C. Method 2: The surface shall be covered with burlap mats which shall be kept wet with water for the duration of the curing period, until the concrete in the walls has been placed. No curing compound shall be applied to surfaces cured under Method 2.
- D. Method 3: The surface shall be covered with moist earth not less than 4 hours, nor more than 24 hours, after the concrete is placed. Earthwork operations that may damage the concrete shall not begin until at least 7 days after placement of concrete.
- E. Method 4: The surface shall be sprayed with a liquid curing compound.
 - 1. It shall be applied in accordance with the manufacturer's printed instructions at a maximum coverage rate of 200 square feet per gallon and in such a manner as to cover the surface with a uniform film which will seal thoroughly.
 - 2. Where the curing compound method is used, care shall be exercised to avoid damage to the seal during the curing period. Should the seal be damaged or broken before the expiration of the curing period, the break shall be repaired immediately by the application of additional curing compound over the damaged portion.
 - 3. Wherever curing compound may have been applied by mistake to surfaces against which concrete subsequently is to be placed and to which it is to adhere, said compound shall be entirely removed by wet sandblasting just before the placing of new concrete.

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4. Where curing compound is specified, it shall be applied as soon as the concrete has hardened enough to prevent marring on unformed surfaces, and within 2 hours after removal of forms from contact with formed surfaces. Repairs required to be made to formed surfaces shall be made within the said 2 hour period; provided, however, that any such repairs which cannot be made within the said 2 hour period shall be delayed until after the curing compound has been applied. When repairs are to be made to an area on which curing compound has been applied, the area involved shall first be wet-sandblasted to remove the curing compound, following which repairs shall be made as specified herein.
5. At locations where concrete is placed adjacent to a panel which has been coated with curing compound, the previously coated panel shall have curing compound reapplied to an area within 6 feet of the joint and to any other location where the curing membrane has been disturbed.
6. Before final acceptance of the Work, visible traces of curing compound shall be removed from surfaces in such a manner that does not damage surface finish.

F. Method 5:

1. Until the concrete surface is covered with curing compound, the entire surface shall be kept damp by applying water using nozzles that atomize the flow so that the surface is not marred or washed. The concrete shall be given a coat of curing compound in accordance with Method 4, herein. Not less than 1 hour nor more than 4 hours after the coat of curing compound has been applied, the surface shall be wetted with water delivered through a fog nozzle, and concrete-curing blankets shall be placed on the slabs. The curing blankets shall be polyethylene sheet, polyethylene-coated waterproof paper sheeting or polyethylene-coated burlap. The blankets shall be laid with the edges butted together and with the joints between strips sealed with 2 inch wide strips of sealing tape or with edges lapped not less than 3 inches and fastened together with a waterproof cement to form a continuous watertight joint.
2. The curing blankets shall be left in place during the 14 day curing period and shall not be removed until after concrete for adjacent Work has been placed. Should the curing blankets become torn or otherwise ineffective, replace damaged sections. During the first 3 days of the curing period, no traffic of any nature and no depositing, temporary or otherwise, of any materials shall be permitted on the curing blankets. During the remainder of the curing period, foot traffic and temporary depositing of materials that impose light pressure will be permitted only on top of plywood sheets 5/8-inch minimum thickness, laid over the curing blanket. Add water under the curing blanket as often as necessary to maintain damp concrete surfaces.

G. Method 6: This method applies to both walls and slabs.

1. The concrete shall be kept continuously wet by the application of water for a minimum period of at least 14 consecutive days beginning immediately after the concrete has reached final set or forms have been removed.

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2. Until the concrete surface is covered with the curing medium, the entire surface shall be kept damp by applying water using nozzles that atomize the flow so that the surface is not marred or washed.
 3. Heavy curing mats shall be used as a curing medium to retain the moisture during the curing period. The curing medium shall be weighted or otherwise held in place to prevent being dislodged by wind or any other causes and to be substantially in contact with the concrete surface. Edges shall be continuously held in place.
 4. The curing blankets and concrete shall be kept continuously wet by the use of sprinklers or other means both during and after normal working hours.
 5. Immediately after the application of water has terminated at the end of the curing period, the curing medium shall be removed, any dry spots shall be rewetted, and curing compound shall be immediately applied in accordance with Method 4, herein.
 6. Dispose of excess water from the curing operation to avoid damage to the Work.
- H. Dampproofing: The exterior surface of buried roof slabs shall be dampproofed as follows:
1. Immediately after completion of curing the surface shall be sprayed with a dampproofing agent consisting of an asphalt emulsion. Application shall be in two coats. The first coat shall be diluted to 1/2 strength by the addition of water and shall be sprayed on so as to provide a maximum coverage rate of 100 square feet per gallon of dilute solution. The second coat shall consist of an application of the specified material, undiluted, and shall be sprayed on so as to provide a maximum coverage rate of 100 square feet per gallon. Dampproofing material shall be as specified herein.
 2. As soon as the asphalt emulsion, applied as specified herein, has taken an initial set, the entire area thus coated shall be coated with whitewash. Any formula for mixing the whitewash may be used which produces a uniformly coated white surface and which so remains until placing of the backfill. Should the whitewash fail to remain on the surface until the backfill is placed, apply additional whitewash.

3.10 PROTECTION

- A. Protect concrete against injury until final acceptance by the Owner.
- B. Fresh concrete shall be protected from damage due to rain, hail, sleet, or snow. Provide such protection while the concrete is still plastic and whenever such precipitation is imminent or occurring.

3.11 CURING IN COLD WEATHER

- A. Water curing of concrete may be reduced to 6 days during periods when the mean daily temperature in the vicinity of the worksite is less than 40 degrees F; provided

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that, during the prescribed period of water curing, when temperatures are such that concrete surfaces may freeze, water curing shall be temporarily discontinued.

- B. Concrete cured by an application of curing compound will require no additional protection from freezing if the protection at 50 degrees F for 72 hours is obtained by means of approved insulation in contact with the forms or concrete surfaces; otherwise the concrete shall be protected against freezing temperatures for 72 hours immediately following 72 hours protection at 50 degrees F. Concrete cured by water curing shall be protected against freezing temperatures for 3 days immediately following the 72 hours of protection at 50 degrees F.
- C. Discontinuance of protection against freezing temperatures shall be such that the drop in temperature of any portion of the concrete will be gradual and will not exceed 40 degrees F in 24 hours. In the spring, when the mean daily temperature rises above 40 degrees F for more than 3 successive days, the specified 72 hour protection at a temperature not lower than 50 degrees F may be discontinued for as long as the mean daily temperature remains above 40 degrees F; provided, that the concrete shall be protected against freezing temperatures for not less than 48 hours after placement.
- D. Where artificial heat is employed, special care shall be taken to prevent the concrete from drying. Use of unvented heaters will be permitted only when unformed surfaces of concrete adjacent to the heaters are protected for the first 24 hours from an excessive carbon dioxide atmosphere by application of curing compound; provided, that the use of curing compound for such surfaces is otherwise permitted by these Specifications.

3.12 TREATMENT OF SURFACE DEFECTS

- A. As soon as forms are removed, exposed surfaces shall be carefully examined and any irregularities shall be immediately rubbed or ground in a satisfactory manner in order to secure a smooth, uniform, and continuous surface. Plastering or coating of surfaces to be smoothed will not be permitted. No repairs shall be made until after inspection by the Construction Manager. In no case will extensive patching of honeycombed concrete be permitted. Concrete containing minor voids, holes, honeycombing, or similar depression defects shall have them repaired as specified herein. Concrete containing extensive voids, holes, honeycombing, or similar depression defects, shall be completely removed and replaced. Repairs and replacements herein specified shall be promptly executed by the Contractor at its own expense.
- B. Defective surfaces to be repaired shall be cut back from trueline a minimum depth of 1/2-inch over the entire area. Feathered edges will not be permitted. Where chipping or cutting tools are not required in order to deepen the area properly, the surface shall be prepared for bonding by the removal of laitance or soft material, and not less than 1/32-inch depth of the surface film from hard portions, by means of an efficient sandblast. After cutting and sandblasting, the surface shall be wetted sufficiently in advance of shooting with shotcrete or with cement mortar so that while the repair material is being applied, the surfaces under repair will remain moist, but not so wet as to overcome the suction upon which a good bond

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depends. The material used for repair proposed shall consist of a mixture of one sack of cement to 3 cubic feet of sand. For exposed walls, the cement shall contain such a proportion of Atlas white Portland cement as is required to make the color of the patch match the color of the surrounding concrete.

- C. Holes left by tie-rod cones shall be reamed with suitable toothed reamers so as to leave the surfaces of the holes clean and rough. These holes then shall be repaired in an approved manner with dry-packed cement grout. Holes left by form-tying devices having a rectangular cross-section, and other imperfections having a depth greater than their least surface dimension, shall not be reamed but shall be repaired in an approved manner with dry-packed cement grout.
- D. Repairs shall be built up and shaped in such a manner that the completed Work will conform to the requirements of this Section, as applicable, using approved methods which will not disturb the bond, cause sagging, or cause horizontal fractures. Surfaces of said repairs shall receive the same kind and amount of curing treatment as required for the concrete in the repaired section.
- E. Before filling any structure with water, cracks that may have developed shall be "vee'd" and filled with construction joint sealant for water-bearing structures conforming to the materials and methods specified in Section 03280 Joints in Sitework Concrete. This repair method shall be done on the water bearing face of members. Before backfilling, faces of members in contact with fill, which are not covered with a waterproofing membrane, shall also have cracks repaired as specified herein.

3.13 PATCHING HOLES IN CONCRETE

- A. Patching Small Holes:
 - 1. Holes which are less than 12 inches in their least dimension and extend completely through concrete members, shall be filled as specified herein.
 - 2. Small holes in members which are water-bearing or in contact with soil or other fill material, shall be filled with nonshrink grout. Where a face of the member is exposed to view, the nonshrink grout shall be held back 2 inches from the finished surface. The remaining 2 inches shall then be patched according to the paragraph in Part 3 entitled "Treatment of Surface Defects."
 - 3. Small holes through other concrete members shall be filled with nonshrink grout, with exposed faces treated as above.
- B. Patching Large Holes:
 - 1. Holes which are larger than 12 inches in their least dimension, shall have a keyway chipped into the edge of the opening all around, unless a formed keyway exists. The holes shall then be filled with concrete as specified herein.
 - 2. Holes which are larger than 24 inches in their least dimension and which do not have reinforcing steel extending from the existing concrete, shall have

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reinforcing steel set in grout in drilled holes. The reinforcing added shall match the reinforcing in the existing wall unless shown.

3. Large holes in members which are water bearing or in contact with soil or other fill, shall have a bentonite type waterstop material placed around the perimeter of the hole as specified in the Section 03280 Joints in Sitework Concrete, unless there is an existing waterstop in place.

3.14 CARE AND REPAIR OF CONCRETE

- A. The Contractor shall protect concrete against injury or damage from excessive heat, lack of moisture, overstress, or any other cause until final acceptance by the Owner. Particular care shall be taken to prevent the drying of concrete and to avoid roughening or otherwise damaging the surface. Any concrete found to be damaged, or which may have been originally defective, or which becomes defective at any time before the final acceptance of the completed Work, or which departs from the established line or grade, or which, for any other reason, does not conform to the requirements of the Contract Documents, shall be satisfactorily repaired or removed and replaced with acceptable concrete at the Contractor's expense.

END OF SECTION

**SECTION 03305
PRECAST CONCRETE UTILITY STRUCTURE**

PART 1 - GENERAL

1.01 SUMMARY

- A. This section contains requirements for precast concrete utility structures such as catch basins, manholes, vaults, boxes, lids, cleanouts, overflow and other structures requiring precast method of construction.

1.02 REFERENCES

- A. Abbreviations and Acronyms
1. ASSHTO: American Association of State Highway and Transportation Officials
 2. ASTM: American Society for Testing and Materials
 3. CBC: California Building Code
 4. CFR: Code of Federal Regulations
 5. OSHA: Occupational Safety and Health Administration
 6. AASHTO: Association of State Highway and Transportation Officials
 7. SSPWC: Standard Specifications for Public Works Construction
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
1. Front End Contract Documents
 2. Section 01311 "Project Coordination."
 3. Section 01330 "Submittal Procedures."
 4. Section 01451 "Contractor Quality Assurance and Control."
 5. Section 01610 "Common Product Requirements."
- C. Standard References: See Front End Contract Documents. Additional standards specific to this Section are listed below. Except as otherwise indicated, the current editions of the following apply to the work of this Section:
1. AASHTO:
 - a. HB 17, Standard Specifications for Highway Bridges, Division 1 Section 3, Division I Design-Loads (Part A, Part B, Part C).
 2. ASTM:
 - a. A497/A497M, Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.
 - b. A615/A615M, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

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- c. C387/C387M, Standard Specification for Packaged, Dry, Combined Materials for Mortar and Concrete.
 - d. C478, Standard Specification for Precast Reinforced Concrete Manhole Sections.
 - e. C857, Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.
 - f. C858, Standard Specification for Underground Precast Concrete Utility Structures.
 - g. D4101, Standard Specification for Propylene Injection and Extrusion Materials.
3. OSHA:
- a. 29 CFR 1910.27, Fixed Ladders.
 - b. 29 CFR 1926.502, Fall Protection Systems Criteria and Practices.

1.03 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Deferred Submittals: The submittal for this Section will be a deferred submittal as described in Section 01330 "Submittal Procedures."
- C. Product Data:
 - 1. Precast concrete items; show materials of construction by ASTM reference and grade.
 - 2. Joint sealants.
 - 3. Manufacturer's data for lifting devices for handling and erection
- D. Shop Drawings:
 - 1. Detailed drawings showing complete information for fabrication including, but not limited to:
 - a. Member dimensions and cross sections; location, size, and type of reinforcement, including additional reinforcement.
 - b. Layout dimensions and identification of each precast unit.
 - c. Welded connections indicated by AWS standard symbols.
 - d. Details of connections, joints, accessories, and openings or inserts.

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- e. Watertight joint details.
 - f. Location and details of anchorage devices.
 - g. Access door details.
 - h. Details of ladder and pull-up extension.
 - i. If applying slope after precasting, submit proposed procedure prior to application.
 - j. Vault design calculation shall be signed by a civil or structural engineer registered in the State of California.
- E. Certifications:
- 1. Manufacturer's certification that vault design and manufacture comply with referenced ASTMs (for example, ASTM C857 and ASTM C858).
- F. Test Reports:
- 1. Manufacturer's laboratory test reports.
- G. Manufacturer Warranty Information

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."
- B. Store each unit in a manner that will prevent cracking, distortion, warping, straining and other physical damage, and in a manner to keep marking visible.
- C. Lift and support each unit only at designated lifting points and supporting points as shown on Shop Drawings.

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

1.09 WARRANTY

- A. Manufacturer Warranty
- 1. Warranty installed equipment to be free from defects in material and workmanship for 1 year from date of final acceptance of Project by the Owner.

**SECTION 03305
PRECAST CONCRETE UTILITY STRUCTURE**

PART 2 - PRODUCTS

2.01 DELIVERY VAULT MANUFACTURERS

- A. Materials, equipment, and accessories specified in this section shall be products of:
1. Oldcastle Precast.
 2. Jensen Precast.
 3. Hanson Pipe and Precast.
 4. Trenwa, Inc.
 5. Or Approved Equal

2.02 PRECAST CONCRETE VAULTS

- A. Design Requirements:
1. In the event of a conflict between or among standards, the more stringent standard shall govern.
 2. Comply with ASTM C858, except as modified herein.
 3. Reinforcing Steel:
 - a. Deformed Bars: ASTM A615/A615M, Grade 60.
 - b. Welded Wire Fabric: ASTM A497/A497M.
 4. Nominal Dimensions: As shown on Drawings.
 5. Construction: Rigid type and behave monolithically. Do not use panel-type vaults.
 6. Design Loads: As determined by ASTM C857, and by using Site-specific values below.
 - a. At-Rest Earth Pressure: 60 PSF (Triangular)
 - b. Soil Dynamic Pressure: 10H' acting at 0.6H above the base of the wall
 - c. Surcharge Pressure: 120 PSF (Uniform)
 - d. Groundwater Level: 398
 - e. Soil behind walls above design groundwater elevation shall be drained
 - f. Live Loads: AASHTO HS20 44 truck loading plus impact.
 7. Design shall accommodate additional stresses or loads that may be imposed during factory precasting, transporting, erection, and placement.
 8. Blockouts for penetrations shall be as shown on Drawings.
 9. Sealant:

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- a. Nonswelling preformed joint sealants to provide a lasting, watertight bond.
 - b. Manufacturer and Product: Henry Company; RAM-NEK.
(1) Or Approved Equal
10. Mortar: Comply with ASTM C387/C387M, Type S
- B. Mark each member or element to indicate location in the structure, top surface, and date of fabrication.
- C. Vault Floor:
- 1. Slope of vault floor shall be as shown on Drawings.
 - 2. Slope may be applied after precasting, using mortar fill as specified in herein
- D. Mortar
- 1. Contain only trace amounts of chlorides and other chemicals that can potentially cause steel to oxidize.
 - 2. Where repairs of exposed concrete are required, prepare mockup using proposed repair materials and methods, for confirmation of appearance compatibility prior to use.
 - 3. Obtain Manufacturer's Certificate of Compliance that products selected are appropriate for specific applications.
 - 4. Repair mortar shall be site mixed.
 - 5. Prepare concrete substrate and mix, place, and cure repair material in accordance with manufacturer's written recommendations.
 - 6. Manufacturers and Products:
 - a. BASF Building Systems Inc., Shakopee, MN; EMACO S-Series products.
 - b. Sika Chemical Corp., Lyndhurst, NJ; SikaTop-Series.
 - c. Or approved equal.

2.03 ACCESSORIES

- A. Polypropylene Steps:
- 1. Fabricate from minimum 1/2 inch, Grade 60, steel bar meeting ASTM A615/A615M.
 - 2. Polypropylene Encasement: Conform to ASTM D4101.
 - 3. Minimum Width: 13 inches, center-to-center of legs.
 - 4. Embedment: 3 1/2 inches minimum and 4 1/2 inch minimum projection from face of concrete at point of embedment to center of step.
 - 5. Cast in vault sections by manufacturer.

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- 6. Load Test: Capable of withstanding ASTM C478 vertical and horizontal load tests.

- B. Sidewalk Doors and Hatches: HS 20 load rated, spring-assisted, lockable, galvanized steel access door, size as indicated on Drawings.

PART 3 - EXECUTION

3.01 GENERAL

- A. Possible Settlement: If subgrade is encountered that may require removal to prevent structure settlement, notify Engineer. Engineer will determine depth of over excavation and means of stabilizing subgrade prior to structure installation.

- B. Place 6 inch minimum thickness of imported crushed aggregate material on undisturbed earth or modified subgrade; thoroughly compact with a mechanical vibrating or power tamper. Meet requirements of Article Excavation and Backfill.

3.02 EXCAVATION AND BACKFILL

- A. Remove and keep water clear from excavation during construction.

3.03 INSTALLATION

- A. Concrete Base:
 - 1. Place on prepared subgrade.
 - 2. Properly locate, ensure firm bearing throughout, and plumb first section.

- B. Sections:
 - 1. Carefully inspect precast sections to be joined.
 - 2. Thoroughly clean ends of sections to be joined.
 - 3. Do not use sections with chips or cracks.

- C. Joints:
 - 1. Fill joints between precast sections per manufacturer's recommendation.
 - 2. Joints shall be watertight to prevent entrance of groundwater.
 - 3. Dry pack interior of joints to provide smooth finish.

- D. Setting Precast Vault: Install vault to elevations shown on Drawings.

- E. Watertight construction below grade with no open cracks or spalls.

**SECTION 03305
PRECAST CONCRETE UTILITY STRUCTURE**

3.04 PIPE CONNECTION TO VAULT

- A. Install products in accordance with manufacturer's instructions. Grout pipe connections as shown on the Plans.

END OF SECTION

**SECTION 03310
CAST-IN-PLACE SITE WORK CONCRETE**

PART 1 - GENERAL

1.01 SUMMARY

- A. The Work of this section includes providing finished cast-in-place lean concrete, site work concrete, minor non-hydraulic concrete structures, air placed concrete, including formwork, steel reinforcement, mixing, placing curing, and repairing.
- B. Site work concrete includes curbs, gutters, catch basins, sidewalks, pavements, fence and guard post embedment, underground duct bank encasement, and concrete Work indicated to be site work concrete.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. SSPWC: Standard Specifications for Public Works Construction
- B. Related Specifications:
 - 1. Section 03280 "Joints in Site Work Concrete"
- C. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
- D. Standard References: See Front End Contract Documents. Additional standards specific to this Section are listed below. Except as otherwise indicated, the current editions of the following apply to the work of this Section:

1.03 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Submittals shall be made in compliance with the requirements of Section 01330 "Submittals" and in compliance with SSPWC Section 201.
- C. Test and Evaluation Reports: Tests on component materials, for the compressive strength of concrete, and for construction tolerances shall be performed in accordance with the requirements of SSPWC Section 201.
- A. Manufacturer Warranty Information

**SECTION 03310
CAST-IN-PLACE SITE WORK CONCRETE**

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."
- B. Preconstruction Testing: Tests on component materials, for the compressive strength of concrete, and for construction tolerances shall be performed in accordance with the requirements of SSPWC Section 201.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

1.09 WARRANTY

- A. Warranty installed equipment to be free from defects in material and workmanship for 1 year from date of final acceptance of Project by the Owner.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

- A. Concrete component materials, including curing materials and joint materials shall be in accordance with SSPWC Subsections 201-1, 201-4, and 201-5.

2.02 FORMWORK

- A. Concrete formwork shall comply with SSPWC Subsection 204-1.

2.03 STEEL REINFORCEMENT

- A. Reinforcing steel shall conform to SSPWC Subsection 201-2.

PART 3 - EXECUTION

3.01 GENERAL

- A. Proportioning and mixing, preparation of surfaces for concreting, handling, transporting and placing concrete, finishing and curing concrete surfaces and related procedures shall be performed in accordance with SSPWC Subsections 303-1 and 303-5.

**SECTION 03310
CAST-IN-PLACE SITE WORK CONCRETE**

END OF SECTION

SECTION 03620 GROUTING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes grouting products and methods.
- B. Conduct grouting per plans and City Standard Drawings.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. ASTM: American Society for Testing and Materials
 - 2. CBC: California Building Code
 - 3. SSPWC: Standard Specifications for Public Works Construction
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
 - 1. Section 03200: Reinforcement Steel
 - 2. Section 03280: Joints in Site Work Concrete
 - 3. Section 03300: Cast-in-Place Concrete
 - 4. Section 03310: Cast-in-Place Site Work Concrete
- C. Standard References: See Front End Contract Documents. Additional standards specific to this Section are listed below. Except as otherwise indicated, the current editions of the following apply to the work of this Section:
 - 1. ASTM:
 - a. C230, Standard Specification for Flow Table for Use in Tests of Hydraulic Cement.
 - b. C307, Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing.
 - c. C531, Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
 - d. C579, Standard Test Methods for Compressive Grout Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
 - e. C882, Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear.
 - f. C939, Standard Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method).

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- g. C940, Standard Test Method for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory.
- h. C1107/C1107M, Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
- i. C1181, Standard Test Methods for Compressive Creep of Chemical-Resistant Polymer Machinery Grouts.
- j. D4263, Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.

1.03 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Product Data:
 - 1. Cutsheets.
 - 2. Proposed method for keeping existing concrete surfaces wet prior to placing nonshrink grout.
 - 3. Forming method for fluid grout placements.
 - 4. Curing method for grout.
 - 5. Manufacturer's Written Instructions:
 - a. Adding fiber reinforcing to batching.
 - b. Mixing of grout.
 - 6. Manufacturer Warranty Information
- C. Certificates:
 - 1. Manufacturer's Certificate of Compliance stating:
 - a. Grout free from chlorides and other corrosion-causing chemicals.
 - b. Nonshrink grout properties of Category II and Category III, verifying expansion at 3 days or 14 days will not exceed the 28-day expansion and nonshrink properties are not based on gas or gypsum expansion.
- D. Test Reports:
 - 1. Test report for 24-hour evaluation of nonshrink grout.
 - 2. Test results and service report from demonstration and training session.
 - 3. Field test reports and laboratory test results for field-drawn Samples.

**SECTION 03620
GROUTING**

1.06 QUALITY ASSURANCE

A. Qualifications

1. Grout Manufacturer’s Representative: Authorized and trained representative of grout manufacturer. Prior experience that has resulted in successful installation of grouts similar to those for this Project.
2. For grout suppliers not listed herein, provide completed 24-hour Evaluation of Nonshrink Grout Test Form, attached at the end of this section. Provide independent testing laboratory test results for testing conducted within last 18 months.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 “Common Product Requirements.”

1.08 SITE CONDITIONS

- A. See Section 01451 “Contractor Quality Control.”

1.09 WARRANTY

A. Manufacturer Warranty

1. Warranty installed equipment to be free from defects in material and workmanship for 1 year from date of final acceptance of Project by the Owner.

PART 2 - PRODUCTS

2.01 NONSHRINK GROUT AND EPOXY GROUT SCHEDULE

- A. Furnish nonshrink grout (Category I, II, and III) and epoxy grout for applications as indicated in the following schedule:

Application	Temperature Range	Max. Placing Time	
	40 deg F to 100 deg F	20 Min.	Greater Than 20 Min.
Precast joints	I or II		II
Column baseplates	I or II		II
Machine bases 25 hp or less	II	II	II
Bases for precast wall sections	II	II	II
Form Tie-Through bolt openings	II	II	II

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GROUTING**

Application	Temperature Range	Max. Placing Time	
	40 deg F to 100 deg F	20 Min.	Greater Than 20 Min.
Machine bases 26 hp and up	III or Epoxy Grout	III or Epoxy Grout	III or Epoxy Grout

2.02 NONSHRINK GROUT

1. Manufacturer and Product:
 - a. BASF Building Systems, Inc., Shakopee, MN; MasterFlow 885.
 - b. Euclid Chemical Co, Cleveland, OH; Hi-Flow Metallic Grout.
 - c. Or approved equal.

B. Category I:

1. Nonmetallic and nongas-liberating.
2. Prepackaged natural aggregate grout requiring only the addition of water.
3. Test in accordance with ASTM C1107/C1107M:
 - a. Grout shall have flowable consistency.
 - b. Flowable for 15 minutes.
4. Grout shall not bleed at maximum allowed water.
5. Minimum strength of flowable grout, 3,000 psi at 3 days, 5,000 psi at 7 days, and 7,000 psi at 28 days.
6. Manufacturers and Products:
 - a. BASF Building System, Inc., Shakopee, MN; MasterFlow 100.
 - b. Euclid Chemical Co., Cleveland, OH; NS Grout.
 - c. Dayton Superior Corp., Miamisburg, OH; 1107 Advantage Grout.
 - d. US MIX Co., Denver, CO; US SPEC GP Grout.
 - e. Five Star Products Inc., Fairfield, CT; Five Star Grout.
 - f. Or approved equal.

C. Category II:

1. Nonmetallic, nongas-liberating.
2. Prepackaged natural aggregate grout requiring only the addition of water.
3. Aggregate shall show no segregation or settlement at fluid consistency at specified times or temperatures.
4. Test in accordance with ASTM C1107/C1107M:

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- a. Fluid consistency 20 seconds to 30 seconds in accordance with ASTM C939.
 - b. Temperatures of 40 degrees F, 80 degrees F, and 90 degrees F.
 5. 1 hour after mixing, pass fluid grout through flow cone with continuous flow.
 6. Minimum strength of fluid grout, 3,500 psi at 1 day, 4,500 psi at 3 days, and 7,500 psi at 28 days.
 7. Maintain fluid consistency when mixed in 1-yard to 9-yard loads in ready-mix truck.
 8. Manufacturers and Products:
 - a. BASF Building Systems, Inc., Shakopee, MN; MasterFlow 928.
 - b. Five Star Products Inc., Fairfield, CT; Five Star Fluid Grout 100.
 - c. Euclid Chemical Co., Cleveland, OH; Hi Flow Grout.
 - d. Dayton Superior Corp., Miamisburg, OH; Sure Grip High Performance Grout.
 - e. US MIX Co., Denver, CO; US SPEC MP Grout.
 - f. Or approved equal.
- D. Category III:
1. Metallic and nongas-liberating.
 2. Prepackaged aggregate grout requiring only the addition of water.
 3. Aggregate shall show no segregation or settlement at fluid consistency at specified times or temperatures.
 4. Test in accordance with ASTM C1107/C1107M:
 - a. Fluid consistency 20 seconds to 30 seconds in accordance with ASTM C939.
 - b. Temperatures of 40 degrees F and 100 degrees F.
 5. 1 hour after mixing, pass fluid grout through flow cone with continuous flow.
 6. Minimum strength of fluid grout, 4,000 psi at 1 day, 5,000 psi at 3 days, and 9,000 psi at 28 days.
 7. Maintain fluid consistency when mixed in 1-yard to 9-yard loads in ready-mix truck.

2.03 EPOXY GROUT

- A. Manufacturer and Product:
1. BASF Building System, Inc., Shakopee MN; MasterFlow 648.
 2. Euclid Chemical Co., Cleveland, OH; E³-G.
 3. Dayton Superior Corp., Miamisburg, OH; Pro-Poxy 2000 Normal Set.
 4. Five Star Products Inc., Fairfield, CT; DP Epoxy Grout.

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GROUTING**

- 5. Or approved equal.
- B. High-strength, nonshrink, high-temperature epoxy grouting material developed for the support of heavy equipment with vibratory loads.
- C. Three-component mixture of a two-component epoxy resin system (100 percent solids) with a graded, precision aggregate blend.
- D. Premeasured, prepackaged system.
- E. Flowable.
- F. Minimum compressive strength in accordance with ASTM C579 Method B, 9,500 psi at 75 degrees F at 7 days, 11,000 psi at post cure.
- G. Maximum creep resistance in accordance with ASTM C1181 at 600 psi, 140 degrees F; 6.0 by 10^{-3} in/in.
- H. Minimum bond strength in accordance with ASTM C882, 2,000 psi.
- I. Minimum tensile strength in accordance with ASTM C307, 2,000 psi.
- J. Maximum coefficient of thermal expansion in accordance with ASTM C531 at 73 degrees F to 210 degrees F, 23.0 by 10^{-6} in/in/degrees F.
- K. Working Time: Minimum 2 hours at 50 degrees F; 1.5 hours at 70 degrees F; 50 minutes at 90 degrees F.
- L. Good chemical resistance.
- M. Good effective bearing area.
- N. Noncorrosive.
- O. Moisture insensitive.
- P. Modify resin and aggregate content where recommended by epoxy grout manufacturer to provide desired epoxy grout flow properties.

PART 3 - EXECUTION

3.01 GROUT

- A. General: Mix, place, and cure grout in accordance with grout manufacturer's representative's training instructions.
- B. Epoxy Grout: Concrete slab shall be fully cured for 28 days to ensure excess water has evaporated. Test concrete surface for moisture in accordance with ASTM D4263 before epoxy grout is placed.

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- C. Form Tie-Through Bolt Holes: Provide nonshrink grout, Category II, fill space with dry pack dense grout hammered in with steel tool and hammer. Through-bolt holes; coordinate dry pack dense grout application with vinyl plug in.
- D. Form Snap-Tie Hole: Fill tie hole as follows
 - 1. Unless otherwise specified, fill with specified repair material.
 - a. Prepare substrate and mix, place, and cure repair material per manufacturer's written recommendations.

3.02 GROUTING MACHINERY FOUNDATIONS

- A. Block out original concrete or finish off at distance shown below bottom of machinery base with grout. Prepare concrete surface by sandblasting, chipping, or by mechanical means to remove any soft material. Surface roughness in accordance with manufacturer's written instructions.
- B. Clean metal surfaces of paint, oil, grease, loose rust, and other foreign material that will be in contact with grout.
- C. Sandblast to bright metal metal surfaces in contact with epoxy grout in accordance with manufacturer's written instructions.
- D. Set machinery in position and wedge to elevation with steel wedges or use cast-in leveling bolts. Remove wedges after grout is set and pack void with grout.
- E. Form with watertight forms at least 2 inches higher than bottom of plate.
- F. Fill space between bottom of machinery base and original concrete in accordance with manufacturer's representative's training instructions.
- G. If grout cannot be placed from one edge and flowed to the opposite edge, air vents shall be provided through the plate to prevent air entrapment.
- H. Radius corners of grout pad.
- I. Install expansion joints for epoxy grout placement in accordance with manufacturer's written instructions.

3.03 FIELD QUALITY CONTROL

- A. General:
 - 1. Performed by Project representative's inspection staff.
 - 2. Perform the following quality control inspections. The grout manufacturer's representative shall accompany the Project representative's inspection staff on the first installation of each size and type of equipment.
- B. Evaluation and Acceptance of Nonshrink Grout:
 - 1. Inspect the surface preparation of concrete substrates onto which nonshrink grout materials are to be applied, for conformance to the specified application

SECTION 03620 GROUTING

criteria including, but not limited to, substrate profile, degree of cleanliness, and moisture.

2. Inspect preparation and application of nonshrink grout form work for conformance to the manufacturer's recommendations.
3. Conduct a final review of completed nonshrink grout installation for conformance to these Specifications.
4. Provide a flow cone and cube molds with restraining plates onsite. Continue tests during Project as demonstrated by grout manufacturer's representative.
5. Perform flow cone and bleed tests, and make three 2-inch by 2-inch cubes for each 25 cubic feet of each type of nonshrink grout used. Use restraining caps for cube molds in accordance with ASTM C1107 C1107M.
6. For large grout applications, make three additional cubes and one more flow cone test. Include bleed test for each additional 25 cubic feet of nonshrink grout placed.
7. Consistency: As specified in Article Nonshrink Grout. Flow cone test in accordance with ASTM C939. Grout with consistencies outside range requirements shall be rejected.
8. Segregation: As specified in Article Nonshrink Grout. Grout when aggregate separates shall be rejected.
9. Nonshrink grout cubes shall test equal to or greater than minimum strength specified.
10. Strength Test Failures: Nonshrink grout work failing strength tests shall be removed and replaced.
11. Perform bleeding test in accordance with ASTM C940 to demonstrate grout will not bleed.
12. Store cubes at 70 degrees F.
13. Independent testing laboratory shall prepare, store, cure, and test cubes in accordance with ASTM C1107/C1107M. section 3.03
14. Grout, already placed, which fails to meet the requirements of these Specifications, is subject to removal and replacement at no additional cost to the Owner.

C. Evaluation and Acceptance of Epoxy Grout:

1. Inspect ambient conditions during various phases of epoxy grouting installation for conformance with the epoxy grout manufacturer's requirements.
2. Inspect the surface preparation of concrete substrates onto which epoxy grout materials are to be applied, for conformance to the specified application criteria including, but not limited to, substrate profile, degree of cleanliness, and moisture.
3. Inspect the surface preparation of the metallic substrates onto which the epoxy primer is to be applied.

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4. Inspect the epoxy-primed metallic substrate for coverage and adhesion.
5. Inspect preparation and application of epoxy grout form work for conformance to the manufacturer's recommendation.
6. Verify consistency obtained is sufficient for the proper field placement at the installed temperatures.
7. Inspect and record that the "pot life" of epoxy grout materials is not exceeded during the installation.
8. Inspect epoxy grout for cure.
9. Inspect and record that localized repairs made to grout voids are in conformance with the specification requirements.
10. Conduct a final review of completed epoxy grout installation for conformance to these Specifications.
11. Compression tests and fabrication of specimens for epoxy grout shall be made in accordance to ASTM C579, Method B, at intervals during construction as selected by the Project representative. A set of three specimens shall be made for testing at 7 days, and each earlier time period as appropriate.
12. Independent testing laboratory shall prepare, store, cure, and test cubes in accordance with ASTM C579.
13. Grout, already placed, which fails to meet the requirements of these Specifications, is subject to removal and replacement at no additional cost to the Owner.

3.04 MANUFACTURER'S SERVICES

A. General:

1. Coordinate demonstrations, training sessions, and applicable Site visits with grout manufacturer's representative. Allow 2-week notice to grout manufacturer's representative for scheduling purposes.
2. Provide and conduct onsite, demonstration and training sessions for bleed tests, mixing, flow cone measurement, cube testing, application, and curing for each category and type of grout.
3. Necessary equipment and materials shall be available for demonstration.
4. Conduct training prior to equipment mount installation work on equipment pads.
5. Training for each type of grout shall be not less than 4 hours' duration.

B. Nonshrink Grout Training:

1. Training is required for Type III grout installations.
2. Provide nonshrink grout installation training by the qualified grout manufacturer's representative for Contractor's workers that will be installing nonshrink grout for baseplates and equipment mounts. Schedule training to allow Engineer's attendance.

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3. Mix nonshrink grouts to required consistency, test, place, and cure on actual Project, such as, baseplates and form tie-through bolt holes to provide actual on-the-job training.
 4. Use minimum of two bags for each grout Category III. Mix grout to fluid consistency and conduct flow cone and two bleed tests, make a minimum of six cubes for testing of two cubes at 1 day, 3 days, and 28 days. Use remaining grout for final Work.
 5. Include recommended grout curing methods in the training.
 6. Transport test cubes to independent test laboratory and obtain test reports.
 7. Training by manufacturer's representative does not relieve Contractor of overall responsibility for this portion of the work.
 8. Submit a list of attendees that have been satisfactorily trained to perform epoxy grout installation for equipment mounting.
- C. Epoxy Grout Training:
1. Provide epoxy grout installation training by the qualified epoxy grout manufacturer's representative for Contractor's workers that will be installing epoxy grout for equipment mounts. Schedule training to allow Engineer's attendance.
 2. Include training in:
 - a. Performance testing such as compressive strength testing of the epoxy grout.
 - b. Aspects of using the products, from mixing to application.
 3. Transport test cubes to independent test laboratory and obtain test reports.
 4. Training by manufacturer's representative does not relieve Contractor of overall responsibility for this portion of the work.
 5. Submit a list of attendees that have been satisfactorily trained to perform epoxy grout installation for equipment mounting.

3.05 SUPPLEMENTS

- A. The supplement listed below, following "End of Section," is part of this Specification.
1. 24-hour Evaluation of Nonshrink Grout Test Form and Grout Testing Procedures.

END OF SECTION

**SECTION 03620
GROUTING**

SUPPLEMENT 1

(Test Lab Name)

(Address)

(Phone No.)

24-HOUR EVALUATION OF NONSHRINK GROUT TEST FORM

OBJECTIVE: Define standard set of test procedures for an independent testing laboratory to perform and complete within a 24-hour period.

SCOPE: Utilize test procedures providing 24-hour results to duplicate field grouting demands. Intent of evaluation is to establish grout manufacturer's qualifications.

PRIOR TO TEST: Obtain three bags of each type of grout.

1. From intended grout supplier for Project.
2. Three bags of grout shall be of same lot number.

ANSWER THE FOLLOWING QUESTIONS FOR GROUT BEING TESTED FROM LITERATURE, DATA, AND PRINTING ON BAG:

- | | | |
|----|---|------------------|
| A. | Product data and warranty information contained in company literature and data? | Yes_____ No_____ |
| B. | Literature and bag information meet specified requirements? | Yes_____ No_____ |
| C. | Manufacturer guarantees grout as specified in Article Guarantee? | Yes_____ No_____ |
| D. | Guarantee extends beyond grout replacement value and allows participation with Contractor in replacing and repairing defective areas? | Yes_____ No_____ |
| E. | Water demands and limits printed on bag? | Yes_____ No_____ |
| F. | Mixing information printed on the bag? | Yes_____ No_____ |
| G. | Temperature restrictions printed on bag? | Yes_____ No_____ |

*Rejection of a grout will occur if one or more answers are noted NO.

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GROUTING**

GROUT TESTING PROCEDURES

A. Bagged Material:

1. List lot numbers. _____
2. List expiration date. _____
3. Weigh bags and record weight. _____

Owner's Representative will disqualify grout if bag weights have misstated measure plus or minus 2 pounds by more than one out of three bags. (Accuracy of weights is required to regulate amount of water used in mixing since this will affect properties.)

B. Mixing and Consistency Determination:

1. Mix full bag of grout in 10-gallon pail.
2. Use electric drill with a paddle device to mix grout (jiffy or jiffler type paddle).
3. Use maximum water allowed per water requirements listed in bag instructions.
4. Mix grout to maximum time listed on bag instructions.
5. In accordance with ASTM C939 (flow cone) determine time of mixed grout through the flow cone. _____ seconds
6. Add water to attain 20- to 30-second flow in accordance with ASTM C939.
7. Record time of grout through cone at new water demand. _____ seconds
8. Record total water needed to attain 20- to 30-second flow. _____ pounds
9. Record percent of water. _____ percent

C. When fluid grout is specified and additional water is required beyond grout manufacturer's listed maximum water, ASTM C1107/C1107M will be run at new water per grout ratio to determine whether grout passes using actual water requirements to be fluid. Use new water per grout ratio on remaining tests.

D. Bleed Test:

1. Fill two gallon cans half full of freshly mixed grout at ambient temperatures for each category and at required consistency for each.
2. Place one can of grout in tub of ice water and leave one can at ambient temperature.
3. Cover top of both cans with glass or plastic plate preventing evaporation.
4. Maintain 38 degrees F to 42 degrees F temperature with grout placed in ice and maintain ambient temperature for second container for 1 hour.
5. Visually check for bleeding of water at 15-minute intervals for 2 hours.
6. Perform final observation at 24 hours.

If grout bleeds a small amount at temperatures specified, grout will be rejected.

**SECTION 03620
GROUTING**

- E. Extended Flow Time and Segregation Test (for Category II and Category III):
1. Divide the remaining grout into two 3-gallon cans. Place the cans into the 40-degree F and 90-degree F containers and leave for 20, 40, and 60 minutes. Every 20 minutes remove and check for segregation or settlement of aggregate. Use a gloved hand to reach to the bottom of the can, if more than 1/4 inch of aggregate has settled to the bottom or aggregate has segregated into clumps reject the grout.
 2. Right after the settlement test mix the grout with the drill mixer for 10 seconds. Take a ASTM C939 flow cone test of grout and record flow time. Maintain this process for 1 hour at ambient temperatures of 40 degrees F and 90 degrees F.
 - a. 20 min _____, sec. @ 40 degrees F.
 - b. 40 min _____, sec. @ 40 degrees F.
 - c. 60 min _____, sec. @ 40 degrees F.
 - d. 20 min _____, sec. @ 90 degrees F.
 - e. 40 min _____, sec. @ 90 degrees F.
 - f. 60 min _____, sec. @ 90 degrees F.

Category II and Category III grout that will not go through the flow cone with continuous flow after 60 minutes will be disqualified.

Qualified

Disqualified

- F. 24-hour Strength Test:
1. Using grout left in mixing cans in accordance with ASTM C1107/C1107M for mixing and consistency determination test and for extended time flow test, make minimum of nine cube samples.
 2. Store cubes at 70 degrees F for 24 hours.
 3. Record average compressive strength of nine cubes at 24 hours.

Grout will be disqualified if 24-hour compressive strengths are less than 2,500 psi for grouts claiming fluid placement capabilities.

Grouts that have not been disqualified after these tests are qualified for use on the Project for the application indicated in Nonshrink Grout Schedule.

Signature of Independent Testing Laboratory

Date Test Conducted

**SECTION 03740
PRESSURE INJECTION OF CRACKS**

PART 1 - GENERAL

1.01 SUMMARY

- A. This section covers the repair of cracks in concrete by the injection of an epoxy resin adhesive.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. ASTM: American Society for Testing and Materials International
 - 2. CBC: California Building Code
 - 3. SSPWC: Standard Specifications for Public Works Construction
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
 - 1. Section 03100 Concrete Formwork
 - 2. Section 03200 Reinforcement Steel
 - 3. Section 03280 Joints in Site Work Concrete
 - 4. Section 03310 Cast-In-Place Site Work Concrete
 - 5. Section 03620 Grouting
- C. Standard References: See Front End Contract Documents. Additional standards specific to this Section are listed below. Except as otherwise indicated, the current editions of the following apply to the work of this Section:
 - 1. ASTM:
 - a. D 695 Test Method for Compressive Properties of Rigid Plastics

1.03 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Manufacturer Warranty Information.

**SECTION 03740
PRESSURE INJECTION OF CRACKS**

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."
- B. Epoxy injection shall be performed by a certified applicator.
- C. Contractor's operator engaged in the epoxy injection process shall have satisfactory operator qualifications in the methods of restoring concrete structures utilizing the specific epoxy injection process indicated. Operator's qualifications shall include previous repairs of cracked or damaged concrete structures, the technical knowledge of correct material selection and use, and the operation, maintenance and troubleshooting of equipment.
- D. Must be NSF approved.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

1.09 WARRANTY

- A. Manufacturer Warranty
 - 1. Warranty installed equipment to be free from defects in material and workmanship for 1 year from date of final acceptance of Project by the Owner.

PART 2 - PRODUCTS

2.01 EPOXY RESIN ADHESIVE FOR INJECTION

- A. Epoxy adhesive grout shall be a 100 percent solids 2-part water insensitive low-viscosity epoxy resin system. Epoxy shall be suitable for grouting both dry and damp cracks. Epoxy shall develop a minimum tensile strength (ASTM D695) of 6,000 psi and a minimum compressive strength of 8,000 psi. Epoxy shall be Sikadur 35, Hi-Mod LV by Sika Corporation, or equivalent.

2.02 SURFACE SEAL

- A. The surface seal material is that material used to confine the injection adhesive in the fissure during injection and cure.
- B. Must be NSF approved.

**SECTION 03740
PRESSURE INJECTION OF CRACKS**

- C. The surface seal material shall have adequate strength to hold injection fittings firmly in place and to resist injection pressures adequately to prevent leakage during injection.
- D. The material shall be from the same manufacturer of the epoxy resin adhesive and be of a compatible material.

2.03 EQUIPMENT FOR INJECTION

- A. The equipment used to meter and mix the two injection adhesive components and inject the mixed adhesive into the crack shall be portable, positive displacement type pumps with interlock to provide positive ratio control of exact proportions of the two components at the nozzle. The pumps shall be electric or air powered and shall provide in-line metering and mixing.
- B. The injection equipment shall have automatic pressure control capable of discharging the mixed adhesive at any pre-set pressure up to 200 psi plus or minus 5 psi and shall be equipped with a manual pressure control override.
- C. The injection equipment shall have the capability of maintaining the volume ratio for the injection adhesive prescribed by the manufacturer of the adhesive within a tolerance of plus or minus 5 percent by volume at any discharge pressure up to 200 psi.

PART 3 - EXECUTION

3.01 REPAIR CRITERIA

- A. Cracks in concrete at least 0.02 inches in size shall be repaired.

3.02 PREPARATION

- A. Surface adjacent to cracks or other areas of application shall be cleaned of dirt, dust, grease, oil, efflorescence or other foreign matter which may be detrimental to the integrity of the bond between the epoxy and the injection surface. Acids and corrosives shall not be permitted.
- B. Grind surface application area to expose aggregate.
- C. Entry ports shall be provided along the crack at intervals of not more than the thickness of the concrete being repaired. Ports shall be compatible with pressure injection equipment.
- D. Surface seal material shall be applied to the face of the crack between the entry ports. For through cracks, surface seal shall be applied to both faces.
- E. Enough time for the surface seal material to gain adequate strength shall pass before proceeding with the injection.

**SECTION 03740
PRESSURE INJECTION OF CRACKS**

3.03 EPOXY INJECTION

- A. Injection of epoxy adhesive shall begin at lower entry port and continue until there is an appearance of epoxy adhesive at the next entry port adjacent to the entry port being pumped.
- B. When epoxy adhesive travel is indicated by appearance at the next adjacent port, injection shall be discontinued on the entry port being pumped, and epoxy injection shall be transferred to the next adjacent port where epoxy adhesive has appeared.
- C. Epoxy adhesive injection shall be performed continuously until cracks are completely filled.
- D. If port to port travel of epoxy adhesive is not indicated, the work shall immediately be stopped and the Engineer of Record notified.

3.04 FINISHING

- A. When cracks are completely filled, epoxy adhesive shall be cured to sufficient time to allow removal of surface seal without any draining or runback of epoxy material from cracks.
- B. Surface seal material and injection adhesive runs or spills shall be removed from concrete surfaces.
- C. The face of the crack shall be finished flush to the adjacent concrete showing no indentations or protrusions caused by the placement of entry ports.

3.05 PRESSURE TEST

- A. The mixing head of the injection equipment shall be connected and the equipment run until clear uniformly mixed material flows into the purge pail. The operator shall engage the equipment shut-off nozzle valve and subsequently bump the on-off switch while monitoring pressure on psi gauge until the pressure reaches 200 psi. Pressure gauge shall be monitored for one minute. If pressure is maintained between 190-200 psi, check valves shall be considered to be functioning properly and the injection may proceed. If pressure drops below 190 psi, Contractor shall be required to have new seals installed on the check valves and the equipment shall be subsequently retested.
- B. The pressure test shall be run for each injection unit at the beginning and after meal break of every shift that the unit is used in the work of crack repair.
- C. The adequacy and accuracy of the equipment shall be solely the responsibility of the Contractor.

**SECTION 03740
PRESSURE INJECTION OF CRACKS**

3.06 RATIO TEST

- A. The epoxy mixture ratio shall be monitored continuously while injecting by placing a strip of masking tape on the sides of the A and B reservoirs full height. After filling reservoirs, the A and B levels shall be marked and monitored while running injection machine into purge pail for a period of one minute.
- B. The ratio test shall be run for each injection unit at the beginning and after meal break of every shift that the unit is used in the work of crack repair.

3.07 PROOF OF RATIO AND PRESSURE TEST

- A. During the course of the work the Contractor shall keep complete and accurate records available to the Engineer of the pressure and ratio tests specified above.
- B. In addition, the Engineer at any time without prior notification of the Contractor, may request the Contractor to conduct the tests specified above in the presence of the Engineer.

END OF SECTION

**SECTION 05520
HANDRAILS AND GUARDRAILS**

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide galvanized steel pipe railings, in accordance with the Contract Documents and City of San Diego Standards.

1.02 REFERENCES

- A. Acronyms and Abbreviations:
 - 1. ASTM: American Society for Testing and Materials
 - 2. ANSI: American National Standards Institute
 - 3. ASTM: American Society for Testing and Materials
 - 4. AISC: American Institute of Steel Construction
 - 5. AWS: American Welding Society
 - 6. CAL OSHA: California Occupational Safety and Health Administration
 - 7. SSWPC: Standard Specifications for Public Works Construction

- B. Standard References: See the Front End Contract Documents. Additional standards specific to this Section are listed below. Except as otherwise indicated, the current editions of the following apply to the work of this Section:
 - 1. AISC:
 - a. Manual of Steel Construction
 - 2. ASTM:
 - a. ASTM A563 Specification for Carbon and Alloy Steel Nuts
 - b. ASTM A307 Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile
 - c. ASTM A320 Specification for Alloy-Steel Bolting Material for Low-Temperature Service
 - d. ASTM A53 Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
 - e. ASTM A123 Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 - 3. Cal-OSHA:
 - a. General Industrial Safety Order (Title 8)
 - 4. CBC:
 - a. (Title 24) Requirements for Handicapped Persons

**SECTION 05520
HANDRAILS AND GUARDRAILS**

1.03 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Deferred Submittals: The submittal for this Section will be a deferred submittal as described in Section 01330 "Submittal Procedures."
- C. Shop Drawings: The Contractor shall submit the railing supplier's detailed shop drawings on the railing systems, including layout plan for location of posts, gates and removable parts.
- D. Calculations: Engineering calculations shall be submitted for review. Engineering calculations shall include railings, handrail brackets, brackets, support flanges, and fasteners or anchors. The Engineer's seal shall be affixed to engineering design drawings, shop drawings, and calculations.
- E. Certification:
 - 1. The Contractor shall submit a written certification prepared and signed by a Civil or Structural Professional Engineer, registered to practice in the State of California, verifying that the railing system design and related structural connections will meet the indicated loading requirements and codes of authorities having jurisdiction.
 - 2. The Contractor shall deliver to the Construction Manager, a notarized certificate stating that anodized finishes provided conform to these Specifications. With the certificate, the Contractor shall deliver finisher(s) test reports of tests made on random production samples, each test report certified.
- F. Warranty: See Section 1.09
- G. Cleaning and Maintenance Instructions. Printed or type-written detailed instructions shall be provided for the cleaning and maintenance of galvanized surfaces during life of the structure. Precautions shall be provided for cleaning of glass or adjacent surfaces to prevent damage to anodized finishes and members.
- H. Samples: The Contractor shall submit samples of the proposed guardrails and hand railing systems, including proposed colors.

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."

**SECTION 05520
HANDRAILS AND GUARDRAILS**

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Delivery of Materials: Manufactured materials shall be delivered in original, unbroken packages, containers, or bundles bearing the label of the manufacturer.
- B. Storage: Materials shall be carefully stored in a manner that will prevent damage and in an area that is protected from the elements.

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Assurance and Control."

1.09 WARRANTY

- A. Manufacturer Warranty
 - 1. Warranty installed equipment to be free from defects in material and workmanship for 1 year from date of final acceptance of Project by the Owner.
 - 2. Defects: The warranty shall include coverage for defects, including fading, corrosion, pitting, blistering, and changes in surface appearance and characteristics. Abuse or physical damage after final acceptance of Project is not considered a defect.
 - 3. Removal and Rework: The warranty shall include coverage for costs incidental to removal, rework, refinishing and reinstallation of members showing any of the above described finish failures within the warranty period, and costs incidental to the removal, rework, reinstallation and refinishing of other work to enable performance of these guarantee requirements, and costs incidental to protection of other work, building contents, occupants and equipment from damage, loss or injury.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Railings shall comply with SSPWC Subsection 304-2.1 unless indicated otherwise. Railing systems shall meet CBC and Cal-OSHA requirements.
- B. Loading Conditions: Railings and handrail brackets shall be capable of withstanding the following non-simultaneous loading conditions without exceeding the allowable working stress of the material and without permanent deformation:
 - 1. A 200 pound concentrated load applied to any point in any direction.
 - 2. A 50 pound per linear foot loading applied perpendicular to the top rail.
- C. Working Stress: The allowable working stress shall be 60% of the material yield stress for materials that are more than 3 inches from a weld, and 40% of the yield stress for materials within 3 inches of any weld.

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HANDRAILS AND GUARDRAILS**

- D. Curved Rails: Railings shown at curved structures, elements or other areas, such as tanks, retaining walls, stairs, and ramps shall be bent to the radius necessary to install where indicated.

2.02 MATERIALS

- A. Railings General: Railings, guardrails, and handrails shall be galvanized steel pipe railing systems unless otherwise specified or indicated.
- B. Rail Material: Seamless hot-dipped galvanized steel pipe, ASTM A53, Grade B.
- C. Welding Rods: Welding electrodes shall conform with AWS D1.1, except E7024 rods or electrodes shall not be used.
- D. Fasteners: Fasteners, nuts, screws, and bolts shall be concealed and shall be of stainless steel.
 - 1. Nuts shall be capable of developing the full strength of the bolts. Threads shall be Coarse Thread Series conforming to the requirements of the American Standard for Screw Threads. Bolts and cap screws shall have hexagon heads and nuts shall be Heavy Hexagon Series.
 - 2. The length of bolts shall be such that after joints are made up, each bolt shall extend through the entire nut, but in no case more than 2-inch beyond the nut.
- E. Brackets: Handrail brackets shall be steel with a finish that matches the handrail or railing of which they are a part.
- F. Grout: Nonshrink grout for handrail post base shall consist of an inorganic, non-metallic, premixed grout with a minimum 28 day compressive strength of 4,000 psi.

2.03 FINISHES

- A. Galvanizing: Structural steel plates shapes, bars and fabricated assemblies required to be galvanized shall, after the steel has been thoroughly cleaned of rust and scale, be galvanized in accordance with the requirements of ASTM A 123.
- B. Any galvanized part that becomes warped during the galvanizing operation shall be straightened.
- C. Bolts, anchor bolts, nuts and similar threaded fasteners, after being properly cleaned, shall be galvanized in accordance with the requirements of ASTM A 153.
- D. Steel pipe handrail shall be picked at fabrication plant and shall be hot-dip galvanized after fabrication.
- E. Provide exposed Work free of finger marks, stains, scratches and other undesirable marks or flaws, and gripper or rack marks. Perform finishing after

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fabrication and forming operations are completed. Provide uniform finishes on exposed surfaces including edges of members.

2.04 SUB-ASSEMBLIES

- A. Height Requirements: The top of upper railing shall be 42 inches above the working surface.
- B. Round Sections: Round tube and round picket railing posts shall be not less than 1.5-inch diameter, Schedule 40 pipe, or 1.5 inch x 2 inches oval section. The posts shall be evenly spaced at not less than 4 feet nor more than 6 feet on centers. Field conditions may require some adjustment of spacing. Pickets shall be not less than 5/8-inch OD, spaced at 4.5 inches on center, or 3/4-inch OD pickets, spaced at 6 inches on centers. Top rails and railings shall be not less than 1-1/2 inch OD pipe, or 2 inch oval section. Rails may be type with bottom enclosures. Bottom rails shall be not less than 1-1/2 inch OD pipe, or 1-7/8 inch diameter extrusion with bottom enclosures. The top railings shall be as long as possible, and the post shall not project through the top rails.
- C. Round Pipe Railing System (Guardrails): Railing guardrail systems shall have rails spaced equally with equal open spaces between rails.

2.05 APPROVED MANUFACTURERS

- A. Round tabular railings indicated of the type and model (if any) shall be manufactured by one of the following, or equal:
 - 1. Wesrail by Moultrie Mfr. Co., Moultrie, Georgia;
 - 2. "C-V Pipe Rail" by Crane Veyor Corp., Moultrie Manufacturing Co., "Wesrail"
 - 3. Or Equal

PART 3 - EXECUTION

3.01 COMPONENT SYSTEMS

- A. Unless otherwise indicated, handrails and railings shall be component systems, installed complete and ready for use with anchors, attachments, balusters, brackets, caps, fasteners, gates, posts, sleeves, trim, and other related items required or necessary for the complete installation. The Contract Documents indicate the desired locations. Field determine exact location based on physical size and arrangement of equipment, finished elevations, and obstructions.

3.02 INSTALLATION

- A. Craftsmanship: Work shall be performed by craftsmen qualified in the fabrication of architectural metal work. Exposed surfaces shall be free from defects or other surface blemishes. Dimensions and conditions shall be verified in the field in advance. Joints, junctions, miters, and butting sections shall be precision-fitted, with no gaps occurring between sections, and surfaces shall be flush and aligned.

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- B. Alignment: Extruded, case, molded, or bent Work shall be straight and with true edges. Railings and handrails shall be provided with continuous top rails, without post projections or other obstructions.
- C. Welding:
1. Welding shall be performed in accordance with the "Structural Welding Code-Steel", AWS D1.1, and current revisions, except where the Gas Metal Arc Welding (GMAW) process is used, the short-circuited mode shall only be used for light gauge material (12 gauge and lighter). Welders shall be qualified by tests in accordance with AWS B3.0.
 2. Exposed welds shall be ground smooth and flush. Discoloration of exposed steel surfaces, whether or not due to welding, shall constitute a basis for rejection of the entire assembly.
 3. Field welds disturbing the factory finish shall be treated with one of the following products:
 - a. Galvinox
 - b. Galvo-Weld
 - c. or equal.
- D. Expansion/Contraction: Exterior railing systems shall provide for 3-inch expansion and contraction per 20 linear feet of railing. Interior railing systems shall provide for c-inch expansion or contraction per 20 linear feet of railing.
- E. Railing Continuity and End Treatment: Handrails and railings shall be designed to form a continuous run system with elbow turns and bends that do not have interferences with hand movement. Handrails along the inside stringer shall be continuous for the full length of the stairs and landings from top to bottom. Handrails shall extend not less than 12 inches beyond the top and bottom risers. Whenever possible, the extension shall be at least one tread width plus 12 inches beyond the bottom riser for possible use by handicapped persons. Ends of handrails shall be returned to the wall or shall be terminated in newel posts or safety terminals. Newel posts and safety terminals may be used only when approved by the Construction Manager.
- F. Gates and Removable Sections: Gates shall be provided with self-closing hinges and self-closing latch bolts. Removable handrail sections shall be provided where indicated. The gate and removable railing hardware color shall match that of the railing system of which it is a part.
- G. Handrail Posts Installed Into Sleeves: Handrail posts installed into sleeves shall be provided with weep holes between 2 inch and 3 inch above the finish deck for condensation drainage.
- H. Weep Holes: Provisions shall be made to drain water from rail systems by drilling weep holes in concealed locations at the lowest possible elevations.

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- I. Isolation of Dissimilar Metals: Use nonabsorptive tape or gaskets, a heavy brush coat of approved zinc chromate primer made with a synthetic resin vehicle, or a heavy coat of approved alkali-resistant bituminous paint.

- J. Protection of the Work: The Contractor shall protect and repair adjacent surfaces and areas which may be damaged. Work shall be protected until completion and final acceptance by the Owner. Damaged or defective work shall be repaired or replaced to the original specified condition at no additional cost to the Owner. The Contractor shall provide approved compatible, strippable, pressure-sensitive coverings or other approved protective coatings. Strippable protective coatings shall be removed immediately before acceptance of the completed build.
 - 1. Field repairs to galvanizing shall be made using:
 - a. Galvinox
 - b. Galvo-Weld
 - c. or equal.

- K. Cleaning: The Contractor shall maintain the work area in a clean condition as the work progresses. After installation, and after danger of subsequent damage or staining has passed, the Contractor shall remove protective coverings from exposed surfaces, and clean surfaces of soil and discoloration. The Contractor shall perform cleaning in accordance with recommendations in of the manufacturer. Only cleaners acceptable to the manufacturer shall be used.

- L. Clean-Up: Upon completion of Work herein specified, the Contractor shall remove from the site debris, unused materials and equipment, and leave the site in a clean, acceptable condition. Immediately before final acceptance of the project, the Contractor shall thoroughly clean work provided under this Section, unless instructed to do so sooner by Construction Manager. No abrasive or damaging cleaning agents or procedures shall be used.

END OF SECTION

**SECTION 09920
GRAFFITI RESISTANT COATING**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes permanent anti-graffiti coating system for the exterior surface of the retaining wall.
- B. Provide all labor, materials, equipment, and services necessary for and incidental to satisfactory completion of high performance, water-borne graffiti resistant coating for designated surfaces as indicated or specified.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. ASTM: American Society for Testing and Materials International
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
 - 1. Front End Contract Documents
 - 2. Section 01311 "Project Coordination."
 - 3. Section 01330 "Submittal Procedures."
 - 4. Section 01451 "Contractor Quality Assurance and Control."
 - 5. Section 01610 "Common Product Requirements."
- C. Standard References: See Front End Contract Documents. Additional standards specific to this Section are listed below. Except as otherwise indicated, the current editions of the following apply to the work of this Section:
 - 1. ASTM:
 - a. ASTM D7089, Standard Practice for Determination of the Effectiveness of Anti-Graffiti Coating for Use on Concrete, Masonry and Natural Stone Surfaces by Pressure Washing
 - b. ASTM D6578/D6578M, Standard Practice for Determination of Graffiti Resistance

1.03 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

**SECTION 09920
GRAFFITI RESISTANT COATING**

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Product Data
 - 1. Manufacturer's descriptive literature and product specifications for each product included in this Section. Product data shall include coating type, manufacturer and manufacturers name.
- C. Samples: Apply graffiti resistant coating to samples in conformance with manufacturer's recommendations to field mock-up sample. Material of mock sample shall be the same material as the specified application surface. Size of sample shall be a minimum of 1 ft x 1 ft. Test removal methods, specified by manufacturer, of applied spray paint under the observation of the Construction Manager. Materials and equipment required for testing shall be provided by the Contractor.
- D. Manufacturer Instructions: Submit manufacturer's preparation, installation, and maintenance instructions. Provide methods and material instruction for graffiti removal
- E. Manufacturer warranty: Submit one copy of manufacturer's warranty for specified materials.

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."
- B. Cleanability
 - 1. Meets ASTM-D7089 with Cleanability at least Level 2.
 - 2. Meets ASTM-D6578 with Cleanability at least Level 9.
- C. Qualifications
 - 1. Licensed Professionals: Installer shall be a firm with not less than three years of successful experience in application of coatings of type required on substrates similar to those of this project. The firm shall be approved by the manufacturer of the coating for installation of their product.
- D. Certifications: The application specified herein is a specially formulated clear, non-sacrificial, high performance, water-borne graffiti resistant coating with added chemical and abrasion resistance for painted surfaces, signs and extremely porous cementitious surfaces in areas susceptible to a high frequency of graffiti vandalism.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."

**SECTION 09920
GRAFFITI RESISTANT COATING**

- B. Deliver all required products in original, unbroken containers bearing labels that identify the container contents, manufacturer, and storage instructions. Conform to manufacturer's delivery, storage, and handling requirements.
- C. If on-site, store specified materials in an enclosed, lockable, well-ventilated room or space providing protection against contamination from the elements, and adjacent construction and other sources and as required by manufacturer's instructions.
- D. Paint orders to the manufacturer or supplier shall identify the store number, location, and address of project.
- E. Deliver coating materials in sealed original labeled containers, bearing manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and/or reducing.

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Assurance and Control."
- B. Conform to the manufacturer's preparation requirements before starting application.

1.09 WARRANTY

- A. Manufacturer Warranty
 - 1. Provide manufacturers written warranty guaranteeing effective graffiti removal for not less than 10 years and warrant that treated surfaces can be effectively and repeatedly cleaned of graffiti without damage or loss of effectiveness of the graffiti resistant coating. Manufacturer shall, for the duration of the warranty period, guarantee replacement of product where graffiti removal has shown to be ineffective

PART 2 - PRODUCTS

2.01 MANUFACTURERS:

- A. Monopole Inc.
- B. Or Approved Equal

**SECTION 09920
GRAFFITI RESISTANT COATING**

2.02 MATERIALS

- A. Coating System
 - 1. Coating system shall conform to City Whitebook Section 210-1.1.1, shown below

First Coat	Aquaseal ME12 (Item 5200)
Second Coat	Permashield Base (Item 6100)
Third Coat	Permashield Premium (Item 5600 for matte finish or Item 5650 for gloss finish)
Fourth Coat	Permashield Premium (Item 5600 for matte finish or Item 5650 for gloss finish)

2.03 SPARE PARTS

- A. Provide four containers of removal products as recommended by the manufacturer accompanied by removal instructions.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify all surfaces are ready to receive coating in accordance with manufacturer's printed requirements. Beginning of installation indicates acceptance of substrate.
- B. If applicable, verify water repellent has been applied to new or non-painted concrete and masonry surfaces prior to the application of the anti-graffiti coating.

3.02 PREPARATION

- A. Surface shall be free of dirt, dust, contaminants such as curing compounds, hardeners, bond breakers, and form release. Allow painted surfaces to cure properly. Do not water blast painted surfaces. Assure surfaces are clean and dry.
- B. Mask or otherwise protect adjacent surfaces not scheduled to receive coating. If applied on unscheduled surfaces such as glass, remove immediately, by approved method.
- C. Protect landscaping, property, and vehicles from over spray and drift.

**SECTION 09920
GRAFFITI RESISTANT COATING**

3.03 APPLICATION

- A. Apply coating in accordance with manufacturer's published instructions.
- B. Application Rate: Apply each coat at the manufacturers published application rate.
- C. If no instructions are provided by the manufacturer, apply as follows:
 - 1. Surfaces to receive graffiti resistant coating will be clean of all dust, efflorescence, and any other foreign matter.
 - 2. Allow new cementitious surfaces to cure for 28 days and painted surfaces to cure as specified by paint manufacturer before application. If pH test has been conducted and the substrate is neutral, application may be made.
 - 3. Apply only to clean, dry surfaces when ambient temperature is above 50 degrees Fahrenheit.
 - 4. Coverage varies from 200 to 400 square feet per gallon. Depending on porosity of substrate and application method. Verify recommended coverage rate with manufacturer.

3.04 FIELD QUALITY CONTROL

- A. Verify application rate by periodic on-site inspection and calculation of area covered compared to consumption of coating material used. Document inspections showing total area covered and number and volume of coating containers used.

3.05 CLEANUP

- A. Periodically during the application phases of the work, remove from the site excess materials, unused equipment, trash and debris. Maintain the work areas in a clean, safe working condition at all times.
- B. Clean all drips, runs, and overspray residue while still wet. Protect all non-treated surfaces, including plant life.
- C. At completion of the work specified herein, thoroughly clean all finished surfaces, floors, and walls and leave the affected areas ready for use by the Owner. Leave no discernible marks or scars.

END OF SECTION

**SECTION 16050
ELECTRICAL GENERAL REQUIREMENTS**

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes materials, installation, and testing of the electrical system and lighting components.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. UL: Underwriting Laboratories
 - 2. CEC: California Electrical Code
 - 3. NEC: National Electrical Code

- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
 - 1. Front End Contract Documents
 - 2. Section 01311 "Project Coordination."
 - 3. Section 01330 "Submittal Procedures."
 - 4. Section 01451 "Contractor Quality Assurance and Control."
 - 5. Section 01610 "Common Product Requirements."
 - 6. Division 16 Specifications

1.03 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."

- B. Shop Drawings

- C. In submitted catalog cuts, cross out items shown that are not pertinent to this project. Where catalog cuts list manufacturer's standard options, cross out those options not intended to be provided and clearly highlight those options that are to be provided.

- D. Manufacturer Warranty Information

**SECTION 16050
ELECTRICAL GENERAL REQUIREMENTS**

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."
- B. Electrical work shall comply with the NEC as amended by the CEC and local city code where applicable.
- C. Materials, appliances, equipment, and devices shall conform to the applicable UL standards. The label of, or listing by, UL is required for electrical equipment.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."
- B. General: Use equipment, materials, and wiring methods suitable for the types of locations in which they are located as defined below.
- C. Definitions of Types of Locations:
 - 1. Wet Locations: Locations exposed to the weather, whether under a roof or not, unless otherwise designated in the drawings.

1.09 WARRANTY

- A. Per "The Whitebook" Section 3-13.3

PART 2 - PER "THE WHITEBOOK" SECTION 3-13.3 PRODUCTS

2.01 GENERAL

- A. Similar materials and equipment shall be the product of a single manufacturer.
- B. Provide only products which are new, undamaged, and in the original cartons or containers.
- C. Materials and equipment shall be the standard products of manufacturers regularly engaged in the production of such material and shall be the manufacturer's current design.
- D. Materials and equipment shall be suitable for storage, installation, and operation at an ambient temperature of 0°C to 40°C except where more stringent conditions are stated in individual equipment specifications.

**SECTION 16050
ELECTRICAL GENERAL REQUIREMENTS**

- E. Electrical equipment and panels shall be factory finished with manufacturer's standard primer and enamel topcoats, unless stated otherwise in the individual equipment specifications. Provide 1 pint of the equipment manufacturer's touchup paint per 500 square feet of painted surface for repair of damaged enamel topcoats.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Provide modifications necessary for a safe and properly operating installation in accordance with the equipment manufacturer's recommendations.
- B. The Contract Documents indicate the desired locations. Field determine exact location based on physical size and arrangement of equipment, finished elevations, and obstructions.
- C. Work or equipment not indicated or specified which is necessary for the complete and proper operation of the electrical systems shall be accomplished without additional cost to the City.
- D. Accomplish work required to pierce any waterproofing after the part piercing the waterproofing has been set in place. Seal and make watertight the openings made for this purpose.
- E. Install equipment and material piercing fire walls and fire-resistant or fire-stopped walls, partitions, ceilings, and floors in a manner so the rating remains equivalent.
- F. Seal weathertight equipment or components exposed to the weather.
- G. Protect equipment outlets and conduit openings with factory-made plugs or caps whenever work is not in progress at that point.

END OF SECTION

**SECTION 16060
GROUNDING AND BONDING**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes grounding and bonding systems and equipment.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
1. IEEE: Institute of Electrical and Electronics Engineers
 2. NFPA: National Fire Protection Agency
 3. NRTL: Nationally Recognized Testing Laboratory
 4. NETA: International Electrical Testing Association
 5. UL: Underwriting Laboratories
 6. ASTM: American Society for Testing and Materials
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
1. Front End Contract Documents
 2. Section 01311 "Project Coordination."
 3. Section 01330 "Submittal Procedures."
 4. Section 01451 "Contractor Quality Assurance and Control."
 5. Section 01610 "Common Product Requirements."
 6. Section 16050 "Electrical General Requirements."

1.03 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."
- B. Preinstallation Meetings
1. Convene pre-installation meeting 15 days prior to commencing work of this Section and/or prior to purchasing materials for field sample mock-up.

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Product Data: For each type of product indicated.

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GROUNDING AND BONDING**

- C. As-Built Data: Plans showing dimensioned as-built locations of grounding features specified in "Field Quality Control" Article, including the following:
 - 1. Ground rods.
- D. Qualification Data: For testing agency and testing agency's field supervisor.
- E. Field quality-control reports.

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."
- B. Testing Agency Qualifications: Member company of NETA or an NRTL.
 - 1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. Comply with UL 467 for grounding and bonding materials and equipment.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

1.09 WARRANTY

- A. Manufacturer Warranty
 - 1. Per "The Whitebook" section 3-13.3

PART 2 - PRODUCTS

2.01 SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

2.02 CONDUCTORS

- A. Insulated Conductors: wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

**SECTION 16060
GROUNDING AND BONDING**

- B. Bare Copper Conductors:
 - 1. Stranded Conductors: ASTM B 8.
 - 2. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.

2.03 CONNECTORS

- A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy.
- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- D. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

2.04 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad steel; 3/4-inch by 10 feet.

PART 3 - EXECUTION

3.01 APPLICATIONS

- A. Conductor Terminations and Connections:
 - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
 - 2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.
 - 3. Connections to Ground Rods at Test Wells: Bolted connectors.
 - 4. Connections to Structural Steel: Welded connectors.

3.02 GROUNDING SEPARATELY DERIVED SYSTEMS

- A. Transformer: Install grounding electrode(s) at the transformer location. The electrode shall be connected to the equipment grounding conductor and to the frame of the separately derived system transformer.

3.03 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with feeders and branch circuits.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:

**SECTION 16060
GROUNDING AND BONDING**

1. Feeders and branch circuits.
2. Lighting circuits.
3. Receptacle circuits.
4. Single-phase motor and appliance branch circuits.
5. Flexible raceway runs.

3.04 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade unless otherwise indicated.
 1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.
- C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 2. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

3.05 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
 2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
 3. Test completed grounding system at each location where a maximum ground-resistance level is specified. Make tests at ground rods before any conductors are connected.
 - a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Perform tests by fall-of-potential method according to IEEE 81.

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GROUNDING AND BONDING**

- C. Grounding system will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.
- E. Report measured ground resistances that exceed the following values:
 - 1. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 10 ohms.
- F. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION

**SECTION 16075
ELECTRICAL IDENTIFICATION**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Identification for raceways.
 - 2. Identification of power and control cables.
 - 3. Identification for conductors.
 - 4. Warning labels and signs.
 - 5. Equipment identification labels.
 - 6. Miscellaneous identification products.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. NEMA: National Electrical Manufacturers Association
 - 2. NFPA: National Fire Protection Association
 - 3. ASTM: American Society for Testing and Materials
 - 4. CFR: Code of Federal Regulations
 - 5. ANSI: American National Standards Institute
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.03 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."
- B. Coordination
 - 1. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.
 - 2. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

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ELECTRICAL IDENTIFICATION**

3. Coordinate installation of identifying devices with location of access panels and doors.

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Product Data: For each electrical identification product indicated.
- C. Samples: For each type of label and sign to illustrate size, colors, lettering style, mounting provisions, and graphic features of identification products.
- D. Identification Schedule: An index of nomenclature of electrical equipment and system components used in identification signs and labels.

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

1.09 WARRANTY

- A. Per "The Whitebook" Section 3-13.3

PART 2 - PRODUCTS

2.01 POWER AND CONTROL RACEWAY IDENTIFICATION MATERIALS

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.
- B. Colors for Raceways Carrying Circuits at 600 V or Less:
 1. Black letters on an orange field.
 2. Legend: Indicate voltage and system or service type.

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ELECTRICAL IDENTIFICATION**

- C. Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing ends of legend label.
- D. Snap-Around Labels for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.
- E. Snap-Around, Color-Coding Bands for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

2.02 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each cable size.
- B. Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing ends of legend label.
- C. Self-Adhesive, Self-Laminating Polyester Labels: Preprinted, 3-mils thick flexible label with acrylic pressure-sensitive adhesive that provides a clear, weather- and chemical-resistant, self-laminating, protective shield over the legend. Labels sized to fit the cable diameter such that the clear shield overlaps the entire printed legend.
- D. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of cable it identifies and to stay in place by gripping action.

2.03 CONDUCTOR IDENTIFICATION MATERIALS

- A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.
- B. Self-Adhesive, Self-Laminating Polyester Labels: Preprinted, 3-mils thick flexible label with acrylic pressure-sensitive adhesive that provides a clear, weather- and chemical-resistant, self-laminating, protective shield over the legend. Labels sized to fit the conductor diameter such that the clear shield overlaps the entire printed legend.
- C. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

2.04 WARNING LABELS AND SIGNS

- A. Comply with NFPA 70 and 29 CFR 1910.145.

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ELECTRICAL IDENTIFICATION**

- B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.

2.05 EQUIPMENT IDENTIFICATION LABELS

- A. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8-inch.

2.06 CABLE TIES

- A. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.
 - 1. Minimum Width: 3/16-inch.
 - 2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
 - 3. Temperature Range: Minus 40 to plus 185 deg F.
 - 4. Color: Black.

2.07 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- E. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.

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ELECTRICAL IDENTIFICATION**

- F. Attach plastic raceway and cable labels that are not self-adhesive type with clear vinyl tape with adhesive appropriate to the location and substrate.

3.02 IDENTIFICATION SCHEDULE

- A. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits More Than 30 A, and 120 V to ground: Identify with self-adhesive vinyl label. Install labels at 10-foot maximum intervals.
- B. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage.
- C. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.
 - 1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service feeder and branch-circuit conductors.
 - a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
 - b. Colors for 240/120-V Circuits:
 - (1) Phase A: Black.
 - (2) Phase B: Red.
 - c. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.
- D. Control-Circuit Conductor Identification: For conductors and cables in pull and junction boxes, manholes, and handholes, use self-adhesive vinyl labels with the conductor or cable designation, origin, and destination.
- E. Control-Circuit Conductor Termination Identification: For identification at terminations provide self-adhesive vinyl labels with the conductor designation.
- F. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive warning labels.
 - 1. Comply with 29 CFR 1910.145.
 - 2. Identify system voltage with black letters on an orange background.
 - 3. Apply to exterior of door, cover, or other access.
- G. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.

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ELECTRICAL IDENTIFICATION**

- H. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
1. Labeling Instructions:
 - a. Indoor Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch high letters on 1-1/2-inch high label; where two lines of text are required, use labels 2 inches high.
 - b. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.
 2. Equipment to Be Labeled:
 - a. Identification labeling of some items listed below may be required by individual Sections or by NFPA 70.
 - b. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be engraved, laminated acrylic or melamine label.
 - c. Enclosures and electrical cabinets.

END OF SECTION

**SECTION 16080
ELECTRICAL TESTING**

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes general requirements for electrical field testing and inspecting. Detailed requirements are specified in each Section containing components that require testing. General requirements include the following:
1. Qualifications of testing agencies and their personnel.
 2. Suitability of test equipment.
 3. Calibration of test instruments.
 4. Coordination requirements for testing and inspecting.
 5. Reporting requirements for testing and inspecting.

1.02 REFERENCES

- A. Abbreviations and Acronyms
1. NETA: International Electrical Testing Association
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
1. Front End Contract Documents
 2. Section 01311 "Project Coordination."
 3. Section 01330 "Submittal Procedures."
 4. Section 01451 "Contractor Quality Assurance and Control."
 5. Section 01610 "Common Product Requirements."
- C. Standard References: See Front End Contract Documents

1.03 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."

**SECTION 16080
ELECTRICAL TESTING**

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."
- B. Testing Agency Qualifications: As specified in each Section containing electrical testing requirements and in subparagraph and associated subparagraph below.
 - 1. Testing Agency's Field Supervisor for Power Component Testing: Person currently certified by the International Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Division 16 power component Sections.
- C. Test Equipment Suitability: Comply with NETA ATS, Section 5.2.
- D. Test Equipment Calibration: Comply with NETA ATS, Section 5.3.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Assurance and Control."

1.09 WARRANTY

- A. Per "The Whitebook" Section 3-13.3

PART 2 - NOT USED

PART 3 - EXECUTION

3.01 GENERAL TESTS AND INSPECTIONS

- A. If a group of tests are specified to be performed by an independent testing agency, prepare systems, equipment, and components for tests and inspections, and perform preliminary tests to ensure that systems, equipment, and components are ready for independent agency testing. Include the following minimum preparations as appropriate:
 - 1. Perform insulation-resistance tests.
 - 2. Perform continuity tests.
 - 3. Perform rotation test (for motors to be tested).
 - 4. Provide a stable source of single-phase, 208/120-V electrical power for test instrumentation at each test location.
- B. Test and Inspection Reports: In addition to requirements specified elsewhere, report the following:

**SECTION 16080
ELECTRICAL TESTING**

1. Manufacturer's written testing and inspecting instructions.
2. Calibration and adjustment settings of adjustable and interchangeable devices involved in tests.
3. Tabulation of expected measurement results made before measurements.
4. Tabulation of "as-found" and "as-left" measurement and observation results.

END OF SECTION

**SECTION 16120
CONDUCTORS AND CABLES**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Wires and cables rated 600 V and less.
 - 2. Connectors, splices, and terminations rated 600 V and less.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. NEMA: National Electrical Manufacturers Association
 - 2. NFPA: National Fire Protection Association
 - 3. NETA: International Electrical Testing Association
 - 4. ICEA: Insulated Cable Engineers Association
 - 5. UL: Underwriters Laboratories
 - 6. NRTL: Nationally Recognized Testing Laboratory
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
 - 1. Front End Contract Documents
 - 2. Section 01311 "Project Coordination."
 - 3. Section 01330 "Submittal Procedures."
 - 4. Section 01451 "Contractor Quality Assurance and Control."
 - 5. Section 01610 "Common Product Requirements."
 - 6. Section 16075 "Electrical Identification."
 - 7. Section 16130 "Raceways and Boxes."

1.03 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."

**SECTION 16120
CONDUCTORS AND CABLES**

- B. Action Submittals:
 - 1. Product Data: For each type of product.
- C. Informational Submittals:
 - 1. Field quality-control reports.

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."
- B. Testing Agency Qualifications: Member company of NETA or an NRTL.
 - 1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

1.09 WARRANTY

- A. Per "The Whitebook" Section 3-13.3

PART 2 - PRODUCTS

2.01 CONDUCTORS AND CABLES

- A. Copper Conductors: Comply with NEMA WC 70/ICEA S-95-658.
- B. Conductor Insulation: Comply with NEMA WC 70/ICEA S-95-658 for Type THHN-2-THWN-2.

2.02 CONNECTORS AND SPLICES

- A. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.03 SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.

**SECTION 16120
CONDUCTORS AND CABLES**

PART 3 - EXECUTION

3.01 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Copper. Stranded.
- B. Branch Circuits: Copper. Stranded.

3.02 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Exposed Feeders: Type THHN-2-THWN-2, single conductors in raceway.

3.03 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.
- B. Complete raceway installation between conductor and cable termination points according to Section 16130 "Raceways and Boxes" prior to pulling conductors and cables.
- C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members and follow surface contours where possible.

3.04 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
 - 1. Use oxide inhibitor in each splice, termination, and tap for aluminum conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

3.05 IDENTIFICATION

- A. Identify and color-code conductors and cables according to Section 16075 "Electrical Identification."

**SECTION 16120
CONDUCTORS AND CABLES**

- B. Identify each spare conductor at each end with identity number and location of other end of conductor and identify as spare conductor.

3.06 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Performing NETA tests on conductors and cables can be expensive. Consider limiting testing to a certain group of conductors, such as service entrance and feeder conductors, or to those conductors feeding critical equipment and services. To require conductors and cables to be tested, delete options in first subparagraph below.
 - 2. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors for compliance with requirements.
 - 3. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
- B. Test and Inspection Reports: Prepare a written report to record the following:
 - 1. Procedures used.
 - 2. Results that comply with requirements.
 - 3. Results that do not comply with requirements and corrective action taken to achieve compliance with requirements.
- C. Cables will be considered defective if they do not pass tests and inspections.

END OF SECTION

**SECTION 16130
RACEWAYS AND BOXES**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
1. Metal conduits, tubing, and fittings.
 2. Boxes, enclosures, and cabinets.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
1. GRC: Galvanized rigid steel conduit
 2. PVC: Polyvinyl Chloride
 3. NEMA: National Electrical Manufacturers Association
 4. NFPA: National Fire Protection Association
 5. RMC: Rigid Metal Conduit
 6. RNC: Rigid Nonmetal conduit
 7. LMFC: Liquid tight flexible metal conduit
 8. IMC: Intermediate metal conduit
- B. Related Specifications: Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
1. Front End Contract Documents
 2. Section 01311 "Project Coordination."
 3. Section 01330 "Submittal Procedures."
 4. Section 01451 "Contractor Quality Assurance and Control."
 5. Section 01610 "Common Product Requirements."
 6. Section 16075 "Electrical Identification."
 7. Section 16120 "Conductors and Cables."
- C. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.03 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.

**SECTION 16130
RACEWAYS AND BOXES**

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

1.09 WARRANTY

- A. Per "The Whitebook" Section 3-13.3

PART 2 - PRODUCTS

2.01 METAL CONDUITS, TUBING, AND FITTINGS

- A. Listing and Labeling: Raceway conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. LFMC: Liquidtight flexible metal conduit; zinc-coated steel with sunlight-resistant PVC jacket and complying with UL 360.
- C. RMC: Rigid metal conduit; galvanized rigid steel; ANSI C80.1.
- D. RNC: Rigid nonmetallic conduit; NEMA TC 2, Schedule 40 PVC, with NEMA TC3 fittings.
- E. Raceway Fittings: Specifically designed for raceway type with which used.
 - 1. Fittings for Metal Conduit: Comply with NEMA FB 1 and UL 514B.
 - 2. Coating for Fittings for PVC-Coated Conduit: Minimum thickness of 0.040 inch with overlapping sleeves protecting threaded joints.

**SECTION 16130
RACEWAYS AND BOXES**

- F. Joint Compound for RMC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.02 BOXES, ENCLOSURES, AND CABINETS

- A. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
- B. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, aluminum, Type FD, with gasketed cover.
- C. Nonmetallic Outlet and Device Boxes: Comply with NEMA OS 2 and UL 514C.
- D. Luminaire Outlet Boxes: Nonadjustable, designed for attachment of luminaire weighing 50 lb. Outlet boxes designed for attachment of luminaires weighing more than 50 lb shall be listed and marked for the maximum allowable weight.
- E. Box extensions used to accommodate new building finishes shall be of same material as recessed box.
- F. Device Box Dimensions: 4 inches by 2-1/8 inches by 2-1/8 inches deep.
- G. Gangable boxes are prohibited.

PART 3 - EXECUTION

3.01 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below unless otherwise indicated:
 - 1. Exposed Conduit: RMC.
 - 2. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
 - 3. Boxes and Enclosures: NEMA 250, Type 3R or Type 4, unless otherwise indicated.
- B. Indoors: Apply raceway products as specified below unless otherwise indicated:
 - 1. In Concrete Slab: RNC.
 - 2. Below Slab on Grade or in Crawlspace: RNC.
 - 3. Connection to Vibrating Equipment: LFMC.
 - 4. Boxes and Enclosures: NEMA 250, Type 1, unless otherwise indicated.
- C. Minimum Raceway Size: 1/2-inch trade size.

SECTION 16130 RACEWAYS AND BOXES

3.02 INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
- B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- C. Complete raceway installation before starting conductor installation.
- D. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches of changes in direction.
- E. Support conduit within 12 inches of enclosures to which attached.
- F. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- G. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.
- H. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch trade size and insulated throat metal bushings on 1-1/2-inch trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
- I. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.
- J. Cut conduit perpendicular to the length. For conduits 2-inch trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.
- K. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.
- L. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of raceways at the following points:
 - 1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 - 2. Where an underground service raceway enters a building or structure.

**SECTION 16130
RACEWAYS AND BOXES**

- 3. Where otherwise required by NFPA 70.
- M. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches of flexible conduit for equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
 - 1. Use LFMC in damp or wet locations subject to severe physical damage.
 - 2. Use LFMC in damp or wet locations not subject to severe physical damage.
- N. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.
- O. Locate boxes so that cover or plate will not span different building finishes.
- P. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
- Q. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

3.03 PROTECTION

- A. Protect coatings, finishes, and cabinets from damage and deterioration.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION

SECTION 16442 PANELBOARDS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Lighting and appliance branch-circuit panelboards.

1.02 REFERENCES

- A. Abbreviations and Acronyms
 - 1. IEEE: Institute of Electrical and Electronics Engineers
 - 2. NEMA: National Electrical Manufacturers Association
 - 3. NRTL: Nationally Recognized Testing Laboratory
 - 4. NETA: International Electrical Testing Association
 - 5. SEI: Structural Engineering Institute
 - 6. ASCE: American Society for Civil Engineers
 - 7. NECA: National Electrical Contractors Association
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
 - 1. Front End Contract Documents
 - 2. Section 01311 "Project Coordination."
 - 3. Section 01330 "Submittal Procedures."
 - 4. Section 01451 "Contractor Quality Assurance and Control."
 - 5. Section 01610 "Common Product Requirements."
- C. Standard References: See Front End Contract Documents

1.03 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.
- B. Withstand: the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

SECTION 16442 PANELBOARDS

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Product Data: For each type of panelboard, switching and overcurrent protective device, transient voltage suppression device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
- C. Shop Drawings: For each panelboard and related equipment.
 - 1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
 - 2. Detail enclosure types and details for types other than NEMA 250, Type 1.
 - 3. Detail bus configuration, current, and voltage ratings.
 - 4. Short-circuit current rating of panelboards and overcurrent protective devices.
 - 5. Include evidence of NRTL listing for series rating of installed devices.
 - 6. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
 - 7. Include wiring diagrams for power, signal, and control wiring.
- D. Qualification Data: For qualified testing agency.
- E. Seismic Qualification Certificates: Submit certification that panelboards, overcurrent protective devices, accessories, and components will withstand seismic forces. Include the following:
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- F. Field Quality-Control Reports:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - 3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
- G. Panelboard Schedules: For installation in panelboards.

SECTION 16442 PANELBOARDS

- H. Operation and Maintenance Data: For panelboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section "Operation and Maintenance Data," include the following:
 - 1. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."
- B. Testing Agency Qualifications: Member company of NETA or an NRTL.
 - 1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.
- C. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- E. Comply with NEMA PB 1.
- F. Comply with NFPA 70.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."
- B. Remove loose packing and flammable materials from inside panelboards; install temporary electric heating (250 W per panelboard) to prevent condensation.
- C. Handle and prepare panelboards for installation according to NECA 407.
- D. Coordination:
 - 1. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
 - 2. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 3.

SECTION 16442 PANELBOARDS

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Assurance and Control."
- B. Environmental Limitations:
 - 1. Do not deliver or install panelboards until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above panelboards is complete.
 - 2. Rate equipment for continuous operation under the following conditions unless otherwise indicated:
 - a. Ambient Temperature: Not exceeding 23 deg F to plus 104 deg F.
 - b. Altitude: Not exceeding 1000 feet.
- C. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:
 - 1. Notify Construction Manager no fewer than seven days in advance of proposed interruption of electric service.
 - 2. Do not proceed with interruption of electric service without Construction Manager's written permission.
 - 3. Comply with NFPA 70E.

1.09 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS FOR PANELBOARDS

- A. Fabricate and test panelboards according to IEEE 344 to withstand seismic forces.
- B. Enclosures: Surface-mounted cabinets.
 - 1. Rated for environmental conditions at installed location.
 - a. Wet or Damp Indoor Locations: NEMA 250, Type 4X Stainless Steel.
 - 2. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.

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3. Fungus Proofing: Permanent fungicidal treatment for overcurrent protective devices and other components.
 4. Directory Card: Inside panelboard door, mounted in transparent card holder.
- C. Incoming Mains Location: Top and bottom.
- D. Phase, Neutral, and Ground Buses:
1. Material: Hard-drawn copper, 98 percent conductivity.
 2. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.
- E. Conductor Connectors: Suitable for use with conductor material and sizes.
1. Material: Hard-drawn copper, 98 percent conductivity.
 2. Main and Neutral Lugs: Mechanical type.
 3. Ground Lugs and Bus-Configured Terminators: Compression type.
- F. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.
- G. Panelboard Short-Circuit Current Rating: Fully Rated for fault duty indicated.
- H. Seismic Performance: Panelboards shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.

2.02 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 3. Siemens Energy & Automation, Inc.
 4. Square D; a brand of Schneider Electric.
 5. Or Approved Equal
- B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
- C. Mains: Circuit breaker or lugs only.
- D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
- E. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

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2.03 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.
 - 5. Or Approved Equal

- B. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with series-connected rating to meet available fault currents.
 - 1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
 - 2. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:
 - a. Standard frame sizes, trip ratings, and number of poles.
 - b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
 - c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
 - d. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in on or off position.

2.04 ACCESSORY COMPONENTS AND FEATURES

- A. Accessory Set: Include tools and miscellaneous items required for overcurrent protective device test, inspection, maintenance, and operation.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Receive, inspect, handle, and store panelboards according to NECA 407.

- B. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.

SECTION 16442 PANELBOARDS

- C. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install panelboards and accessories according to NECA 407.
- B. Mount top of trim 90 inches above finished floor unless otherwise indicated.
- C. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
- D. Install overcurrent protective devices and controllers not already factory installed.
 - 1. Set field-adjustable, circuit-breaker trip ranges.
- E. Install filler plates in unused spaces.
- F. Arrange conductors in gutters into groups and bundle and wrap with wire ties.
- G. Comply with NECA 1.

3.03 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Division 16 Section "Electrical Identification."
- B. Create a directory to indicate installed circuit loads; incorporate Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
- C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Division 16 Section "Electrical Identification."

3.04 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Acceptance Testing Preparation:
 - 1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.

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PANELBOARDS**

- C. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- D. Panelboards will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.05 ADJUSTING

- A. Adjust moving parts and operable component to function smoothly, and lubricate as recommended by manufacturer.

3.06 PROTECTION

- A. Temporary Heating: Apply temporary heat to maintain temperature according to manufacturer's written instructions.

END OF SECTION

**SECTION 16461
DRY-TYPE TRANSFORMERS (600 V AND LESS)**

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes the following types of dry-type transformers rated 600 V and less, with capacities up to 100 kVA:
 - 1. Distribution transformers.

1.02 REFERENCES

- A. Abbreviations and Acronyms
 - 1. NFPA: National Fire Protection Association
 - 2. IEEE: Institute of Electrical and Electronics Engineers
 - 3. NEMA: National Electrical Manufacturers Association
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
 - 1. Front End Contract Documents
 - 2. Section 01311 "Project Coordination."
 - 3. Section 01330 "Submittal Procedures."
 - 4. Section 01451 "Contractor Quality Assurance and Control."
 - 5. Section 01610 "Common Product Requirements."
 - 6. Section 16120 "Conductors and Cables."
 - 7. Section 16050 "Grounding and Bonding."

1.03 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Product Data Include rated nameplate data, capacities, weights, dimensions, minimum clearances, installed devices and features, and performance for each type and size of transformer indicated.
- C. Shop Drawings: Wiring and connection diagrams.

**SECTION 16461
DRY-TYPE TRANSFORMERS (600 V AND LESS)**

- D. Manufacturer Seismic Qualification Certification: Submit certification that transformer assembly and components will withstand applicable seismic forces. Include the following:
1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- E. Source quality-control test reports.
- F. Output Settings Reports: Record of tap adjustments specified in Part 3.

1.06 QUALITY ASSURANCE

- A. See Section 01451 "Contractor Quality Assurance and Control."
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with IEEE C 57.12.91.
- D. Energy-Efficient Transformers Rated 15 kVA and Larger: Certified as meeting NEMA TP 1, Class 1 efficiency levels when tested according to NEMA TP 2.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."
- B. Temporary Heating: Apply temporary heat according to manufacturer's written instructions within the enclosure of each ventilated-type unit, throughout periods during which equipment is not energized and when transformer is not in a space that is continuously under normal control of temperature and humidity.
- C. Coordination:
1. Coordinate size and location of concrete bases for floor mounted units. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 3.
 2. Coordinate installation of wall-mounting and structure-hanging supports.

**SECTION 16461
DRY-TYPE TRANSFORMERS (600 V AND LESS)**

1.08 WARRANTY

- A. Per "The Whitebook" Section 3-13.3

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Cutler-Hammer.
 - 2. GE Electrical Distribution & Control.
 - 3. Square D/Groupe Schneider NA.
 - 4. Or Approved Equal

2.02 MATERIALS

- A. Description: Factory-assembled and tested, air-cooled units for 60-Hz service.
- B. Cores: Grain-oriented, non-aging silicon steel.
- C. Coils: Continuous windings without splices, except for taps.
 - 1. Internal Coil Connections: Brazed or pressure type.

2.03 DISTRIBUTION TRANSFORMERS

- A. Comply with NEMA ST 20, and list and label as complying with UL 1561.
- B. Provide transformers that are internally braced to withstand applicable seismic forces.
- C. Cores: One leg per phase.
- D. Enclosure: Ventilated, raintight, NEMA 250, Type 3R, stainless steel.
 - 1. Core and coil shall be encapsulated within resin compound, sealing out moisture and air.
- E. Insulation Class: 220 deg C, UL-component-recognized insulation system with a maximum of 150 deg C rise above 40 deg C ambient temperature.
- F. Taps for Transformers 25 kVA and Larger: Two 2.5 percent taps above and two 2.5 percent taps below normal full capacity.
- G. Wall Brackets: Manufacturer's standard brackets.

**SECTION 16461
DRY-TYPE TRANSFORMERS (600 V AND LESS)**

2.04 SOURCE QUALITY CONTROL

- A. Test and inspect transformers according to IEEE C57.12.91.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine conditions for compliance with enclosure- and ambient-temperature requirements for each transformer.
- B. Verify that field measurements are as needed to maintain working clearances required by NFPA 70 and manufacturer's written instructions.
- C. Examine walls and floors for suitable mounting conditions where transformers will be installed.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install wall-mounting transformers level and plumb with wall brackets fabricated by transformer manufacturer.
- B. Install floor-mounting transformers level on concrete bases.
 - 1. Anchor transformers to concrete bases according to manufacturer's written instructions and seismic codes at Project.

3.03 CONNECTIONS

- A. Ground equipment according to Division 16 Section "Grounding and Bonding."
- B. Connect wiring according to Division 16 Section "Conductors and Cables."
- C. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.04 ADJUSTING

- A. Record transformer secondary voltage at each unit under expected final load conditions. Adjust transformer taps to provide optimum voltage conditions at secondary terminals. Optimum is defined as not exceeding nameplate voltage plus 10 percent and not being lower than nameplate voltage minus 5 percent. Submit recording and tap settings as test results.
- B. Adjust buck-boost transformers to provide nameplate voltage of equipment being served, plus or minus 5 percent, at secondary terminals.

**SECTION 16461
DRY-TYPE TRANSFORMERS (600 V AND LESS)**

- C. Output Settings Report: Prepare a written report recording output voltages and tap settings.

END OF SECTION

**SECTION 16511
EXTERIOR LIGHTING**

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Exterior lighting fixtures and poles.

1.02 REFERENCES

- A. Abbreviations and Acronyms:
 - 1. NFPA: National Fire Protection Association
 - 2. LED: Light-Emitting Diode
 - 3. UV: Ultraviolet
- B. Related Specifications: The Work of the following Sections applies to the Work of this Section. Other Sections, not referenced below, shall also apply to the extent required for proper performance of this Work.
 - 1. Front End Contract Documents
 - 2. Section 01311 "Project Coordination."
 - 3. Section 01330 "Submittal Procedures."
 - 4. Section 01451 "Contractor Quality Assurance and Control."
 - 5. Section 01610 "Common Product Requirements."
 - 6. Division 16 Specifications

1.03 DEFINITIONS

- A. The definitions given in the Front End Contract Documents apply to this work.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. See Section 01311 "Project Coordination."

1.05 SUBMITTALS

- A. See Section 01330 "Submittal Procedures."
- B. Product Data: For each type of lighting fixture scheduled, arranged in order of fixture designation. Include data on features, accessories, finishes, and the following:
 - 1. Physical description of fixture, including dimensions and verification of indicated parameters.
 - 2. LED's and Driver

**SECTION 16511
EXTERIOR LIGHTING**

- C. Wiring Diagrams: Power, signal, and control wiring.
- D. Source quality-control test reports.
- E. Warranties: Special warranties specified in this Section.

1.06 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01610 "Common Product Requirements."

1.08 SITE CONDITIONS

- A. See Section 01451 "Contractor Quality Control."

1.09 WARRANTY

- A. Special Warranty for LED lighting fixtures: Manufacturer's standard form in which manufacturer agrees to repair or replace units that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period for LED driver light engine, and housing:
 - a. 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Provide products per manufacturer as indicated on the drawings.

2.02 FIXTURES AND COMPONENTS, GENERAL

- A. Metal Parts: Free of burrs and sharp corners and edges.
- B. Sheet Metal Components: Steel, unless otherwise indicated. Form and support to prevent warping and sagging.
- C. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

**SECTION 16511
EXTERIOR LIGHTING**

- D. Reflecting surfaces shall have minimum reflectance as follows, unless otherwise indicated:
 - 1. White Surfaces: 85 percent.
 - 2. Specular Surfaces: 83 percent.
 - 3. Diffusing Specular Surfaces: 75 percent.
 - 4. Laminated Silver Metallized Film: 90 percent.

- E. Plastic Diffusers, Covers, and Globes:
 - 1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
 - a. Lens Thickness: At least 0.125 inch minimum unless different thickness is scheduled.
 - b. UV stabilized.
 - 2. Glass: Annealed crystal glass, unless otherwise indicated.

2.03 FINISHES

- A. Fixtures: Manufacturers' standard, unless otherwise indicated.
 - 1. Paint Finish: Applied over corrosion-resistant treatment or primer, free of defects.
 - 2. Metallic Finish: Corrosion resistant.

2.04 SOURCE QUALITY CONTROL

- A. Factory test fixtures with ballasts and lamps; certify results for electrical ratings and photometric data.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Fixtures: Set level and plumb.

3.02 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.03 FIELD QUALITY CONTROL

- A. Inspect each installed fixture for damage. Replace damaged fixtures and components.

**SECTION 16511
EXTERIOR LIGHTING**

- B. Verify normal operation of each fixture after installation.
- C. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.
- D. Corroded Fixtures: During warranty period, replace fixtures that show any signs of corrosion.

3.04 CONTROLS

- A. Lighting Control Panel:
 - 1. Program lighting control panel per City direction compliant with California Energy Code control requirements.
- B. Exterior Lighting Motion Sensor:
 - 1. Locate motion sensors on pole at height and direction aiming recommended by manufacturer for optimum control of outdoor lighting system.
 - 2. Motion sensors shall be programmed to function by control zones indicated on the drawings and shall be compliant with California Energy Code control requirements.

END OF SECTION

APPENDIX A
NOTICE OF EXEMPTION

NOTICE OF EXEMPTION

(Check one or both)

TO: Recorder/County Clerk
P.O. Box 1750, MS A-33
1600 Pacific Hwy, Room 260
San Diego, CA 92101-2400

FROM: City of San Diego
Development Services Department
1222 First Avenue, MS 501
San Diego, CA 92101

Office of Planning and Research
1400 Tenth Street, Room 121
Sacramento, CA 95814

Project Name/Number: Scripps Miramar Ranch Library / 665541

SCH No.: N/A

Project Location-Specific: 10301 Scripps Lake Drive, San Diego, CA 92131

Project Location-City/County: San Diego/San Diego

Description of nature and purpose of the Project: Public Project Assessment (PPA) for the expansion of Scripps Miramar Ranch Library parking lot. The project will add 54 additional parking spaces (52 standard and two ADA) to the existing parking lot. The project proposes a Boundary Line Correction to avoid development into the City's Multiple Planning Habitat Area (MHPA). The project would exchange 0.094-acre of Tier IV habitat for 0.094-acre of Tier II and Tier IV habitat onsite within the City's property. The project also includes driveway and landscaping improvements. The project is located in the IP-2 zone in Council District 5.

Name of Public Agency Approving Project: City of San Diego

Name of Person or Agency Carrying Out Project: Peter Fogec, City of SD
525 B Street #750
San Diego, CA 92101
(619) 533-5118

Exempt Status: (CHECK ONE)

- Ministerial (Sec. 21080(b)(1); 15268);
- Declared Emergency (Sec. 21080(b)(3); 15269(a));
- Emergency Project (Sec. 21080(b)(4); 15269 (b)(c))
- Categorical Exemption: CEQA Guidelines Section 15301, EXISTING FACILITIES

Reasons why project is exempt: The City conducted an environmental review which determined that the proposed project is exempt from CEQA pursuant to CEQA Guidelines Section 15301, which allows for the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing facilities (public or private), involving negligible or no expansion of existing or former use. The proposed project, as included in the Project Description of this notice, is not an expansion of use. The project proposes to add additional parking to serve the existing library. No environmental impacts were identified for the proposed project. Additionally, none of the exceptions described in CEQA Guidelines Section 15300.2 apply.

Lead Agency Contact Person: Rachael Ferrell

Telephone: (619) 446-5129

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a notice of exemption been filed by the public agency approving the project? Yes No

It is hereby certified that the City of San Diego has determined the above activity to be exempt from CEQA

Sara Osborn

Signature/Title

9/14/2021

Date

Check One:

Signed By Lead Agency

Signed by Applicant

Date Received for Filing with County Clerk or OPR:

APPENDIX B
FIRE HYDRANT METER PROGRAM

CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS	NUMBER DI 55.27	DEPARTMENT Water Department
SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 1 OF 10	EFFECTIVE DATE October 15, 2002
	SUPERSEDES DI 55.27	DATED April 21, 2000

1. **PURPOSE**

1.1 To establish a Departmental policy and procedure for issuance, proper usage and charges for fire hydrant meters.

2. **AUTHORITY**

2.1 All authorities and references shall be current versions and revisions.

2.2 San Diego Municipal Code (NC) Chapter VI, Article 7, Sections 67.14 and 67.15

2.3 Code of Federal Regulations, Safe Drinking Water Act of 1986

2.4 California Code of Regulations, Titles 17 and 22

2.5 California State Penal Code, Section 498B.0

2.6 State of California Water Code, Section 110, 500-6, and 520-23

2.7 Water Department Director

Reference

2.8 State of California Guidance Manual for Cross Connection Programs

2.9 American Water Works Association Manual M-14, Recommended Practice for Backflow Prevention

2.10 American Water Works Association Standards for Water Meters

2.11 U.S.C. Foundation for Cross Connection Control and Hydraulic Research Manual

3. **DEFINITIONS**

3.1 **Fire Hydrant Meter:** A portable water meter which is connected to a fire hydrant for the purpose of temporary use. (These meters are sometimes referred to as Construction Meters.)

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SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 2 OF 10	EFFECTIVE DATE October 15, 2002
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- 3.2 **Temporary Water Use:** Water provided to the customer for no longer than twelve (12) months.
- 3.3 **Backflow Preventor:** A Reduced Pressure Principal Assembly connected to the outlet side of a Fire Hydrant Meter.

4. **POLICY**

- 4.1 The Water Department shall collect a deposit from every customer requiring a fire hydrant meter and appurtenances prior to providing the meter and appurtenances (see Section 7.1 regarding the Fees and Deposit Schedule). The deposit is refundable upon the termination of use and return of equipment and appurtenances in good working condition.
- 4.2 Fire hydrant meters will have a 2 ½" swivel connection between the meter and fire hydrant. The meter shall not be connected to the 4" port on the hydrant. All Fire Hydrant Meters issued shall have a Reduced Pressure Principle Assembly (RP) as part of the installation. Spanner wrenches are the only tool allowed to turn on water at the fire hydrant.
- 4.3 The use of private hydrant meters on City hydrants is prohibited, with exceptions as noted below. All private fire hydrant meters are to be phased out of the City of San Diego. All customers who wish to continue to use their own fire hydrant meters must adhere to the following conditions:
 - a. Meters shall meet all City specifications and American Water Works Association (AWWA) standards.
 - b. Customers currently using private fire hydrant meters in the City of San Diego water system will be allowed to continue using the meter under the following conditions:
 - 1. The customer must submit a current certificate of accuracy and calibration results for private meters and private backflows annually to the City of San Diego, Water Department, Meter Shop.

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2. The meter must be properly identifiable with a clearly labeled serial number on the body of the fire hydrant meter. The serial number shall be plainly stamped on the register lid and the main casing. Serial numbers shall be visible from the top of the meter casing and the numbers shall be stamped on the top of the inlet casing flange.
3. All meters shall be locked to the fire hydrant by the Water Department, Meter Section (see Section 4.7).
4. All meters shall be read by the Water Department, Meter Section (see Section 4.7).
5. All meters shall be relocated by the Water Department, Meter Section (see Section 4.7).
6. These meters shall be tested on the anniversary of the original test date and proof of testing will be submitted to the Water Department, Meter Shop, on a yearly basis. If not tested, the meter will not be allowed for use in the City of San Diego.
7. All private fire hydrant meters shall have backflow devices attached when installed.
8. The customer must maintain and repair their own private meters and private backflows.
9. The customer must provide current test and calibration results to the Water Department, Meter Shop after any repairs.
10. When private meters are damaged beyond repair, these private meters will be replaced by City owned fire hydrant meters.

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SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 4 OF 10	EFFECTIVE DATE October 15, 2002
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11. When a private meter malfunctions, the customer will be notified and the meter will be removed by the City and returned to the customer for repairs. Testing and calibration results shall be given to the City prior to any re-installation.
 12. The register shall be hermetically sealed straight reading and shall be readable from the inlet side. Registration shall be in hundred cubic feet.
 13. The outlet shall have a 2 ½ “National Standards Tested (NST) fire hydrant male coupling.
 14. Private fire hydrant meters shall not be transferable from one contracting company to another (i.e. if a company goes out of business or is bought out by another company).
- 4.4 All fire hydrant meters and appurtenances shall be installed, relocated and removed by the City of San Diego, Water Department. All City owned fire hydrant meters and appurtenances shall be maintained by the City of San Diego, Water Department, Meter Services.
- 4.5 If any fire hydrant meter is used in violation of this Department Instruction, the violation will be reported to the Code Compliance Section for investigation and appropriate action. Any customer using a fire hydrant meter in violation of the requirements set forth above is subject to fines or penalties pursuant to the Municipal Code, Section 67.15 and Section 67.37.
- 4.6 Conditions and Processes for Issuance of a Fire Hydrant Meter**
- Process for Issuance
- a. Fire hydrant meters shall only be used for the following purposes:
 1. Temporary irrigation purposes not to exceed one year.

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SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 5 OF 10	EFFECTIVE DATE October 15, 2002
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2. Construction and maintenance related activities (see Tab 2).
 - b. No customer inside or outside the boundaries of the City of San Diego Water Department shall resell any portion of the water delivered through a fire hydrant by the City of San Diego Water Department.
 - c. The City of San Diego allows for the issuance of a temporary fire hydrant meter for a period not to exceed 12 months (365 days). An extension can only be granted in writing from the Water Department Director for up to 90 additional days. A written request for an extension by the consumer must be submitted at least 30 days prior to the 12 month period ending. No extension shall be granted to any customer with a delinquent account with the Water Department. No further extensions shall be granted.
 - d. Any customer requesting the issuance of a fire hydrant meter shall file an application with the Meter Section. The customer must complete a "Fire Hydrant Meter Application" (Tab 1) which includes the name of the company, the party responsible for payment, Social Security number and/or California ID, requested location of the meter (a detailed map signifying an exact location), local contact person, local phone number, a contractor's license (or a business license), description of specific water use, duration of use at the site and full name and address of the person responsible for payment.
 - e. At the time of the application the customer will pay their fees according to the schedule set forth in the Rate Book of Fees and Charges, located in the City Clerk's Office. All fees must be paid by check, money order or cashiers check, made payable to the City Treasurer. Cash will not be accepted.
 - f. No fire hydrant meters shall be furnished or relocated for any customer with a delinquent account with the Water Department.
 - g. After the fees have been paid and an account has been created, the

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SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 6 OF 10	EFFECTIVE DATE October 15, 2002
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meter shall be installed within 48 hours (by the second business day). For an additional fee, at overtime rates, meters can be installed within 24 hours (within one business day).

4.7 Relocation of Existing Fire Hydrant Meters

- a. The customer shall call the Fire Hydrant Meter Hotline (herein referred to as "Hotline"), a minimum of 24 hours in advance, to request the relocation of a meter. A fee will be charged to the existing account, which must be current before a work order is generated for the meter's relocation.
- b. The customer will supply in writing the address where the meter is to be relocated (map page, cross street, etc). The customer must update the original Fire Hydrant Meter Application with any changes as it applies to the new location.
- c. Fire hydrant meters shall be read on a monthly basis. While fire hydrant meters and backflow devices are in service, commodity, base fee and damage charges, if applicable, will be billed to the customer on a monthly basis. If the account becomes delinquent, the meter will be removed.

4.8 Disconnection of Fire Hydrant Meter

- a. After ten (10) months a "Notice of Discontinuation of Service" (Tab 3) will be issued to the site and the address of record to notify the customer of the date of discontinuance of service. An extension can only be granted in writing from the Water Department Director for up to 90 additional days (as stated in Section 4.6C) and a copy of the extension shall be forwarded to the Meter Shop Supervisor. If an extension has not been approved, the meter will be removed after twelve (12) months of use.
- b. Upon completion of the project the customer will notify the Meter Services office via the Hotline to request the removal of the fire hydrant meter and appurtenances. A work order will be generated

CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS	NUMBER DI 55.27	DEPARTMENT Water Department
SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 7 OF 10	EFFECTIVE DATE October 15, 2002
	SUPERSEDES DI 55.27	DATED April 21, 2000

for removal of the meter.

- c. Meter Section staff will remove the meter and backflow prevention assembly and return it to the Meter Shop. Once returned to the Meter Shop the meter and backflow will be tested for accuracy and functionality.
- d. Meter Section Staff will contact and notify Customer Services of the final read and any charges resulting from damages to the meter and backflow or its appurtenance. These charges will be added on the customer's final bill and will be sent to the address of record. Any customer who has an outstanding balance will not receive additional meters.
- e. Outstanding balances due may be deducted from deposits and any balances refunded to the customer. Any outstanding balances will be turned over to the City Treasurer for collection. Outstanding balances may also be transferred to any other existing accounts.

5. **EXCEPTIONS**

- 5.1 Any request for exceptions to this policy shall be presented, in writing, to the Customer Support Deputy Director, or his/her designee for consideration.

6. **MOBILE METER**

- 6.1 Mobile meters will be allowed on a case by case basis. All mobile meters will be protected by an approved backflow assembly and the minimum requirement will be a Reduced Pressure Principal Assembly. The two types of Mobile Meters are vehicle mounted and floating meters. Each style of meters has separate guidelines that shall be followed for the customer to retain service and are described below:

- a) **Vehicle Mounted Meters:** Customer applies for and receives a City owned Fire Hydrant Meter from the Meter Shop. The customer mounts the meter on the vehicle and brings it to the Meter Shop for

CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS	NUMBER DI 55.27	DEPARTMENT Water Department
SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 8 OF 10	EFFECTIVE DATE October 15, 2002
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inspection. After installation is approved by the Meter Shop the vehicle and meter shall be brought to the Meter Shop on a monthly basis for meter reading and on a quarterly basis for testing of the backflow assembly. Meters mounted at the owner's expense shall have the one year contract expiration waived and shall have meter or backflow changed if either fails.

b) **Floating Meters:** Floating Meters are meters that are not mounted to a vehicle. **(Note: All floating meters shall have an approved backflow assembly attached.)** The customer shall submit an application and a letter explaining the need for a floating meter to the Meter Shop. The Fire Hydrant Meter Administrator, after a thorough review of the needs of the customer, (i.e. number of jobsites per day, City contract work, lack of mounting area on work vehicle, etc.), may issue a floating meter. At the time of issue, it will be necessary for the customer to complete and sign the "Floating Fire Hydrant Meter Agreement" which states the following:

- 1) The meter will be brought to the Meter Shop at 2797 Caminito Chollas, San Diego on the third week of each month for the monthly read by Meter Shop personnel.
- 2) Every other month the meter will be read and the backflow will be tested. This date will be determined by the start date of the agreement.

If any of the conditions stated above are not met the Meter Shop has the right to cancel the contract for floating meter use and close the account associated with the meter. The Meter Shop will also exercise the right to refuse the issuance of another floating meter to the company in question.

Any Fire Hydrant Meter using reclaimed water shall not be allowed use again with any potable water supply. The customer shall incur the cost of replacing the meter and backflow device in this instance.

CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS	NUMBER DI 55.27	DEPARTMENT Water Department
SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 9 OF 10	EFFECTIVE DATE October 15, 2002
	SUPERSEDES DI 55.27	DATED April 21, 2000

7. **FEE AND DEPOSIT SCHEDULES**

7.1 **Fees and Deposit Schedules:** The fees and deposits, as listed in the Rate Book of Fees and Charges, on file with the Office of the City Clerk, are based on actual reimbursement of costs of services performed, equipment and materials. These deposits and fees will be amended, as needed, based on actual costs. Deposits, will be refunded at the end of the use of the fire hydrant meter, upon return of equipment in good working condition and all outstanding balances on account are paid. Deposits can also be used to cover outstanding balances.

All fees for equipment, installation, testing, relocation and other costs related to this program are subject to change without prior notification. The Mayor and Council will be notified of any future changes.

8. **UNAUTHORIZED USE OF WATER FROM A HYDRANT**

8.1 Use of water from any fire hydrant without a properly issued and installed fire hydrant meter is theft of City property. Customers who use water for unauthorized purposes or without a City of San Diego issued meter will be prosecuted.

8.2 If any unauthorized connection, disconnection or relocation of a fire hydrant meter, or other connection device is made by anyone other than authorized Water Department personnel, the person making the connection will be prosecuted for a violation of San Diego Municipal Code, Section 67.15. In the case of a second offense, the customer's fire hydrant meter shall be confiscated and/or the deposit will be forfeited.

8.3 Unauthorized water use shall be billed to the responsible party. Water use charges shall be based on meter readings, or estimates when meter readings are not available.

8.4 In case of unauthorized water use, the customer shall be billed for all applicable charges as if proper authorization for the water use had been obtained, including but not limited to bi-monthly service charges, installation charges and removal charges.

CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS	NUMBER DI 55.27	DEPARTMENT Water Department
SUBJECT FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)	PAGE 10 OF 10	EFFECTIVE DATE October 15, 2002
	SUPERSEDES DI 55.27	DATED April 21, 2000

- 8.5 If damage occurs to Water Department property (i.e. fire hydrant meter, backflow, various appurtenances), the cost of repairs or replacements will be charged to the customer of record (applicant).

Water Department Director

- Tabs: 1. Fire Hydrant Meter Application
2. Construction & Maintenance Related Activities With No Return To Sewer
3. Notice of Discontinuation of Service

APPENDIX

Administering Division: Customer Support Division

Subject Index: Construction Meters
Fire Hydrant
Fire Hydrant Meter Program
Meters, Floating or Vehicle Mounted
Mobile Meter
Program, Fire Hydrant Meter

Distribution: DI Manual Holders



Application for Fire Hydrant Meter (EXHIBIT A)

(For Office Use Only)

NS REQ	FAC#
DATE	BY

METER SHOP (619) 527-7449

Meter Information

Application Date	Requested Install Date:
------------------	-------------------------

Fire Hydrant Location: (Attach Detailed Map//Thomas Bros. Map Location or Construction drawing.) <u>Zip:</u>	T.B.	G.B. (CITY USE)
Specific Use of Water:		
Any Return to Sewer or Storm Drain, if so, explain:		
Estimated Duration of Meter Use: <input type="text"/>	<input type="checkbox"/>	Check Box if Reclaimed Water

Company Information

Company Name:			
Mailing Address:			
City:	State:	Zip:	Phone: ()
*Business license#		*Contractor license#	
A Copy of the Contractor's license OR Business License is required at the time of meter issuance.			
Name and Title of Billing Agent: <small>(PERSON IN ACCOUNTS PAYABLE)</small>			Phone: ()
Site Contact Name and Title:			Phone: ()
Responsible Party Name:			Title:
Cal ID#			Phone: ()
Signature:		Date:	
<small>Guarantees Payment of all Charges Resulting from the use of this Meter. Insures that employees of this Organization understand the proper use of Fire Hydrant Meter</small>			

Fire Hydrant Meter Removal Request	Requested Removal Date:
Provide Current Meter Location if Different from Above:	
Signature:	Title: Date:
Phone: ()	Pager: ()

<input type="checkbox"/> City Meter	<input type="checkbox"/> Private Meter	
Contract Acct #:	Deposit Amount: \$ 936.00	Fees Amount: \$ 62.00
Meter Serial #	Meter Size: 05	Meter Make and Style: 6-7
Backflow #	Backflow Size:	Backflow Make and Style:
Name:	Signature:	Date:

WATER USES WITHOUT ANTICIPATED CHARGES FOR RETURN TO SEWER

Auto Detailing
Backfilling
Combination Cleaners (Vactors)
Compaction
Concrete Cutters
Construction Trailers
Cross Connection Testing
Dust Control
Flushing Water Mains
Hydro Blasting
Hydro Seeing
Irrigation (for establishing irrigation only; not continuing irrigation)
Mixing Concrete
Mobile Car Washing
Special Events
Street Sweeping
Water Tanks
Water Trucks
Window Washing

Note:

1. If there is any return to sewer or storm drain, then sewer and/or storm drain fees will be charges.

Date

Name of Responsible Party
Company Name and Address
Account Number: _____

Subject: Discontinuation of Fire Hydrant Meter Service

Dear Water Department Customer:

The authorization for use of Fire Hydrant Meter # _____, located at (*Meter Location Address*) ends in 60 days and will be removed on or after (*Date Authorization Expires*). Extension requests for an additional 90 days must be submitted in writing for consideration 30 days prior to the discontinuation date. If you require an extension, please contact the Water Department, or mail your request for an extension to:

City of San Diego
Water Department
Attention: Meter Services
2797 Caminito Chollas
San Diego, CA 92105-5097

Should you have any questions regarding this matter, please call the Fire Hydrant Hotline at (619) _____ - _____.

Sincerely,

Water Department

APPENDIX C

MATERIALS TYPICALLY ACCEPTED BY CERTIFICATE OF COMPLIANCE

MATERIALS TYPICALLY ACCEPTED BY CERTIFICATE OF COMPLIANCE

1. Soil amendment
2. Fiber mulch
3. PVC or PE pipe up to 16 inch diameter
4. Stabilizing emulsion
5. Lime
6. Preformed elastomeric joint seal
7. Plain and fabric reinforced elastomeric bearing pads
8. Steel reinforced elastomeric bearing pads
9. Waterstops (Special Condition)
10. Epoxy coated bar reinforcement
11. Plain and reinforcing steel
12. Structural steel
13. Structural timber and lumber
14. Treated timber and lumber
15. Lumber and timber
16. Aluminum pipe and aluminum pipe arch
17. Corrugated steel pipe and corrugated steel pipe arch
18. Structural metal plate pipe arches and pipe arches
19. Perforated steel pipe
20. Aluminum underdrain pipe
21. Aluminum or steel entrance tapers, pipe downdrains, reducers, coupling bands and slip joints
22. Metal target plates
23. Paint (traffic striping)
24. Conductors
25. Painting of electrical equipment
26. Electrical components
27. Engineering fabric
28. Portland Cement
29. PCC admixtures
30. Minor concrete, asphalt
31. Asphalt (oil)
32. Liquid asphalt emulsion
33. Epoxy

APPENDIX D

SAMPLE CITY INVOICE WITH CASH FLOW FORECAST

City of San Diego, CM&FS Div., 9753 Chesapeake Drive, SD CA 92123

Project Name:

Work Order No or Job Order No.

City Purchase Order No.

Resident Engineer (RE):

RE Phone#: Fax#:

Contractor's Name:

Contractor's Address:

Contractor's Phone #:

Contractor's fax #:

Contact Name:

Invoice No.

Invoice Date:

Billing Period: (To)

Item #	Item Description	Contract Authorization				Previous Totals To Date		This Estimate		Totals to Date	
		Unit	Price	Qty	Extension	%/QTY	Amount	% / QTY	Amount	% / QTY	Amount
1					\$ -		\$ -		\$ -	0.00%	\$ -
2					\$ -		\$ -		\$ -	0.00%	\$ -
3					\$ -		\$ -		\$ -	0.00%	\$ -
4					\$ -		\$ -		\$ -	0.00%	\$ -
5					\$ -		\$ -		\$ -	0.00%	\$ -
6					\$ -		\$ -		\$ -	0.00%	\$ -
7					\$ -		\$ -		\$ -	0.00%	\$ -
8					\$ -		\$ -		\$ -	0.00%	\$ -
5					\$ -		\$ -		\$ -	0.00%	\$ -
6					\$ -		\$ -		\$ -	0.00%	\$ -
7					\$ -		\$ -		\$ -	0.00%	\$ -
8					\$ -		\$ -		\$ -	0.00%	\$ -
9					\$ -		\$ -		\$ -	0.00%	\$ -
10					\$ -		\$ -		\$ -	0.00%	\$ -
11					\$ -		\$ -		\$ -	0.00%	\$ -
12					\$ -		\$ -		\$ -	0.00%	\$ -
13					\$ -		\$ -		\$ -	0.00%	\$ -
14					\$ -		\$ -		\$ -	0.00%	\$ -
15					\$ -		\$ -		\$ -	0.00%	\$ -
16					\$ -		\$ -		\$ -	0.00%	\$ -
17	Field Orders				\$ -		\$ -		\$ -	0.00%	\$ -
CHANGE ORDER No.					\$ -		\$ -		\$ -	0.00%	\$ -
Total Authorized Amount (including approved Change Order)					\$ -		\$ -		\$ -	Total Billed	\$ -

SUMMARY	
A. Original Contract Amount	\$ -
B. Approved Change Order #00 Thru #00	\$ -
C. Total Authorized Amount (A+B)	\$ -
D. Total Billed to Date	\$ -
E. Less Total Retention (5% of D)	\$ -
F. Less Total Previous Payments	\$ -
G. Payment Due Less Retention	\$0.00
H. Remaining Authorized Amount	\$0.00

I certify that the materials
have been received by me in
the quality and quantity specified

Resident Engineer

Construction Engineer

Retention and/or Escrow Payment Schedule	
Total Retention Required as of this billing (Item E)	\$0.00
Previous Retention Withheld in PO or in Escrow	\$0.00
Add'l Amt to Withhold in PO/Transfer in Escrow:	\$0.00
Amt to Release to Contractor from PO/Escrow:	

Contractor Signature and Date: _____

NOTE: CONTRACTOR TO CALCULATE TO THE 2ND DECIMAL PLACE.

WBS #:	B18108
Date Submitted:	10/10/2018
NTP Date:	3/23/2018
Final Statement of WD Date:	5/23/2020
Contract #:	K-XX-XXXX-XXX-X
Contract Amount:	\$5,617,000

Construction Cash Flow Forecast

"Sewer and Water Group Job 965 (W)"

Year	January	February	March	April	May	June	July	August	September	October	November	December
2018				15,000	25,000	52,000	52,000	100,000	10,000	100,000	100,000	100,000
2019	10,000	10,000	85,000	58,000	100,000	100,000	100,000	100,000	100,000	100,000	1,000,000	1,000,000
2020	100,000	100,000	100,000	1,000,000	1,000,000							
2021												
2022												
2023												
2024												
2025												

SAMPLE REFERENCE

APPENDIX E
LOCATION MAP

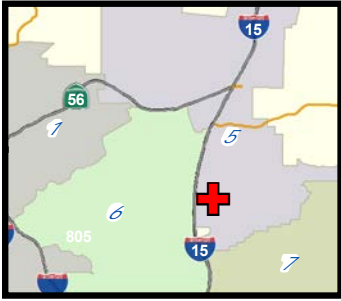
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SCRIPPS MIRAMAR RANCH LIBRARY PARKING LOT EXPANSION

DESIGN
SENIOR ENGINEER
Edgar Lozano
619-533-6613

DESIGN
PROJECT MANAGER
Zina Rummani
619-533-3409

LOCATION MAP



Date: April 19, 2021

Appendix E - Location Map

Legend

 **Proposed New Parking Lot**

COUNCIL DISTRICT: 05



No Scale

S:\PITS\CIP-Preliminary-Engineering-and-Program-Coordination\Sect_Preliminary_Engineering\Buildings\Scrrips Miramar Ranch Library Parking Lot Expansion\CIPTracking\Location Map

COMMUNITY NAME: SCRIPPS MIRAMAR RANCH SAP ID: S-00811

Scrrips Miramar Ranch Library Parking Expansion
K-23-2061-DBB-3



APPENDIX F
ADJACENT PROJECT MAP

Engineering & Capital Projects
SCRIPPS MIRAMAR RANCH LIBRARY
PARKING LOT EXPANSION

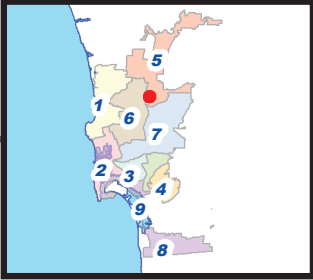
PREDESIGN
 SENIOR ENGINEER
 EDGAR LOZANO
 (619) 533-6613

PREDESIGN
 PROJECT MANAGER
 ZINA RUMMANI
 (619) 533-3409

PREDESIGN
 PROJECT ENGINEER
 JODY CHEUNG
 (858) 573-5071

FOR QUESTIONS ABOUT THIS PROJECT
 Call: 619-533-4629
 Email: engineering@sandiego.gov

PREDESIGN LOCATION MAP



Legend

- Proposed New Parking Lot
- Miramar Valves Replacement - B20015

PROGRAM & PROJECT DEVELOPMENT DIVISION

Council District: 5



No Scale

Document Path: \\ad\dfs\PWD-Shared\PTTS\PTTS-CIP-Preliminary-Engineering-and-Program-Coordination\PUDE Active\S00811 Scripps Miramar Ranch Library Parking Lot Expansion\CIPTracking\Location Map.mxd

Community Name: Scripps MiraMar Ranch

SAP ID# S00811

Scripps Miramar Ranch Library Parking Expansion

348 | Page

K-23-2061-DBB-3

Date: 1/27/2022

Last updated by: HCastillo on 1/27/2022 at 1:21:31 PM

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APPENDIX G

CONTRACTOR'S DAILY QUALITY CONTROL INSPECTION REPORT

Appendix G

City of San Diego
Asphalt Concrete Overlay

Contractor's Daily Quality Control Inspection Report

Project Title: _____ Date: _____

Locations: 1. _____
2. _____
3. _____

Asphalt Mix Specification: Attached Supplier: _____

Dig out Locations: 1. _____
2. _____
3. _____

Tack Coat Application Rate @ Locations:
1. _____
2. _____
3. _____

Asphalt Temperature at Placement @ Locations:
1. _____
2. _____
3. _____

Asphalt Depth @Locations:
1. _____
2. _____
3. _____

Compaction Test Result @Locations:
1. _____
2. _____
3. _____

Location and nature of defects:

- 1. _____
- 2. _____
- 3. _____

Remedial and Corrective Actions taken or proposed for Engineer's approval:

- 1. _____
- 2. _____
- 3. _____

Date's City Laboratory representative was present:

- 1. _____
- 2. _____
- 3. _____

Verified the following:

Initials:

- | | |
|--|-------|
| 1. Proper Storage of Materials & Equipment | _____ |
| 2. Proper Operation of Equipment | _____ |
| 3. Adherence to Plans and Specs | _____ |
| 4. Review of QC Tests | _____ |
| 5. Safety Inspection | _____ |

Deviations from QCP _____ (see attached)

Quality Control Plan Administrator's Signature:

Date Signed:

APPENDIX H
SAMPLE OF PUBLIC NOTICE



CONSTRUCTION NOTICE

PROJECT TITLE

Work on your street will begin within one week to replace the existing water mains servicing your community.

The work will consist of:

- Saw-cutting and trench work on Ingulf Street from Morena Boulevard to Galveston Street to install new water mains, water laterals and fire hydrants.
• Streets where trenching takes place will be resurfaced and curb ramps will be upgraded to facilitate access for persons with disabilities where required.
• This work is anticipated to be complete in your community by December 2016.

How your neighborhood may be impacted:

- Water service to some properties during construction will be provided by a two-inch highline pipe that will run along the curb. To report a highline leak call 619-515-3525.
• Temporary water service disruptions are planned. If planned disruptions impact your property, you will receive advance notice.
• Parking restrictions will exist because of the presence of construction equipment and materials.
• "No Parking" signs will be displayed 72 hours in advance of the work.
• Cars parked in violation of signs will be TOWED.

Hours and Days of Operation:

Monday through Friday X:XX AM to X:XX PM.

City of San Diego Contractor:

Company Name, XXX-XXX-XXXX



CONSTRUCTION NOTICE

PROJECT TITLE

Work on your street will begin within one week to replace the existing water mains servicing your community.

The work will consist of:

- Saw-cutting and trench work on Ingulf Street from Morena Boulevard to Galveston Street to install new water mains, water laterals and fire hydrants.
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• Parking restrictions will exist because of the presence of construction equipment and materials.
• "No Parking" signs will be displayed 72 hours in advance of the work.
• Cars parked in violation of signs will be TOWED.

Hours and Days of Operation:

Monday through Friday X:XX AM to X:XX PM.

City of San Diego Contractor:

Company Name, XXX-XXX-XXXX

APPENDIX I

ADVANCED METERING INFRASTRUCTURE (AMI) DEVICE PROTECTION

Protecting AMI Devices in Meter Boxes and on Street Lights

The Public Utilities Department (PUD) has begun the installation of the Advanced Metering Infrastructure (AMI) technology as a new tool to enhance water meter reading accuracy and efficiency, customer service and billing, and to be used by individual accounts to better manage the efficient use of water. **All AMI devices shall be protected per Section 402-2, "Protection", of the 2021 Whitebook.**

AMI technology allows water meters to be read electronically rather than through direct visual inspection by PUD field staff. This will assist PUD staff and customers in managing unusual consumption patterns which could indicate leaks or meter tampering on a customer's property.

Three of the main components of an AMI system are the:

- A. Endpoints, see Photo 1:

Photo 1



B. AMI Antenna attached to Endpoint (antenna not always required), see Photo 2:



Network Devices, see Photo 3:

Photo 3



AMI endpoints transmit meter information to the AMI system and will soon be on the vast majority of meters in San Diego. These AMI devices provide interval consumption data to the PUD's Customer Support Division. If these devices are damaged or communication is interrupted, this Division will be alerted of the situation. The endpoints are installed in water meter boxes, coffins, and vaults adjacent to the meter. A separate flat round antenna may also be installed through the meter box lid. This antenna is connected to the endpoint via cable. The following proper installation shall be implemented when removing the lid to avoid damaging the antenna, cable, and/or endpoint. Photo 4 below demonstrates a diagram of the connection:

Photo 4



The AMI device ERT/Endpoint/Transmitter shall be positioned and installed as discussed in this Appendix. If the ERT/Endpoint/Transmitter is disturbed, it shall be re-installed and returned to its original installation with the end points pointed upwards as shown below in Photo 5.

The PUD's code compliance staff will issue citations and invoices to you for any damaged AMI devices that are not re-installed as discussed in the Contract Document

Photo 5 below shows a typical installation of an AMI endpoint on a water meter.

Photo 5

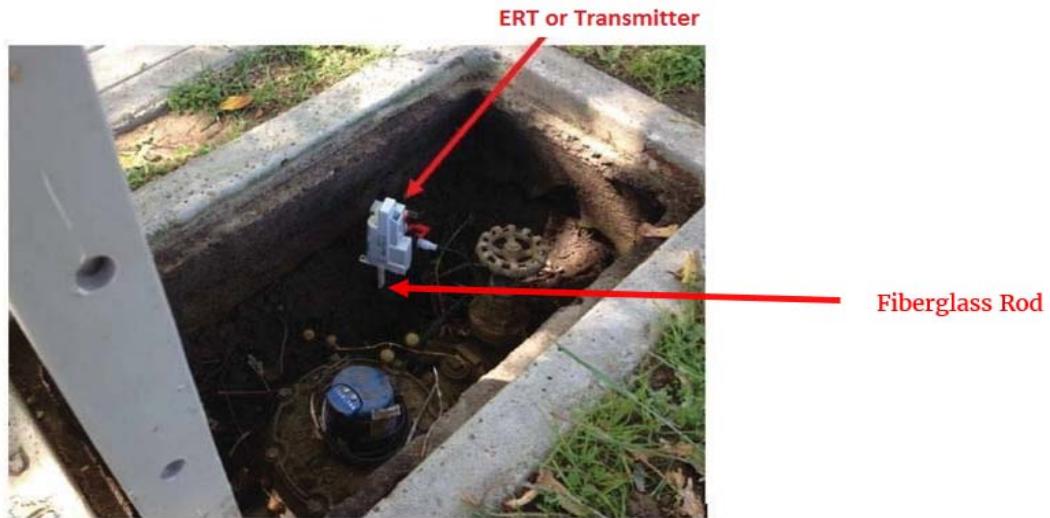


Photo 6 below is an example of disturbance that shall be avoided:

Photo 6



You are responsible when working in and around meter boxes. If you encounter these endpoints, use proper care and do not disconnect them from the registers on top of the water meter. If the lid has an antenna drilled through, do not change or tamper with the lid and inform the Resident Engineer immediately about the location of that lid. Refer to Photo 7 below:

Photo 7



Another component of the AMI system are the Network Devices. The Network Devices are strategically placed units (mainly on street light poles) that collect interval meter reading data from multiple meters for transmission to the Department Control Computer. **If you come across any of these devices on street lights that will be removed or replaced (refer to Photos 8 and 9 below), notify AMI Project Manager Arwa Sayed at (619) 362-0121 immediately.**

Photo 8 shows an installed network device on a street light. On the back of each Network Device is a sticker with contact information. See Photo 9. **Call PUD Water Emergency Repairs at 619-515-3525 if your work will impact these street lights.** These are assets that belong to the City of San Diego and you shall be responsible for any costs of disruption of this network.

Photo 8



Network Device

Photo 9



If you encounter any bad installations, disconnected/broken/buried endpoints, or inadvertently damage any AMI devices or cables, notify the Resident Engineer immediately. The Resident Engineer will then immediately contact the AMI Project Manager, Arwa Sayed, at (619) 362-0121.

APPENDIX J

SWPPP CONSTRUCTION BMP MAINTENANCE LOG

SWPPP Construction BMP Maintenance Log

Examples of construction BMP maintenance activities include but are not limited to tasks listed below. The contractor is ultimately responsible for compliance with the Storm Water Standards Manual and/or the Construction General Permit, and for ensuring all BMPs function per manufacturer's specifications. Use the attached log to schedule and document maintenance activities. The log shall be kept with the project SWPPP document at all times.

Construction BMP Maintenance Activities

- Maintain stabilized construction entrances/exits
- Redress gravel/rock to full coverage and remove any sediment accumulation
- Remove and replace geotextile/compost blanket/plastic with holes or tears
- Redress and restabilize erosion or rilling greater than 1-inch deep
- Reapply hydraulic stabilization products to full coverage
- Remove and replace silt fence/fiber roll/gravel bags/etc. with holes or tears
- Reinstall or replace silt fence/fiber roll/etc. with sags
- Remove sediment accumulation from perimeter controls
- Remove sediment accumulation from storm drain inlet protection and check dams
- Remove sediment accumulation from energy dissipators
- Repair or remove any vehicle/equipment that leaks
- Remove any accumulation in drip pans or containment
- Empty concrete washouts when they reach 75% capacity
- Empty waste disposal containers when they reach 95% capacity

Construction BMP Maintenance Log

Project Title:

WBS/IO No:

WDID:

Scheduled Date/Time	Completion Date/Time	Location	Maintenance Tasks Performed	Logged By

APPENDIX K

SAMPLE CERTIFICATION LETTER FOR AIS IMPLEMENTATION

SAMPLE CERTIFICATION LETTER

The following information is provided as a sample letter of **step** certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. XXXX
2. XXXX
3. XXXX

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. XXXX
2. XXXX
3. XXXX

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

ATTACHMENT F

RESERVED

ATTACHMENT G
CONTRACT AGREEMENT

CONTRACT AGREEMENT

CONSTRUCTION CONTRACT

This contract is made and entered into between THE CITY OF SAN DIEGO, a municipal corporation, herein called "City", and Dick Miller, Inc., herein called "Contractor" for construction of **Scripps Miramar Ranch Library Parking Expansion**; Bid No. **K-23-2061-DBB-3**; in the total amount Seven Million Seventy Seven Thousand Seven Hundred Seventy Seven Dollars and Seventy Seven Cents (\$7,077,777.77), which is comprised of the Base Bid.

IN CONSIDERATION of the payments to be made hereunder and the mutual undertakings of the parties hereto, City and Contractor agree as follows:

1. The following are incorporated into this contract as though fully set forth herein:
 - (a) The attached Faithful Performance and Payment Bonds.
 - (b) The attached Proposal included in the Bid documents by the Contractor.
 - (c) Reference Standards listed in the Instruction to Bidders and the Supplementary Special Provisions (SSP).
 - (e) That certain documents entitled **Scripps Miramar Ranch Library Parking Expansion**, on file in the office of the Engineering & Capital Projects Department as Document No. **S-00811**, as well as all matters referenced therein.
2. The Contractor shall perform and be bound by all the terms and conditions of this contract and in strict conformity therewith shall perform and complete in a good and workmanlike manner **Scripps Miramar Ranch Library Parking Expansion, K-23-2061-DBB-3**, San Diego, California.
3. For such performances, the City shall pay to Contractor the amounts set forth at the times and in the manner and with such additions or deductions as are provided for in this contract, and the Contractor shall accept such payment in full satisfaction of all claims incident to such performances .
4. No claim or suit whatsoever shall be made or brought by Contractor against any officer, agent, or employee of the City for or on account of anything done or omitted to be done in connection with this contract, nor shall any such officer, agent, or employee be liable hereunder.
5. This contract is effective as of the date that the Mayor or designee signs the agreement and is approved by the City Attorney in accordance with San Diego Charter Section 40.

CONTRACT AGREEMENT (continued)

IN WITNESS WHEREOF, this Agreement is signed by the City of San Diego, acting by and through its Mayor or designee, pursuant to Municipal Code Section 22.3102 authorizing such execution.

THE CITY OF SAN DIEGO

APPROVED AS TO FORM

Mara W. Elliott, City Attorney

By Beric Doringo

By Dana Fairchild

Print Name: Beric Doringo
Deputy Director
Purchasing & Contracting Department

Print Name: Dana Fairchild
Deputy City Attorney

Date: 6/15/2023

Date: 6/28/2023

CONTRACTOR

By Glen F. Bullock
Digitally signed by Glen F. Bullock
DN: C=US, E=gBullock@DMIUSA.net,
O=Dick Miller Inc., CN=Glen F. Bullock
Date: 2023.05.02 18:17:33-0700

Print Name: Glen F. Bullock

Title: President

Date: 05/02/2023

City of San Diego License No.: B2014004558

State Contractor's License No.: 380204

DEPARTMENT OF INDUSTRIAL RELATIONS (DIR) REGISTRATION NUMBER: 1000004547

CERTIFICATIONS AND FORMS

The Bidder, by submitting its electronic bid, agrees to and certifies under penalty of perjury under the laws of the State of California, that the certifications, forms and affidavits submitted as part of this bid are true and correct.

BIDDER'S GENERAL INFORMATION

To the City of San Diego:

Pursuant to "Notice Inviting Bids", specifications, and requirements on file with the City Clerk, and subject to all provisions of the Charter and Ordinances of the City of San Diego and applicable laws and regulations of the United States and the State of California, the undersigned hereby proposes to furnish to the City of San Diego, complete at the prices stated herein, the items or services hereinafter mentioned. The undersigned further warrants that this bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

The undersigned bidder(s) further warrants that bidder(s) has thoroughly examined and understands the entire Contract Documents (plans and specifications) and the Bidding Documents therefore, and that by submitting said Bidding Documents as its bid proposal, bidder(s) acknowledges and is bound by the entire Contract Documents, including any addenda issued thereto, as such Contract Documents incorporated by reference in the Bidding Documents.

**NON-COLLUSION AFFIDAVIT TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID UNDER 23
UNITED STATES CODE 112 AND PUBLIC CONTRACT CODE 7106**

State of California

County of San Diego

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

CONTRACTOR CERTIFICATION

COVID-19 VACCINATION ORDINANCE

CERTIFICATION OF COMPLIANCE

I hereby certify that I am familiar with the requirements of San Diego Ordinance No. O-21398 implementing the City's Mandatory COVID-19 Vaccination Policy.

TERMS OF COMPLIANCE

The City's Mandatory COVID-19 Vaccination Policy, outlined in San Diego Ordinance O-21398 (Nov. 29, 2021), requires ALL City contractors, who interact in close contact with City employees while providing contracted services indoors in City facilities or while performing bargaining unit work while indoors, to be fully vaccinated against COVID-19, effective January 3, 2022, as a condition for provision or continued provision of contracted services.

1. "City contractor" means a person who has contracted with the City of San Diego to provide public works, goods, services, franchise, or consultant services for or on behalf of the City, and includes a subcontractor, vendor, franchisee, consultant, or any of their respective officers, directors, shareholders, partners, managers, employees, or other individuals associated with the contractor, subcontractor, consultant, or vendor. "Person" means any natural person, firm, joint venture, joint stock company, partnership, association, club, company, corporation business trust or organization.
2. "Fully vaccinated" means a person has received, at least 14 days prior, either the second dose in a two-dose COVID-19 vaccine series or a single-dose COVID-19 vaccine, or otherwise meets the criteria for full vaccination against COVID-19 as stated in applicable public health guidance, orders, or law. Acceptable COVID-19 vaccines must be approved by the U.S. Food and Drug Administration (FDA) or authorized for emergency use by the FDA or the World Health Organization.
3. "Close contact" means a City contractor is **within 6 feet** of a City employee for a **cumulative total of 15 minutes or more over a 24-hour period** (for example, three individual 5-minute exposures for a total of 15 minutes).
4. City contractors who interact in close contact with City employees must fully comply with the City's Mandatory COVID-19 Vaccination Policy, which may include a reporting program that tracks employee vaccination status.
5. City contractors with employees or subcontractors who interact in close contact with City employees must certify that those members of their workforce, and subcontractors regardless of tier, who work indoors at a City facility, are fully vaccinated and that the City contractor has a program to track employee compliance.
6. City contractors that have an Occupational Safety and Health Administration compliant testing program for members of their workforce, as a reasonable accommodation, may be considered for compliance.

Non-compliance with the City's Mandatory COVID-19 Vaccination Policy may result in termination of a contract for cause, pursuant to the City's General Terms and Provisions, Reference Standards, and the San Diego Municipal Code.

CONTRACTOR CERTIFICATION

DRUG-FREE WORKPLACE

I hereby certify that I am familiar with the requirements of San Diego City Council Policy No. 100-17 regarding Drug-Free Workplace as outlined in the WHITEBOOK, Section 5-1.3, "Drug-Free Workplace", of the project specifications, and that;

This company has in place a drug-free workplace program that complies with said policy. I further certify that each subcontract agreement for this project contains language which indicates the subcontractor's agreement to abide by the provisions of subdivisions a) through c) of the policy as outlined.

CONTRACTOR CERTIFICATION

AMERICANS WITH DISABILITIES ACT (ADA) COMPLIANCE CERTIFICATION

I hereby certify that I am familiar with the requirements of San Diego City Council Policy No. 100-4 regarding the Americans With Disabilities Act (ADA) outlined in the WHITEBOOK, Section 5-1.2, "California Building Code, California Code of Regulations Title 24 and Americans with Disabilities Act". of the project specifications, and that:

This company has in place workplace program that complies with said policy. I further certify that each subcontract agreement for this project contains language which indicates the subcontractor's agreement to abide by the provisions of the policy as outlined.

CONTRACTOR CERTIFICATION

CONTRACTOR STANDARDS – PLEDGE OF COMPLIANCE

I declare under penalty of perjury that I am authorized to make this certification on behalf of the company submitting this bid/proposal, that as Contractor, I am familiar with the requirements of City of San Diego Municipal Code § 22.3004 regarding Contractor Standards as outlined in the WHITEBOOK, Section 5-1.4, ("Contractor Standards and Pledge of Compliance"), of the project specifications, and that Contractor has complied with those requirements.

I further certify that each of the Contractor's subcontractors has completed a Pledge of Compliance attesting under penalty of perjury of having complied with City of San Diego Municipal Code § 22.3004.

CONTRACTOR CERTIFICATION

EQUAL BENEFITS ORDINANCE CERTIFICATION

I declare under penalty of perjury that I am familiar with the requirements of and in compliance with the City of San Diego Municipal Code § 22.4300 regarding Equal Benefits Ordinance.

CONTRACTOR CERTIFICATION

EQUAL PAY ORDINANCE CERTIFICATION

Contractor shall comply with the Equal Pay Ordinance (EPO) codified in the San Diego Municipal Code (SDMC) at section 22.4801 through 22.4809, unless compliance is not required based on an exception listed in SDMC section 22.4804.

Contractor shall require all of its subcontractors to certify compliance with the EPO in their written subcontracts.

Contractor must post a notice informing its employees of their rights under the EPO in the workplace or job site.

By signing this Contract with the City of San Diego, Contractor acknowledges the EPO requirements and pledges ongoing compliance with the requirements of SDMC Division 48, section 22.4801 et seq., throughout the duration of this Contract.

CONTRACTOR CERTIFICATION

PRODUCT ENDORSEMENT

I declare under penalty of perjury that I acknowledge and agree to comply with the provisions of City of San Diego Administrative Regulation 95.65, concerning product endorsement. Any advertisement identifying or referring to the City as the user of a product or service requires the prior written approval of the City.

AFFIDAVIT OF DISPOSAL

(To be submitted upon completion of Construction pursuant to the contracts Certificate of Completion)

WHEREAS, on the _____ DAY OF _____, 2____ the undersigned entered into and executed a contract with the City of San Diego, a municipal corporation, for:

Scripps Miramar Ranch Library Parking Expansion

(Project Title)

as particularly described in said contract and identified as Bid No. **K-23-2061-DBB-3**; SAP No. (WBS) **S-00811**; and **WHEREAS**, the specification of said contract requires the Contractor to affirm that "all brush, trash, debris, and surplus materials resulting from this project have been disposed of in a legal manner"; and **WHEREAS**, said contract has been completed and all surplus materials disposed of:

NOW, THEREFORE, in consideration of the final payment by the City of San Diego to said Contractor under the terms of said contract, the undersigned Contractor, does hereby affirm that all surplus materials as described in said contract have been disposed of at the following location(s)

and that they have been disposed of according to all applicable laws and regulations.

Dated this _____ DAY OF _____, _____.

By: _____
Contractor

ATTEST:

State of _____ County of _____

On this _____ DAY OF _____, 2____, before the undersigned, a Notary Public in and for said County and State, duly commissioned and sworn, personally appeared _____ known to me to be the _____ Contractor named in the foregoing Release, and whose name is subscribed thereto, and acknowledged to me that said Contractor executed the said Release.

Notary Public in and for said County and State

COMPANY LETTERHEAD

CERTIFICATE OF COMPLIANCE

Materials and Workmanship Compliance

For Contract or Task _____

I certify that the material listed below complies with the materials and workmanship requirements of the Caltrans Contract Plans, Special Provisions, Standard Specifications, and Standard Plans for the contract listed above.

I also certify that I am an official representative for _____, the manufacturer of the material listed above. Furthermore, I certify that where California test methods, physical or chemical test requirements are part of the specifications, that the manufacturer has performed the necessary quality control to substantiate this certification.

Material Description:

Manufacturer: _____
Model: _____
Serial Number (if applicable) _____
Quantity to be supplied: _____
Remarks: _____

Signed by: _____

Printed Name: _____

Title: _____

Company: _____

Date: _____

City of San Diego

Engineering & Capital Projects Department, CMFE Division

NOTICE OF MATERIALS TO BE USED

To: _____
Resident Engineer

Date: _____, 20____

You are hereby notified that the materials required for use under Contract No. _____
for construction of _____

in the City of San Diego, will be obtained from sources herein designated.

CONTRACT ITEM NO. (Bid Item)	KIND OF MATERIAL (Category)	NAME AND ADDRESS WHERE MATERIAL CAN BE INSPECTED (At Source)

It is requested that you arrange for a sampling, testing, and inspection of the materials prior to delivery, in accordance with Section 4 - CONTROL OF MATERIALS of the WHITEBOOK, where it is practicable, and in accordance with your policy. It is understood that source inspection does not relieve the Contractor of full responsibility for incorporating in the work, materials that comply in all respects with the contract plans and specifications, nor does it preclude subsequent rejection of materials found to be undesirable or unsuitable.

Distribution:

Supplier

Signature of Supplier

Address

LIST OF SUBCONTRACTORS

***** PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY *** TO BE SUBMITTED IN ELECTRONIC FORMAT ONLY*** SEE INSTRUCTIONS TO BIDDERS, FOR FURTHER INFORMATION**

In accordance with the requirements of the "Subletting and Subcontracting Fair Practices Act", Section 4100, of the California Public Contract Code (PCC), the Bidder is to list below the name, address and license number of each Subcontractor who will perform work, labor, render services or specially fabricate and install a portion [type] of the work or improvement, in an amount of or in excess of 0.5% of the Contractor's total Bid. Failure to comply with this requirement may result in the Bid being rejected as non-responsive. The Contractor is to list only one Subcontractor for each portion of the Work. The Bidder's attention is directed to the Special Provisions – General; Paragraph 2-3 Subcontracts, which stipulates the percentage of the Work to be performed with the Bidder's own forces. The Bidder is to also list all SLBE, ELBE, DBE, DVBE, MBE, WBE, OBE, SDB, WoSB, HUBZone, and SDVOSB Subcontractors for which the Bidders are seeking recognition towards achieving any mandatory, voluntary, or both subcontracting participation percentages.

NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	SUBCONTRACTOR LICENSE NUMBER	TYPE OF WORK	DOLLAR VALUE OF SUBCONTRACT	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WoSB, HUBZone, OR SDVOSB®	WHERE CERTIFIED®	CHECK IF JOINT VENTURE PARTNERSHIP
Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____							
Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____							

- ① As appropriate, Bidder shall identify Subcontractor as one of the following and shall include a valid proof of certification (except for OBE, SLBE and ELBE):
- | | | | |
|---|--------|--|---------|
| Certified Minority Business Enterprise | MBE | Certified Woman Business Enterprise | WBE |
| Certified Disadvantaged Business Enterprise | DBE | Certified Disabled Veteran Business Enterprise | DVBE |
| Other Business Enterprise | OBE | Certified Emerging Local Business Enterprise | ELBE |
| Certified Small Local Business Enterprise | SLBE | Small Disadvantaged Business | SDB |
| Woman-Owned Small Business | WoSB | HUBZone Business | HUBZone |
| Service-Disabled Veteran Owned Small Business | SDVOSB | | |
- ② As appropriate, Bidder shall indicate if Subcontractor is certified by:
- | | | | |
|--|--------|--|----------|
| City of San Diego | CITY | State of California Department of Transportation | CALTRANS |
| California Public Utilities Commission | CPUC | | |
| State of California's Department of General Services | CADoGS | City of Los Angeles | LA |
| State of California | CA | U.S. Small Business Administration | SBA |

The Bidder will not receive any subcontracting participation percentages if the Bidder fails to submit the required proof of certification.

NAMED EQUIPMENT/MATERIAL SUPPLIER LIST

***** PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY *** TO BE SUBMITTED IN ELECTRONIC FORMAT ONLY *** SEE INSTRUCTIONS TO BIDDERS FOR FURTHER INFORMATION**

NAME, ADDRESS AND TELEPHONE NUMBER OF VENDOR/SUPPLIER	MATERIALS OR SUPPLIES	DOLLAR VALUE OF MATERIAL OR SUPPLIES	SUPPLIER (Yes/No)	MANUFACTURER (Yes/No)	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WoSB, HUBZone, OR SDVOSB ^①	WHERE CERTIFIED ^②
Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						
Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						

- ① As appropriate, Bidder shall identify Vendor/Supplier as one of the following and shall include a valid proof of certification (except for OBE, SLBE and ELBE):
- | | | | |
|---|--------|--|---------|
| Certified Minority Business Enterprise | MBE | Certified Woman Business Enterprise | WBE |
| Certified Disadvantaged Business Enterprise | DBE | Certified Disabled Veteran Business Enterprise | DVBE |
| Other Business Enterprise | OBE | Certified Emerging Local Business Enterprise | ELBE |
| Certified Small Local Business Enterprise | SLBE | Small Disadvantaged Business | SDB |
| Woman-Owned Small Business | WoSB | HUBZone Business | HUBZone |
| Service-Disabled Veteran Owned Small Business | SDVOSB | | |

- ② As appropriate, Bidder shall indicate if Vendor/Supplier is certified by:
- | | | | |
|--|--------|--|----------|
| City of San Diego | CITY | State of California Department of Transportation | CALTRANS |
| California Public Utilities Commission | CPUC | | |
| State of California's Department of General Services | CADoGS | City of Los Angeles | LA |
| State of California | CA | U.S. Small Business Administration | SBA |

The Bidder will not receive any subcontracting participation percentages if the Bidder fails to submit the required proof of certification.

ELECTRONICALLY SUBMITTED FORMS

FAILURE TO FULLY COMPLETE AND SUBMIT ANY OF THE FOLLOWING FORMS WILL DEEM YOUR BID NON-RESPONSIVE.

PLANETBIDS WILL NOT ALLOW FOR BID SUBMISSIONS WITHOUT THE ATTACHMENT OF THESE FORMS

The following forms are to be completed by the bidder and submitted (uploaded) electronically with the bid in PlanetBids.

- A. BID BOND – See Instructions to Bidders, Bidders Guarantee of Good Faith (Bid Security) for further instructions**
- B. CONTRACTOR’S CERTIFICATION OF PENDING ACTIONS**
- C. MANDATORY DISCLOSURE OF BUSINESS INTERESTS FORM**
- D. DEBARMENT AND SUSPENSION CERTIFICATION FOR PRIME CONTRACTOR**
- E. DEBARMENT AND SUSPENSION CERTIFICATION FOR SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS**

BID BOND

**See Instructions to Bidders, Bidder Guarantee of Good Faith
(Bid Security)**

KNOW ALL MEN BY THESE PRESENTS,

That Dick Miller, Inc. as Principal, and The Ohio Casualty Insurance Company as Surety, are held and firmly bound unto The City of San Diego hereinafter called "OWNER," in the sum of **10% OF THE TOTAL BID AMOUNT** for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, said Principal has submitted a Bid to said OWNER to perform the WORK required under the bidding schedule(s) of the OWNER's Contract Documents entitled

K-23-2061-DBB-3 Scripps Miramar Ranch Library Parking Expansion

NOW THEREFORE, if said Principal is awarded a contract by said OWNER and, within the time and in the manner required in the "Notice Inviting Bids" enters into a written Agreement on the form of agreement bound with said Contract Documents, furnishes the required certificates of insurance, and furnishes the required Performance Bond and Payment Bond, then this obligation shall be null and void, otherwise it shall remain in full force and effect. In the event suit is brought upon this bond by said OWNER and OWNER prevails, said Surety shall pay all costs incurred by said OWNER in such suit, including a reasonable attorney's fee to be fixed by the court.

SIGNED AND SEALED, this 5th day of March, 2023

Dick Miller, Inc. (SEAL)
(Principal)

By: [Signature]
(Signature)

The Ohio Casualty Insurance Company (SEAL)
(Surety)

By: [Signature]
(Signature)
Bart Stewart, Attorney-in-Fact



(SEAL AND NOTARIAL ACKNOWLEDGEMENT OF SURETY)



This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

Certificate No: 8206236 - 969556

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Bart Stewart

all of the city of Encinitas state of CA each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 3rd day of September, 2021.



Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

By: [Signature of David M. Carey]

David M. Carey, Assistant Secretary

State of PENNSYLVANIA ss
County of MONTGOMERY

On this 3rd day of September, 2021 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



Commonwealth of Pennsylvania - Notary Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2025
Commission number 1126044
Member, Pennsylvania Association of Notaries

By: [Signature of Teresa Pastella]
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII - Execution of Contracts: Section 5. Surety Bonds and Undertakings.

Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 5th day of March, 2023.



By: [Signature of Renee C. Llewellyn]

Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.com.

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

CIVIL CODE § 1189



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.

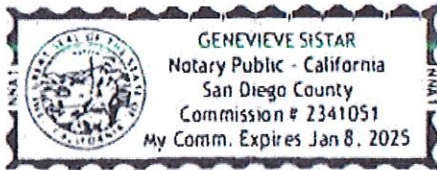
State of California)
County of San Diego)

On March 5, 2023 before me, Genevieve Sistar, Notary Public,
Date Here Insert Name and Title of the Officer
personally appeared Bart Stewart
Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.



Genevieve Sistar

Signature _____
Signature of Notary Public

Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: _____ Document Date: _____
Number of Pages: _____ Signer(s) Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____
 Corporate Officer — Title(s): _____
 Partner — Limited General
 Individual Attorney in Fact
 Trustee Guardian or Conservator
 Other: _____
Signer Is Representing: _____

Signer's Name: _____
 Corporate Officer — Title(s): _____
 Partner — Limited General
 Individual Attorney in Fact
 Trustee Guardian or Conservator
 Other: _____
Signer Is Representing: _____

CALIFORNIA ALL-PURPOSE CERTIFICATE OF ACKNOWLEDGMENT

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 California

County of San Diego

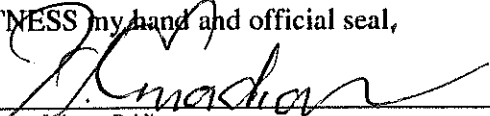
On 03/07/2023 before me, Hamid Emadian Naeini, Notary Public
(Here insert name and title of the officer)

personally appeared GLEN F. BULLOCK

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

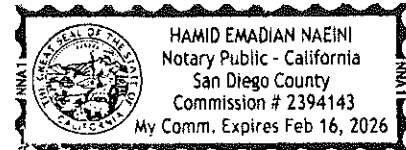
I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal,



Signature of Notary Public

(Notary Seal)



ADDITIONAL OPTIONAL INFORMATION

DESCRIPTION OF THE ATTACHED DOCUMENT

BID BOND

(Title or description of attached document)

(Title or description of attached document continued)

Number of Pages 1 Document Date 03,07,23

(Additional information)

CAPACITY CLAIMED BY THE SIGNER

- Individual (s)
- Corporate Officer
PRINCIPAL
(Title)
- Partner(s)
- Attorney-in-Fact
- Trustee(s)
- Other _____

INSTRUCTIONS FOR COMPLETING THIS FORM

Any acknowledgment completed in California must contain verbiage exactly as appears above in the notary section or a separate acknowledgment form must be properly completed and attached to that document. The only exception is if a document is to be recorded outside of California. In such instances, any alternative acknowledgment verbiage as may be printed on such a document so long as the verbiage does not require the notary to do something that is illegal for a notary in California (i.e. certifying the authorized capacity of the signer). Please check the document carefully for proper notarial wording and attach this form if required.

- State and County information must be the State and County where the document signer(s) personally appeared before the notary public for acknowledgment.
- Date of notarization must be the date that the signer(s) personally appeared which must also be the same date the acknowledgment is completed.
- The notary public must print his or her name as it appears within his or her commission followed by a comma and then your title (notary public).
- Print the name(s) of document signer(s) who personally appear at the time of notarization.
- Indicate the correct singular or plural forms by crossing off incorrect forms (i.e. ~~he/she/they~~ is /are) or circling the correct forms. Failure to correctly indicate this information may lead to rejection of document recording.
- The notary seal impression must be clear and photographically reproducible. Impression must not cover text or lines. If seal impression smudges, re-seal if a sufficient area permits, otherwise complete a different acknowledgment form.
- Signature of the notary public must match the signature on file with the office of the county clerk.
 - ❖ Additional information is not required but could help to ensure this acknowledgment is not misused or attached to a different document.
 - ❖ Indicate title or type of attached document, number of pages and date.
 - ❖ Indicate the capacity claimed by the signer. If the claimed capacity is a corporate officer, indicate the title (i.e. CEO, CFO, Secretary).
- Securely attach this document to the signed document

CONTRACTOR'S CERTIFICATION OF PENDING ACTIONS

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of all instances within the past 10 years where a complaint was filed or pending against the Bidder in a legal or administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers, and a description of the status or resolution of that complaint, including any remedial action taken.

CHECK ONE BOX ONLY.

- The undersigned certifies that within the past 10 years the Bidder has NOT been the subject of a complaint or pending action in a legal administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers.

- The undersigned certifies that within the past 10 years the Bidder has been the subject of a complaint or pending action in a legal administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers. A description of the status or resolution of that complaint, including any remedial action taken and the applicable dates is as follows:

DATE OF CLAIM	LOCATION	DESCRIPTION OF CLAIM	LITIGATION (Y/N)	STATUS	RESOLUTION/REMEDIAL ACTION TAKEN

Contractor Name: DICK MILLER INC.

Certified By JOHN MARTINEZ Title SR. ESTIMATOR

Name

 Signature

Date 03/15/2023

USE ADDITIONAL FORMS AS NECESSARY

Mandatory Disclosure of Business Interests Form

BIDDER/PROPOSER INFORMATION

Legal Name		DBA	
GLEN F. BULLOCK		DICK MILLER INC.	
Street Address	City	State	Zip
930 BOARDWALK STE H	SAN MARCOS	CA.	92078
Contact Person, Title		Phone	Fax
JOHN MARTINEZ, SR. ESTIMATOR		951-216-4070	760-471-6178

Provide the name, identity, and precise nature of the interest* of all persons who are directly or indirectly involved** in this proposed transaction (SDMC § 21.0103).

* The precise nature of the interest includes:

- the percentage ownership interest in a party to the transaction,
- the percentage ownership interest in any firm, corporation, or partnership that will receive funds from the transaction, the value of any financial interest in the transaction,
- any contingent interest in the transaction and the value of such interest should the contingency be satisfied, and any philanthropic, scientific, artistic, or property interest in the transaction.

** Directly or indirectly involved means pursuing the transaction by:

- communicating or negotiating with City officers or employees,
- submitting or preparing applications, bids, proposals or other documents for purposes of contracting with the City,
- or directing or supervising the actions of persons engaged in the above activity.

Name	Title/Position
GLEN F. BULLOCK	PRESIDENT
City and State of Residence	Employer (if different than Bidder/Proposer)
SAN MARCOS, CA.	
Interest in the transaction	
100%	

Name	Title/Position
City and State of Residence	Employer (if different than Bidder/Proposer)
Interest in the transaction	

* Use Additional Pages if Necessary *

Under penalty of perjury under the laws of the State of California, I certify that I am responsible for the completeness and accuracy of the responses contained herein, and that all information provided is true, full and complete to the best of my knowledge and belief. I agree to provide written notice to the Mayor or Designee within five (5) business days if, at any time, I learn that any portion of this Mandatory Disclosure of Business Interests Form requires an updated response. Failure to timely provide the Mayor or Designee with written notice is grounds for Contract termination.

JOHN MARTINEZ, SR. ESTIMATOR 03/15/2023

Print Name, Title
Signature
Date

Failure to sign and submit this form with the bid/proposal shall make the bid/proposal non-responsive. In the case of an informal solicitation, the contract will not be awarded unless a signed and completed Mandatory Disclosure of Business Interests Form is submitted.

DEBARMENT AND SUSPENSION CERTIFICATION
PRIME CONTRACTOR
FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE

EFFECT OF DEBARMENT OR SUSPENSION

To promote integrity in the City's contracting processes and to protect the public interest, the City shall only enter into contracts with responsible- bidders and contractors. In accordance with San Diego Municipal Code §22.0814 (a): *Bidders and contractors* who have been *debarred* or *suspended* are excluded from submitting bids, submitting responses to requests for proposal or qualifications, receiving *contract awards*, executing *contracts*, participating as a *subcontractor*, employee, agent or representative of another *person* contracting with the City.

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of Names of the Principal Individual owner(s).

The names of all persons interested in the foregoing proposal as Principals are as follows:

NAME	TITLE
GLEN F. BULLOCK	PRESIDENT

IMPORTANT NOTICE: If Bidder or other interested person is a corporation, state secretary, treasurer, and manager thereof; if a co-partnership, state true name of firm, also names of all individual co-partners composing firm; if Bidder or other interested person is an individual, state first and last names in full.

The Bidder, under penalty of perjury, certifies that, except as noted below, he/she or any person associated therewith in the capacity of owner, partner, director, officer, manager:

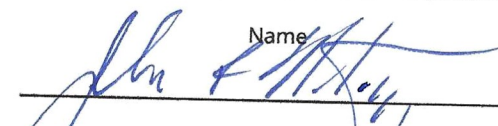
- Is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any Federal, State or local agency;
- has not been suspended, debarred, voluntarily excluded or determined ineligible by any Federal, State or local agency within the past 3 years;
- does not have a proposed debarment pending; and
- has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exceptions in the following space.

Exceptions will be considered in determining bidder responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action.

Contractor Name: DICK MILLER INC

Certified By JOHN MARTINEZ Title SR. ESTIMATOR

Name

 Signature

Date 3/15/2023

NOTE: Providing false information may result in criminal prosecution or administrative sanctions.

DEBARMENT AND SUSPENSION CERTIFICATION
SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS
TO BE COMPLETED BY BIDDER
FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE

Names of the Principal individual owner(s)

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of Names of the Principal Individual owner(s) for their subcontractor/supplier/manufacturers.

Please indicate if principal owner is serving in the capacity of **subcontractor**, **supplier**, and/or **manufacturer**:

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Lekos Electric, Inc.	Teresa E. Lekos - President

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

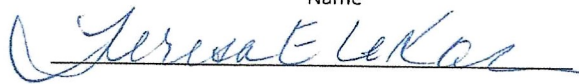
NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

Contractor Name: Lekos Electric, Inc.

Certified By Teresa E. Lekos Title President

Name

 Signature

Date 3-15-23

USE ADDITIONAL FORMS AS NECESSARY*

DEBARMENT AND SUSPENSION CERTIFICATION
SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS
TO BE COMPLETED BY BIDDER
FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE

Names of the Principal individual owner(s)

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Please indicate if principal owner is serving in the capacity of **subcontractor**, **supplier**, and/or **manufacturer**:

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Holland Mason	President
Tyler Mason	Controller

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

Contractor Name: Coast Landscaping Inc.

Certified By Holland Mason Title President

Name
Holland Mason Date 3-15-2023

Signature

USE ADDITIONAL FORMS AS NECESSARY*

DEBARMENT AND SUSPENSION CERTIFICATION
SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS
TO BE COMPLETED BY BIDDER
FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE

Names of the Principal individual owner(s)

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of Names of the Principal Individual owner(s) for their subcontractor/supplier/manufacturers.

Please indicate if principal owner is serving in the capacity of **subcontractor**, **supplier**, and/or **manufacturer**:

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Soil Retention Systems, Inc. - Jan Jansson	President

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

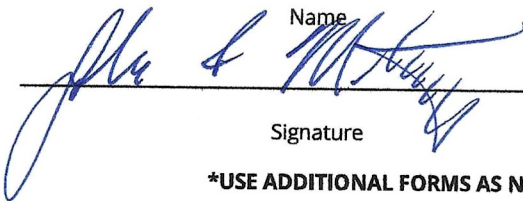
NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

Contractor Name: soil RETENSION SYSTEM S

Certified By John Martinez Title SR ESTIMATOR

Name

 Signature

Date 3/15/2023

USE ADDITIONAL FORMS AS NECESSARY*

DEBARMENT AND SUSPENSION CERTIFICATION
SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS
TO BE COMPLETED BY BIDDER
FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE

Names of the Principal individual owner(s)

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of Names of the Principal Individual owner(s) for their subcontractor/supplier/manufacturers.

Please indicate if principal owner is serving in the capacity of **subcontractor, supplier, and/or manufacturer**:

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Tim Martin	President
Jason Gable	Vice President
Cesar Rodriguez	Treasurer

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

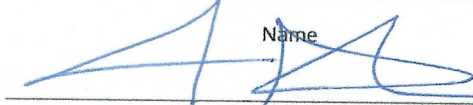
NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

Contractor Name: Precision Striping, Inc.

Certified By Timothy Martin Title President/ Owner


 Name _____
 Date 03/15/2023
 Signature

USE ADDITIONAL FORMS AS NECESSARY

DEBARMENT AND SUSPENSION CERTIFICATION
SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS
TO BE COMPLETED BY BIDDER
FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE

Names of the Principal individual owner(s)

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of Names of the Principal Individual owner(s) for their subcontractor/supplier/manufacturers.

Please indicate if principal owner is serving in the capacity of **subcontractor**, **supplier**, and/or **manufacturer**:

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Michelle Elliott	CEO

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

Contractor Name: MTGL, Inc

Certified By Steven Koch Title Senior Vice President

 Name

Date 3/13/23

Signature

USE ADDITIONAL FORMS AS NECESSARY*

DEBARMENT AND SUSPENSION CERTIFICATION
SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS
TO BE COMPLETED BY BIDDER
FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE

Names of the Principal individual owner(s)

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of Names of the Principal Individual owner(s) for their subcontractor/supplier/manufacturers.

Please indicate if principal owner is serving in the capacity of **subcontractor**, **supplier**, and/or **manufacturer**:

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
<u>ERIAN PRATT</u>	<u>OWNER</u>

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER


NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

Contractor Name: PRATT EQUIPMENT

Certified By JOHN MARTINEZ Title SR ESTIMATOR

Name

 Signature
 Date 3/15/2023

USE ADDITIONAL FORMS AS NECESSARY*

DEBARMENT AND SUSPENSION CERTIFICATION
SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS
TO BE COMPLETED BY BIDDER
FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE

Names of the Principal individual owner(s)

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of Names of the Principal Individual owner(s) for their subcontractor/supplier/manufacturers.

Please indicate if principal owner is serving in the capacity of **subcontractor**, **supplier**, and/or **manufacturer**:

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
Scott Nelson	Estimator

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

Contractor Name: Seal Right Paving

Certified By: Scott Nelson Title: Estimator

[Signature] Name Date: 3/15/23

Signature

USE ADDITIONAL FORMS AS NECESSARY*

**DEBARMENT AND SUSPENSION CERTIFICATION
SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS**

TO BE COMPLETED BY BIDDER

FAILURE TO COMPLETE AND SUBMIT AT TIME OF BID SHALL RENDER BID NON-RESPONSIVE

Names of the Principal individual owner(s)

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of Names of the Principal Individual owner(s) for their subcontractor/supplier/manufacturers.

Please indicate if principal owner is serving in the capacity of **subcontractor, supplier, and/or manufacturer:**

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE
FENCE CORP, INC 3045 INDUSTRY ST. OCEANSIDE, CA 92054	AL SAID - PROJECT MGR <i>Al Said</i>

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER


NAME	TITLE

SUBCONTRACTOR SUPPLIER MANUFACTURER

NAME	TITLE

Contractor Name: FENCE CORP INC

Certified By JOHN MARTINEZ Title SR. ESTIMATOR


 Name _____
 Signature _____
 Date 3/15/2023

USE ADDITIONAL FORMS AS NECESSARY*

APPENDIX L
LONG-TERM MAINTENANCE AND MONITORING AGREEMENT

LONG-TERM MAINTENANCE AND MONITORING AGREEMENT

This **25-Month Long-Term Maintenance and Monitoring Agreement (LTMMA)** is made and entered into by and between the City of San Diego (City), a municipal corporation, and **Dick Miller, Inc.** (Contractor), who may be individually or collectively referred to herein as a "Party" or the "Parties."

RECITALS

- A.** Concurrent with execution of this LTMMA, the Parties entered into a general contract (Construction Contract) for the construction of **Scripps Miramar Ranch Library Parking Expansion**, WBS number **S-00811**, Bid No. **K-23-2061-DBB-3**.
- B.** In accordance with the Construction Contract, the Contractor shall enter into this LTMMA with the City for the purpose of implementing and fulfilling long-term maintenance requirements in accordance with the City of San Diego Municipal Code and the Contract Documents for the specified elopement(s) of **Scripps Miramar Ranch Library Parking Expansion** (Maintenance Requirements).
- C.** The Contractor is ready and willing to fulfill its maintenance requirements in accordance with the terms of this LTMMA.

NOW, THEREFORE, in consideration of the above recitals and the mutual covenants and conditions set forth herein, and for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby set forth their mutual covenants and understandings as follows:

INTRODUCTORY PROVISIONS

- A. Recitals Incorporated.** The above referenced Recitals are true and correct and are incorporated into this LTMMA by this reference.
- B. Exhibits Incorporated.** All Exhibits and Attachments referenced in this LTMMA are incorporated into this LTMMA by this reference.
- C. Contract Term.** This LTMMA shall be effective upon completion of the Plant Establishment Period (PEP) as described in **Section 6-1.1** of **Attachment E - Supplementary Special Provisions** and **Section 802** of the 2021 GREENBOOK AND WHITEBOOK and it shall be effective until the completion of the Work as described below.
- D. Terms and Conditions.** This LTMMA is subject to the terms and conditions of the Construction Contract included in the 2021 GREENBOOK, WHITEBOOK, Part 1 and Part 8, and Special Provisions (see **Contract Document-Attachment E Section 800**) except as otherwise stated in this LTMMA.

E. Partial Release of Payment Bond and Performance Bond.

- 1. Performance of Contract in Two Phases.** There are two separate phases of Work to be performed by the Contractor under this Contract. The first phase covers the Work involved in the original agreement as described in this agreement (“Phase 1 Work”). The second phase covers the work involved in the long-term maintenance and monitoring of the Re-vegetation/Restoration Area after Phase 1 Work has been completed (“Phase 2 Work”).
- 2. Bond Handling for Contract Phases.** The Payment Bond and the Performance Bond covering Phase 1 Work on this Contract shall remain in full force and effort until completion of that phase is certified. The original Payment Bond and the original Performance Bond covering Phase 1 Work on this Contract shall continue in full force and effort for Phase 2 Work, however the value of each bond may be reduced as follows:

 - i. Completion by the Contractor of all Phase 1 Work shall be evidenced solely by the City Engineer affirming in writing that to the best of their knowledge that all Phase 1 Work has been completed by the Contractor in strict conformity with all City-approved plans and revisions, and that the Phase 1 Work completed by the Contractor meets all applicable standards (“Notice of Completion”).
 - ii. Upon issuance by the City Engineer of the Notice of Completion for Phase 1 Work, the Payment Bond for this Project, and the Performance Bond for this Project, may be partially released, and thereby reduced for the Work performed under Phase 1. The remaining payment and performance bond will cover the full cost of Phase 2 Work on this Project, which will be the amount specified in “Section 4: COMPENSATION” in Section 4.1 of this LTMMA.
- 3. No Partial Release Upon Default.** No Partial Performance Bond Release and Reduction shall be given to the Contractor if the Performance Bond and/or this Agreement is in default on Phase 1 Work.

SECTION 1 - MAINTENANCE & MONITORING CONTRACT SUMMARY

- 1.1. General.** The Contractor shall fulfill the Project's Maintenance & Monitoring Requirements (Work) as identified in the scope of work attached as **Exhibit A** in a manner satisfactory to the City.

The Contractor shall provide all equipment, labor, and materials necessary to perform the **Work** as described in **Exhibit A**, at the direction of the City.

- 1.2. Schedule of Work.**

After receiving notification from the City, the Contractor shall create a comprehensive Schedule of Work (Schedule) both phases, and the LTMMA performance, for the City's approval. The Schedule shall include routine work, inspection, and infrequent operations such as repairs, fertilization, aerification, watering, and pruning.

The City will approve the Schedule prior to the commencement of the Work. The City may require the Contractor to revise the Schedule. The Contractor shall not revise the Schedule unless the revisions have received the prior written approval of the City.

- 1.3. Commencement of Maintenance & Monitoring Period.** This LTMMA shall commence when the City approves of the Work of the Plant Establishment Period and sends notice of the approval to the Contractor in accordance with **Part 8, Section 802** of the Construction Contract and shall continue for **25** months. A copy of the approval form is attached as **Exhibit B**.

- 1.4. License.** The Contractor shall hold the following licenses in good standing:

1.4.1. **C-27** State Contractor's License.

1.4.1.1. Alternatively, the Contractor shall retain the services of a Subcontractor with a **C-27** State Contractor's License.

1.4.2. Pest Control Advisor's License.

1.4.2.1. Alternatively, the Contractor shall retain the services of a licensed Pest Control Advisor.

1.4.3. Registration with the County Agriculture Commission.

1.4.4. Qualified Applicator's Certificate for Category B. This shall apply to any person supervising the use of pesticides, herbicides, or rodenticides.

1.4.5. City of San Diego Business License.

Prior to performing the Work, the Contractor shall complete and submit to the City the License Data Sheet. **See Exhibit C.**

- 1.5. Hours of Performance.** The Contractor shall perform the Work between the hours of 6:00 a.m. and 6:00 p.m., Monday through Friday (Working Hours). The City may, in its sole discretion, grant permission to the Contractor to perform Work during non-Working Hours.

Maintenance functions that generate excess noise (operations of power equipment which would cause annoyance to area residents for example) shall not begin before 7:00 a.m.

SECTION 2 - ADMINISTRATION

- 2.1. Contract Administrator. PURCHASING & CONTRACTING DEPARTMENT, PUBLIC WORKS DIVISION (PWD)** is the Contract Administrator for the LTMMA. The Contractor shall perform the Work under the direction of a designated representative of the Purchasing & Contracting Department. The City will communicate with the Contractor on all matters related to the administration of this LTMMA and the Contractor's performance of the Work rendered hereunder. When this LTMMA refers to communications to or with the City, those communications shall be with the City, unless the City or this LTMMA specifies otherwise. Further, when this LTMMA requires an act or approval by City, that act or approval will be performed by the City.
- 2.2. Local Office.** The Contractor shall maintain a local office with a company representative who is authorized to discuss matters pertaining to this LTMMA with the City and shall promptly respond and be available during Normal Working Hours. A local office is one located in San Diego County that can be reached by telephone and facsimile. An answering service in conjunction with a company email address for the designated company representative may fulfill this requirement. A mobile telephone shall not fulfill the requirement for a local office. All calls to the Contractor from the City shall be returned within a 1-hour period.
- 2.3. Emergency Calls.** The Contractor shall have the capability to receive and to respond immediately to calls of an emergency nature. The City shall refer emergency calls to the Contractor for immediate disposition. The Contractor shall provide the City with a 24 hour emergency telephone number for this purpose.
- 2.4. Staffing.** The Contractor shall furnish supervisory and working personnel capable of promptly accomplishing all Work required under this LTMMA on schedule and to the satisfaction of the City.
- 2.5. Contractor Inspections.** The Contractor shall perform inspections of the Work site and shall prepare and submit to the City a Punchlist and dates of correction. The Punchlist shall include a comprehensive report of Work performed at the Work site to ensure 100% cover.

SETION 3: WORK SITE MAINTENANCE

- 3.1. Use of Chemicals.** The Contractor shall submit to the City for approval sample labels and MSDS for all chemical herbicides, rodenticides, and pesticides proposed for use under this LTRMC. Materials included shall be limited to chemicals approved by the State of California Department of Agriculture.

The use of any chemical shall be based on the recommendations of a licensed pest control advisor. Annual PCA Pesticide Recommendations are required for each pesticide proposed to be used for the Work site covered by this LTRMC. The use of chemicals shall conform to the current San Diego County Department of Agriculture regulations.

No chemical herbicide, rodenticide, or pesticide shall be applied until its use is approved, in writing, by City as appropriate for the purpose and area proposed.

The Contractor shall submit a monthly pesticide use report to the City along with the Contractor's invoices for payment. This report shall include a statement of all applications of herbicides, rodenticides, and pesticides, detailing the chemical used, undiluted quantity, rate of application, applicator's name, and the date and purpose of the application. For months in which no pesticides are applied, state "No Pesticide Used" on the report.

- 3.2. Irrigation Water.** The Contractor shall diligently practice water conservation, including minimizing run-off or other waste. The Contractor shall turn off irrigation systems, if any, during periods of rainfall and at such other times when suspension of irrigation is desirable to conserve water and to remain within the guidelines of good horticultural landscape maintenance practices in accordance with the instructions from the Project Biologist. The Contractor's failure to properly manage and conserve water may result in deductions from the monthly payment to be made to the Contractor or other penalties under this LTMMA.

If the Contractor causes excessive use or waste of irrigation water, the estimated cost of that water shall be deducted from the monthly payment. Further, any monetary fines or other damages assessed to City for the Contractor's failure to follow water conservation regulations imposed by the City, the Public Utilities Department of the City of San Diego, and, where appropriate, the State of California, the County Water Authority, or other legal entities shall be solely the responsibility of the Contractor and may be deducted from the monthly payment to be made to the Contractor under this LTMMA.

- 3.3. Payment for Water.** The Contractor shall pay for the water used in the maintenance of the Work site and this cost is included in the price of this LTMMA.

- 3.4. Satisfactory Progression.** If the Revegetation/Restoration Area is not progressing towards the required performance criteria, as defined in the Scope of Work, in accordance with the Work Schedule, and as determined by City, the City may accordingly adjust monthly payments to the Contractor.

SECTION 4: COMPENSATION

- 4.1. Maximum Compensation.** The compensation for this LTMMA will be included in the Contract Price in Section 5 of the above agreement.

- 4.2. Method of Payment and Reports.** The payments will be made monthly in direct proportion that each month bears to the total value of the Contract Price. As conditions precedent to

payment, the Contractor shall submit a detailed invoice and report of maintenance Work performed every month. The Contractor's failure to submit the required reports or certified payrolls as described in the Construction Contract shall constitute a basis for withholding payment by the City.

4.3. Final Payment. The Contractor shall not receive final payment until the following conditions have been completed to the City's satisfaction:

4.3.1. The item(s) of the Work subject to this maintenance coverage as specified in **Exhibit A** (Maintenance Items) have been determined to be in compliance with the Construction Contract and this LTMMA.

4.3.2. The Contractor has provided to the City a signed and notarized Affidavit of Disposal, a copy of which is attached to the Construction Contract, stating that all brush, trash, debris, and surplus materials resulting from the Work have been disposed of in a legal manner.

4.3.3. The Contractor has provided a final work summary report to the City.

4.3.4. The Contractor has performed comprehensive and successful testing and checks of the Maintenance Items.

SECTION 5: BONDS AND INSURANCE

5.1. Contract Bonds. Prior to the commencement of Work, the Contractor, at its sole cost and expense, shall provide the following bonds issued by a surety authorized to issue bonds in California satisfactory to the City:

5.1.1. A Payment Bond (Material and Labor Bond) in an amount not less than the Contract Price for this Bid item, to satisfy claims of material suppliers and mechanics and laborers employed by it on the Work. The Payment Bond shall be maintained by the Contractor in full force and effect until the Work is accepted by City and until all claims for materials and labor are paid and shall otherwise comply with the California Civil Code.

5.1.2. A Performance Bond in an amount not less than the Contract Price for this bid item to guarantee the faithful performance of all Work within the time prescribed in a manner satisfactory to the City and to guarantee all materials and workmanship will be free from original or developed defects. The Performance Bond shall remain in full force and effect until performance of the Work is completed as set forth in this LTMMA.

5.2. Insurance. The Contractor shall maintain insurance coverage as specified in **Section 5-4, "INSURANCE"** of the Construction Contract at all times during the term of this LTMMA.

The Contractor shall not begin the Work under this LTMMA until they have complied with the following:

5.2.1. Obtain insurance certificates reflecting evidence of insurance:

1. Commercial General Liability
2. Commercial Automobile Liability
3. Worker's Compensation

5.2.2. Confirm that all policies contain the specific provisions required in **Section 5-4, "INSURANCE"**.

The Contractor shall submit copies of any policy upon request by the City.

The Contractor shall not modify any policy or endorsement thereto which increases the City's exposure to loss for the duration of this LTMMA.

SECTION 6: MISCELLANEOUS

- 6.1. Illness and Injury Prevention Program.** The Contractor shall comply with all the mandates of Senate Bill 198 and shall specifically have a written Injury Prevention Program on file with the City in accordance with all applicable standards, orders, or requirements of California Labor Code, Section 6401.7. This Program shall be on file prior to the performance of any Work.
- 6.2. City Standard Provisions.** This LTMMA is subject to the same standard provisions and Contractor Certification requirements as the Construction Contract.
- 6.3. Taxpayer Identification Number.** I.R.S. regulations require the City to have the correct name, address, and Taxpayer Identification Number (TIN) or Social Security Number (SSN) on file for businesses or persons who provide services or products to the City. This information is necessary to complete Form 1099 at the end of each tax year. As such, the Contractor shall provide the City with a Form W-9 upon execution of this LTMMA.
- 6.4. Assignment.** The Contractor shall not assign the obligations under this LTMMA, whether by express assignment or by sale of the company, nor any monies due or to become due, without the City's prior written approval. Any assignment in violation of this section shall constitute a Default and is grounds for immediate termination of this LTMMA, at the sole discretion of City. In no event shall any putative assignment create a contractual relationship between the City and any putative assignee.
- 6.5. Independent Contractors.** The Contractor and any Subcontractors employed by Contractor shall be independent contractors and not agents of the City. Any provisions of this LTMMA that may appear to give the City any right to direct the Contractor concerning the details of performing the Work, or to exercise any control over such performance, shall mean only that

the Contractor shall follow the direction of the City concerning the end results of the performance.

- 6.6. Covenants and Conditions.** All provisions of this LTMMA expressed as either covenants or conditions on the part of the City or the Contractor shall be deemed to be both covenants and conditions.
- 6.7. Jurisdiction and Venue.** The jurisdiction and venue for any suit or proceeding arising out of or concerning this LTMMA, the interpretation or application of any of its terms, or any related disputes shall be the County of San Diego, State of California.
- 6.8. Successors in Interest.** This LTMMA and all rights and obligations created by it shall be in force and effect whether or not any Parties to this LTMMA have been succeeded by another entity and all rights and obligations created by this LTMMA shall be vested and binding on any Party's successor in interest.
- 6.9. Integration.** This LTMMA and the exhibits, attachments, and references incorporated into this LTMMA fully express all understandings of the Parties concerning the matters covered in this LTMMA. No change, alteration, or modification of the terms or conditions of this LTMMA, and no verbal understanding of the Parties, their officers, agents, or employees shall be valid unless made in the form of a written change agreed to in writing by both Parties or by an amendment to this LTMMA agreed to by both Parties. All prior negotiations and agreements shall be merged into this LTMMA.
- 6.10. Counterparts.** This LTMMA may be executed in counterparts, which when taken together shall constitute a single signed original as though all Parties had executed the same page.
- 6.11. No Waiver.** Any failure of either the City or the Contractor to insist upon the strict performance by the other of any covenant, term, or condition of this LTMMA, nor any failure to exercise any right or remedy consequent upon a breach of any covenant, term, or condition of this LTMMA, shall constitute a waiver of any such breach or of such covenant, term, or condition. No waiver of any breach shall affect or alter this LTMMA, and each and every covenant, condition, and term hereof shall continue in full force and effect to any existing or subsequent breach.
- 6.12. Severability.** The unenforceability, invalidity, or illegality of any provision of this LTMMA shall not render any other provision of this LTMMA unenforceable, invalid, or illegal.
- 6.13. Signing Authority.** The representative for each Party signing on behalf of a corporation, partnership, joint venture or governmental entity hereby declares that authority has been obtained to sign on behalf of the corporation, partnership, joint venture, or entity and agrees to hold the other Party or Parties hereto harmless if it is later determined that such authority does not exist.

IN WITNESS WHEREOF, this Contract is executed by the City of San Diego, acting by and through its Purchasing & Contracting Department Director and by Contractor.

Dated this 15th day of June 2023.

THE CITY OF SAN DIEGO

By: Beric Doringo

Beric Doringo
Deputy Director
Purchasing & Contracting Department

I HEREBY CERTIFY I can legally bind **Dick Miller, Inc.** and that I have read this entire contract, this 27th day of April, 2023

By: [Signature]

Printed Name: Glen Bullock

Title: President

I HEREBY APPROVE the form of the foregoing Contract this

28th day of June of 2023.

Mara W. Elliott, City Attorney

By: Dana Fairchild

Printed Name: Dana Fairchild
Deputy City Attorney

EXHIBIT A

SCOPE OF WORK

- I. **Location of Work.** The location of the Work to be performed (Revegetation Area) is shown on Drawings sheets numbered **42220-34-D (L-1)** through **42220-49-D (L-16)** through, which are incorporated into this Contract by this reference as though fully set forth herein.
- II. **Description of Work.** The Contractor shall maintain the Revegetation/Restoration Area during the Monitoring Program in accordance with this Contract. The Revegetation/Restoration Area shall meet the success criteria specified in the Plan at each of the milestones listed in the Schedule for the maintenance and monitoring period. The Work includes complete landscape maintenance & monitoring consisting of irrigation, pruning, shaping and training of trees, shrubs, and ground cover plants; fertilization; weed control; control of all plant diseases and pests; and trash removal, and all other maintenance listed in this Contract and as required to maintain the Revegetation Area in a useable condition and to maintain the plant material in a healthy and viable state.

The Work also includes biological monitoring of the Revegetation/Restoration Area according to the schedule and methods specified in the Revegetation/Restoration Plan. The monitoring work shall include all reporting tasks specified in the Plan.

III. **Method of Performing Work.**

A. **Irrigation.** Irrigation shall be applied to container and salvaged plants in accordance with instructions from the Project Biologist. Irrigation delivery techniques and schedules will vary depending on the availability of a sprinkler irrigation system and weather patterns. Failure of an existing irrigation system to provide full and proper irrigation shall not relieve Contractor of the responsibility to provide adequate irrigation with full and proper coverage of all areas subject to this LTMMA.

1. In areas where an automatic sprinkler system is installed, Contractor shall periodically inspect the operation of the system for any malfunction. The maximum interval between inspections shall not exceed 7 Calendar Days. The Contractor shall maintain all sprinkler systems in such a way as to guarantee proper coverage and full working capability and shall make whatever adjustments may be necessary to prevent excessive run-off into streets, rights-of-way, or other areas not meant to be irrigated. The cost of wasted water may be charged to Contractor.
2. All areas not adequately covered by a sprinkler system shall be irrigated by a portable irrigation method in accordance with instructions from the Project Biologist. The Contractor shall furnish all hoses, nozzles, sprinklers, etc. necessary to accomplish this supplementary irrigation. The Contractor shall exercise due diligence to prevent water waste, erosion, and detrimental seepage into existing underground improvements and to existing structures.

3. Irrigation shall be accomplished as follows:
- a) Turf (if any) shall be irrigated Monday through Friday, as required, to maintain acceptable growth, viability and health, and to encourage deep rooting, in accordance with instructions from the Project Biologist. Additional irrigation shall be performed in the event of unusually hot/dry weather conditions (as are present during Santa Ana conditions, or other times of low humidity or high winds, or during a prolonged high temperature period during summer months).
 - b) Landscaped improved banks and slopes (if any) shall be irrigated Monday through Friday as required to maintain acceptable growth, viability and health, and to encourage deep rooting, in accordance with instructions from the Project Biologist.
 - c) Shrub beds (if any) shall be irrigated as required to maintain acceptable growth, viability and health, and to encourage deep rooting, in accordance with instructions from the Project Biologist. Shrub areas shall be irrigated at a rate which keeps surface runoff to a minimum. The irrigation rate shall be adjusted to the needs of shrub types, seasons and weather conditions.
 - d) Planted and seeded areas shall be irrigated as required to maintain acceptable growth, viability and health, and to encourage deep rooting, in accordance with instructions from the Project Biologist. Planted and seeded areas shall be irrigated at a rate which keeps surface runoff to a minimum. The irrigation rate shall be adjusted to the needs of plant types, seasons and weather conditions.

B. Maintenance of Irrigation System. The Contractor shall keep controller and valve boxes (if any) clear of soil and debris and shall maintain the irrigation system at no additional cost to City, including replacement, repair, adjustment, raising or lowering, straightening and any other operation required for the continued proper operation of the system from the "cold" side of the water meter throughout the Revegetation/Restoration Area. The Contractor shall also be responsible for maintaining the painted surfaces of irrigation and lighting controller cabinets as well as the corresponding automatic irrigation battery numbers on the lids of the automatic control valve boxes (if any). The Contractor shall be responsible for light bulb replacements in controller cabinets as necessary.

- a) Repair or replacement includes: sprinkler system laterals (piping), sprinkler mains (pressure lines), vacuum breakers, sprinkler control valves, sprinkler controllers, sprinkler heads, sprinkler caps, sprinkler head risers, valve covers, boxes and lids (including electrical pull boxes and lids), valve sleeves and lids, quick coupler valves and hose bibs. Any replacement shall conform to the type and kind of existing system. Any deviation shall be approved in writing by City.

- b) The Contractor shall repair irrigation systems which are damaged or altered in any way, including by acts of God, vandalism, vehicular damage, or theft.

C. Operation of Automatic Irrigation Controllers. Where the operation of automatic irrigation controllers is required as part of this LTRMC, the Contractor shall:

- a) Not duplicate any coded City key furnished by City for access and operation of the controller;
- b) Surrender all keys furnished by City, promptly at the end of the term of this LTRMC, or at any time deemed necessary by City to prevent serious loss to City;
- c) protect the security of City's property by keeping controller cabinet and building doors locked at all times; and
- d) refrain from using premises behind locked doors for storage of materials, supplies, or tools except as approved by City.

D. Pruning Shrubs and Ground Cover Plants. The Contractor shall prune all shrubs and ground cover plants growing in the Revegetation Area as required to:

- 1. Maintain plant growth viability and health, and to encourage deep rooting, in accordance with instructions from the Project Biologist.
- 2. Prevent encroachment of passageways, walks, streets, or view of signs; and
- 3. Prevent encroachment in any manner deemed objectionable by the City.

The Contractor shall remove dead or damaged limbs with sharp pruning tools, with no stubs remaining. The Contractor shall seal any pruning cut which exceeds 2 inches in diameter with an approved pruning paint when required by the City. The Contractor shall perform pruning to permit plants to grow naturally in accordance with their normal growth characteristics except where box hedging is required by the City. The Contractor shall not shear, hedge, or severely prune plants, unless authorized by the City. The Contractor shall not use growth regulators.

E. Tree Maintenance. The Contractor shall maintain all trees and container plants in the revegetation area in accordance with instructions from the Project Biologist. The Contractor shall perform pruning in accordance with instructions from the Project Biologist, when necessary. The Contractor shall not top trees.

- 1. **Potential Hazards.** The Contractor shall notify the City within 24 hours of any tree that shows signs of root heaving or leaning or is in any manner a potential safety hazard. The Contractor shall immediately reestablish trees and shrubs that are uprooted due to storms, if possible. If trees or shrubs cannot be reestablished, Contractor shall remove them immediately (including roots) and fill the holes until replacement planting is complete.

2. **Replacement.** The Contractor shall completely remove and replace trees lost due to Contractor's faulty maintenance or negligence, as determined by the City. The Contractor shall replace trees in kind and size as determined by the City. If there is a difference in value between the tree lost and the replacement tree, the City will deduct the difference from payment to be made under this LTMMA. The City shall determine the value of the tree lost using the latest International Society of Arboriculture (I.S.A.) guidelines for value determination.
3. **Staking.** The Contractor shall securely stake any newly planted trees and other trees needing support with two "lodge pole" type stakes placed on opposite sides of the tree outside the root ball and secured to the tree with at least two flexible rubber tree ties. The Contractor shall regularly inspect tree ties and stakes and reposition them as necessary to ensure against girdling and abrasion.

F. Fertilization. The Contractor shall fertilize the Revegetation Area as necessary in accordance with instructions from the Project Biologist. Contractor shall submit to City Material Safety Data Sheets and a schedule of application showing the site, date, and approximate time of fertilizer application (Fertilizer Schedule). The Fertilization Schedule, regardless of its intensity, timing, or the number of sites covered daily or weekly, shall not excuse Contractor from performing any other Work regularly required under this LTMMA. All fertilization shall first be approved by the Project Biologist.

1. The Contractor shall notify the City at least 48 hours before beginning any fertilization. Fertilizer shall be delivered to the site only in the original unopened containers bearing the manufacturer's guaranteed analysis. Damaged packages shall not be accepted. The Contractor shall furnish to the City with duplicate signed, legible copies of all certificates and invoices for all fertilizer to be used for this LTMMA. The invoices shall state the grade, amount and quantity received. Both the copy to be retained by the City and the Contractor's copy shall be signed by the City, on site, before any fertilizer may be used.
2. Fertilizers, if necessary, shall be applied at the direction of the Project Biologist and according to manufacturer's product specifications.
3. If deemed necessary by the City to achieve required results, the Contractor shall apply other materials as directed by the City, including:
 - a) iron chelate;
 - b) soil sulfur;
 - c) gypsum; or
 - d) surfactant enzymes such as Sarvon or Naiad.

4. The Contractor shall adequately irrigate the fertilized area(s) immediately following the application of fertilizers and/or amendments to force fertilizer material to rest directly on the soil surface. Drip irrigated areas shall be adequately hand watered using quick coupler valves and hoses to dissolve fertilizer.

- G. Weed Removal.** The Contractor shall completely remove weeds from the Revegetation Area, including all turf grass areas, shrub and ground cover areas, planters, tree wells, and cracks in paved areas, including sidewalks, parking lot, gutters and curbs, as shown on the Work Schedule. For the purposes of this Section, "Weed" means any undesirable or misplaced plant. The Contractor shall control Weeds by manual, mechanical, or chemical methods. The City or Project Biologist may restrict the use of chemical weed control in certain areas.

Weed removal in areas with native habitat shall be in accordance with **Section 802 of the Whitebook**.

- H. Disease and Pest Control.** The Contractor shall regularly inspect the Revegetation Area for the presence of disease and insect or rodent infestation. The Contractor shall notify the City within 4 Calendar Days if disease or insect or rodent infestation is discovered. In its notice to the City, the Contractor shall identify the disease, insect, or rodent and specify the control measures to be taken. Upon approval of the City, the Contractor shall implement the approved control measures, exercising extreme caution in the application of all sprays, dusts, or other materials utilized. The Contractor shall continue the approved control measures until the disease, insect, or rodent is controlled to the satisfaction of the City.

1. All individuals who supervise the mixing and application of herbicides, pesticides, and rodenticides on behalf of the Contractor shall possess valid Qualified Applicators Certificate for Category B issued to them by the State Department of Food and Agriculture.
2. The Contractor shall utilize all safeguards necessary during disease, insect or rodent control operations to ensure safety of the public and the employees of the Contractor, in accordance with current standard practices accepted by the State of California Department of Food and Agriculture. If the Contractor is unable to control the pest or disease, a pest control company will be hired, and the cost shall be deducted from Contractor's monthly payment.

- I. Plant Replacement.** Except as provided in **Section H** below, the Contractor shall notify the City within 4 Calendar Days of the loss of plant material due to any cause.

1. The Contractor shall, at no cost to the City, replace any tree, shrub, ground cover, or other plant which is damaged or lost as a result of Contractor's faulty maintenance or negligence. The size and species of replacement plant materials shall be as directed by the City.

2. If so directed by the City, the Contractor shall replace any plant damaged or lost that is not a result of the Contractor's faulty maintenance or negligence. The size and species of replacement plant materials shall be as directed by City. The City will pay for materials and labor outside of warranty.
3. The City may determine that certain plants should be replaced in order to ensure maximum ecological health and overall aesthetic appearance of planting in the Revegetation Area. When the City determines such replacement should occur, Contractor shall replace the plants as directed by the City. The City will pay for materials and labor outside of warranty.

J. Damage Reports. The Contractor shall notify the City within 24 hours of any damage to the Work Area caused by accident, vandalism, or theft.

K. Litter. The Contractor shall promptly dispose of all trash and debris at an appropriate City disposal site. The Contractor shall pay any and all fees associated with the disposal of debris or trash accumulated under the terms of this LTMMA. The Contractor understands that disposal of refuse at City landfills is subject to a fee and that the Refuse Disposal Division can be contacted at (619) 573-1418 for fee information.

1. **Contractor Generated Litter.** The Contractor shall promptly remove all debris generated by the Contractor's pruning, trimming, weeding, edging and other Work required by this LTMMA. Immediately after working in streets, park walks, gutters, driveways, and paved areas, the Contractor shall clean them in accordance with all applicable laws.
2. **Third Party Generated Litter.** Upon discovery, the Contractor shall remove all litter, including bottles, glass, cans, paper, cardboard, fecal matter, leaves, branches, metallic items, and other debris, from the Work site.

L. Monitoring. The Project Biologist will oversee all maintenance operations and conduct qualitative and quantitative biological monitoring of the Revegetation Area according to the schedule and methods described in the Revegetation Plan. The Project Biologist will be responsible for preparing and submitting monitoring reports according to the schedule and instructions in the Revegetation Plan. The Project Biologist shall meet all requirements specified in **Section 802 of the Whitebook**.

M. Final Site Cleanup. Prior to completion of the LTMMA, all temporary irrigation materials, BMP's, and signs shall be removed from the site and properly disposed of.

EXHIBIT B

INSERT A COPY OF THE ENGINEER'S FIELD NOTIFICATION WHICH ACCEPTS THE PLANT ESTABLISHMENT PERIOD (PEP) AND ESTABLISHES THE COMMENCEMENT DATE OF THE MONITORING PROGRAM, SEE THE 2021 WHITEBOOK, SECTION 802

EXHIBIT C
LICENSE DATA SHEET

State Contractor License Classification and Number: _____

Name of License Holder: _____

Expiration Date: _____

City of San Diego Business License Number: _____

Expiration Date: _____

Bid Results

Bidder Details

Vendor Name Dick Miller Inc.
Address 930 Boardwalk, Suite H
San Marcos, California 92078
United States
Respondee John Martinez
Respondee Title Sr. Estimator
Phone 951-216-4070
Email jmartinez@dmiusa.net
Vendor Type DVBE, CADIR, SLBE, MALE, SDVSB, CAU
License # 380204
CADIR 1000004547

Bid Detail

Bid Format Electronic
Submitted 03/15/2023 1:32 PM (PDT)
Delivery Method
Bid Responsive
Bid Status Submitted
Confirmation # 322428

Respondee Comment

Buyer Comment

Attachments

File Title	File Name	File Type
SUB DEBAR PACK.pdf	SUB DEBAR PACK.pdf	Debarment and Suspension Form - Subs/Supp/MFR
debarment prime.pdf	debarment prime.pdf	Debarment and Suspension Form - Prime
MDOBI.pdf	MDOBI.pdf	Mandatory Disclosure of Business Interests Form
CERT OF PENDING ACTIONS.pdf	CERT OF PENDING ACTIONS.pdf	Contractor's Certification of Pending Actions
BOND SCRIPPS.pdf	BOND SCRIPPS.pdf	Bid Bond

Subcontractors

Showing 8 Subcontractors

Name & Address	Desc	License Num	CADIR	Amount	Type
Coast Landscaping Inc. 2230 La Mirada Dr Ste B Vista, California 92081	landscape, irrigation, long term maintenance CONTRACTOR SLBE	353359	1000004310	\$324,000.00	CADIR, CAU, MALE, Local
FenceCorp Inc. 2401 Industry Street Oceanside, California 92054	GUARD RAIL, CHAIN LINK FENCE, CABLE RAILING, PROTECTIVE RAILING, CONTRACTOR	886544	1000000850	\$173,382.00	Local
Lekos Electric, Inc. 1370 Pioneer Way El Cajon, California 92020	TRAFFIC SIGNAL, INTERCONNECT, LIGHTING AND ELECTRICAL PARKING LOT CONTRACTOR	588410	1000004487	\$800,500.00	WBE, CADIR, HUBZ, Local
MTGL Inc. 6295 Ferris Square, Suite C San Diego, California 92121	TESTING, SERVICE	000000	1000006646	\$89,124.00	WOSB, SDB, FEM, CADIR, LAT, DBE, HUBZ, MBE, WBE, Local
Pratt Equipment Corp. PO Box 2546 Vista, California 92085	GRADING, IMPORT, CLEAR & GRUB, DEMO, CONTRACTOR SLBE	847624	1000016735	\$801,350.00	SDB, SLBE, Local
Precision Striping, Inc. 545 W. Bradley Avenue El Cajon, California 92020	STRIPING & SIGNS ON AND OFF SITE CONTRACTOR SLBE	1026547	1000051515	\$22,900.00	CADIR, SDB, ELBE, MALE, LAT, Local
SealRight Paving, Inc. 9053 Olive Dr. Spring Valley, California 91977	ASPHALT PAVING, BASE, GRINDING CONTRACTOR SLBE	364113	1000039542	\$285,665.00	DBE, MBE, CADIR, MALE, LAT, Local
Soil Retention Systems, Inc. 2501 State Street Carlsbad, California 92008	MSE WALLS CONTRACTOR	516900	1000002114	\$448,425.00	CADIR, Local

Line Items

Discount Terms No Discount

Item #	Item Code	Type	Item Description	UOM	QTY	Unit Price	Line Total	Response	Comment
Main Bid							\$7,077,777.77		
1	524126		Bonds (Payment and Performance)	LS	1	\$120,000.00	\$120,000.00	Yes	
2	236220		Building Permits (EOC Type I)	AL	1	\$30,000.00	\$30,000.00	Yes	
3	238110		Construction of Scripps Miramar Ranch Parking Lot Expansion	LS	1	\$6,178,479.77	\$6,178,479.77	Yes	
4			Field Orders (EOC Type II)	AL	1	\$620,000.00	\$620,000.00	Yes	
5	541330		SWPPP Development	LS	1	\$22,074.00	\$22,074.00	Yes	
6	237310		SWPPP Implementation	LS	1	\$53,224.00	\$53,224.00	Yes	
7	541330		SWPPP Permit Fee (EOC Type I)	AL	1	\$7,000.00	\$7,000.00	Yes	
8	238210		Utility Fees (EOC Type I)	AL	1	\$17,000.00	\$17,000.00	Yes	
9	541330		25 Months of Long-term Maintenance and Monitoring Agreement	LS	1	\$30,000.00	\$30,000.00	Yes	

Line Item Subtotals

Section Title	Line Total
Main Bid	\$7,077,777.77
Grand Total	\$7,077,777.77