City of San Diego

CONTRACTOR'S NAME: Marcon Engineering, Inc.
ADDRESS: 876 N Broadway, Escondido, CA 92025
TELEPHONE NO.: (760) 871-0477 **FAX NO.:**
CITY CONTACT: Juan E. Espindola, Senior Contract Specialist, Email: JEEspindola@sandiego.gov
Phone No. (619) 533-4491
Y. Lewis / A. Parra / N. Donovan

BIDDING DOCUMENTS

e - Bidding

FINAL

FOR

SALK NEIGHBORHOOD PARK JOINT USE DEVELOPMENT

BID NO.: **K-22-1993-DBB-3-B**
SAP NO. (WBS/IO/CC): **S-14007**
CLIENT DEPARTMENT: **1714**
COUNCIL DISTRICT: **1, 6**
PROJECT TYPE: **GB**

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
MAY 24, 2022

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:

1) Registered Engineer — 04/13/2022 (Date) — Seal:

2) For City Engineer — 4/13/22 (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 §22.0807I, (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.	List of Subcontractors for Alternate Items	At Time of Bid	ALL BIDDERS
4.	Mandatory Disclosure of Business Interests	At Time of Bid	ALL BIDDERS
5.	Debarment and Suspension Certification for Prime Contractors	At Time of Bid	ALL BIDDERS
6.	Debarment and Suspension Certification for Subcontractors, Suppliers & Mfgrs	At Time of Bid	ALL BIDDERS
7.	Bid Bond (Original)	By 5PM 3 working days after bid opening	ALL BIDDERS
8.	SLBE Good Faith Effort Documentation	By 5 PM 3 working days after bid opening	ALL BIDDERS
9.	Form AA60 – List of Work Made Available	By 5 PM 3 working days after bid opening with Good Faith Effort (GFE) documentation	ALL BIDDERS
10.	If the Contractor is a Joint Venture: • Joint Venture Agreement • Joint Venture License	Within 10 working days of receipt by bidder of contract forms	AWARDED BIDDER
11.	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

ITEM	DOCUMENT TO BE SUBMITTED	WHEN DUE	FROM
12.	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 **Salk Neighborhood Park Joint Use Development.** 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 **$6,450,000.**

4. **BID DUE DATE AND TIME ARE: MAY 24, 2022** 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 **6.2%**
2. ELBE participation **9.2%**
3. Total mandatory participation **15.4%**

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 plus all the Alternates.

8.5. Once the low bid has been determined, the City may, at its sole discretion, award the contract for the Base bid alone; or for the Base bid plus one or more alternates.

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:

JEEspindola@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.

10. ADDITIVE/DEDUCTIVE ALTERNATES:

10.1. The additive/deductive alternates have been established to allow the City to compare the cost of specific portions of the Work with the Project's budget and enable the City to make a decision whether to incorporate these portions prior to award. The award will be established as described in the Bid. The City reserves the right to award the Contract for the Base Bid only or for the Base Bid plus one or more Alternates.

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 and 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, EOCP 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/	2018	PWPI010119-01
City of San Diego Standard Specifications for Public Works Construction ("The WHITEBOOK")* https://www.sandiego.gov/ecp/edocref/greenbook	2018	PWPI010119-02
City of San Diego Standard Drawings* https://www.sandiego.gov/ecp/edocref/standarddraw	2018	PWPI010119-03
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
CALTRANS Standard Plans https://dot.ca.gov/programs/design/ccs-standard-plans-and-standard-specifications	2018	PWPI030119-06

Title	Edition	Document Number
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
NOTE: *Available online under Engineering Documents and References at: https://www.sandiego.gov/ecp/edocref/ *****Electronic updates to the Standard Drawings may also be found in the link above		

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 additive or deductive alternate items, in addition to the above requirements, bidder shall further note "ALTERNATE" and alternate item number within the description.

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 ACCCEPTED:** 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,

3 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, 3 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, 3 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 56
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.

Bond No. EACX4023209

PERFORMANCE BOND, LABOR AND MATERIALMEN'S BOND

FAITHFUL PERFORMANCE BOND AND LABOR AND MATERIALMEN'S BOND:

Marcon Engineering, Inc., a corporation, as principal, and Endurance Assurance Corporation, 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 Two Hundred Forty Thousand Eight Hundred Eighty Eight Dollars and Zero Cents ($7,240,888.00) for the faithful performance of the annexed contract, and in the sum of Seven Million Two Hundred Forty Thousand Eight Hundred Eighty Eight Dollars and Zero Cents ($7,240,888.00) 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

By: Berric Doringo

Print Name: Berric Doringo
Deputy Director
Purchasing & Contracting Department

Date: 7/26/2022

APPROVED AS TO FORM

Mara W. Elliott, City Attorney

By: Dana Fairchild

Print Name: Dana Fairchild
Deputy City Attorney

Date: 7/29/2022

CONTRACTOR
MarCon Engineering, Inc.

By: Margory Contreras

Print Name: Margory Contreras

Date: 06-17-2022

SURETY
Endurance Assurance Corporation

By: _____
Attorney-In-Fact

Endurance Assurance Corporation CORPORATE SEAL 2002 DELAWARE

Print Name: Lawrence F. McMahon, Attorney-In-Fact

Date: June 14, 2022

725 S. Figueroa St., Ste 2100, Los Angeles, CA 90017
Local Address of Surety

(213)270-7000
Local Phone Number of Surety

$54,841.00 (SUBJECT TO ADJUSTMENT BASED ON FINAL CONTRACT PRICE)
Premium

EACX4023209
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 JUN 14 2022 (Date) before me, Maria Guise (Insert Name of Notary exactly as it appears on the official seal), Notary Public,

personally appeared Lawrence F. McMahon (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 _____ (Signature of Notary Public) Maria Guise

MARIA GUISE
COMMISSION # 2283717
Notary Public - California
ORANGE COUNTY
My Comm Expires Apr 14, 2023

Place Notary Seal Above

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of the form to another 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: _____
- ☐ Individual
- ☐ Corporate Officer — Title(s): _____
- ☐ Partner ☐ Limited ☐ General
- ☑ Attorney in Fact
- ☐ Trustee
- ☐ Guardian or Conservator
- ☐ Other: _____

Signer is Representing: Surety Company

RIGHT THUMBPRINT OF SIGNER
Top of thumb here

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

Signer is Representing: _____

RIGHT THUMBPRINT OF SIGNER
Top of thumb here

SOMPO INTERNATIONAL
INSURANCE

POWER OF ATTORNEY

2697

KNOW ALL BY THESE PRESENTS, that **Endurance Assurance Corporation**, a Delaware corporation, **Endurance American Insurance Company**, a Delaware corporation, **Lexon Insurance Company**, a Texas corporation, and/or **Bond Safeguard Insurance Company**, a South Dakota corporation, each, a "Company" and collectively, "**Sompo International**," do hereby constitute and appoint: **Lawrence F. McMahon** as true and lawful Attorney(s)-In-Fact to make, execute, seal, and deliver for, and on its behalf as surety or co-surety; bonds and undertakings given for any and all purposes, also to execute and deliver on its behalf as aforesaid renewals, extensions, agreements, waivers, consents or stipulations relating to such bonds or undertakings provided, however, that no single bond or undertaking so made, executed and delivered shall obligate the Company for any portion of the penal sum thereof in excess of the sum of **ONE HUNDRED MILLION Dollars ($100,000,000.00).**

Such bonds and undertakings for said purposes, when duly executed by said attorney(s)-in-fact, shall be binding upon the Company as fully and to the same extent as if signed by the President of the Company under its corporate seal attested by its Corporate Secretary.

This appointment is made under and by authority of certain resolutions adopted by the sole shareholder of each Company by unanimous written consent effective the 15th day of June, 2019, a copy of which appears below under the heading entitled "Certificate".

This Power of Attorney is signed and sealed by facsimile under and by authority of the following resolution adopted by the sole shareholder of each Company by unanimous written consent effective the 15th day of June, 2019 and said resolution has not since been revoked, amended or repealed:

RESOLVED, that the signature of an individual named above and the seal of the Company may be affixed to any such power of attorney or any certificate relating thereto by facsimile, and any such power of attorney or certificate bearing such facsimile signature or seal shall be valid and binding upon the Company in the future with respect to any bond or undertaking to which it is attached.

IN WITNESS WHEREOF, each Company has caused this instrument to be signed by the following officers, and its corporate seal to be affixed this 15th day of June, 2019.

Endurance Assurance Corporation	Endurance American Insurance Company	Lexon Insurance Company	Bond Safeguard Insurance Company
By: Richard M Appel	By: Richard M Appel	By: Richard M Appel	By: Richard M Appel
Richard Appel; SVP & Senior Counsel	Richard Appel; SVP & Senior Counsel	Richard Appel; SVP & Senior Counsel	Richard Appel; SVP & Senior Counsel

Endurance Assurance Corporation CORPORATE SEAL 2002 DELAWARE

Endurance American Insurance Company CORPORATE SEAL 1996 DELAWARE

Lexon Insurance Company CORPORATE SEAL MARCH 15, 1965 STATE OF TEXAS

Bond Safeguard Insurance Company A SOUTH DAKOTA INSURANCE COMPANY

ACKNOWLEDGEMENT

On this 15th day of June, 2019, before me, personally came the above signatories known to me, who being duly sworn, did depose and say that he/they is/are an officer of each of the Companies; and that he executed said instrument on behalf of each Company by authority of his office under the by-laws of each Company.

By: Amy Taylor
Amy Taylor, Notary Public - My Commission Expires 5/9/23

AMY TAYLOR NOTARY PUBLIC STATE OF TENNESSEE DAVIDSON COUNTY

CERTIFICATE

I, the undersigned Officer of each Company, DO HEREBY CERTIFY that:

1. That the original power of attorney of which the foregoing is a copy was duly executed on behalf of each Company and has not since been revoked, amended or modified, that the undersigned has compared the foregoing copy thereof with the original power of attorney, and that the same is a true and correct copy of the original power of attorney and of the whole thereof;
2. The following are resolutions which were adopted by the sole shareholder of each Company by unanimous written consent effective June 15, 2019 and said resolutions have not since been revoked, amended or modified:

   "RESOLVED, that each of the individuals named below is authorized to make, execute, seal and deliver for and on behalf of the Company any and all bonds, undertakings or obligations in surety or co-surety with others: RICHARD M. APPEL, BRIAN J. BEGGS, CHRISTOPHER DONELAN, SHARON L. SIMS, CHRISTOPHER L. SPARRO, MARIANNE L. WILBERT

   ; and be it further

   RESOLVED, that each of the individuals named above is authorized to appoint attorneys-in-fact for the purpose of making, executing, sealing and delivering bonds, undertakings or obligations in surety or co-surety for and on behalf of the Company."
3. The undersigned further certifies that the above resolutions are true and correct copies of the resolutions as so recorded and of the whole thereof.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal this 14th day of June, 2022.

By:
Daniel S. Lurie, Secretary

NOTICE: U.S. TREASURY DEPARTMENT'S OFFICE OF FOREIGN ASSETS CONTROL (OFAC)

No coverage is provided by this Notice nor can it be construed to replace any provisions of any surety bond or other surety coverage provided. This Notice provides information concerning possible impact on your surety coverage due to directives issued by OFAC. **Please read this Notice carefully.**

The Office of Foreign Assets Control (OFAC) administers and enforces sanctions policy, based on Presidential declarations of "national emergency". OFAC has identified and listed numerous foreign agents, front organizations, terrorists, terrorist organizations, and narcotics traffickers as "Specially Designated Nationals and Blocked Persons". This list can be located on the United States Treasury's website – https://www.treasury.gov/resource-center/sanctions/SDN-List.

In accordance with OFAC regulations, if it is determined that you or any other person or entity claiming the benefits of any coverage has violated U.S. sanctions law or is a Specially Designated National and Blocked Person, as identified by OFAC, any coverage will be considered a blocked or frozen contract and all provisions of any coverage provided are immediately subject to OFAC. When a surety bond or other form of surety coverage is considered to be such a blocked or frozen contract, no payments nor premium refunds may be made without authorization from OFAC. Other limitations on the premiums and payments may also apply.

ATTACHMENTS

ATTACHMENT A

SCOPE OF WORK

SCOPE OF WORK

1. **SCOPE OF WORK:** Park improvements to include a comfort station, new pedestrian access from the public right of way, paving area, entry monument wall, retaining wall, multi-use fields, security lighting, shades structures, walkways retaining walls, landscape, bioretention basins, adult fitness equipment, parking lot, enhanced furnishings including; benches, trash/recycle receptacles, bike racks, drinking fountain, fencing, improvements to the existing dog park at Maddox Park and shade structure at Maddox Park.

1.1. The Work shall be performed in accordance with:

1.1.1. The Notice Inviting Bids and Plans numbered **41245-01-D** through **41245-106-D**, inclusive.

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

See **Appendix E – Location Map.**

3. **CONTRACT TIME:** The Contract Time for completion of the Work including the Plant Establishment Period, shall be **311 Working Days**.

ATTACHMENT B

RESERVED

ATTACHMENT C

RESERVED

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 sections1810 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 **2018 Edition** of the Standard Specifications for Public Works Construction (The "GREENBOOK").
2. The **2018 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.

PART 0 – EQUAL OPPORTUNITY CONTRACTING PROGRAM (EOCP)

SECTION A – GENERAL REQUIREMENTS

0-12 CONTRACT RECORDS AND REPORTS. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

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.

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

1-2 TERMS AND DEFINITIONS. To the "WHITEBOOK", items 43, 56, 69, and 102, DELETE in their entirety and SUBSTITUTE with the following:

43. **Field Order** - A Field Order is a written agreement by the Engineer to compensate you for Work items in accordance with 2-8, "EXTRA WORK" or 2-9, "CHANGED CONDITIONS". A Field Order does not change the Contract Price, Contract Time, or the scope intent of the Contract. The unused portion of the Field Order shall revert to the City upon Acceptance.

56. **Notice of Completion (NOC)** - A document recorded with the County of San Diego to signify that the Contract Work has been completed and accepted by the City.

69. **Punchlist** - A list of items of Work or corrections generated after a Walk-through that is conducted when you consider that the Work and Services are complete, and as verified by the Owner. The Punchlist may be completed in phases if defined in the Contract.

102. **Walk-through** - An inspection the City uses to verify the completion of the Project or phase of the Project and to generate a Punchlist prior to Acceptance.

To the "WHITEBOOK", item 54, "Normal Working Hours", ADD the following:

The **Normal Working Hours** are **8:00 AM** to **5:00 PM**.

To the "WHITEBOOK", ADD the following:

108. **Acceptance** – When all of the Contract Work, including all Punchlist items, is deemed officially complete by the City Asset Owning Department or Deputy City Engineer.

109. **Occupancy** – When the Owner deems a building is ready for use, the Owner will issue a certificate of Occupancy in writing.

110. **Substantial Completion** – When all Contract Work is deemed complete by the Contractor in writing, and as verified by the Owner. Substantial Completion may be completed in phases if defined in the Contract.

1-7.1.3 Requests for Information (RFI). To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. Should You discover a conflict, omission, errors in the Contract Documents, differences with existing field conditions, or have any questions concerning interpretation or clarification of Contract Documents, or when you propose deviations to the standards or design, you shall submit a Request for Information (RFI) to the City regarding your question or clarification within **1 Working Day**.

2. Your RFI shall meet the following requirements:

   a) All RFIs, whether by You or your Subcontractor or supplier at any tier, shall be submitted by You to the City.

   b) RFIs shall be numbered sequentially.

   c) You shall clearly and concisely set forth the single issue for which interpretation or clarification is sought, indicate Specification Section numbers, Contract Drawing numbers, and details, or other items involved, and state why a response is required from the City.

   d) RFIs shall be submitted within **1 Working Day** in order that they may be adequately researched and answered before the response affects any critical activity of the Work.

   e) Should You believe that a response to an RFI causes a change to the requirements of the Contract, You shall, before proceeding, give written notice to the City, indicating that You believe that City response to the RFI to be a Change Order. Failure to give such written notice within **5 Working Days** of receipt of the City's response to the RFI shall waive Your right to seek additional time or cost.

3. The City will respond to RFIs within **5 Working Days** unless the City notifies You in writing that a response will take longer. The **5 Working Days** shall begin when the RFI is received and dated by the City. Responses from the City will not change any requirement of the Contract unless so noted by the City in the response to the RFI. The City will not issue a Change Order for Extra Work or additional time when the issue raised in the RFI was due to your fault, neglect, or any unauthorized deviations from the project design or specifications.

4. If You proceed in resolving a conflict, omission, or any error in the Contract Documents without sending the City an RFI in accordance with the requirements stated above, the City may require You to remove such work at Your cost or back charge You the cost to remove this work.

1-7.2 **Contract Bonds.** To the "WHITEBOOK", item 1, DELETE in its entirety and SUBSTITUTE with the following:

1. Before execution of the Contract, file payment and performance bonds with the City to be approved by the Board in the amounts and for the purposes noted. Bonds shall be executed by a responsible surety as follows:

   a) If the Work is being funded with state or local money, consistent with California Code of Civil Procedure §995.670, the Surety shall be an "admitted surety" authorized by the State of California Department of Insurance to transact surety insurance in the State.

   b) If the Work is being funded with federal money, the Surety shall be listed in the U.S. Treasury Department Circular 570 and shall be in conformance with the specified Underwriting Limitations.

To the "WHITEBOOK", item 2, subsection "a", subsection "i", DELETE in its entirety and SUBSTITUTE with the following:

i. A "Payment Bond" (Materials and Labor Bond) is optional. If no bond is submitted, no payment shall be made until 35 Calendar Days after Acceptance and any lien requirements have been fulfilled. If a bond is submitted, progress payments shall be made in accordance with these Specifications.

To the "WHITEBOOK", item 2, subsection "d", DELETE in its entirety and SUBSTITUTE with the following:

d) For Contracts over $100,000:

i. A "Payment Bond" (Materials and Labor Bond) for 100% of the Contract Price to satisfy claims of material Suppliers and of mechanics and laborers employed on the Work. You shall maintain the bond in full force and effect until Acceptance and until all claims for materials and labor are paid and shall otherwise comply with the Government Code.

ii. A "Faithful Performance Bond" for 100% of the Contract Price to guarantee faithful performance of Work, within the time prescribed and in a manner satisfactory to the City, that materials and workmanship shall be free from original or developed defects.

To the "WHITEBOOK", item 7, DELETE in its entirety and SUBSTITUTE with the following:

7. You shall require the Surety to mail its standard "Bond Status" form to the Engineer at the following address:

Deputy Director
Construction Management and Field Engineering Division
9573 Chesapeake Drive
San Diego, CA 92123

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 50% of the Base Bid.

3-3 **SUBCONTRACTORS.** To the "WHITEBOOK", ADD the following:

6. When a Subcontractor fails to prosecute a portion of the Work in a manner satisfactory to the City, you shall remove such Subcontractor immediately upon written request of the City, and shall request approval of a replacement Subcontractor to perform the Work in accordance with California Public Contract Code (PCC), Subletting and Subcontracting, Section 4107, at no added cost to the City.

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) Biological Resource Report, dated October 15, 2019, by Sean Paver

   b) Geotechnical Addendums, dated August 2, 2017, February 20, 2019 and May 4, 2020, by SCST, Inc.

   c) Drainage Study, dated April 1, 2019, by Michael Baker International

   d) Geotechnical Investigation, dated July 17, 2017, by SCST, Inc.

   e) Structural Calculations, dated March 2, 2018, March 5, 2018, and January 3, 2019 by USA Shade and Fabric Structures and January 30, 2019, November 7, 2019, and February 6, 2020 by AARK Engineering Inc.

   f) Storm Water Quality Management Program (SWQMP), dated December 16, 2020, by Michael Baker International

   g) Infiltration Assessment Summary, dated February 20, 2019 by SCST, Inc.

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

https://drive.google.com/drive/folders/1YFCgIgm375tbYIz5tosCpe2exu15jLf-?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.

3-13.1 Completion. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. You shall submit a written assertion that the Work has been completed and is ready for Owner Acceptance. If, in the Engineer's judgment, the Work has been completed in accordance with the Contract Documents, the Engineer will set forth in writing the date the Work was completed. This will be the date that you are relieved from responsibility to protect and maintain the Work and to which liquidated damages will be computed.

3-13.1.1 Requirements Before Requesting a Walk-through. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

3-13.1.1 Requirements Before Requesting Substantial Completion.

1. The following items are required prior to requesting a Substantial Completion:

   a) Remove temporary facilities from the Site.

   b) Thoroughly cleaning the Site and removing all mark outs and construction staking.

   c) Provide completed and signed Red-lines in accordance with 3-7.3 "Redlines and Record Documents".

   d) Provide all material and equipment maintenance and operation instructions and/or manuals.

   e) Provide all tools which are permanent parts of the equipment installed in the Project.

   f) Provide and properly identify all keys for construction and all keys for permanent Work.

g) Provide all final Special Inspection reports required by the applicable building Code.

h) Provide all items specified to be supplied as extra stock. Wrap, seal, or place in a container all items as necessary to allow for storage by the City for future use. Verify the specified quantities.

i) Ensure that all specified EOCP and certified wage rate documentations covering the Contract Time have been submitted.

j) If the Work includes installing an irrigation system, provide the spare parts for the proposed irrigation system as specified in the Special Provisions.

k) If the Work includes sewer and storm drain installations, the inspection shall include televising in accordance with 306-18, "VIDEO INSPECTION".

l) If the Work includes a Plant Establishment Period, Work in accordance with 801-6, "MAINTENANCE AND PLANT ESTABLISHMENT" shall be completed prior to requesting Substantial Completion, unless approved otherwise by the Owner.

m) Notify the Engineer to arrange a final inspection of any permanent BMPs installed.

3-13.1.2 Walk-through and Punchlist Procedure. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. You shall notify the Engineer 15 Working Days in advance of date of anticipated Substantial Completion to allow time for Engineer to schedule a Walk-through.

2. After you complete the requirements in 3-13.1.1, "Requirements Before Requesting Substantial Completion" and when you consider that the Work is Substantially Complete, you will notify the Engineer in writing that the Project is Substantially Complete and request a Walk-through. The Engineer will review your request and determine if the Project is ready for a Walk-through, by verifying whether you have completed all items as required by 3-13.1.1, "Requirements Before Requesting Substantial Completion". Within 7 Working Days, the City will either reject your request for a Walk-through in writing or schedule and conduct a Walk-through inspection. The Engineer shall facilitate the Walk-through.

3. The following documents shall be provided at the time of your Walk-through request: As-Built markup, Plans, specifications, technical data such as submittals and equipment manuals, draft final payment, warranties, material certifications, bonds, guarantees, maintenance service agreements, and maintenance and operating manuals.

4. Written warranties, except manufacturer's standard printed warranties, shall be on a letterhead addressed to you. Warranties shall be submitted in the format described in this section, modified as approved by the City, to suit the

conditions pertaining to the warranty. Lack of submitting these items will delay start of Walk-through.

5. The Engineer will provide you with the Punchlist within 15 Working Days after the date of the Walk-through. The City shall not provide a preliminary Punchlist.

6. If the Engineer finds that the Project is not Substantially Complete as defined herein, the Engineer will terminate the Walk-through and notify you in writing.

7. If, at any time during the Engineer's evaluation of the corrective Work required by the Punchlist, the Engineer discovers that additional corrective Work is required, the Engineer may include that corrective Work in the Punchlist.

8. You shall remain solely responsible for the Project Site until the Project is completely operational, all Punchlist items have been corrected, all operation and maintenance manuals have been approved, all necessary warranty letters have been received, and the work is formally accepted by the City.

9. The Engineer shall meet with you within 5 Working Days of notification that all Punchlist items are corrected. You shall complete the Punchlist within 30 Working Days, and Working Days will continue to be counted until Acceptance of the Project.

3-13.2 **Acceptance.** To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. You shall provide the completed, signed, and stamped DS-563 to the Engineer prior to Acceptance.

2. You shall deliver the final As-builts and final billing prior to Acceptance.

3. You shall assemble and deliver to the Engineer a Final Summary Report and Affidavit of Disposal prior to Acceptance.

4. Acceptance shall occur after all of the requirements contained in the Contract Documents have been fulfilled. If, in the Engineer's judgment, you have fully performed the Contract, the Engineer will recommend to the City Engineer that your performance of the Contract be accepted. You shall receive notification of Acceptance in writing from the Owner and counting of working days shall cease and Warranty begins.

5. Retention can be released 35 Calendar Days after NOC. Submit your request for retention to the Resident Engineer and they will mail to you a "Release of Claims" form which shall be completed and returned before the retention will be released.

3-13.3 **Warranty.** To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. You shall warranty and repair all defective materials and workmanship for a period of 1 year. This call back warranty period shall start on the date the Work was accepted by the City unless the City has Beneficial Use or takes Occupancy of the project earlier (excluding water, sewer, and storm drain projects).

2. You shall warranty the Work free from all latent defects for 10 years and patent defects for a period of 4 years.

3. The warranty period for specific items covered under manufacturers' or suppliers' warranties shall commence on the date they are placed into service at the direction of the Engineer in writing.

4. All express warranties from Subcontractors, manufacturers', or Suppliers', of any tier, for the materials furnished and Work performed shall be assigned, in writing, to the City, and shall be delivered to the Engineer prior to the Acceptance of your performance of the Contract.

5. Replace or repair defective materials and workmanship in a manner satisfactory to the Engineer after notice to do so from the Engineer and within the time specified in the notice. If you fail to make such replacements or repairs within the time specified in the notice, the City may perform the replacement or repairs at your expense. If you fail to reimburse the City for the actual costs, your Surety shall be liable for the cost

6. Items that shall be warrantied free from defective workmanship and materials for a period longer than 1 year are as follows:

Specified Item	**Minimum Warranty Period**
Detectable Warning Tile Construction	3 Years of Manufacturer's Warranty
All Work Under SECTION 500 – PIPELINE REHABILITATION	3 Years
Fiber Optic Interconnect Cables	2 Years
Luminaires*	10 Years of Manufacturer's Warranty
LED Signal Modules	3 Years of Manufacturer's Warranty
Field Devices Associated with 700-6.3, "Adaptive Control Note"	See 700-6.3.9, "Warranty"

* Provide documentation verifying that the induction luminaire models being offered for the Project are covered by the 10-year warranty.

7. If installed, you shall provide the City and property owner a copy of the manufacturer's warranty for private sewer pumps, including the alarm panel and all other accessories.

   a) You shall involve the manufacturer in the installation and startup as needed to secure any extended warranty required.

   b) Nothing in here is intended to limit any manufacturer's warranty which provides the City with greater warranty rights than set forth in this section or the Contract Documents.

c) The warranty shall include all components. The form of the warranty shall be approved by the Engineer in accordance with 3-13.3.2, "Warranty Format Requirements".

8. If, during the warranty period, any item of the Work is found to be Defective Work, you shall correct it promptly after receipt of written notice from the City to do so. The warranty period shall be extended with respect to portions of the Work corrected as part of the warranty requirements.

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) Modular Retaining Wall

4-3.6 **Preapproved Materials.** To the "WHITEBOOK", ADD the following:

3. You shall submit in writing a list of all products to be incorporated in the Work that are on the AML.

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 and defense duties set forth in the Contract.

5-4.1 **Policies and Procedures.**

1. You shall procure the insurance described below, at your 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 as required by this Contract and at all times thereafter when you are correcting, removing, or replacing Work in accordance with this Contract. Your duties under the Contract, including your indemnity obligations, are not 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 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:

General Annual Aggregate Limit	Limits of Liability
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..

5-4.2.6 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.

5-4.5.3.2 **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 8 of Section 5-4.1. 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.

5-4.9 **Excess Insurance.** Policies providing excess coverage shall follow the form of the primary policy or policies, including, all endorsements.

5-10.2.1 **Public Notice by Contractor.** To the "WHITEBOOK", items 2 and 3, DELETE in their entirety and SUBSTITUTE with the following:

2. No less than 5 Working Days in advance of Project construction activities and utility service interruptions, you shall notify all critical facilities, businesses, institutions, property owners, residents, or any other impacted stakeholders within a minimum 300-foot (90 m) radius of the Project. Verbal and written notifications shall be sent to critical facilities (including but not limited to police stations, fire stations, hospitals, and schools). A copy of written notifications sent to any critical facility shall also be sent to the Resident Engineer. You shall keep records of the people contacted, along with the dates of notification, and

shall provide the record to the Engineer upon request. You shall identify all other critical facilities that need to be notified.

3. Furnish and distribute public notices in the form of door hangers using the City's format to all occupants and/or property owners along streets:

   a) Where Work is to be performed at least Working 5 Working Days before starting construction or survey activities or impacting the community as approved by the Resident Engineer.

   b) Within 5 Working Days of the completion of your construction activities where Work was performed, you shall distribute public notices in the form of door hangers, which outlines the anticipated dates of Asphalt Resurfacing or Slurry Seal.

   c) 72 hours in advance of the scheduled resurfacing.

5-13 **ELECTRONIC COMMUNICATION.** To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. Virtual Project Manager shall be used on this Contract.
2. You shall post all communications addressed to the Engineer concerning construction including RFIs, submittals, daily logs including the Weekly Statement of Working Days (WSWD), Storm Water, and transmittals to the Virtual Project Manager (VPM) website established for the Projects. This shall not supersede any Federal requirements.
3. Maintain a list of scheduled activities including planned and actual execution dates for all major construction activities and milestones defined in the approved Schedule.
4. Review and act on all communications addressed to you in the VPM project website.
5. A user's guide to the VPM system is available on the City's website and shall be provided to you at the Pre-construction Meeting. Refer to the VPM training videos and forms at the location below:

   https://www.sandiego.gov/ecp/edocref/
6. Submit the Sensitive Information Authorization Acknowledgement Form and VPM User Agreement located in the VPM user's guide at the Pre-construction Meeting.

5-15.1 **General.** To the "WHITEBOOK", item 10, DELETE in its entirety and SUBSTITUTE with the following:

10. If your construction activities have encountered flammable liquids or other hazardous substances, you shall ensure that construction staff have the required Hazardous Waste Operations and Emergency Response (HAZWOPER)

certification. Construction staff shall include: City Engineers, City Laboratory Technicians, and City staff that perform onsite inspections.

a) If your Work encounters flammable liquids or other hazardous substances, you shall be responsible for scheduling training for all construction staff to attend and for submitting verification to the Engineer that construction staff have the required HAZWOPER certification prior to continuing that Work in that area. You shall maintain the HAZWOPER certifications annually until the construction activities triggering the requirement is complete, as approved by the Resident Engineer.

SECTION 6 – PROSECUTION AND PROGRESS OF THE WORK

6-1.1 **Construction Schedule.** To the "WHITEBOOK", item 1, subsection "e" and "s", DELETE in their entirety and SUBSTITUTE with the following:

e) Monthly progress payments are contingent upon the submittal of an updated Schedule to the Engineer. The Engineer may refuse to process the whole or part of any monthly payment if you refuse or fail to provide an acceptable schedule.

h) Your Schedule shall include 7 Working Days for the Engineer to schedule and conduct a Walk-through inspection and 15 Working Days for the generation of the Punchlist. You shall Work diligently to complete all Punchlist items within 30 Working Days after the Engineer provides the Punchlist.

s) Submit an updated cash flow forecast with every pay request (for each Project ID or WBS number provided in the Contract) showing periodic and cumulative construction billing amounts for the duration of the Contract Time. If there has been any Extra Work since the last update, include only the approved amounts.

i. Refer to the Sample City Invoice materials in **Appendix D – Sample City Invoice with Cash Flow Forecast** and use the format shown.

ii. See also the "Cash Flow Forecast Example" at the location below:

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

To the "WHITEBOOK", ADD the following:

3. The **120 Calendar Day** Plant Establishment Period 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".

6-1.1.2 **Contracts More Than $500,000 In Value.** To the "WHITEBOOK", item 1, DELETE in its entirety and SUBSTITUTE with the following:

1. Provide the Schedule to the Engineer in accordance with 6-1.1, "Construction Schedule" and 6**-**1.2, "Commencement of the Work"**.**

To the "WHITEBOOK", item 2, DELETE in its entirety.

6-1.2 **Commencement of the Work.** To the "WHITEBOOK", ADD the following:

5. You shall submit a Cost Loaded Construction Schedule in accordance with 6-1.1, "Construction Schedule" at the scheduled pre-construction meeting.

6. If a Cost Loaded Construction Schedule is not provided, the pre-construction meeting will still be held. The Contract Time shall commence at issuance of the NTP, but you shall be limited to the following activities until the Cost Loaded Construction Schedule has been submitted to the Resident Engineer with no exceptions taken:

    a) Mobilization of your trailers, associated utility setup, and grading for trailer area

    b) Permit Procurement

    c) Fencing and temporary utilities for your storage areas

    d) Submittal of anticipated critical path submittals

6-1.5.2 **Excusable Non-Compensable Delays.** To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

6-1.5.2 **Excusable Non-Compensable and Concurrent Delays.**

1. The City shall only issue an extension of time for Excusable Delays that meet the requirements of 6-4.2, "Extensions of Time" for the following circumstances:

    a) Delays resulting from Force Majeure.

    b) Delays caused by weather.

    c) Delays caused by changes to County, State, or Federal law.

2. When a non-excusable delay is concurrent with an Excusable Delay, you shall not be entitled to an extension of Contract Time for the period the non-excusable delay is concurrent with the Excusable Delay.

3. When an Excusable Non-Compensable Delay is concurrent with an Excusable Compensable Delay, you shall be entitled to an extension of Contract Time,

but shall not be entitled to compensation for the period the Excusable Non-Compensable Delay is concurrent with the Excusable Compensable Delay.

6-4.2 **Extensions of Time.** To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. The Contract Time shall not be modified except by Change Order.

2. You shall notify the City in writing within **1 Working Day** after the occurrence and discovery of an event that impacts the Project Schedule.

    a) If you believe this event requires a Change Order, you shall submit a written Change Order request with a report to the City that explains the request for Change Order within **5 Working Days**. The Change Order request must include supporting data, a general description of the discovery, the basis for extension, and the estimated length of extension. The City may grant an extension of time, in writing, for the Change Order request if you require more time to gather and analyze data.

3. The Engineer shall not grant an extension of Contract Time in accordance with 6-1.5, "Excusable Delays" unless you demonstrate, through an analysis of the critical path, the following:

    a) The event causing the delay impacted the activities along the Project's critical path.

    b) The increases in the time to perform all or part of the Project beyond the Contract Time arose from unforeseeable causes beyond your control and without your fault or negligence and that all project float has been used.

4. Any modifications to the Contract Time will be incorporated into the weekly document that the Engineer issues that stipulates the Contract Time. If you do not agree with this document, submit to the Engineer for review a written protest supporting your objections to the document within **30 Calendar Days** after receipt of the statement. Your failure to file a timely protest shall constitute your acceptance of the Engineer's weekly document.

    a) Your protest will be considered a claim for time extension and shall be subject to 2-10.1, "Claims".

6-4.4 **Written Notice and Report.** To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

Your failure to notify the Resident Engineer within **1 Working Day** OR provide a Change Order request within **5 Working Days** after the event, in accordance with 6-4.2, "Extensions of Time", will be considered grounds for refusal by the City to consider such request if your failure to notify prejudices the City in responding to the event.

ADD:

6-6.1.1 Environmental Document.

1. The City of San Diego has prepared a **Notice of Determination** and a **Site Development Permit** for **Salk Neighborhood Park SDP (Salk Neighborhood Park Joint Use Facility)**, Document No**. 2020-NOD-135**, as referenced in the Contract Appendix. You shall comply with all requirements of the **Notice of Determination** and the **Site Development Permit** 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 "GREENBOOK" and "WHITEBOOK", paragraph (8), DELETE in its entirety and SUBSTITUTE with the following:

If, within the time fixed by law, a properly executed notice to stop payment is filed with the City, due to your failure to pay for labor or materials used in the Work, all money due for such labor or materials will be withheld from payment in accordance with applicable laws.

To the "WHITEBOOK", ADD the following:

1. Unless specified otherwise, the Contract Price includes use, consumer, and other taxes mandated by applicable legal requirements.

2. As provided in §7105 of the California Public Contract Code, if the Contract is not financed by revenue bonds, you are not responsible for the cost of repairing or restoring damage to the Project when damage was proximately caused by an act of God, in excess of 5% of the Contract Price, if the following occur:

   a) The Project damaged was built in accordance with the Contract requirements.

   b) There are no insurance requirements in the Contract for the damages.

3. The Lump Sum Bid item for Salk Neighborhood Park Joint Use Facility shall include and not be limited to, The improvement to the park include a comfort station, new pedestrian access from the public right of way, paving area, entry monument wall, multi-use fields, security lighting, shades structures, walkways, curb ramps, retaining walls, landscape, irrigation system, bioretention basins, fencing, adult fitness equipment, parking lot, enhanced furnishings including; benches, trash/recycle receptacles, bike racks, drinking fountains and improvements to the existing dog park at Maddox Neighborhood Park as specified in the Plans, Contract Documents, and Technical Section 41245-01-D through 41245-106 -D.

4. The Lump Sum Bid for Additive Alternate A "Maddox Park Shade Sail" at existing playground area, shall include furnishing all labor, materials, tools, equipment, and incidentals for unit fabrication, foundations, temporary

fencing, dirt removal, delivery, applicable sales tax, installation, and warranty as specified in the Plans, Contract Documents, and Technicals Section.

5. The Lump Sum Bid for Additive Alternate B "Exercise Equipment" shall include furnishing all labor, materials, tools, equipment, and incidentals, including excavation and concrete footings as specified in the Plans, Contract Documents, and Technicals Section.

6. The Lump Sum Bid for Additive Alternate C "Rubberized Play Surfacing at Exercise Equipment" shall include furnishing all labor, material, tools, equipment, and incidentals, including excavation, base material, and base preparation as specified in the Plans, Contract Documents, and Technicals Section.

7. The Lump Sum Bid for Additive Alternate D "Exercise Equipment Area Shade Sails" shall include furnishing all labor, materials, tools, and equipment, and incidentals for unit fabrication, foundation, dirt removal, delivery, applicable sales tax, installation, and warranty as specified in the Plans, Contract Documents, and Technicals Section.

7-3.2 **Partial and Final Payment.** To the "WHITEBOOK", item 1, DELETE in its entirety and SUBSTITUTE with the following:

1. The Final Payment, which is the release of Retention, shall be paid to you after you have successfully submitted the following required documents:

   a) An affidavit that payrolls and bills for materials, equipment, and other indebtedness connected with the Work for which the City or the City's property might be responsible for or encumbered by.

   b) A certificate evidencing that insurances required by the Contract Documents shall remain in force after Final Payment is currently in effect and shall not be canceled or allowed to expire until at least a 30 Calendar Days prior written notice has been given to the Engineer.

   c) Consent of Surety to Final Payment.

   d) If required by the Engineer, other data establishing payment or satisfaction of obligations such as receipts, releases and waivers of liens, claims, and security interests or encumbrances arising out of the Contract Documents. If a Subcontractor refuses to furnish a release or waiver required by the City, you may furnish a bond satisfactory to the Engineer to indemnify the City against such lien.

   e) If required in the Contract Documents, the successful completion and submittal of the required reports such as construction demolition, waste recycling, and hydrostatic discharge reports.

   f) Required EOCP Final Summary Report in accordance with Section 0-12, "Contract Records and Reports", record drawings, operations

manuals, test reports, warranty documentation, and UL labels shall be submitted before requesting the release of retention.

g) Acceptance of the completed Project by the asset owning Department.

To the "WHITEBOOK", ADD the following:

2. Submit an invoice for payment after you successfully complete the required documents and the City will pay the invoice within 30 Calendar Days. The City will pay 6% annually for late retention payments.

7-3.2.1 Application for Progress Payment. To the "WHITEBOOK", item 3, DELETE in its entirety and SUBSTITUTE with the following:

3. The City shall not pay progress or partial payments until you submit to the Engineer an acceptable updated Schedule. It is solely your responsibility to prepare and submit the Schedule updates.

7-3.2.2 Amount of Progress Payments. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. The City will pay 6% annually for late progress payments.

2. Progress payments will be considered "late" if the following occur:

   a) The City does not pay the contractor within 30 Calendar Days from receipt of an undisputed and properly submitted invoice. A properly submitted payment invoice means that the City has approved for payment the entire invoice amount or if the Resident Engineer has not disputed any portion of the application within 7 Calendar Days of the date of submission.

   b) The application for payment does not require signing of a Contract Change Order.

3. The Engineer may withhold payment for any of the following reasons:

   a) Defective or incomplete Work.

   b) Not providing an updated and accurate Cost Loaded Construction Schedule in accordance with 6-1.1, "Construction Schedule".

   c) Stop notices, wage orders, or other withholdings required by Applicable Law. Your failure to comply with 5-3.3, "Payroll Records" and the Contractor Registration and Electronic Reporting System requirements of the Contract Documents.

4. The Engineer may back charge the contract for any of the following reasons:

   a) Defective or incorrect Work not remedied.

b) Damage to City property or a third party's property that was caused by you.

c) Liquidated Damages.

7-3.2.3 Waiver of Claims at Final Payment. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. Your acceptance of Final Payment constitutes a waiver of affirmative Claims by you, except those previously made in writing and identified as unsettled at the time of Final Payment.

7-3.2.4 Withholding of Payment and Back Charge. To the "WHITEBOOK", DELETE in its entirety.

7-3.5.1 General. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. Unit Bid prices shall not be subject to adjustment regardless of quantity used, or if none is used, for the following Bid items:
   a) imported backfill
   b) shoring
   c) water services
   d) house connection sewers
   e) water pollution control items
2. Upon discovery and prior to the Work, you shall notify the Resident Engineer if there is a change in Bid item quantity that increases the total Contract Price by 5% or $100,000 or more, whichever is less.

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.

7-4.3 MARKUP. To the "WHITEBOOK", item 4, DELETE in its entirety and SUBSTITUTE with the following:

4. When a Subcontractor is performing Extra Work, the allowance for overhead and profit shall be applied to the labor, materials, and equipment costs of the Subcontractor as follows:
   a) Regardless of the number of a Subcontractor's tasks for Extra Work, you may only apply 10% for the first $50,000 of the Subcontractor's portion of accumulated total cost then 5% for any remaining costs. You shall not apply 10% to any costs after the first $50,000 of accumulated total costs from performing Extra Work.

b) If the accumulated costs of single or subsequent tasks exceed the $50,000 threshold, you shall instead only apply 5% to any amounts in excess of the $50,000.

c) Regardless of the number of hierarchical tiers of Subcontractors, you may only markup a Subcontractor's Work once.

SECTION 200 – ROCK MATERIALS

200-1.6 Stone for Riprap.

200-1.6.1 General. To the "GREENBOOK", DELETE the first paragraph and SUBSTITUTE with the following:

Stone for riprap shall be quarrystone or cobblestone. Quarrystone shall be angular (used for higher velocities) and cobblestone shall be rounded (used for slower velocities). Flat or elongated shapes will not be acceptable unless the thickness of the individual pieces is at least 1/3 of the length.

ADD:

200-1.8 Cobble Mulch.

Cobble mulch shall be "Baja Cresta Rubble" by Southwest Boulder and Stone (760-342-5522) or approved equal. 50% shall be 4-8" size and 50% shall be 1-3" size.

200-2 UNTREATED BASE MATERIALS.

200-2.1 General. To the "WHITEBOOK", ADD the following:

3. Where specified, Class 2 aggregate base shall be per Subsection 26-1.02A, "Class 2 Aggregate Base" of the Caltrans Standard Specifications, and associated AGGREGATE GRADING REQUIREMENTS and QUALITY REQUIREMENTS tables or Crushed Aggregate Base per Subsection 200-2.2 ("Crushed Aggregate Base.") and as shown in the gradation in TABLE 200-2.2.2 of Subsection 200-2.2.2 ("Grading.") of the Greenbook.

   Aggregate may include up to one hundred percent (100%) material processed from reclaimed asphalt concrete, Portland Cement concrete, lean concrete base, cement treated base or a combination of any of these materials. It should be noted, this does not change the specification requirements for material or placement quality. It is still the Contractor's responsibility to verify that any blend of reclaimed paving materials with or without virgin materials shall meet all the specification requirements.

200-2.7 Disintegrated Granite.

200-2.7.1 General. To the "GREENBOOK", ADD the following:

The terms "disintegrated granite" and "decomposed granite" shall refer to the same material and can be used interchangeably.

All decomposed granite shall be able to flow through a 3/8-inch mesh screen. The decomposed granite shall be "Desert Gold" by Southwest Boulder and Stone (760-342-5522) or approved equal.

Binder shall be Natracil by Gail Materials (951-667-6106) or approved equal. Mix decomposed granite with Natracil, or approved equal, with pug mill that includes a weigh-belt feeder.

Mix 12 lbs. of binder per 2,000 lbs. of decomposed granite .

To the "GREENBOOK", ADD the following Subsections:

200-2.7.4 **Mock-Up.** Install 20 square feet minimum of stabilized decomposed granite surfacing at a location approved by the Engineer. Allow the Engineer and the project Landscape Architect to view the mock-up before proceeding with the installation of the stabilized decomposed granite surfacing. The Approved mock-up may remain as part of completed Work. Any unapproved mock-ups shall be removed by the Contractor.

200-2.7.5 **Delivery, Storage, And Handling.** Protect stabilized decomposed granite mix from contamination. Store under cover.

200-2.7.6 **Field Conditions.** Decomposed granite surfacing shall be placed on compacted subgrade soils, as approved by the Geotechnical Consultant. Subgrade soils shall be compacted to a minimum 90 percent relative compaction at optimum moisture content. Do not install stabilized decomposed granite surfacing when subgrade is saturated.

200-2.7.7 **Pre-Emergent Herbicide.** All chemicals used for weed control shall be registered by the State of California Department of Food and Agriculture and the Environment Protection Agency with registration identification on the label. Label shall be at the job site at all times.

All chemicals shall be applied in accordance with registered label instruction and manufacturer's recommendations.

To the "GREENBOOK", ADD the following:

200-5 **STONE VENEER.**

200-5.1 **Submittals** (Product Data).

Samples:

a. Consisting of 5 pieces of stone veneer showing full range of textures, colors, and sizes.

b. Full range of mortar colors.

Quality Assurance/Control Submittals:

a. Qualifications: Proof of installer qualifications.

b. Installation instructions for other materials.

200-5.2 **Quality Assurance.** Installer Qualifications: Company with documented experience in installation of masonry.

Field Sample: Prepare 4' by 4' sample stand-alone sample that will not be incorporated into the completed work. Use approved selection sample materials and colors. Protect and retain sample as a basis for approval of completed manufactured stone work.

Approval: Obtain project Landscape Architect's approval before installing the stone veneer.

200-5.3 **Delivery, Storage, and Handling**. Follow manufacturer's instructions.

200-5.4 **Project/Site Conditions.** Environmental Requirements: When air temperature is 40 degrees F or below, consult local building code for Cold-Weather Construction requirements.

200-5.5 **Warranty.** Special Warranty: Manufacturer's standard warranty coverage against defects in materials when installed in accordance with manufacturer's installation instructions.

200-5.6 **Products.** Stone: "Honey Ledge" approximate size: 3-12" length by 1-5" height by 1" depth by KRC Rock (800-KRC-ROCK) or approved equal. Include matching corner pieces.

Mortar: Cement: Any cement complying with ASTM C 270.

Lime: ASTM C 207.

Sand: ASTM C 144, natural or manufactured sand.

Color Pigment: ASTM C 979, mineral oxide pigments.

Water: Potable. Pre-Packaged Latex-Portland Cement Mortar: ANSI A118.4.

200-5.7 **Mortar Mixes.** Standard Installation (Grouted Joints):

Mix mortar in accordance with ASTM C 270, Type N.

Add color pigment in grout joint mortar in accordance with pigment manufacturer's instructions.

SECTION 201 – CONCRETE, MORTAR, AND RELATED MATERIALS

201-1 **PORTLAND CEMENT CONCRETE**

201-1.1 **Requirements.**

201-1.1.1 **General**. To the "GREENBOOK", ADD the following:

Contractor shall furnish the Engineer a copy of the mix design to be used and with legible certified weight-master's certificate for each load of PCC delivered to the Work. Portland Cement concrete delivered to the project site having a water content and/or slump greater than that specified in the mix design shall be rejected and removed from the Work site.

PCC Paving

PCC ADA Curb Ramp

PCC Curb & Gutters, Curbs, & Mow Curbs

PCC Brow Ditch

PCC zero face curb

PCC Ped ramp

PCC Stairs

PCC Drainage structures

201-1.2.4 Chemical Admixtures. To the "GREENBOOK", ADD the following:

f) Integral Color Admixture. Integral colors for the sun dial shall be Chromix "Sombrero Buff" C-25, "Desert Sand" C-11, and "Coral Red" C-22 by Scofield (800-800-9900) or approved equal.

Integral Color Admixture. Integral color for the entry monument sign and pilaster cap and seatwall caps shall be Chromix "Mesa Beige" C-12 by Scofield (800-800-9900) Or Approved Equal.

201-2 Reinforcement for Concrete.

201-2.2 Steel Reinforcement.

201-2.2.1 Reinforcing Steel. To the "GREENBOOK", DELETE the first sentence and SUBSTITUTE with the following:

Unless otherwise specified, reinforcing steel, except longitudinal steel, shall be Grade 60 billet steel conforming to ASTM A615.

201-3 EXPANSION JOINT FILLER AND JOINT SEALANTS.

201-3.4 Type "A" Sealant (Two-Part Polyurethane Sealant). To the "GREENBOOK", ADD the following:

Type "A" Sealant shall be used. Color shall match adjacent concrete surface. Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

Contractor shall submit product data from the manufacturer of each joint sealant product required, including instructions for joint preparation and joint sealer application.

Contractor shall engage an experienced Installer who has completed joint sealant applications similar in material, design, and extent to that indicated for Project that have resulted in construction with a record of successful in service performance.

To the "GREENBOOK", ADD the following Sections:

201-11 PRECAST CONCRETE FURNISHINGS.

201-11.1 Precast Concrete Picnic Table. The precast concrete picnic table shall be model Q-LBT-72PT, color "Latte" with standard gloss sealer by Quick Crete (951-737-6240) or approved equal.

201-11.2 Precast Concrete ADA Picnic Table. The precast concrete ADA picnic table shall be model Q-LBT-102PT-ADA, color "Latte" with standard gloss sealer by Quick Crete (951-737-6240) or approved equal.

201-11.3 Precast Concrete Trash Receptacle. The precast concrete trash receptacle shall be model QS-SC2651SDW, color "Latte", plastic liner, and standard gloss sealer by Quick Crete (951-737-6240) or approved equal.

201-11.4 Precast Concrete Recycling Receptacle. The precast concrete recycling receptacle shall be QS-SC2651SDW, color "Latte", modified with (1) 12-5/8" height recycle logo inset painted brown on opposite side of door, plastic liner, and standard gloss sealer by Quick Crete (951-737-6240) or approved equal.

201-11.5 Precast Concrete Bench. The precast concrete bench shall be model Q1-AV78B Adenville, color "Latte" with standard gloss sealer by Quick Crete (951-737-6240) or approved equal.

201-11.6 Precast Concrete Wall Caps. The precast concrete wall caps shall be curved to fit the radiuses shown on the plans, come in equal lengths (± 2-feet) depending on the length of the wall, integral color per Section 201-1.2.4, light broom finish, and standard gloss sealer by Quick Crete (951-737-6240) or approved equal.

201-11.7 Precast Concrete Play Features. The precast concrete Spring Butterfly and Caterpillar Papilio shall be by ID Sculpture (970-641-1747) or approved equal.

201-12 RUBBERIZED PLAY SURFACING.

201-12.1 Manufacturers. Rubberized Play Surfacing shall be by Surface America (1-800-999-0555) or approved equal.

201-12.2 Performance Requirements. Performance Requirements: Provide a 2-layer rubber-urethane playground surfacing system which has been designed, manufactured and installed to meet the following criteria:

1. Shock Attenuation (ASTM F1292):

a. Gmax: Less than 200.

b. Head Injury Criteria: Less than 1000.

2. Flammability (ASTM D2859): Pass.

3. Tensile Strength (ASTM D412): 60 psi (413 kPa).

4. Tear Resistance (ASTM D624): 140%.

5. Water Permeability: 0.4 gal/yd2/second.

6. Accessibility: Comply with requirements of ASTM F1951.

201-12.3 Rubberized Play Surfacing.

A. Poured-In-Place Primer

a. Material: Aliphatic Urethane Binder

B. Poured-In-Place Basemat

a. Material: Blend of 100% recycled SBR (styrene butadiene rubber) and urethane.

b. Thickness: 1 1/4" for 4' critical fall height, 2" for 5' critical fall height, 2 1/2" for 6' and 7' critical fall heights, 3" for 8' critical fall height, 3 1/2" for 9' critical fall height, 4" for 10' critical fall height, 5" for 12' critical fall height, 6" for 13' critical fall height.

c. Formulation Components: Blend of strand and granular material.

C. Poured-In-Place Top Surface

a. Material: Blend of recycled EPDM (ethylene propylene diene monomer) rubber and aromatic or aliphatic urethane binder.

b. Thickness: Nominal 1/2", minimum 3/8", maximum 5/8".

c. Color for Butterfly Area

i. Mix #1: 30% Black granules, 20% Brown granules, 50% Bright Green granules

ii. Mix #2 (Butterfly Body): 60% Black granules, 20% Yellow granules, 20% Army Green granules

iii. Mix #3 (Butterfly Wings): 10% Black granules, 20% Yellow granules, 70% Gold granules

d. Color for Exercise Area (Bid Alternate): 30% Black granules, 20% Brown granules, 50% Bright Green granules

D. Mixes

a. Required mix proportions by weight:

i. Basemat: 16+% urethane (as ratio: 14% urethane divided by 86% rubber). 14% urethane, 86% rubber (based on entire rubber & urethane mix).

ii. Top Surface: 22% urethane (ratio: 18% urethane divided by 82% rubber). 18% urethane, 82% rubber (based on entire rubber & urethane mix).

SECTION 202 – MASONRY MATERIALS

202-2 CONCRETE BLOCK.

ADD:

202-2.3 Concrete Segmental Blocks. Segmental block retaining walls shall be Allan Block gravity blocks or approved equal. The color of the blocks shall be tan, style of block and shall be selected from the standard colors provided by the manufacturer. The Contractor shall provide a submittal for the blocks for approval by the Engineer.

ADD:

202-4 INTERLOCKING CONCRETE PAVERS.

202-4.1 General. Interlocking concrete pavers shall consist of the paving unit, joint fill and bedding aggregate, base aggregate, and geotextile fabric.

202-4.2 Submittals. Contractor shall submit for approval a minimum of four full-size samples of each concrete paver type/size/thickness/color/finish specified. The samples shall represent the range of shape, texture, and color permitted for the respective type.

Prior to delivery of the associated material to the site, the Contractor shall submit the following product-specific documentation for approval:

1. Aggregates
   a. Sieve analysis per ASTM C136 for base, bedding, and joint aggregate materials
2. Concrete Pavers:
   a. Test results from an independent testing laboratory for compliance with ASTM C936.
   b. Manufacturer's catalog product data.
   c. Safety Data Sheets (SDS).
3. Geotextile
   a. One 18-inch x 18-inch panel of each type of geotextile to be used for inspection and testing. The sample panels shall be uniformly rolled and shall be wrapped in plastic to protect the material from moisture and damage during shipment. Samples shall be externally tagged for easy identification. External identification shall include the name of the manufacturer; product type; product grade; lot number; and physical dimensions.
   b. Current National Transportation Product Evaluation Program (NTPEP) evaluation report.
   c. Safety Data Sheets (SDS).

4. Pattern

   a. Variation of running bond pattern as recommended by the manufacturer.

202-4.3 Quality Assurance. Contractor Qualifications: The Contractor's site foreman shall hold a Certified Concrete Paver Installer Designation from the Interlocking Concrete Pavement Institute (ICPI). The site foreman shall be onsite for the entire installation.

202-4.4 Product.

202-4.4.1 Picnic Area Pavers. "Melville Plank" in Large Plank A (7-1/2" x 11-13/16"), Large Plank B (7-1/2" x 15-3/4"), and Large Plank C (7-1/2" x 19-11/16") sizes by Belgard Pavers (844-495-8210) or approved equal.

Thickness: 60 mm

Color: Montecito

Finish: Smooth

Pavers shall meet the minimum material and physical properties set forth in ASTM C 936:

1. Measured length or width of test specimens shall not differ by more than +/- 0.063 in, while measured thickness shall not differ by more than +/- 0.125 in.

2. Average compressive strength of not less than 8,000 psi (55 MPa) with no individual unit under 7,200 psi (50 MPa) when tested in accordance with ASTM C140.

3. Average absorption of 5% or less with no unit greater than 7% when tested in accordance with ASTM C140.

4. Pigment in Concrete Pavers shall conform to ASTM C979.

202-4.4.2 Parkdale Driveway Pavers. Contractor shall visit the site and prepare paver submittal with matching size, color, and shapes of existing driveway pavers at Parkdale Avenue. Pavers shall be 80mm thick.

202-4.5 Bedding Sand. Bedding sand shall be clean, non-plastic sand, free from deleterious or foreign matter, and manufactured from crushed rock.

Screenings or stone dust shall not be utilized.

Verify gradation conforms to ASTM C33 requirements for concrete sand (listed in Table 1) as tested in accordance with ASTM C136.

Table 1

Gradation Requirements for Bedding Sand

Sieve Size	Percent Passing
3/8 inch (9.5 mm)	100
No. 4 (4.75 mm)	95 to 100
No. 8 (2.36 mm)	85 to 100
No. 16 (1.18 mm)	50 to 85
No. 30 (0.600 mm)	25 to 60
No. 50 (0.300 mm)	5 to 30
No. 100 (0.150 mm)	0 to 10
No. 200 (0.075 mm)	0 to 1

202-4.6 **Joint Filling Sand.** Joint sand aggregate shall be clean, non-plastic sand, free from deleterious or foreign matter, and manufactured from crushed rock.

Screenings or stone dust shall not be utilized.

Verify gradation conforms to ASTM C144 requirements for concrete sand (listed in Table 2) as tested in accordance with ASTM C136.

Table 2

Gradation Requirements for Joint Filling Sand

Sieve Size	Percent Passing
No. 4 (4.75 mm)	100
No. 8 (2.36 mm)	95 to 100
No. 16 (1.18 mm)	70 to 100
No. 30 (0.600 mm)	40 to 100
No. 50 (0.300 mm)	10 to 35
No. 100 (0.150 mm)	2 to 15
No. 200 (0.075 mm)	0 to 5

202-4.7 **Base Aggregate.** Base aggregate shall be clean, non-plastic, free from deleterious or foreign matter, recycled concrete, and manufactured from crushed rock.

Verify gradation conforms to ASTM D2940 as presented in Table 3.

Table 3

Gradation Requirements for Base Course Material

Sieve Size	Percent Passing
2 in (50 mm)	100
1 ½ in (37.5 mm)	95 to 100
¾ in (19 mm)	70 to 92
3/8 in (9.5 mm)	50 to 70
No. 4 (4.75 mm)	35 to 55
No. 30 (0.600 mm)	12 to 25
No. 200 (0.075 mm)	0 to 8

202-4.8 **Geotextiles.** Geotextile materials shall be selected based on the intended use in accordance with AASHTO M288.

Only geotextiles with a current NTPEP evaluation will be accepted.

SECTION 203 – BITUMINOUS MATERIALS

203-6 ASPHALT CONCRETE.

203-6.1 **General**. To the "GREENBOOK", ADD the following:

A minimum of five (5) Working Days prior to the paving operation, the Contractor shall submit to the Engineer the pavement supplier's certification of gradation and oil content of the asphalt concrete to be used for this Contract.

SECTION 206 – MISCELLANEOUS METAL ITEMS

To the "GREENBOOK", ADD the following:

206-8 DRINKING FOUNTAINS.

206-8.1 **General.** The drinking fountain shall be Model 3500 "Hi-Lo" barrier-free pedestal drinking fountain with a 12 gauge galvanized substrate steel pedestal with "Silver" color powder-coating, polished stainless steel basins, push-button operated stainless steel valves with front-accessible cartridge and flow adjustment, polished chrome-plated brass vandal-resistant shielded bubbler head, 100% lead-free waterways, polished chrome-plated vandal-resistant waste strainers with top-down clean-out access, vandal-resistant access plates, integral mounting feet, and 1-1/2" slip waste by Haws (888-640-4297) or approved equal.

206-8.2 **Dog Drinking Fountain.** The dog drinking shall be Model 3500D "Hi-Lo" barrier-free pedestal drinking fountain with pet drinking fountain, with a 12 gauge galvanized substrate steel pedestal with "Silver" color powder-coating, polished stainless steel basins, push-button operated stainless steel valves with front-accessible cartridge and

flow adjustment, polished chrome-plated brass vandal-resistant shielded bubbler head, 100% lead-free waterways, polished chrome-plated vandal-resistant waste strainers with top-down clean-out access, vandal-resistant access plates, integral mounting feet, and 1-1/2" slip waste by Haws (888-640-4297) or approved equal.

206-9 BICYCLE RACK.

206-9.1 General. The bicycle rack shall be Model # HW238-7-IG-S Heavy-Duty Winder Wave Bike Rack with 5 Loops for 7 Bikes, 63-5/8" width by 42" height, stainless steel finish, in-ground mount by Belson Outdoors (800-323-5664) or approved equal.

206-10 DOG WASTE STATION.

206-10.1 General. The Dog Waste Station shall be The Mini Dog Waste Station Model JJB204-Green with SINGLpul® System by Zero Waste Dog Waste Solutions (800) 789-2563 or approved equal.

206-11 ALUMINUM BLEACHER.

206-11.1 General. The aluminum bleacher shall meet all current uniform building codes. Bleacher shall have Individual galvanized steel frames are welded into one solid structure, then Hot Dipped Galvanized, free of burrs and sharp edges. Bleachers12" wide nominal seat plank. All bolts, nuts and washers have anti-corrosion protection. Model PN203-15 with wheelchair cutouts by L.A. Steelcraft Products (626-798-7401) or approved equal.

206-12 SHADE SAILS.

206-12.1 General. The shade sails shall be by USA Shade & Fabric Structures

(619-616-8272, contact Paul Publico) or approved equal.

206-13 DOG PARK AGILITY EQUIPMENT.

206-13.1 General. The dog park agility equipment shall be by Barkpark (800-458-5872) or approved equal. Models:

Rover Jump Over -Natural, Model PBARK-450N

Dog Walk – Natural, Model PBARK-410N

Doggie Crawl – Natural, Model PBARK-491-GRN

206-14 EXERCISE EQUIPMENT.

206-14.1 General. The exercise equipment shall be as shown on the plans by Landscape Structures, Inc (714-619-0100, Contact Mike Eisert) or approved equal.

206-15 ASSESSIBLE ROUTE SIGNS.

206-15.1 General. The accessible route signs shall be as shown on the construction plans.

SECTION 210 – PAINT AND PROTECTIVE COATINGS

210-1.1.1 Anti-graffiti Coating. To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

Anti Graffiti Coating for picnic tables, ADA picnic tables, trash receptacles, recycling receptacle, concrete bench and concrete wall caps is required as follow:

1. Anti-Graffiti Coating shall be as manufactured by Monopole, Inc. Materials, or approved equal, shall be field applied to the picnic tables, ADA picnic tables, trash receptacles, recycling receptacle, concrete bench and concrete wall caps
2. Graffiti coating shall be applied as specified below and per manufacturer's specifications for coverage:

   1st Coat: Aquaseal ME12 (item 5200 (for unpainted porous surfaces)

   2nd Coat: Permashield Base (Item 6100)

   3rd Coat: Permashield Premium (item 5600 for matte finish)

   4th Coat: Pemashield Premium (item 5600 for matte finish)

   Final Finish selection per City and Architect approval.

SECTION 300 – EARTHWORK

300-1 CLEARING AND GRUBBING.

300-1.1 General. To the "GREENBOOK", ADD the following:

Clearing and Grubbing shall include the protection of all items to remain, sawcutting, cold milling AC pavement, demolition of existing improvements, salvaging existing materials (topsoil) and improvements as specified or shown on the Plans, removal of deleterious materials, and proper disposal from the Project site of all existing surface and subsurface materials as required to construct the improvement as shown on the Plans and as described in the Specifications. Typical items to be removed include, but are not limited to, trash, fences, posts, poles, gates, street signs, AC dikes, AC paving, striping (by grinding), decorative concrete, concrete driveway entrance, concrete sidewalk, concrete curb and gutter, concrete headwall structures, retaining walls, landscape border logs, decorative walls, concrete pavers, reinforcing steel, rock, boulders and cobbles, trees, stumps and roots, shrubs, other vegetation or organic materials, soil, irrigation systems, spoils, debris, sewer pipe, storm drain pipe, storm drain inlets and grates, electrical conduits and pullboxes, wire, utility cabinets or boxes, drinking fountains, guardrails, delineators, pavement markers, and all other objectionable materials which interfere with the Work whether or not specifically indicated on the Plans or otherwise shown to be protected or relocated. Abandoned

utility lines and structures not removed with Engineer's approval shall be filled with blown sand and conduits plugged. Concrete and bituminous pavement shall be removed to neatly sawed edges. Sawcuts shall be to a minimum depth of three inches (3").

Clearing and grubbing shall also include the relocation, adjusting or salvaging of all facilities so indicated on the Plans which are not designated as separate bid items or which are not included in other bid items.

If there are decorative items on private lots, including decorative concrete pavers, decorative wall blocks, rocks used for landscape decoration, boulders, and custom signs, and the Contractor would prefer to salvage items for the property owners, the items shall be removed carefully and placed at a location near the disturbed area on the private property, with the property owner's approval.

The Contractor shall remove existing irrigation systems (including both water supply and water distribution lines, electrical supply, and electrical control elements of the system) that are within the Project limits and place these materials on the property owner's property. Contractor shall cap ends of cut lines and wires, and mark locations with lath so that property owner can locate them later.

Miscellaneous fencing materials may be encountered during Work. The terminal post of each fence removed shall be reinforced by bracing or other appropriate means to maintain the structural integrity of the portion of fence to remain. Relocation and reconnection of existing fences as shown on the Plans shall include all posts, hardware, and all incidentals necessary to complete the Work.

During surface clearing operations, the Contractor shall not cover or bury any plant growth or other objectionable materials on public or private property. If the Contractor cannot successfully separate the plant growth from the surface soil and advertently or inadvertently mixes organic or other objectionable materials with the soil, the soil so contaminated shall be removed from the site by the Contractor. All costs, if any, associated with removing the soil mixed with organic or other objectionable materials and importing soil to replace said contaminated soil shall be borne by the Contractor and no additional payment shall be made to the Contractor.

During grading operations, the Contractor shall provide temporary graded driveways and continuing maintenance thereof to provide safe, smooth, stable and continuous access to all residences and businesses within the Project area. All costs, if any, associated with such grading operations shall be borne by the Contractor and no additional payment shall be made to the Contractor.

Unless otherwise noted on Plans, the Contractor shall protect all existing sewer, water, electric, telephone, communication, television, fire lines, street lights, traffic signal, red light cameras, irrigation, and other utilities, services and systems, whether shown on the Plans or not. The Contractor shall maintain all services in working condition during the course of the Work. The Contractor shall remove all existing abandoned pipelines

and conduits of any type or use, and pipelines and conduits of any type or use that are abandoned during the course of the Work and shall replace said pipelines and conduits with properly compacted soils. The Contractor shall immediately restore to

full operation any utilities, services or systems that are disturbed during the course of the Work.

Existing improvements, adjacent property, utility and other facilities, and trees and plants that are not to be removed shall be protected from injury or damage.

Bituminous Pavement. Bituminous pavement shall be removed to clean, straight lines. Sawcutting of edges to be joined is required, unless the entire pavement section is removed by cold milling. Where only the surface of existing bituminous pavement is to be removed, the method of removal shall be cold milling or other method approved by the Engineer, and a minimum laying depth of one and one-half inches (1-1/2") of new pavement material shall be provided at the edge of new pavement. Where new bituminous pavement adjoins existing pavement, either at a trench or a section where pavement has been removed or is being widened, the edges where new pavement meets existing pavement shall be trimmed to neat straight lines and cold milled a minimum of one and one-half inches (1-1/2") deep for a minimum of six inches (6") wide from the edge before paving or resurfacing, to ensure that all surfaces being paved or resurfaced are accessible to the rollers used to compact the subgrade or paving materials, and to provide an overlay key at the join line.

Concrete Pavement. Concrete pavement shall be removed to neatly sawed edges. Saw cuts shall be made to a minimum depth of three inches (3"). If a saw cut in concrete pavement falls within 3 feet of a construction joint, cold joint, expansion joint, or edge, the concrete shall be removed to the joint or edge.

Concrete Curb, Walk, Gutters, Driveways, and Alley Intersections. Concrete shall be removed to neatly sawed edges with saw cuts made to a minimum depth of three inches (3"). Concrete sidewalk or driveway to be removed shall be neatly sawed in straight lines either parallel to the curb or at right angles to the alignment of the sidewalk. No section to be replaced shall be smaller than 30 inches in either length or width. If the saw cut in sidewalk or driveway would fall within 30 inches of a construction joint, expansion joint, or edge, the concrete shall be removed to the joint or edge, except that where the saw cut would fall within 12 inches of a score mark, the saw cut shall be made in and along the score mark. Curb and gutter shall be sawed to a minimum depth of three inches (3"), or otherwise as required to prevent damage to the adjacent concrete to remain, on a neat line at right angles to the curb face.

ADD:

300-1.1.1 Environmental Requirements.

MHP LAND USE ADJACENCY REQUIREMENTS:

Grading/Land Development/MHPA Boundaries - Within or adjacent to the MHPA, all manufactured slopes associated with site development shall be included within the development footprint.

Drainage - All staging and developed/paved areas must prevent the release of toxins, chemicals, petroleum products, exotic plant materials prior to release by incorporating the use of filtration devices, planted swales and/or planted

detention/desiltation basins, or other approved temporary and permanent methods that are designed to minimize negative impacts, such as excessive water and toxins into the ecosystems of the MHPA.

Toxics/Project Staging Areas/Equipment Storage - Projects that use chemicals or generate by-products such as pesticides, herbicides, and animal waste, and other substances that are potentially toxic or impactive to native habitats/flora/fauna (including water) shall incorporate measures to reduce impacts caused by the application and/or drainage of such materials into the MHPA. No trash, oil, parking, or other construction/development-related material/activities shall be allowed outside any approved construction limits. Provide a note in/on the CD's that states: "All construction related activity that may have potential for leakage or intrusion shall be monitored by the Qualified Biologist/Owners Representative or Resident Engineer to ensure there is no impact to the MHPA."

Lighting -All lighting within or adjacent to the MHPA is directed away/shielded from the MHPA, or limited to the immediate area and is in compliance with City Outdoor Lighting Regulations per LDC Section 142.0740.

Barriers –Existing fences/walls; and/or signage along the MHPA boundaries shall remain and or be added to direct public access to appropriate locations, reduce domestic animal predation, protect wildlife in the preserve, and provide adequate noise reduction where needed.

Invasives - No invasive, non-native plant species shall be introduced into areas within or adjacent to the MHPA.

Brush Management -Brush management zones will not be greater in size that is currently required by the City's regulations (this includes use of approved alternative compliance). Within Zone 2 the amount of woody vegetation clearing shall not exceed 50 percent of the vegetation existing when the initial clearing is done. Vegetation clearing shall be done consistent with City standards and shall avoid/minimize impacts to covered species to the maximum extent possible. For all new development, regardless of the ownership, the brush management in the Zone 2 area will be the responsibility of a home-owner's association or other private party.

Noise - Construction noise that exceeds the maximum levels allowed (60 dB or greater at the beginning edge of the habitat) shall be avoided during the breeding seasons for the following: CA gnatcatcher (3/1-8/15). If construction is proposed during the breeding season for the species the following measures are required:

<u>COASTAL CALIFORNIA GNATCATCHER (Federally Threatened)</u>

Prior to the issuance of any grading permit, the City Manager (or appointed designee) shall verify that the Multi-Habitat Planning Area (MHPA) boundaries and the following project requirements regarding the Coastal California Gnatcatcher are shown on the construction plans:

No clearing, grubbing, grading, or other construction activities shall occur between March 1 and August 15, the breeding season of the Coastal California Gnatcatcher, until the following requirements have been met to the satisfaction of the City Manager:

A. The Contractor shall provide a qualified biologist for approval by the City (possessing a valid Endangered Species Act Section 10(A)(1)(A) Recovery Permit) to survey those habitat areas within the MHPA that would be subject to construction noise levels exceeding 60 decibels [db(a)] hourly average for the presence of the Coastal California Gnatcatcher. Surveys for the Coastal California Gnatcatcher shall be conducted pursuant to the protocol survey guidelines established by the U.S. Fish and Wildlife Service within the breeding season prior to the commencement of any construction. If gnatcatchers are present, then the following conditions must be met:

i. Between March 1 and August 15, no clearing, grubbing, or grading of occupied gnatcatcher habitat shall be permitted. Areas restricted from such activities shall be staked or fenced under the supervision of a qualified biologist; and

ii. Between March 1 and August 15, no construction activities shall occur within any portion of the site where construction activities would result in noise levels exceeding 60 db (a) hourly average at the edge of occupied gnatcatcher habitat. An analysis showing that noise generated by construction activities would not exceed 60 db (a) hourly average at the edge of occupied habitat must be completed by a qualified acoustician (possessing current noise engineer license or registration with monitoring noise level experience with listed animal species) and approved by the City Manager at least two weeks prior to the commencement of construction activities. Prior to the commencement of construction activities during the breeding season, areas restricted from such activities shall be staked or fenced under the supervision of a qualified biologist; or

iii. At least two weeks prior to the commencement of construction activities, under the direction of a qualified acoustician provided by the Contractor and approved by the city, noise attenuation measures (e.g., berms, walls) shall be implemented to ensure that noise levels resulting from construction activities will not exceed 60 db(a) hourly average at the edge of habitat occupied by the Coastal California Gnatcatcher. Concurrent with the commencement of construction activities and the construction of necessary noise attenuation facilities, noise monitoring* shall be conducted at the edge of the occupied

iv. habitat area to ensure that noise levels do not exceed 60 db (a) hourly average. If the noise attenuation techniques implemented are determined to be inadequate by the qualified acoustician or biologist, then the associated construction activities shall cease until such time

that adequate noise attenuation is achieved or until the end of the breeding season (august 16).

Construction noise monitoring shall continue to be monitored at least twice weekly on varying days, or more frequently depending on the construction activity, to verify that noise levels at the edge of occupied habitat are maintained below 60 db (a) hourly average or to the ambient noise level if it already exceeds 60 db (a) hourly average. If not, other measures shall be implemented in consultation with the biologist and the City Manager, as necessary, to reduce noise levels to below 60 db(a) hourly average or to the ambient noise level if it already exceeds 60 db(a) hourly average. Such measures may include, but are not limited to, limitations on the placement of construction equipment and the simultaneous use of equipment.

B. If Coastal California Gnatcatchers are not detected during the protocol survey, the qualified biologist shall submit substantial evidence to the City Manager and applicable resource agencies which demonstrates whether or not mitigation measures such as noise walls are necessary between March 1 and August 15 as follows:

i. If this evidence indicates the potential is high for Coastal California Gnatcatcher to be present based on historical records or site conditions, then condition A. iii. shall be adhered to as specified above.

ii. If this evidence concludes that no impacts to this species are anticipated, no mitigation measures would be necessary.

300-1.4 Payment. To the WHITEBOOK, ADD the following:

3. Payment for Clearing and Grubbing will be paid for under the Lump Sum Bid item of "Construction for Salk Neighborhood Park Joint Use Facility" and shall include full compensation to perform the construction operations specified or shown on the Plans including a qualified biologist and acoustician and the removal and disposal of abandoned utilities. No additional compensation will be allowed.

300-2 UNCLASSIFIED EXCAVATION.

300-2.1 General. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

Unclassified excavation shall consist of all excavation, including roadway excavation, removal and stockpiling of suitable material, mixing and moisture conditioning of dry material, mixing and drying of wet material by various methods, disposal of unsuitable materials (including cobbles, rocks and boulders), salvage and stockpile of existing

topsoil for use on the Project, and all other required earthwork operations to bring all areas that are within the grading and excavation limits on both public and private property to the required subgrade elevations and cross sections as shown on the Plans and as required in the Project's geotechnical investigation. Suitable excavated material may be used onsite to make all fills shown on the Plans. Unclassified excavation shall also include pumping and disposal of storm water and groundwater. Any tree roots or other deleterious material uncovered during excavation shall be completely removed and cut back so that new improvements will not be affected by future root growth.

In the event weather conditions make drying by aeration or other processes impractical as determined by the engineer, he may suspend the Work. However, the Contractor shall continuously provide for traffic and access requirements during the suspension period in conformance with these Technical Provisions. The Work shall be suspended as provided for in Section 6 ("Prosecution and Progress of the Work.") of the Standard Specifications except the suspension shall not be deemed to be suspension by the Agency for its own convenience or benefit.

Stockpiling of material and storage of equipment or supplies associated with excavation and/or soil aeration activities within existing or proposed wetland, willow woodland or riparian areas is strictly prohibited.

The excavation, placement, conditioning, and compaction of material shall be in accordance with the Plans, Specifications and the Geotechnical Report, prepared by SCST, Inc., Geotechnical Investigation Salk Neighborhood Park Joint Use Facility Parkdale Avenue Northwest of Port Royale Drive, San Diego, California, Dated July 17, 2017. The Geotechnical Report is attached to these Project Specifications in its Appendices together with Addendum dated August 2, 2017, February 20, 2019, and May 4, 2020.

300-2.2 Unsuitable Material.

300-2.2.1 General. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

All excess material generated by the grading operations that is not suitable for backfill shall be excavated and disposed of by the Contractor at a legal disposal site. The Agency makes no claim on the suitability or moisture content of the existing materials. Any suitable local borrow materials at the site that the Contractor wishes to re-use shall be stockpiled by the Contractor. The location of stockpiles shall be approved by the Engineer prior to placement of materials, and all stockpiles shall be protected by erosion control measures.

All subgrade areas to receive fills or structures shall be inspected by the Geotechnical Engineer. All alluvial and colluvial soils, loose or poorly compacted soils, or existing dry material must be reworked before the placement of base or concrete can proceed. Areas where soils are loose or poorly compacted shall be reworked by excavating,

blending and recompacting the loose soils to the specified compaction. The existing loose soils to be reworked shall be removed by the Contractor until a firm unyielding surface is exposed or to a depth determined by the Engineer. Dry materials shall be scarified and moisture conditioned to achieve the specified compaction. With the approval of the Geotechnical Engineer, the Contractor may choose to stabilize poorly-compacted areas with geogrid at his own expense.

If the Contractor wishes to temporarily stockpile material for disposal at a later date in any area other than the project area or construction staging area, the Contractor shall locate a suitable space which is outside the Public Right-of-Way and suitable to the Agency. The location of stockpiles shall be approved by the Engineer prior to placement of materials, and all stockpiles shall be protected by storm water pollution prevention and erosion control measures. The stockpiles shall be removed regularly from the Project site so as not to interfere with access to the Project.

If the excavated material is unsatisfactory as excavated for other uses in the Project, as determined by the Engineer, the Contractor shall remove and dispose of such excavated material off the site. The Contractor shall be responsible for obtaining a suitable legal disposal site for any unsuitable excavated materials in accordance with the appropriate section in the Standard Specifications.

300-2.9 **Payment**. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

The BID SCHEDULE for this Project DOES include a bid item for Site Grading. Payment for the Site Grading shall be under the Lump Sum bit item of "Construction for Salk Neighborhood Park Joint Use Facility" and includes:

- Full compensation for all necessary Unclassified Excavation required to perform the construction operations specified or shown on the Plans.
- Export or Import required to perform the construction operations specified or shown on the Plans.
- The excavation, stockpiling, and placement of topsoil and suitable local borrow material. Removing such material from the stockpile and placing it in its final position. The Contractor may stockpile suitable local borrow material or import suitable borrow material; however, no separate payment will be made for excavating material from an optional stockpile or importing suitable borrow material and placing the material in its final position.
- The removal and disposal of unsuitable material, and the over-excavating and reworking of material that can be made suitable, including groundwater removal by various drying procedures or other remedial geotechnical (soil) treatment.
- The over-excavation and processing or removal and disposal of wet materials.

No separate payment will be made for excavating topsoil temporarily stockpiled and placing in its final location on the slope and other areas to be planted for erosion

control planting or landscaping, whether or not required by the Contract Documents or by the Engineer.

All costs for the work required to comply with the Erosion Control requirements of this subsection shall be included in the bid item for "SWPPP Implementation" as shown on the BID SCHEDULE.

300-4 UNCLASSIFIED FILL.

300-4.1 General. To the "GREENBOOK", ADD the following:

The excavation, placement, conditioning, and compaction of material shall be in accordance with the Plans, Specifications and the Geotechnical Report, prepared by SCST, Inc., Geotechnical Investigation Salk Neighborhood Park Joint Use Facility Parkdale Avenue Northwest of Port Royale Drive, San Diego, California, Dated July 17, 2017. The Geotechnical Report is attached to these Project Specifications in its Appendices together with Addendum dated August 2, 2017

Any objectionable material, including organic and inorganic debris, shall be removed, and shall not be placed in the fill.

The Contractor shall establish rough grade of the areas to be planted by placing fill material to a minimum of six inches (6") below the finished grade shown on the Plans. The Contractor shall then complete the grading work to establish finished grade by placing a minimum of six inches (6") of topsoil that has been stockpiled from the existing site or imported.

Excess soil remaining from excavations on the Project site may only be used for fill material when rocks, lumps, cobbles, clods, base material, or other solid materials such as broken concrete or asphalt from removal operations are suitable for the particular area to be filled as determined by the Engineer and conform to the requirements of the geotechnical investigation. Broken concrete or asphalt pavement materials shall not be allowed within site grading fill areas or roadway fills less than three feet (3') in height, within three feet (3') of final grade in any area or within five feet (5') (vertically) of the existing ground water table. Any concrete or asphalt placement shall be approved by the Geotechnical Engineer. Concrete or asphalt pieces shall be less than six inches (6") in maximum dimension and surrounded by soil particles when used as compacted fill. No nesting shall occur. If the Contractor wishes to use any of the excess material remaining from the Project excavations for any purpose, the material must be suitable for use as fill or backfill and meet the requirements of Subsection 300-4 ("UNCLASSIFIED FILL.") of the Standard Specifications and the geotechnical investigation for this Project. The Contractor shall.

first remove all organic material, construction debris, miscellaneous debris, rubbish, and other objectionable materials contained therein, then obtain tests of the material to confirm its suitability.

Geotechnical (soil) testing of all fill materials; subgrade, subbase, and base will be conducted by the Contractor's Geotechnical Engineer. Geotechnical (soil) tests may include relative compaction tests, sand equivalent tests, sieve analysis, R-values, etc. The results shall be presented directly by the laboratory to the City Engineer. No base

or PCC pavement shall be placed prior to the subgrade or subbase being compacted, tested and approved by the City Engineer.

The cost of any geotechnical (soil) tests shall be borne by the Contractor. Additional geotechnical (soil) tests due to the failure of one (1) or more of the initial tests shall be conducted by the laboratory and any costs borne by the Contractor. The Contractor shall make allowances in his construction procedure to permit testing of the Work in progress by the City Engineer, and no additional compensation shall be paid to the Contractor for delays due to testing.

300-4.10 Payment. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

The BID SCHEDULE for this Project DOES NOT list a bid item for Unclassified Fill. Full compensation for any necessary Unclassified Fill required to perform the construction operations specified or shown on the Plans will be considered as included in the price bid for the related items of work, and no additional compensation will be allowed therefore.

300-11 STONEWORK FOR EROSION CONTROL.

300-11.4 Measurement and Payment. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

Payment for **Rip Rap Energy Dissipator per CSD SDD-104** shall be paid for under the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility " and shall include all materials, tools, and equipment necessary to acquire and install the rip-rap as shown on the Plans, and no additional compensation will be made.

SECTION 301 – TREATED SOIL, SUBGRADE PREPARATION, AND PLACEMENT OF BASE MATERIALS

301-2.4 Measurement and Payment. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

The quantities of new untreated aggregate base will be calculated using the square footage of the improvements constructed on the base, multiplied by the thickness of the base shown on the plans or specified. If the Engineer directs the Contractor to place additional base, the thickness requested by the Engineer will be used in calculating the pay quantity. If the base thickness is increased by the Contractor for

his convenience or to avoid performing additional required subgrade preparation, the additional base will not be included in the pay quantity.

To confirm the pay quantities, the Contractor shall furnish to the Engineer at the time of delivery of the material to the job site a legible copy of a licensed weigh master's certificate showing gross, tare, and net weights of each truckload of untreated base. Failure of the Contractor to provide a certificate to the Engineer by the end of the day on which the material represented by such certificate is delivered to the job site may, at the discretion of the Engineer, result in the forfeiture of all payment for such

material, including any labor and equipment costs or related costs included in the price for furnishing and placing the untreated base.

Payment for untreated compacted aggregate base shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for clearing and grubbing; earthwork; subgrade preparation; supplying, placing, spreading, compacting, and finishing the untreated base; and all other work required to perform the construction operations specified or shown on the Plans, and no additional compensation will be allowed therefore.

To the "GREENBOOK", ADD the following Sections:

301-7 COBBLE MULCH.

301-7.1 General. Cobble shall be carefully keyed and set in a tight and interlocking configuration to form a stable layer of riprap. Cobble shall be placed in a manner which will produce a reasonably well-graded mass of stone with minimal voids.

301-7.2 Payment. Payment for furnishing and installing the Cobble Mulch in Basins shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work and no additional compensation will be allowed.

301-8 DISINTEGRATED/DECOMPOSED GRANITE.

301-8.1 Installation. Excavate to depth required so edges of stabilized decomposed granite surface will match adjacent grades of concrete curb edging and have a maximum cross slope of 1 percent.

Apply pre-emergent herbicide per the manufacturer's recommendations to the subgrade prior to installation.

Blend 12 lbs. of Natracil stabilizer, or approved equal, per 2,000 lbs. of decomposed granite.

Prior to installation, the surface on which stabilized decomposed granite surfacing is to be placed shall be compacted to a minimum 90 percent relative compaction.

Install and compact to a minimum of 90 percent relative compaction in 2" maximum lift thickness and soak with sufficient water to activate Natracil stabilizer through

entire depth of lift. Install and compact the additional lifts, and soak with sufficient water to activate Natracil as required.

Grade and smooth to required elevation.

After +/- 4 hours, compact final lift with a three-five ton double or single static drum roller.

Surface shall follow overall contours of landscape. Flat areas shall be crowned for drainage.

Completed surface shall be of consistent quality and free of deleterious materials such as organic materials, nails, stones, and loose material. Surface shall not have depressions or humps greater than ¼" in ten feet.

Finished surface shall be smooth, uniform and solid. There shall be no evidence of chipping or cracking. Cured and compacted pathway shall be firm throughout profile with no spongy areas. Loose material shall not be present on the surface. Any significant irregularities in path surface shall be repaired to the uniformity of entire installation.

301-8.2 **Protection.** Do not allow traffic on stabilized decomposed granite surfacing for four days after placement or until compacted stabilized decomposed granite has fully cured.

Protect stabilized decomposed granite surfacing from damage until Project completion. Repair damaged areas to match specified requirements.

301-8.3 **Maintenance & Repairs.** Loose aggregate will appear on the surface over time which is a natural occurrence. If excessive aggregate over ¼ inches occurs, redistribute the stabilized decomposed granite over the entire surface, water thoroughly and re-compact with a minimum one ton drum roller. This process can be repeated as needed.

To repair, excavate damaged area leaving a minimum one inch depth of existing stabilized decomposed granite, water and scarify. Scarifying existing stabilized decomposed granite will prevent a cold joint layer between the existing stabilized decomposed granite and the newly imported pre-blended stabilized decomposed granite.

Add water to the pre-blended stabilized decomposed granite to activate. Apply moistened pre-blended stabilized decomposed granite to excavated area at or above finished grade.

Compact with a walk behind drum roller. Do not allow traffic on stabilized decomposed granite surfacing for one-two days after placement or until compacted stabilized decomposed granite has fully cured.

301-8.4 **Measurement and Payment.** Payment for the Stabilized Decomposed Granite shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals, including excavation, backfill, grading and compacting the subgrade, herbicide spraying, stabilizer, blending, placing, watering, and compacting the decomposed granite as shown on the plans and construction details. No additional compensation will be allowed.

302-4.5 Scheduling, Public Convenience and Traffic Control. To the "GREENBOOK", paragraphs (1) and (2), DELETE in their entirety and SUBSTITUTE with the following:

1. In addition to the requirements of Part 6, you shall comply with the following:

   a) At least 5 Working Days prior to commencing the Work, you shall submit your proposed Schedule to the Engineer for approval.

   b) Based upon the approved schedule, you shall notify residents and businesses of the Work and post temporary "No Parking" signs 72 hours in advance.

   c) Requests for changes in the approved Schedule shall be submitted to the Engineer for approval at least 3 Working Days before the street is scheduled to be sealed.

302-5 ASPHALT CONCRETE PAVEMENT.

302-5.1 General. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

Asphalt concrete pavement shall consist of two (2) or more courses of a mixture of paving asphalt and graded aggregate as specified in Subsection 203-6 ("Asphalt Concrete."), placed on a prepared surface of existing or new untreated base, or over existing paving, as necessary to construct the roadway as shown on the Plans or as required to complete the Work (i.e. where new curb is placed, utility cuts, and manhole reconstruction area). The courses shall be of the type of mixture specified. The thickness of asphalt concrete pavement for initial patch areas next to gutters, spandrels, and curbs shall be a minimum of six inches (6"), and the thickness in trenches next to curbs and driveways and in trenches shall be one-inch (1") thicker than the existing pavement. The initial asphalt concrete patch base course for the items of work shown on the Plans shall be placed full depth from the aggregate base to the existing pavement surface as soon as the adjacent improvements are cured sufficiently to allow the paving to proceed. The initial asphalt concrete patch shall be placed in multiple move-ins to accommodate the required traffic control and staging phases, and to ensure that traffic is allowed to use the improvements as quickly as possible. Asphalt concrete in streets and parking lot areas where there is no base shall be placed on a prepared section of subgrade material to the thickness shown on the Plans. The surface course of asphalt concrete shall be a minimum of one and one-half inches (1-1/2") thick with a one inch (1") minimum thickness at the overlay key. The surface course shall be placed in the minimum number of move-ins necessary to accommodate the required traffic control and staging phases, but minimize the joints in the new asphalt concrete surface. Before the surface course is placed, the edges of

existing pavement shall be cold milled to form an overlay key as shown on the Plans or as specified.

302-5.9 **Measurement and Payment**. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

Payment for the 4" Asphalt Concrete over 6" Class II Aggregate Base shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for clearing and grubbing, unclassified excavation and fill, cold milling, subgrade preparation and applying tack coat, supplying and placing the base course and surface course asphalt concrete, compacting and finishing the asphalt concrete pavement, and all other related items of work, and no additional compensation will be allowed. Re-setting or adjusting manholes, covers, vaults, valves, boxes or other miscellaneous facilities to grade will be paid for as provided in Subsection 301-1.7 ("Payment.") of the Greenbook.

SECTION 303 – CONCRETE AND MASONRY CONSTRUCTION

303-1 **CONCRETE STRUCTURES.**

303-1.11 **Payment**. To the "GREENBOOK", ADD the following:

Payment for Modified Curb Outlet shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility", complete and in accordance with the Contract Documents, and as directed by the Engineer. Payment for Modified Curb Outlet shall include but is not limited to furnishing all labor, material, tools, and equipment and performing all work required for the Modified Curb Outlet including but not limited to connections, earthwork, shoring, bracing, bedding, backfilling, compaction, materials testing, concrete, frames and covers, and all other work necessary to installation and no additional compensation will be allowed therefore.

In the process Payment for Connect to Existing Storm Drain Inlet shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for furnishing all labor, materials, tools, equipment, earthwork, bedding, backfilling, compaction, materials testing, and all other work and incidentals necessary to accomplish the connection as specified herein and no additional compensation will be allowed therefore.

Payment for the Reconstruct Top of Existing Catch Basin shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility ". The Reconstructed Catch Basin shall be installed with inlet filters (Bio Clean curb inlet filter, or equivalent), The contract price for work under this item shall include but is not limited to furnishing all labor, material, tools, and equipment and performing all work required for the Modified Catch Basin installation with filters including but not limited to connections of existing pipe and connection of new pipe to proposed inlets, earthwork, shoring, bracing, concrete lug and connections of existing & proposed pipes, bedding, backfilling, compaction, materials testing, concrete, frames and

covers, and all other work necessary to complete the Reconstructed Catch Basin as described within the Contract Documents and no additional compensation will be allowed therefore.

Payment for Biofiltration Overflow Catch Basin per CSD SDSW-103 shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include the cost of excavation and shall include full compensation for furnishing all labor, materials, tools, equipment, earthwork, connections to existing or proposed pipes, bedding, backfilling, compaction, materials testing, and all other work and incidentals necessary to accomplish the work as specified herein and no additional compensation will be allowed therefore.

Payment for Storm Drain Cleanout per CSD SDSW-101 shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility", complete and in accordance with the Contract Documents, and as directed by the Engineer. Payment for Storm Drain Cleanout per CSD SDSW-101 shall include but is not limited to furnishing all labor, material, tools, and equipment and performing all work required for the Storm Drain Cleanout including but not limited to connections, earthwork, shoring, bracing, bedding, backfilling, compaction, materials testing, concrete, frames and covers, and all other work necessary to acquire and install the Storm Drain Cleanout construction and no additional compensation will be allowed therefore.

303-4 MASONRY CONSTRUCTION.

ADD:

303-4.3 Segmental Gravity Block Retaining Walls.

303-4.3.1 Construction. The work for the segmental gravity block retaining wall includes furnishing and constructing the segmental gravity block retaining wall at the locations shown on the Plans. The Contractor shall excavate the base trench twenty-four inches (24") wide at a depth of fourteen inches (14"). The subgrade of the trench shall be compacted to ninety-five percent (95%) relative compaction and a six inch (6") layer of aggregate base added, tamped and leveled to form the base-leveling pad. The base-leveling pad shall be constructed such that the resulting top of wall is a continuous smooth profile throughout the entire length of wall. The first course of blocks will be placed on the compacted aggregate base and will remain eight inches (8") below adjacent grade. The remaining segmental gravity blocks shall then be placed per the manufacturer's recommendations.

303-4.3.2 Measurement and Payment. Payment for Segmental Gravity Block Retaining Wall shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility". The height portion of the square footage measurement shall be from the finished grade of the soil or concrete surface at the toe of the wall to the top of the wall. Such price shall include all materials, labor and equipment required to install the wall including the installation of the aggregate base.

Payment for Masonry Retaining Wall shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility". The height portion of the square footage measurement shall be from the finished grade of the soil or concrete surface at the toe of the wall to the top of the wall. Such price shall include all materials, labor and equipment required to install the wall including the installation of the foundation and reinforcing steel.

303-5 CONCRETE CURBS, WALKS, GUTTERS, CROSS GUTTERS, ALLEY INTERSECTIONS, ACCESS RAMPS, AND DRIVEWAYS.

303-5.1 Requirements.

303-5.1.1 General. To the "WHITEBOOK", ADD the following:

7. For the purposes of this section, the terms "walk" and "access ramp" shall be synonymous with "sidewalk" and "curb ramp and pedestrian ramp", respectively.

   Portland cement concrete paving shall be stable, firm, and slip resistant and shall comply with CBC Section 11B-302 and 11B-403.

ADD:

303-5.1.5 Curb and Gutter. PCC Curb and Gutter shall be formed along the gutter lip using specified form material. For projects where curb and gutter are being constructed adjacent to existing pavement, a section of pavement twelve inches (12") wide, measured from the lip of the gutter, shall be removed to allow for the gutter lip to be formed. The twelve inch (12") slot shall be paved after the curb and gutter is fully cured, to avoid damage from paving operations.

The Contractor shall exercise great care to construct curbs conforming strictly to ADA standards at locations where curb ramps will be constructed. The curb face shall be depressed to a flush surface with no lip at the flowline. The slope of the asphalt leading up to the curb ramp shall not exceed five percent (5.00%) for a distance of four feet (4') with a maximum two percent (2.00%) cross slope per SDRSD No. G-32A.

303-5.1.6 Walks. Sidewalks shall be constructed in strict conformance with ADA standards. The cross slope on sidewalks shall in no case exceed two percent (2.00%). The clear width of sidewalk shall not be less than forty-eight inches (48"), measured from the back of curb. Construction tolerances shall not be a reason to exceed the minimum or maximum standards of the ADA. The width of the top of the curb cannot be counted as part of the sidewalk clearance. If a monolithic retaining curb at the back of curb ramp or sidewalk with a maximum height of six inches (6") is required to minimize erosion or match existing improvements or earth, the Contractor shall construct those retaining curbs at the back of the curb ramp or sidewalk to the limits determined by

the Engineer. Retaining curbs shall not reduce the sidewalk clear width below the minimum of forty-eight inches (48").

Where curbs are sleeved to provide connections to the gutter for yard drains, new sidewalk shall be constructed with under-sidewalk drains, in accordance with Subsection 306-7 ("Curb Drains.") and SDRSD D-27 ("SIDEWALK UNDERDRAIN PIPE").

Any irrigation facilities removed or adjusted for the construction of the sidewalk or other work shall be replaced, relocated, or re-configured with similar materials, so that the irrigation system is fully functional. Unless there is a bid item for landscaping and irrigation, payment for this work will be considered as included with other items of work.

Any turf, sod or landscaping removed adjacent to the Work for the construction of the sidewalk shall be replaced with new turf, sod or landscaping of the same type from a commercial nursery. Unless there is a bid item for landscaping and irrigation, payment for this work will be considered as included in the related items of work.

303-5.1.7 **Curb Ramp.** PCC Curb Ramps shall be constructed in strict conformance with ADA standards. The ADA standards are shown in the latest edition of the San Diego Regional Standard Drawings (SDRSD). For the construction of curb ramps, the Contractor shall refer to, and comply with, all of the requirements for curb ramps shown in the most recent version of the SDRSD Nos. G-27 through G-32B ("CURB RAMP") (inclusive).

The Contractor shall modify, adjust or relocate any adjacent improvements so the curb ramp can be constructed to ADA Standards. Before the placement of any concrete curb or curb ramp, the Contractor shall notify the Engineer if it appears that the specified maximum slopes will be exceeded due to existing conditions, to allow the Engineer the opportunity to provide direction. If the Engineer determines that a TYPE C CURB RAMP (per SDRSD No. G-29) must be constructed instead of a TYPE A or TYPE B CURB RAMP (per SDRSD No. G-27), to fit existing conditions or minimize impacts to private property, the Contractor shall construct the alternate type of ramp. The Engineer shall pay the bid price for the specified ramp if there is no bid price for the alternate ramp.

If a monolithic retaining curb with a maximum height of six inches (6") is required to minimize erosion or match existing improvements at the back side of the curb ramp, the Contractor shall construct those curbs at the back of the sidewalk to the limits determined by the Engineer, otherwise they may be eliminated. Retaining curbs shall not reduce the clear width of the landing below the minimum of forty-eight inches (48").

The Contractor shall depress the curb to flush (0" curb face) in front of the curb ramp to meet ADA standards. The Contractor shall construct the road paving or remove

and replace sufficient asphalt concrete paving and base to provide a four-foot (4') minimum square landing area, measured from the gutter flowline, where the slopes do not exceed five percent (5%) in any direction per California Building Code (CBC) 1127 B.5.3. The surface of the curb ramp and side flares shall be of contrasting finish from that of the adjacent sidewalk per CBC 1127 B.5.5.

If a diagonal curb ramp on a corner is being constructed at a crossing marked on the pavement, the Contractor shall provide twenty-four inch (24") long segments of straight curb on each side of the curb ramp, per CBC 1127 B.5.9.

The Contractor shall install a detectible warning surface pad on all pedestrian access ramps and curb ramps leading to hazardous area (e.g. vehicular traffic), as shown on the Plans or in the Standard Plans. The detectable warning surface pad shall extend the full width of the ramp forty-eight inches (48") minimum and shall measure at least thirty-six inches (36") along the ramp slope. The detectable warning surface pad or tile shall be securely attached to the surface of the concrete using adhesive and anchors as recommended by the manufacturer of the detectible warning surface. The concrete surface shall be recessed if required by the manufacturer of the detectable warning pad, and the Contractor shall follow all other manufacturer installation instructions. The detectable warning surface pad shall be integrally-colored "CHARCOAL GRAY" at all pedestrian access ramps (or curb ramps) on street intersections. The integral color of the detectable surface at all other on-site ramps shall be selected by the Engineer.

303-5.2 Forms.

303-5.2.2 Slip-Forms. To the "GREENBOOK", ADD the following:

Contractor shall give Engineer the opportunity to confirm the slip-form shoe is set at the correct batter for the concrete curb and gutter.

303-5.5 Finishing.

303-5.5.4 Gutter. To the "GREENBOOK", ADD the following:

Cross gutters and spandrels shall be constructed in accordance with the Plans. Prior to acceptance of the gutter constructed by the Contractor, a flow test shall be conducted by the Contractor in the presence of the Engineer. Any new work found to be defective shall be repaired or replaced by the Contractor in accordance with Subsection 303-5.7 ("Repairs and Replacements.").

303-5.7 Repairs and Replacements. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

Any new work found to be defective or damaged, cracked, chipped, discolored, improperly finished, heaved, vandalized, or for any other reason does not conform to

the specifications, prior to its acceptance, shall be replaced by the Contractor, at the Contractor's expense, as approved by the Engineer.

The Contractor shall exercise great care in the construction of curb ramps to ensure compliance with the ADA standards. Any curb ramps that do not satisfy the ADA requirements in any aspect, including exceeding the minimum or maximum values by ANY amount, shall be removed and replaced by the Contractor at his expense. Construction tolerances shall not be a reason to exceed the minimum or maximum standards of the ADA.

303-5.9 Measurement and Payment. To the "GREENBOOK", ADD the following:

Payment for the 6" Concrete Curb and Gutter per CSD SDG-151, Type G shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility". Quantities of curb and gutter will be measured along the line of the curb, around curb returns, and across curb ramps and driveway entrances. Pay quantities will NOT include concrete improvements with monolithic curbs covered by separate items in the bid, such as curb ramps, parking areas and special driveway entrances. Full compensation for any necessary work required to perform the construction operations specified or shown on the Plans, including clearing and grubbing, earthwork, subgrade preparation, removing and replacing existing pavement to allow forming of the gutter lip, installing joints per SDRSD Nos. G-9 and G-10 ("SIDEWALK JOINT LOCATIONS" & "CONCRETE JOINT DETAILS"), installing sleeves for drains, and depressing curbs for driveway entrances and curb ramps, will be considered as included in the linear foot price bid for PCC Curb & Gutter, and no additional compensation will be allowed.

Payment for the 6" Concrete Curb per CSD SDG-150 shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility". Quantities of curb will be measured along the line of the curb, around curb returns, and across curb ramps and driveway entrances. Pay quantities for will NOT include concrete improvements with monolithic curbs covered by separate items in the bid, such as curb ramps, parking areas and special driveway entrances. Full compensation for any necessary work required to perform the construction operations specified or shown on the Plans, including clearing and grubbing, earthwork, subgrade preparation, removing and replacing existing pavement to allow forming of the gutter lip, installing joints per SDRSD Nos. G-9 and G-10 ("SIDEWALK JOINT LOCATIONS" & "CONCRETE JOINT DETAILS"), installing sleeves for drains, and depressing curbs for driveway entrances and curb ramps, will be considered as included within PCC Curb & Gutter, and no additional compensation will be allowed.

Payment for the Remove and Replace Existing Driveway per SDG-159 shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility". Quantities of driveway entrance will be measured to include all concrete flatwork that is thicker than adjacent sidewalk, from the back of the curb to the back of the accessible walkway area across the driveway at the property line and between the tops of the wings where the curb height is transitioning. Quantities of Driveway will be measured from the lip of the gutter to the back of the accessible walkway area

across the driveway at the property line, and between the tops of the ramps where the curb height is transitioning. If a monolithic retaining curb is required for the Concrete Driveway, the top surface quantity of the retaining curb will be measured and added to the bid quantity or included in the lump sum for the Concrete Driveway. Full compensation for any necessary work required to perform the construction operations specified or shown on the Plans, including clearing and grubbing, earthwork, subgrade preparation, adjusting locations of driveways and widths of wings to meet City Standards and location requirements, will be considered as included in the square foot price bid for Concrete Driveway of each type specified and no additional compensation will be allowed.

Payment for Concrete Walkway shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility". Quantities will be measured from the back of the curb to the back of the walk, and between adjacent concrete improvements covered by separate items in the bid, such as driveway entrances, curb ramps, cross gutters or alley aprons. The contract unit prices paid for work shall include full compensation for furnishing all labor, materials, tools, equipment, delivery and incidentals as identified on the drawings and in these technical specifications, complete, in-place, and doing all the work involved and providing any specialty tools as required. No additional compensation will be allowed.

Payment for Concrete Paving with Deepened Edge shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility". Quantities will be measured from the back of the curb to the back of the walk, and between adjacent concrete improvements covered by separate items in the bid, such as driveway entrances, curb ramps, cross gutters or alley aprons. The contract unit prices paid for work shall include full compensation for furnishing all labor, materials, tools, equipment, delivery and incidentals as identified on the drawings and in these technical specifications, complete, in-place, and doing all the work involved and providing any specialty tools as required. No additional compensation will be allowed.

Payment for Type "B" Curb Ramp per CSD SDG-133 shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility". The pay limit for each pedestrian access ramp (or curb ramp) will include the area within the measurements from the back of the street curb, up to and including the twelve inch (12") wide border at the top of the ramp (or ramps) and the ramp wings or integral curbs that make up the side of the curb ramp, which surrounds the truncated dome detectable warning surface pad. Intermediate landings within the

limits of the main ramp will be included in the measurement for pedestrian access ramps (or curb ramps). Concrete flatwork for the top landings, transition areas and ramping areas outside the border surrounding the truncated domes, and additional twelve inch (12") wide borders at the top of the secondary ramping areas will NOT be included in the measurement for pedestrian access ramps (or curb ramps), but WILL BE measured and paid for with PCC Sidewalk. If integral curbs and hand railings are required for pedestrian access ramps (or curb ramps), that work shall be included in the price paid for pedestrian access ramp (or curb ramp) as shown in the bid. Full compensation for any necessary work required to perform the construction

operations specified or shown on the Plans, including clearing and grubbing, earthwork, subgrade preparation, placing reinforcing steel and dowels, constructing a landing area in the street at the bottom of pedestrian access ramps (or curb ramps), installing detectible warning surface pads, constructing integral curbs and handrails, and strictly complying with all ADA standards, will be considered as included in the per each price bid for Curb Ramp and no additional compensation will be allowed.

Payment for the Zero Face Curb shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for furnishing all labor, materials, tools, equipment, earthwork, bedding, backfilling, aggregate base, compaction, materials testing, concrete, and all other work and incidentals necessary to accomplish the work as specified herein and no additional compensation will be allowed therefore.

Payment for the 4" Wide Concrete Mowing Strip at Decomposed Granite shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for furnishing all labor, materials, tools, equipment, earthwork, bedding, backfilling, aggregate base, compaction, materials testing, concrete, and all other work and incidentals necessary to accomplish the work as specified herein and no additional compensation will be allowed.

Payment for the Concrete Stairs with Handrails shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for furnishing all labor, materials, tools, equipment, earthwork, bedding, backfilling, compaction, materials testing, concrete, metal handrails, and all other work and incidentals necessary to accomplish the work as specified herein and no additional compensation will be allowed.

Payment for the Concrete Mowing Strip Type "A" per City Std. SDL-103 shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for furnishing all labor, materials, tools, equipment, earthwork, bedding, backfilling, aggregate base, compaction, materials testing, concrete, and all other work and incidentals necessary to accomplish the work as specified herein and no additional compensation will be allowed.

Payment for the Concrete Mowing Strip Type "B" per City Std. SDL-103 shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for furnishing all labor, materials, tools, equipment, earthwork, bedding, backfilling, aggregate base,

compaction, materials testing, concrete, and all other work and incidentals necessary to accomplish the work as specified herein and no additional compensation will be allowed.

Payment for the Deepened Concrete Curb shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for furnishing all labor, materials, tools, equipment, earthwork, backfilling, aggregate base, compaction, materials testing, concrete, and all other work

and incidentals necessary to accomplish the work as specified herein and no additional compensation will be allowed.

Payment for the Concrete Walkway Quote shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals to sandblast the quote as shown on the plans and construction details. The concrete walkway is covered under a separate bid item. No additional compensation will be allowed.

303-7 COLORED CONCRETE.

ADD:

303-7.5 Measurement and Payment.

2. Payment for the Human Sun Dial with Decorative Concrete Paving shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals, including excavation, grading and compacting the subgrade, base materials, forms, joints, and sandblasting as shown on the plans and construction details. No additional compensation will be allowed.

To the "GREENBOOK", ADD the following:

303-9 STONE VENEER WALLS.

303-9.1 Examination. Examine substrates upon which work will be installed. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates.

Commencement of work by installer is acceptance of substrate.

303-9.2 Preparation. Protect adjacent work from contact with mortar.

Surface Preparation: Prepare substrate in accordance with manufacturer's installation instructions for the type of substrate being covered.

303-9.3 Installation. Install and clean stone in accordance with manufacturer's installation instructions for Standard Installation with Dry Stack Joints.

303-9.4 Cleaning. Remove protective coverings from adjacent work.

Cleaning Stone Units:

Wash with soft bristle brush and water/granulated detergent solution.

Rinse immediately with clean water.

303-9.5 Payment. Payment for the Seatwall with Stone Veneer shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall

include furnishing all labor, materials, tools, equipment, and incidentals, including excavation, foundations, block, mortar, caps, and stone as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the Entry Monument Wall shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals, including excavation, foundations, block, mortar, precast concrete caps, and stone as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the Entry Monument shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, including excavation, foundations, block, mortar, precast concrete sign and pilaster cap, painted recessed lettering, and City seal as shown on the plans and construction details. No additional compensation will be allowed.

303-10 INTERLOCKING CONCRETE PAVERS.

303-10.1 Mockups. Build mockups to verify selections made under submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Install a 10 ft x 10 ft paver. This area shall be used to verify joint sizes; lines; laying pattern(s); stitching details (for mechanical installation); color(s); and, texture of the job.
2. To provide a proper representation of color blend, blending during installation of sample mock-up will be pulled from a minimum of 3 cubes.
3. This area shall be the standard by which the work will be judged.
4. Subject to approval by the Engineer, the mock-up may be retained as part of the finished work. If mock-up is not retained, remove and dispose of mock-up at the completion of the project.

303-10.2 Delivery, Storage, and Handling. Contractor shall coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.

Contractor shall check all materials upon delivery to assure that the proper materials have been received and are in good condition before signing off on the manufacturer's packing slip.

Contractor shall protect all materials from damage or contamination due to job site conditions and in accordance with manufacturer's recommendations. Damaged or contaminated materials shall not be incorporated into the work.

Concrete pavers shall be delivered to the site in steel banded, plastic banded, or plastic wrapped cubes capable of transfer by forklift or clamp lift. Unload and store concrete pavers at the job site in such a manner that no damage occurs to the product.

Contractor shall handle and transport aggregates to avoid segregation, contamination, and degradation and keep different materials sufficiently separated as

to prevent mixing. The material shall not be dumped or stored one material on top of another unless it is part of the installation process. Materials shall be covered to prevent removal by wind.

Geotextile shall be delivered, stored and handled in accordance with ASTM D4873.

303-10.3 **Preparation.** Prior to commencement of any work, the Contractor shall conduct a pre-construction meeting with the Engineer and affected sub-trades. The pre-construction meeting should establish contractor responsibilities and at a minimum verify:

1. The location of the mock-up, and whether it will be part of the final construction or need to be removed.
2. The site layout is in general conformance with the construction documents.
3. The subgrade lines and elevations are in general conformance with the construction documents. The subgrade elevations shall be within +/- 0.1 ft of the specified grades.
4. Subgrade soil conditions and grades meet the requirements in the construction documents.
5. The details of the site's erosion and sediment control plan.

Proof-roll prepared subgrade according to requirements to identify soft pockets and areas of excess yielding. Proceed with subbase installation only after deficient subgrades have been corrected.

Contractor shall verify compaction of the subgrade is in general conformance with the construction documents prior to placing subbase materials.

Once the Contractor has confirmed the subgrade conditions are in general conformance with the requirements in the construction documents, the Contractor shall begin installing the base course material. By initiating installation of the base course, the Contractor acknowledges acceptance of the subgrade.

303-10.4 **Installation of Base Course.** Install the base course at the thickness, compaction, surface tolerances, and elevations outlined in the construction documents.

1. The aggregate should be spread and compacted in uniform layers not exceeding 6-inch loose thickness.
2. Compact base course to 98% Standard Proctor Density in accordance with ASTM D698.
3. Density testing shall be conducted to verify conformance.
4. Surface tolerance should be plus or minus 3/8 inch over a 10-foot. straight edge laid in any direction.

5. Base course compaction must be achieved near curbs, grade beams, concrete collars around utility structures, lights standards, tree wells, building edges and other protrusions as applicable to the project. In areas not accessible to large compaction equipment, compact to specified density with mechanical tampers (jumping jacks).

6. The upper surface of the base shall be sufficiently well graded and compacted to prevent infiltration of the bedding sand into the base both during construction and throughout its service life. Segregated areas of the granular base shall be blended by the application of crushed fines that have been watered and compacted into the surface.

Before commencing the placing of the bedding course, the base shall be inspected by the CITY.

303-10.5 Installation of Edge Restraints. Adequate edge restraint shall be provided along the perimeter of all paving as specified. The face of the edge restraint, where it abuts pavers, shall be vertical.

All concrete edge restraints shall be constructed to dimensions and grades in general conformance with the construction documents and shall be supported on a compacted base.

303-10.6 Installation of Bedding Course, Pavers, and Joint Filling Material. Spread the bedding course evenly over the base course and screed to a nominal 1-inch thickness. The Contractor shall screed the bedding course using screed rails and boards. The screeded sand should not be disturbed. Place sufficient sand to stay ahead of the laid pavers. Do not use the bedding sand to fill depressions in the base course surface.

Ensure that concrete pavers are free of foreign material before installation. Concrete pavers shall be inspected for color distribution and all chipped, damaged, or discolored concrete pavers shall be replaced. Initiation of concrete paver placement shall be deemed to represent acceptance of the pavers.

Lay the concrete pavers in the approved pattern. Maintain straight pattern lines.

Paving units shall be installed from a minimum of 3 bundles by hand, and 6 bundles during mechanical installation, simultaneously to ensure color blending.

Joints between the individual concrete pavers, and between concrete pavers and the edge restraints, buildings, collars, or other protrusions/edging, on average shall be between 1 /16 inch and 3 /16 inch wide.

Joint (bond) lines shall not deviate more than ±1/2 in. over 50 ft. from string lines.

Fill gaps at the edges of the paved area with cut pavers or edge units. Do not install cut pavers smaller than one-third of a whole paver along edges subject to vehicular traffic – trim two pavers to fit.

Cut all pavers using a masonry saw. Upon completion of cutting, the area must be swept clean of all debris to facilitate inspection and to ensure the concrete pavers are not damaged during compaction.

Using a low amplitude plate compactor capable of at least 5,000 lbs. (22 kN) compaction at a frequency of 75 Hz –100 Hz, compact the concrete pavers into the bedding course.

The pavers shall be compacted to achieve consolidation of the bedding sand and brought to level and profile by not less than three passes. Initial compaction should proceed as closely as possible following the installation of the paving units and prior to the acceptance of any traffic or application of joint filling sand.

Any units that are structurally damaged during compaction shall be immediately removed and replaced.

Sweep dry joint filling sand into the joints and vibrate until they are full. This will require two or three passes with the compactor. Do not compact within 3 feet of the unrestrained edges of the paving units.

All work to within 3 feet of the laying face must be left fully compacted with sand-filled joints at the end of each day.

Sweep off excess sand when the job is complete.

The final surface elevations shall not deviate more than 3/8 inch under a 10-foot long straightedge.

The surface elevation of pavers shall be 1/8 to 1/4 inch above adjacent drainage inlets, concrete collars or channels.

303-10.7 **Construction Tolerances.** Final inspection shall be conducted to verify conformance to the drawings after removal of excess joint sand. All pavements shall be finished to lines and levels to ensure positive drainage at all drainage outlets and channels.

The final surface elevations shall not deviate more than +/- 3/8 inch under a 10-foot long straight edge.

Lippage: No greater than 1/8 in. difference in height between adjacent pavers.

303-10.8 **Payment.** Payment for the Interlocking Concrete Pavers shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals, including excavation, backfill, grading and compacting the subgrade, geotextile fabric, aggregate base, bedding sand, pavers, and joint sand as shown on the plans and construction details. No additional compensation will be allowed. Payment for the Interlocking

Concrete Pavers at Parkdale Driveway shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals, including excavation, backfill, grading and compacting the subgrade, geotextile fabric, aggregate base, bedding sand, pavers, and joint sand as shown on the plans and construction details. No additional compensation will be allowed.

303-11 PRECAST CONCRETE FURNISHINGS.

303-11.1 Preparation. Remove loose material and debris from base surface before placing site furnishings.

303-11.2 Layout. The Contractor shall mark the locations of all site furnishings and obtain approval from the Engineer and the project Landscape Architect prior to installation. Locations may be adjusted to provide minimum clear distances from other obstructions.

303-11.3 Installation. Precast concrete picnic tables, trash receptacles, and recycling receptacles shall be installed using "Epoxy Mount" method per the manufacturer's instructions.

Precast concrete benches shall be installed using anchor bolts per the manufacturer's instructions.

303-11.4 Cleaning. Clean up and dispose of all waste materials and debris resulting from these installations off the site.

303-11.5 Payment. Payment for the Precast Concrete Picnic Table shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the Precast Concrete ADA Picnic Table shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the Precast Concrete Trash Receptacle shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the Precast Concrete Recycling Receptacle shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the Precast Concrete Bench shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include

furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the Precast Concrete Butterfly shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the Precast Concrete Caterpillar shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

Payment for 24" x 24" Precast Catch Basin shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, material, tools, and equipment and performing all work required for the Precast Catch Basin installation with Traffic Rated Grate & filter (Bio Clean grate inlet filter, or equivalent) including but not limited to connections, earthwork, shoring, bracing, bedding, backfilling, compaction, materials testing, concrete, frames and covers, and all other work necessary. No additional compensation will be allowed.

303-12 RUBBERIZED PLAY SURFACING

303-12.1 Action Submittals.

A. Product Data: For each type of product.

B. Shop Drawings: For each type of protective surfacing.

   a. Include fall heights and use zones for equipment and structures specified in Section 116800 "Playground and Fitness Equipment" coordinated with the critical heights for protective surfacing.

C. Samples for Initial Selection: For each type of exposed finish.

   a. Include Samples of accessories involving color selection.

D. Samples for Verification: Minimum 9 by 9 inches.

303-12.2 Informational Submittals.

A. Qualification Data: For installer and testing agency.

B. Product Certificates: For each type of unitary surfacing product.

C. Field quality-control reports.

D. Sample Warranty: For manufacturer's special warranty.

303-12.3 Quality Assurance.

A. Installer Qualifications: Utilize an installer approved and trained by the manufacturer of the playground surfacing system, having experience with other projects of the scope and scale of the work described in this section.

B. Certifications: Certification by manufacturer that installer is an approved applicator of the playground surfacing system.

C. International Play Equipment Manufacturers Association (IPEMA) certified.

303-12.4 Delivery, Storage & Handling.

A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at a minimum temperature of 40 degrees F

C. (4 degrees C) and a maximum temperature of 90 degrees F.

303-12.5 Project/Site Conditions

A. Environmental Requirements: Install surfacing system when minimum ambient temperature is 40 degrees F and maximum ambient temperature is 90 degrees F. Do not install in steady or heavy rain.

303-12.6 Warranty.

A. Manufacturer's Warranty: Submit, for CITY'S acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights CITY may have under contract documents.

303-12.7 Manufacturer's Instructions.

A. Comply with the instructions and recommendations of the playground surfacing manufacturer.

303-12.8 Examination.

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for subgrade elevations, slope, and drainage and for other conditions affecting performance of the Work.

   a. Verify that substrates are sound and without high spots, ridges, holes, and depressions.

303-12.9 Installation.

A. Do not proceed with playground surfacing installation until all applicable site work, including substrate preparation, fencing, playground equipment installation and other relevant work, has been completed.

B. Surface Preparation: Using a brush or short nap roller, apply primer to the substrate perimeter and any adjacent vertical barriers such as playground equipment support legs, curbs or slabs that will contact the surfacing system at the rate of 300 ft2/gal.

C. Basemat Installation:

a. Using screeds and hand trowels, install the basemat at a consistent density of 29 pounds, 1 ounce per cubic foot to the specified thickness.

b. Install to the manufacturer's minimum thickness or greater as required by the fall heights of the playground equipment.

c. Allow basemat to cure for sufficient time so that indentations are not left in the basemat from applicator foot traffic or equipment.

d. Do not allow foot traffic or use of the basemat surface until it is sufficiently cured.

D. Primer Application: Using a brush or short nap roller, apply primer to the basemat perimeter and any adjacent vertical barriers such as playground equipment support legs, curbs or slabs that will contact the surfacing system at the rate of 300 ft2/gal.

E. Top Surface Installation:

a. Using a hand trowel, install top surface at a consistent density of 58 pounds, 9 ounces per cubic foot to a nominal thickness of 1/2".

b. Allow top surface to cure for a minimum of 48 hours.

c. At the end of the minimum curing period, verify that the top surface is sufficiently dry and firm to allow foot traffic and use without damage to the surface.

d. Do not allow foot traffic or use of the surface until it is sufficiently cured.

303-12.10 Field Quality Control.

A. Testing Agency: Engage a qualified testing agency to perform tests.

B. Perform the following tests with the assistance of a factory-authorized service representative:

a. Perform "Installed Surface Performance Test" according to ASTM F 1292 for each protective surfacing type and thickness in each playground area.

C. Playground protective surfacing will be considered defective if it does not pass tests.

D. Prepare test reports.

303-12.11 Protection.

A. Prevent traffic over seamless surfacing for not less than 48 hours after installation.

SECTION 304 – METAL FABRICATION AND CONSTRUCTION

304-2 METAL RAILINGS.

304-2.4 Measurement and Payment. To the "GREENBOOK", ADD the following:

Payment for the Pedestrian Railing per CSD SDM-115 and SDM-118 shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

Metal railing associated with stairs shall be included in the Lump Sum payment for Concrete Stairs.

304-3 CHAIN LINK FENCE.

304-3.3 Installation of Gates. To the "GREENBOOK", ADD the following:

Gate hardware shall be able for the door to open with 5 lbs. maximum force.

304-3.4 Measurement and Payment. To the "GREENBOOK", ADD the following:

Payment for the 42" High Chain Link Fence Above Segmental Gravity Block Retaining Wall shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the 5' High Black Vinyl Coated Chain Link Fence shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the 12' Wide (5' High) Black Vinyl Coasted Chain Link Gate shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the 4' Wide (5' High) Black Vinyl Coated Chain Link Gate shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the 10' High Chain link Fence shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the 12′ Wide (10′ High) Chain Link Double Gate shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the 4′ Wide (10′ High) Chain Link Gate shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the 6′ High Black Vinyl Coated Chain link Fence shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as well as (5) 12"x12" Aluminum Signs as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the 4′ Wide (6′ High) Black Vinyl Coated Chain Link Gate shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

ADD:

304-7 DRINKING FOUNTAINS.

304-7.1 Measurement and Payment. Payment for the Drinking Fountain shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

Payment for the Drinking Fountain with Pet Bowl shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

304-8 BICYCLE RACK.

304-8.1 General. Install per the manufacturer's instructions.

304.8.2 Measurement and Payment. Payment for the Bicycle Rack shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals, including the concrete foundation as shown on the plans and construction details. No additional compensation will be allowed.

304-9 DOG WASTE STATION.

304-9.1 General. Install per the manufacturer's instructions in 12" diameter x 24" depth concrete footing. Concrete shall be 520-C-3250 with Type V cement.

304.9.2 Measurement and Payment. Payment for the Dog Waste Station shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals, including the excavation, concrete footing, post, signs, bag dispenser, 400 bags, nuts, bolts, washers, and mounting hardware as shown on the plans and construction details. No additional compensation will be allowed.

304-10 ALUMINUM BLEACHER.

304-10.1 General. Install per the manufacturer's instructions.

304-10.2 Measurement and Payment. Payment for the Aluminum Bleacher shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals as shown on the plans and construction details. No additional compensation will be allowed.

304-11 INTERPRETIVE SIGNS.

304-11.1 Measurement and Payment. Payment for the Interpretive Signs shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals, including excavation and concrete footing as shown on the plans and construction details. No additional compensation will be allowed.

304-12 SHADE SAILS.

304-12.1 General. Install per the manufacturer's instructions and approved shop drawings.

304.12.2 Measurement and Payment. Payment for the Dog Park Shade Sail shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals for unit fabrication, foundations, dirt removal, delivery, applicable sales tax, installation, and warranty. No additional compensation will be allowed.

304-13 DOG PARK AGILITY EQUIPMENT.

304-13.1 General. Install per the manufacturer's instructions.

304-13.2 Measurement and Payment. Payment for the Dog Park Agility Equipment shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and

incidentals, including excavation and concrete footings as shown on the plans and construction details. No additional compensation will be allowed.

304-14 EXERCISE EQUIPMENT.

304-14.1 General. Install per the manufacturer's instructions.

304-15 ACCESSIBLE ROUTE SIGNS.

304-15.1 General. Install per the construction plans.

304-15.2 Measurement and Payment. Payment for the Accessible Route Signs shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals, including excavation and concrete footings as shown on the plans and construction details. No additional compensation will be allowed.

SECTION 305 – PILE DRIVING AND TIMBER CONSTRUCTION

305-2.6 Measurement and Payment. To the "GREENBOOK", ADD the following:

Payment for the Salvage and Relocate the Existing Bulletin Board shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include furnishing all labor, materials, tools, equipment, and incidentals, including excavation and concrete footings as shown on the plans and construction details. No additional compensation will be allowed.

SECTION 306 – OPEN TRENCH CONDUIT CONSTRUCTION

306-7 PREFABRICATED GRAVITY PIPE.

306-7.7 Plastic Sewer and Drainage Pipe:

ADD:

306-7.7.4 Payment. Payment for 8" PVC Storm Drain Pipe and 12" PVC Storm Drain Pipe shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include placement of the new 8" or 12" HDPE storm drain and cleanout structures and joints including full compensation for furnishing all labor, materials, tools, equipment, earthwork, bedding, backfilling, compaction, materials testing, and all other work and incidentals necessary to accomplish the work as specified herein and no additional compensation will be allowed.

Payment for the 4" PVC (SDR-35) Sewer Main shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility". The contract price for work under this item shall include but is not limited to furnishing all labor, asphalt trench restoration, material, tools, and equipment and performing all work required for the 4" PVC (SDR-35) Sewer Force Main installation as specified in Section 306-15 of

the Supplementary General Provisions of the Standard Specifications. No additional compensation will be allowed.

Payment for Sewer Cleanout per SDRSD SC-01 shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for removals, excavation, installation, connection, drain piping, delivery, along with any incidentals to accomplish all work involved in the installation of the Sewer Cleanouts. No additional compensation will be allowed.

Payment for Sewer Cleanout per CSD SDS-103 shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for removals, excavation, installation, connection, drain piping, delivery, along with any incidentals to accomplish all work involved in the installation of the Sewer Cleanouts. No additional compensation will be allowed.

Payment for Sewer Lateral Connection per CSD SDS-105 shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for furnishing all labor, materials, tools, and equipment, trench, curb & gutter and sidewalk restoration, and for all work involved in the installation of the Sewer Service Lateral. No additional compensation will be allowed.

306-15 PAYMENT.

306-15.1 General. To the "GREENBOOK", ADD the following:

Payment for the 2" Copper, Type L Water Service shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for furnishing all labor, materials, tools, and equipment, trench restoration and for all work involved. No additional compensation will be allowed.

Payment for the 1" Copper, Type L Water Service shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for furnishing all labor, materials, tools, and equipment, trench restoration and for all work involved. No additional compensation will be allowed.

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

314-4.3.7 Payment. To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

Payment for Parking Lot and Driveway Signing and Striping shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall constitute full compensation for all materials, labor, equipment, tools, painting curbs, painting parking stalls, painting handicap stalls, handicap signage, parking lot signage, and incidentals. No additional compensation will be allowed.

SECTION 402 – UTILITIES

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

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

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

1. Notify SDG&E at least **40 Working Days** prior to excavating within 10 feet of SDG&E Underground High Voltage Transmission Power Lines (69 KV and higher).

SECTION 600 - ACCESS

600-1 **GENERAL.** To the "WHITEBOOK", item 5, DELETE in its entirety and SUBSTITUTE with the following:

5. You shall notify Environmental Services Department via email (trash@sandiego.gov) of street closures affecting the regular scheduled solid waste collection at least 3 Working Days prior to the street closure. Include your business name and phone number, days of closure, time of scheduled closure, and date of anticipated street reopening in the notification.

   a) You shall verify waste collection schedules via the Environmental Services website at:

      http://www.sandiego.gov/environmental-services/collection/index.shtml

   b) You shall comply with the following requirements for trash, recycling, and yard waste collection:

      i. Provide advance written notice to every property affected by blocked public right of way.

      ii. Coordinate the relocation of trash, recycling, and yard waste containers to an accessible public street for the City's waste collection crews on collection day.

      iii. When necessary, relocate the containers from the blocked streets to the accessible public right of way before the City's collection vehicles arrive to assist with collection on existing schedules. Return the containers to their point of origin to ensure the accuracy of inventory assignment by address.

   c) If the City's crews are unable to provide the citizens with the mandated services due to your failure to comply with these specifications, you shall collect trash, recyclables, and yard waste on the City's schedule and deliver to the City's designated locations. If you fail to perform this Work, you shall incur additional costs for the City to reschedule pick up of an area.

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

601-2.1.4 **Traffic Control for Resurfacing and Slurry Sealing.** To the "WHITEBOOK", item 3, subsection "d", DELETE in its entirety and SUBSTITUTE with the following:

d) Place "NO PARKING - TOW-AWAY ZONE" signs 72 hours in advance of the scheduled slurry sealing. Reschedule street block segments which are not completed by the last posted Working Day. If a Work delay of 48 hours or more occurs from the originally scheduled Work date, remove the "NO PARKING - TOW-AWAY ZONE" signs for a minimum of 24 hours, then reset and re-post for the appropriate Work date.

601-3.5.1 **General.** To the "WHITEBOOK", item 3, DELETE in its entirety and SUBSTITUTE with the following:

3. Temporary "No Parking" and "No Stopping" signs shall be installed 72 hours before enforcement. Temporary "No Parking" and "No Stopping" signs shall be installed and removed as specified in the Special Provisions. Signs shall indicate specific days, dates, and times of restrictions. If violations occur, call Police Dispatch 619-531-2000 to enforce the Tow-Away notice.

601-3.6 **Channelizing Devices.** To the "WHITEBOOK", item 4, Barricades, ADD the following:

h) You shall place "OPEN TRENCH" signs (C27(CA)) on Type 3 Barricade within the construction Work zone, ahead of any Work areas with open trenches that are greater than 3 inches in depth, in accordance with California MUTCD SECTION 6F.103 (CA). The barricades shall be placed in a continuous manner and shall prevent pedestrian, vehicular, and biker access to the open trench area.

SECTION 800 – MATERIALS

800-1 **LANDSCAPE MATERIALS.** To the "GREENBOOK", ADD the following:

800-1.1.2 **Class "A" Topsoil.** To the "WHITEBOOK", item 4, subsection "e", DELETE in its entirety and SUBSTITUTE with the following:

e) The test results shall provide the following information:

i. Date of Testing
ii. Project Name
iii. The Contractor's Name
iv. Source of Material and Supplier's Name
v. Estimate of Quantity Needed in Cubic Yards
vi. Soil Gradation
vii. Fertility
viii. Heavy Metals
ix. Soil Permeability in Inches per Hour

x. Toxic Elements

xi. Chloride Content

xii. pH

xiii. EcE (electrical conductivity)

xiv. SAR (Sodium Absorption Ratio)

xv. Organic Content by Dry Weight

xvi. Carbon : Nitrogen Ratio

xvii. Water-soluble Nutrient Levels

xviii. Recommendations for adding amendments, chemical corrections, or both.

To the "WHITEBOOK", item 5, DELETE in its entirety and SUBSTITUTE with the following:

5. The topsoil shall conform to the following agricultural suitability requirements:

pH	6.0 – 7.5
ECe (electrical conductivity)	0.0 – 3.0
SAR (Sodium Absorption Ratio)	0.0 – 5.0
Chloride Content	Less than 150 ppm
Boron Content	Less than 1 ppm
Organic Content	3% to 6% by dry weight
Carbon : Nitrogen Ratio	20:1 maximum
Sandy Loam Gradation Limit*	Gravel over 2mm: Less than 10% by weight Sand: 75% to 85% Sand finer than 100 mesh (0.15 mm): Less than 15% Sand finer that 60 mesh (0.25 mm): Less than 40% Sand larger than 32 mesh (0.5 mm): Minimum 15% Silt: 20% maximum Clay: 15% maximum
Permeability Rate**	2 inches to 5 inches per hour at 80% compaction

* Per USDA Classification Scheme.

** Tested in accordance with USDA Handbook Number 60, method 34b or other approved method.

800-1.2.5 **Mulch.** To the "WHITEBOOK", item 3, subsection "i", ADD the following:

Type 9 Mulch shall be 4" maximum in size.

800-1.2.7 **Herbicides and Pesticides.** Herbicides and pesticides shall be used in their appropriate applications with strict adherence to manufacturers' specifications and instructions and shall be approved by the Engineer prior to use.

All chemicals used for weed control shall be registered by the State of California Department of Food and Agriculture and the Environmental Protection Agency with registration identification on the label. Label shall be at the job site at all times. A written recommendation shall be prepared by a licensed California pest control advisor for all pesticides used.

801-5 IRRIGATION SYSTEM INSTALLATION.

801-5.1 **General.** To the "GREENBOOK", ADD the following:

The Contractor shall check and verify the water pressure at each Point of Connection (P.O.C.) prior to beginning work. The Contractor shall notify the Engineer of any discrepancy between pressure indicated on the Plans and the actual water pressure measured in the field. If the pressure provided at work site or any other conditions create problems that shall prevent proper operation of the irrigation system, the Engineer shall be notified before commencement of any work.

801-9 **PAYMENT.** To the "WHITEBOOK", ADD the following:

4. Payment for Maintenance and Plant Establishment shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for furnishing all labor, tools, materials, equipment, and work involved to complete this work. No additional compensation will be allowed.

5. Payment for the Bioretention Areas shall be included in the Lump Sum bid item of "Construction of Salk Neighborhood Park Joint Use Facility" and shall include full compensation for furnishing all labor, material, tools, and equipment and performing all work required construct the bioretention areas including but not limited to connections, earthwork, shoring, bracing, bedding, backfilling, compaction, materials testing, concrete, frames and covers, and all other work necessary. Planting, irrigation, and rock cobble within the bioretention areas are not included in this bid item as they are included in separate bid items in the BID SCHEDULE. No additional compensation will be allowed.

SECTION 802 – NATIVE HABITAT PROTECTION, INSTALLATION, MAINTENANCE, AND MONITORING

802-2.1 **Project Biologist.** To the "WHITEBOOK", ADD the following:

5. You shall retain a qualified Project Biologist to perform biological monitoring Work for this Contract. You shall coordinate your activities and Schedule with the activities and schedules of the Project Biologist.

802-4 **PAYMENT.** To the "WHITEBOOK", item 1, sub item "d", DELETE in its entirety and SUBSTITUTE with the following:

The payment for Biological Monitoring and Reporting shall be included in the lump sum Bid item for "Construction of Salk Neighborhood Park Joint Use Facility".

SECTION 1001 – CONSTRUCTION BEST MANAGEMENT PRACTICES (BMPs)

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

7. Based on a preliminary assessment by the City, this Contract is subject to **SWPPP** Risk Level 2.

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 H - SWPPP Construction BMP Maintenance Log**.

1001-3.7 **Payment.** To the "WHITEBOOK", item 3, subsection "g", DELETE in its entirety and SUBSTITUTE with the following:

g) BMP Inspection, Maintenance, Repair, and Construction BMP Maintenance Log.

TECHNICALS

CITY OF SAN DIEGO
SALK NEIGHBORHOOD PARK
JOINT USE PROJECT

TECHNICAL SPECIFICATIONS

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CITY OF SAN DIEGO
SALK NEIGHBORHOOD PARK

SECTION 000107 – SEALS PAGES

See Table of Contents for author of each specification section, identified by author's initials as follows:

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Michael Baker International	Jeremy Franzini	=	MBI-L (LANDSCAPE)
aark Engineering, Inc.	Mark S. Van Bibber	=	AARK
Turpin & Rattan Engineering, Inc.	Cesar Rodriguez	=	TREI
The Engineering Partners, Inc.	Matthew Long	=	EPI

SPECIFICATIONS

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 04-118253 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 06/18/2020

June 8, 2020

Joanne S. Tyler

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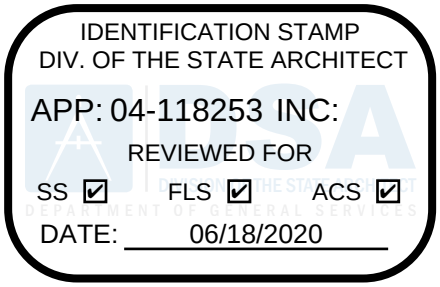
The Engineering Partners, Inc.	Matthew Long	=	EPI

SPECIFICATIONS



June 8, 2020

Jeremy Franzini

SECTION 000107 – SEALS PAGES

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APP: 04-118253 INC:
REVIEWED FOR
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DATE: 06/18/2020

LICENSED ARCHITECT
JUAN MANUEL ONCINA
C-13996
2-28-23
REN
STATE OF CALIFORNIA

June 8, 2020

J. Manuel Oncina

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Mark S. Van Bibber

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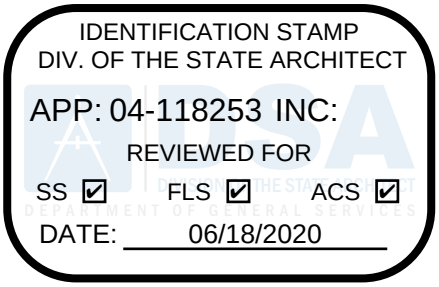

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Cesar Rodriguez

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Matthew Long

SECTION 032000 - REINFORCEMENT STEEL

PART 1 - GENERAL

1.1 WORK OF THIS SECTION

A. The CONTRACTOR shall provide concrete reinforcement steel, welded wire fabric, couplers, concrete inserts, wires, clips, supports, chairs, spacers, and other accessories, complete, all 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.
3. Submittals.

1.2 RELATED SECTIONS

A. The Work of the following Sections apply 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 033000 Cast-in-Place Concrete
2. Section 042320 Reinforced Concrete Block Masonry

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. Except as otherwise indicated in this Section of the Specifications, the CONTRACTOR shall comply with the latest adopted edition of the Standard specifications for Public Works Construction (SSPWC), together with the latest adopted editions of the Regional and City of San Diego Supplement Amendments.

B. The current edition of the California Building Code (CBC) as adopted by the City of San Diego Municipal Code.

C. Commercial Standards (Current Edition):

1. ACI 117 Specification for Tolerances for Concrete Construction and Materials
2. ACI 315 Details and Detailing of Concrete Reinforcement
3. ACI 318 Building Code Requirements for Structural Concrete
4. CRSI MSP Concrete Reinforcing Steel Institute Manual of Standard Practice

5. WRI Manual of Standard Practice for Welded Wire Fabric
6. AWS D1.4 Structural Welding Code - Reinforcing Steel

D. ASTM Standards in Building Codes (Current Edition):

1. ASTM A82 Steel Wire, Plain, for Concrete Reinforcement

2. ASTM A185 Steel Welded Wire Reinforcement, Plain, for Concrete

3. ASTM A615 Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

4. ASTM A706 Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement

1.4 CONTRACTOR SUBMITTALS

A. The CONTRACTOR shall furnish shop bending diagrams, placing lists, and drawings of all reinforcement steel before fabrication in accordance with the requirements of the General Provisions.

B. Details of the concrete reinforcement steel and concrete inserts shall be submitted at the earliest possible date after receipt of the Notice to Proceed. Details of reinforcement steel for fabrication and erection shall conform to ACI 315, ACI 301 and the requirements indicated. The shop bending diagrams shall 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. The shop drawings shall include bar placement diagrams which clearly indicate the dimensions of each bar splice.

1.5 QUALITY ASSURANCE

A. If requested by the CITY ENGINEER , the CONTRACTOR shall furnish samples from each heat of reinforcement steel delivered in a quantity adequate for testing. Costs of initial tests will be paid by the CITY . Costs of additional tests due to material failing initial tests shall be paid by the CONTRACTOR.

PART 2 - PRODUCTS

2.1 MATERIAL REQUIREMENTS

A. Materials which may remain or leave residues on or within the concrete shall be classified as acceptable for potable water use by the Environmental Protection Agency within 30 days of application or use.

2.2 REINFORCEMENT STEEL

A. Reinforcement steel for all cast-in-place reinforced concrete construction shall conform to the following requirements:

1. Bar reinforcement shall conform to the requirements of ASTM A615 for Grade 60 Billet Steel Reinforcement or as otherwise indicated.

2. All welded reinforcement, specifically detailed or otherwise indicated, shall be low-alloy grade 60 deformed bars conforming to the requirements of ASTM A706.

3. Spiral reinforcement shall be cold-drawn steel wire conforming to the requirements of ASTM A82.

4. Tie wire shall be Annealed Steel, 14 gauge minimum.

B. Accessories:

1. Accessories shall include all necessary chairs, slab bolsters, concrete blocks, tie wires, dips, supports, spacers, and other devices to position reinforcement during concrete placement. All bar supports shall meet the requirements of the CRSI Manual of Standard Practice, Chapter 3. Wire bar supports shall be CRSI Class 1 for maximum protection with a 1/16-inch minimum thickness of plastic coating which extends at least 2-inch from the concrete surface. Plastic shall be gray in color.

2. 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.

2.3 MECHANICAL COUPLERS

A. Mechanical couplers shall not be used.

2.4 WELDED SPLICES

A. Welded splices shall not be used.

PART 3 - EXECUTION

3.1 GENERAL

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

3.2 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.

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: All fabrication of reinforcing bars shall meet the requirements of ACI 117.

D. Reinforcing Bars for Masonry: The CONTRACTOR shall detail and fabricate bars at the shop, ready for installation by masons.

3.3 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. All 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 (or dobies) shall be used, in sufficient numbers to support the bars without settlement, but in no case shall such support be continuous. All 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 all 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 all 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 CITY .

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 CITY ENGINEER .

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 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. 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.

3.4 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.

3.5 ADDITIONAL REINFORCING

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

END OF SECTION 032000

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

B. Related Requirements:

1. See 2018 GREENBOOK and City Whitebook Section 303-5 for concrete pavement and walks.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:

a. Contractor's superintendent.
b. Independent testing agency responsible for concrete design mixtures.
c. Concrete Subcontractor.

2. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, semirigid joint fillers, forms and form removal limitations, shoring

and reshoring procedures, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, concrete repair procedures, and concrete protection.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.

1. Location of construction joints is subject to approval of the City Engineer.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Form materials and form-release agents.
4. Steel reinforcement and accessories.
5. Curing compounds.
6. Floor and slab treatments.
7. Bonding agents.
8. Adhesives.
9. Semirigid joint filler.
10. Joint-filler strips.
11. Repair materials.

C. Material Test Reports: For the following, from a qualified testing agency:

1. Aggregates.

2. Cementitious materials.

D. Field quality-control reports.

E. Minutes of preinstallation conference.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

1.8 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on concrete mixtures.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

1.10 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F (4.4 deg C) for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301 (ACI 301M).

2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 301 (ACI 301M) and as follows:

1. Maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301 (ACI 301M).
2. ACI 117 (ACI 117M).

2.2 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.

D. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch (19 by 19 mm), minimum.

E. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

F. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

G. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that leave no corrodible metal closer than 1 inch (25 mm) to the plane of exposed concrete surface.
2. Furnish ties that, when removed, leave holes no larger than 1 inch (25 mm) in diameter in concrete surface.
3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.3 STEEL REINFORCEMENT

A. Reinforcing Bars: see Section 032000 - Reinforcing Steel.

2.4 REINFORCEMENT ACCESSORIES

A. Reinforcing accessories: see Section 032000 - Reinforcing Steel.

2.5 CONCRETE MATERIALS

A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C 150/C 150M, Type II, gray.
2. Fly Ash: ASTM C 618, Class F or C.
3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
4. Silica Fume: ASTM C 1240, amorphous silica.

C. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source.

1. Maximum Coarse-Aggregate Size: 1 inch (25 mm) nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Air-Entraining Admixture: ASTM C 260/C 260M.

E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

F. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set-accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

G. Water: ASTM C 94/C 94M and potable.

2.6 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating.

G. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, 18 to 25 percent solids, nondissipating.

2.7 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 according to ASTM D 2240.

2.8 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C 150/C 150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 5000 psi (29 MPa) at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch (6.4 mm) and that can be filled in over a scarified surface to match adjacent floor elevations.

1. Cement Binder: ASTM C 150/C 150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi (34.5 MPa) at 28 days when tested according to ASTM C 109/C 109M.

2.9 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301 (ACI 301M).

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash: 15 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing, high-range water-reducing, or plasticizing admixture in concrete, as required, for placement and workability.

2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in all concrete.
4. Use corrosion-inhibiting admixture in all concrete mixtures.

2.10 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. All normal-weight concrete.

1. Minimum Compressive Strength: 4000 psi (27.6 MPa) at 28 days.
2. Maximum W/C Ratio: 0.50.
3. Slump Limit: 8 inches (200 mm) for concrete with verified slump of 4 inches (50 to 100 mm) before adding high-range water-reducing admixture, plus or minus 1 inch (25 mm).
4. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.

2.11 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.12 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301 (ACI 301M), to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 (ACI 117M).

C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:

1. Class A, 1/8 inch (3.2 mm) for smooth-formed finished surfaces.
2. Class B, 1/4 inch (6 mm) for rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.

1. Install keyways, reglets, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEM INSTALLATION

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.
2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
3. Install dovetail anchor slots in concrete structures as indicated.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved its 28-day design compressive strength.
2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material are not acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 SHORING AND RESHORING INSTALLATION

A. Comply with ACI 318 (ACI 318M) and ACI 301 (ACI 301M) for design, installation, and removal of shoring and reshoring.

1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.

B. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.5 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

3.6 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by City Engineer.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
2. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
3. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
4. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

3.7 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301 (ACI 301M).

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301 (ACI 301M).
3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

3.8 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view, or to be covered with a coating or covering material applied directly to concrete.

C. Rubbed Finish: Apply the following to smooth-formed-finished as-cast concrete where indicated:

1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix 1 part portland cement to 1-1/2 parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix 1 part portland cement and 1 part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.9 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch (6 mm) in one direction.

1. Apply scratch finish to surfaces to receive concrete floor toppings or to receive mortar setting beds for bonded cementitious floor finishes.

C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces to receive trowel finish.

D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces to receive a trowel and fine-broom finish.

2. Finish and measure surface, so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- (3.05-m-) long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch (6 mm)].

E. Trowel and Fine-Broom Finish: Apply a first trowel finish to floor surfaces, unless otherwise indicated. While concrete is still plastic, slightly scarify surface with a fine broom.

1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

F. Slip-Resistive Finish: Before final floating, apply slip-resistive aggregate finish where indicated and to concrete stair treads, platforms, and ramps. Apply according to manufacturer's written instructions and as follows:

1. Uniformly spread 25 lb/100 sq. ft. (12 kg/10 sq. m of dampened slip-resistive aggregate over surface in one or two applications. Tamp aggregate flush with surface, but do not force below surface.
2. After broadcasting and tamping, apply float finish.
3. After curing, lightly work surface with a steel wire brush or an abrasive stone and water to expose slip-resistive aggregate.

3.10 MISCELLANEOUS CONCRETE ITEM INSTALLATION

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

3.11 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 (ACI 301M) for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

    a. Water.
    b. Continuous water-fog spray.
    c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.

    a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
    b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
    c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies does not interfere with bonding of floor covering used on Project.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

    a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.12 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches (50 mm) deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.13 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch (13 mm) in any dimension to solid concrete. Limit cut depth to 3/4 inch (19 mm). Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar matches surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by City Engineer.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.

4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch (6 mm) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch (19-mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.14 FIELD QUALITY CONTROL

A. Special Inspections: CITY will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

C. Inspections:

1. Steel reinforcement placement.
2. Headed bolts and studs.
3. Verification of use of required design mixture.
4. Concrete placement, including conveying and depositing.
5. Curing procedures and maintenance of curing temperature.
6. Verification of concrete strength before removal of shores and forms from beams and slabs.

D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd. (4 cu. m), but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.
2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. (76 cu. m) or fraction thereof of each concrete mixture placed each day.

    a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

3. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
4. Air Content: ASTM C 231/C 231M, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
5. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F (4.4 deg C) and below or 80 deg F (27 deg C) and above, and one test for each composite sample.
6. Unit Weight: ASTM C 567/C 567M, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
7. Compression Test Specimens: ASTM C 31/C 31M.

    a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
    b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.

8. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.

    a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
    b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
10. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).

11. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
12. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
13. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
14. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
15. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION 03 30 00

SECTION 04 23 20

REINFORCED CONCRETE BLOCK MASONRY

PART 1 - GENERAL

1.1 WORK OF THIS SECTION

A. The CONTRACTOR shall provide concrete masonry and appurtenant Work, complete, in accordance with the Contract Documents.

B. Work Included in this Section. Principal items are:

1. Concrete block masonry.
2. Installing reinforcing steel in masonry.
3. Grout and mortar for masonry.
4. Shoring, bracing and scaffolding incidental to work of this Section.
5. Setting and incorporating into masonry all bolts, anchors, inserts and ledgers.
6. Building in of frames, vents, pipes, conduits and inserts.
7. Continuous inspections, test specimens and samples of material, as specified.
8. Pointing, cleaning and protection.
9. Submittals.

1.2 RELATED SECTIONS

A. The Work of the following Sections apply 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 033000 Cast-in-Place Concrete
2. Section 032000 Reinforcement Steel
3.
4. Section 079200 Joint Sealants
5. Section 099600 High-Performance Coatings, for anti-graffiti coatings on all exposed masonry surfaces.

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. The current edition of the California Building Code (CBC) as adopted by the City of San Diego Municipal Code.

B. Commercial Standards (Current Edition)

1. ACI 315 Manual of Standard Practice for Detailing Reinforced Concrete Structures

2.	ACI 531	Building Code Requirements for Concrete Masonry Structures

C. ASTM Standards in Building Codes (Current Edition)

1.	ASTM A 615	Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
2.	ASTM C 5	Specification for Quicklime for Structural Purposes
3.	ASTM C 55	Concrete Building Brick
4.	ASTM C 90	Specification for Load-Bearing Concrete Masonry Units
5.	ASTM C 140	Tests Methods for Sampling and Testing Concrete Masonry Units and Related Units
6.	ASTM C 144	Specification for Aggregate for Masonry Mortar
7.	ASTM C 150	Specification for Portland Cement
8.	ASTM C 207	Specification for Hydrated Lime for Masonry Purposes
9.	ASTM C 270	Specification for Mortar for Unit Masonry
10.	ASTM C 404	Specification for Aggregates for Masonry Grout
11.	ASTM C 426	Test Method for Linear Drying Shrinkage of Concrete Masonry Units
12.	ASTM C 476	Specification for Grout for Masonry
13.	ASTM E 447	Test Methods for Compressive Strength of Masonry Prisms

1.4 CONTRACTOR SUBMITTALS

A. Samples of concrete masonry unit colors with texture ranges as indicated shall be submitted to the CITY ENGINEER for selection of the color in accordance with the requirements of the General Provisions . Full size samples of the blocks selected shall be submitted for final approval by the CITY ENGINEER after color selection, if requested. If the material indicated is a colored and textured unit, the samples submitted shall be colored and textured units. Samples of mortar colors shall be submitted for color selection by the CITY ENGINEER .

B. A 4-foot minimum square free-standing sample panel shall be prepared for approval by the CITY ENGINEER before starting masonry Work and shall remain at the Work site for reference until all masonry Work is completed.

1.5 QUALITY ASSURANCE

A. Applicable Standards: Concrete masonry shall conform to the CBC and other applicable codes and standards of governing authorities.

B. All Work shall conform to the standard of quality established by the CITY ENGINEER'S acceptance of the free-standing sample panel required to be constructed before starting the masonry work.

C. Concrete block masonry units shall be sampled and tested in accordance with ASTM C 140.

D. Testing of Mortar and Grout: The CONTRACTOR shall have the mortar and grout tested by a recognized testing laboratory approved by the CITY ENGINEER to ensure compliance with the Specifications and the governing codes. Test reports shall be submitted to the CITY ENGINEER in accordance with Section 01300 - Submittals.

E. Tests shall be taken at the following times:

1. At the start of the masonry Work, at least two test samples each of mortar and grout shall be taken on three successive working days.

2. At any change in materials or job conditions, at least two samples of each modified material, grout and mortar shall be tested.

3. Four random tests each of mortar and grout shall be made. The random test samples shall be taken when requested by the CITY ENGINEER .

4. Additional samples and tests may be required whenever, in the judgment of the CITY ENGINEER , additional tests (beyond the random tests) are necessary to determine the quality

F. The costs of tests and test reports, except for additional tests requested by the CITY ENGINEER , shall be paid by the CONTRACTOR at no additional cost to the CITY . The costs of the additional tests and reports, when such reports verify compliance with the Contract Documents, will be paid by the CITY . When tests or reports do not verify compliance, the cost of all additional tests and reports shall be paid by the CONTRACTOR at no additional cost to the CITY .

G. Test samples shall be stored in a moist environment until tested, unless directed otherwise by the CITY ENGINEER or the testing laboratory. Tests shall be in accordance with CBC Section 1708A.1. The grout and mortar strengths shall be not less than the minimum strengths indicated herein.

H. Inspection: Continuous inspection by a special inspector approved by the City of San Diego Development Services Department and by the CITY ENGINEER will be required where necessary to conform with code requirements. [Costs of special

inspection shall be paid for by the CONTRACTOR. Inspection reports shall be submitted.]

I. Weather Conditions: Concrete masonry units shall not be placed when air temperature is below 40 degrees F and shall be protected against direct exposure to the wind and sun when erected when the ambient air temperature exceeds 99 degrees F in the shade with relative humidity less than 50 percent.

J. Product Storage: Cement, lime, and other cementitious materials shall be delivered to the site and stored in dry, weather-tight sheds or enclosures, in unbroken bags, barrels, or other approved containers, plainly marked and labeled with the manufacturers' names and brands. Mortar and grout shall be stored and handled in a manner which will prevent the inclusion of foreign materials and damage by water or dampness. Masonry units shall be handled with care to avoid chipping and breakage, and shall be stored as directed in the Building Code Requirements for Concrete Masonry Structures. Materials stored on newly constructed floors shall be stacked in such manner that the uniformly-distributed loading does not exceed 30 pounds per square foot. Masonry materials shall be protected from contact with the earth and exposure to the weather and shall be kept dry and clean until used.

PART 2 - PRODUCTS

2.1 CONCRETE MASONRY UNITS

A. Concrete masonry units shall conform to ASTM C 90, Type I, hollow load bearing units with maximum linear shrinkage of 0.6 percent from standard to oven-dried condition. Units shall be medium weight units unless indicated otherwise.

B. Concrete masonry units at exterior walls shall be 8-inch by 8-inch by 16-inch, 8-inch by 12-inch by 16-inch or 8-inch by 16-inch by 16-inch modular size, as indicated on the drawings, with smooth, scored and split faces. Off-set cells when called out in the drawings. The color, scoring and finish of concrete masonry units shall be as specified on the Drawings.

C. Concrete masonry units at interior walls shall be medium weight block 8-inch by 8-inch by 16-inch or 8-inch by 12-inch by 16-inch modular size, as indicated on the drawings, with smooth faces, of color matching the integrally colored block.

D. All bond beam, corner, lintel, sill, and other specially shaped blocks shall be provided and used where required or necessary. Specially shaped nonstructural blocks may be constructed by saw cutting. The color and texture of specially shaped blocks shall match that of adjacent units.

E. Concrete masonry units hidden from view entirely may be natural color units the same size as other adjacent masonry units.

2.2 MATERIALS FOR MORTAR AND GROUT

A. Portland cement shall be Type II, low alkali, conforming to ASTM C 150.

B. Lime paste shall be made with pulverized quicklime, or with hydrated lime, which shall be allowed to soak not less than 72 hours before use; except, that hydrated lime processed by the steam method shall be allowed to soak not less than 24 hours and shall be made by adding the lime to the water. In lieu of hydrated lime paste for use in mortar, the hydrated lime may be added in the dry form. Hydrated lime shall be Type S, conforming to ASTM C 207. Pulverized quicklime shall conform to ANSI/ASTM C 5, shall pass a No. 20 sieve, and 90 percent shall pass a No. 50 sieve.

C. Sand shall conform to ASTM C 144. Coarse aggregate shall conform to ASTM C 404.

D. Water for mixing shall be clear potable water.

E. Reinforcing steel shall be deformed bars conforming to ASTM A 615, Grade 60.

F. Admixture for mortar shall be BASF Aktiengesellschaft Rheopel Mortar Admixture; Grace Construction Products, W. R. Grace & Co. Conn. Dry-Block Mortar Admixture or approved alternate. The admixture shall not be detrimental to the bonding or help the process of efflorescence.

G. Admixture for grout shall be Sika Co. Sika Grout Aid; BASF Aktiengesellschaft Pozzolith or approved alternate.

2.3 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene, urethane, or PVC.

B. Elastomeric Sealant: Per Section 079200 "Joint Sealants".

PART 3 - EXECUTION

3.1 GENERAL

A. Measurements for mortar and grout shall be accurately made. Shovel measurements are not acceptable. Mortar proportions shall be accurately controlled and maintained.

3.2 MORTAR

A. Mortar for concrete block masonry shall be Type S, with a minimum 28-day compressive strength of 2,000 psi. Proportions shall be one part portland cement, 3- to 2-part lime paste or hydrated lime, and damp, loose sand in an amount (by volume) of not less than 2-3 or more than three times the sum of the volumes of cement and lime used, with the precise amount of water required to produce the required workability and strength.

B. Mortar color shall match block color.

3.3 GROUT

A. Grout shall have a minimum 28-day compressive strength of 2,000 psi. Proportions shall be one part portland cement, not more than 1/10-part lime paste or hydrated lime, 2-3 to 3 parts damp, loose sand, not more than two parts pea gravel, and water in the amount necessary to produce a consistency for pouring without segregation of components. Where the grout space is less than 4 inches, pea gravel shall be omitted.

B. Admixtures may only be used when approved by the CITY ENGINEER. When it has been approved for use, it shall be used in accordance with the manufacturer's published recommendations for the grout.

3.4 CONSTRUCTION - GENERAL

A. All Work shall be performed in accordance with the provisions of the applicable code for reinforced concrete unit masonry.

B. Set or embed all anchors, bolts, reglets, sleeves, conduits, and other items in Work as required.

C. All block cutting shall be by machine.

D. Masonry units shall be supported off ground and shall be covered to protect them from rain. Only clean, dry, uncracked units shall be incorporated into the Work.

E. All reinforcing steel shall be cleaned of all loose rust and scale, and all oil, dirt, paint, laitance, or other substances which may be detrimental to or reduce bonding of the steel and concrete.

F. Immediately before starting Work, the concrete upon which the masonry will be laid shall be cleaned with water under pressure.

G. Full mortar joint for first course shall be provided.

H. Units shall be shoved tightly against adjacent units to assure good mortar bond.

I. The CONTRACTOR shall provide safe and adequate scaffolding, planking, ladders and/or ramps conforming with all applicable CAL/OSHA State of California Construction Safety Orders.

3.5 MASON'S IRON WORK

A. The CONTRACTOR shall furnish, set and build into the masonry, all iron work necessary for the masonry construction, and which is enclosed in the masonry.

B. The CONTRACTOR shall set and build into the masonry all items which are furnished and located by other trades, or indicated on the Drawings, such as bolts and sleeves for securing the work of such other trades, metal attachments, sleeves, inserts and similar items. Setting shall consist of the bedding, or setting in mortar or dry pack, of all items to be set hereunder.

C. The CONTRACTOR shall build into the masonry all items furnished, located and set by others, such as door frames, vents, conduit, pipes and the like. Building into masonry shall consist of filling-in with mortar or grout around all items to be built into masonry, including hollow metal door frames. The CONTRACTOR shall set and build-in all such items so that there will be no voids anywhere, and so that the items are installed rigid, solid, and held accurately and securely in place.

D. The CONTRACTOR shall bear full responsibility for the accurate placement of all mason's iron work. The CONTRACTOR shall fully and solidly grout anchors in place. Unless otherwise noted, the CONTRACTOR shall provide embedment of not less than 2/3 of the wall thickness.

3.6 EQUIPMENT

A. All equipment for mixing and transporting the mortar and grout shall be clean and free from set mortar, dirt, or other foreign matter.

3.7 MIXING

A. Mortar shall be mixed by placing 1/2 of the water and sand in the operating mixer, followed by the cement, lime, and remainder of the sand and water. After all ingredients are in the mixer, they shall be mechanically mixed for not less than 5 minutes. Retempering shall be done on the mortar board by adding water within a basin formed within the mortar, and the mortar reworked into the water. Mortar which is not used within one hour shall be discarded.

3.8 ERECTION OF CONCRETE BLOCK MASONRY

A. Masonry Work shall be erected in-plane, plumb, level, straight, and true to dimensions shown and executed in accordance with acceptable practices of the trade.

B. Unless indicated otherwise, masonry shall be laid up in straight uniform courses with running bond.

C. All masonry shall be erected to preserve the unobstructed vertical continuity of the cells measuring not less than 3-inch by 3-inch in cross-section. Walls and cross webs shall be full bedded in mortar. All head (or end) joints shall be solidly filled with mortar for a distance in from the face of the wall or unit not less than the thickness of the longitudinal face shells.

3.9 SHORING AND BRACING

A. All shoring and bracing shall be provided as required for work. Shoring and bracing shall be constructed to required shapes and sizes, capable of supporting and sustaining the loads to which they will be subjected without failure or deflection. Shores and bracing shall be left in place until concrete masonry can safely carry all required live and dead loads.

B. Concrete masonry wall shall be adequately braced to withstand all forces to which they will be subjected during construction. Walls are not designed to be self-supporting for lateral loads until attached to floor and roof elements.

3.10 JOINTS

A. Vertical and horizontal joints shall be uniform and approximately 3/8 inch wide. Exterior joints and interior exposed block joints shall be concave-tooled to a dense surface. Special care shall be used in tooling joints so as to match existing construction. Interior or exterior nonexposed masonry and masonry behind plaster shall have flush joints.

3.11 CLEANOUTS

A. Cleanout openings shall be provided at the bottoms of all cells to be filled at each lift or pour of grout, where such lift or pour is over 4 ft in height. Any overhanging mortar or other obstructions or debris shall be removed from the insides of such cell walls. The cleanouts shall be sealed before grouting and after inspection. Cleanout openings shall match the finished wall in exposed masonry.

3.12 REINFORCEMENT

A. Deep cut bond beam blocks shall be used where horizontal reinforcing steel is embedded. H-block bond beams may be used at locations other than openings.

B. Vertical reinforcement shall be held in position at top and bottom and at intervals not exceeding 192 diameters of the reinforcement.

3.13 GROUTING

A. All cells shall be filled solidly with grout unless indicated otherwise. Grouting shall not be started until the wall has cured for 24 hours. Grout shall not be poured in more than 8-foot lifts.

B. All grout shall be consolidated at time of pouring by puddling or vibrating. Where the grouting operation has been stopped for one hour or longer, horizontal construction joints shall be formed by stopping the grout pour 1-1/2 inches below the top of the uppermost unit.

3.14 PROTECTION

A. Wall surfaces shall be protected from droppings of mortar or grout during construction.

3.15 FINISHING AND CLEANING

A. Masonry shall not be wet-finished unless exposed to extreme hot weather or hot wind and then only by using a nozzle-regulated fog spray sufficient only to dampen the face but not of such quantity to cause water to flow down over the masonry.

B. Finished masonry shall be cleaned and painted in a manner satisfactory to the CITY ENGINEER , based upon the standards established by the approved sample panel.

C. All exposed to view interior and exterior colored masonry Work shall be cleaned by light sandblasting to remove all stains and other imperfections.

Apply Anti-Graffiti Coating to all exposed interior and exterior masonry surfaces.

D. All exposed masonry surfaces of openings and window and door openings such as sills, heads, and jambs shall be finish block surfaces, not formed surfaces, unless indicated otherwise. Closed bottom bond beam blocks shall be used at heads and sills. Pour holes may be used at the sill under window frame and where approved by the City Engineer.

END OF SECTION 042320

SECTION 051200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and City of San Diego Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Structural steel.
2. Grout.

B. Related Requirements:

1. Section 055000"Miscellaneous Metals"for miscellaneous steel fabrications and other steel items not defined as structural steel.

1.3 DEFINITIONS

A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

B. Seismic-Load-Resisting System: Elements of structural-steel frame designated as "SLRS" or along grid lines designated as "SLRS" on Drawings, including columns, beams, and braces and their connections.

C. Demand Critical Welds: Those welds, the failure of which would result in significant degradation of the strength and stiffness of the Seismic-Load-Resisting System and which are indicated as "Demand Critical" or "Seismic Critical" on Drawings.

1.4 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Sustainable Design Submittals:

C. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment Drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
5. Identify members and connections of the Seismic-Load-Resisting System.
6. Identify demand critical welds.

D. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for each welded joint qualified by testing, including the following:

1. Power source (constant current or constant voltage).
2. Electrode manufacturer and trade name, for demand critical welds.

E. Delegated-Design Submittal: For structural-steel connections indicated to comply with design loads, include analysis data.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Welding certificates.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

D. Mill test reports for structural steel, including chemical and physical properties.

E. Product Test Reports: For the following:

1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
2. Shop primers.
3. Nonshrink grout.

F. Survey of existing conditions.

G. Source quality-control reports.

H. Field quality-control and special inspection reports.

1.8 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.

B. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.

C. Shop-Painting Applicators: Qualified according to AISC's Sophisticated Paint Endorsement P3 or to SSPC-QP 3, "Standard Procedure for Evaluating Qualifications of Shop Painting Applicators."

D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8/D1.8M. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.

E. Comply with applicable provisions of the following specifications and documents:

1. AISC 303.
2. AISC 341 and AISC 341s1.
3. AISC 360.
4. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

1.9 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided City's testing and inspecting agency observes repackaging and seals containers.
2. Clean and relubricate bolts and nuts that become dry or rusty before use.
3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

A. Angles: ASTM A 36/A 36M.

B. Plate and Bar: ASTM A 36/A 36M.

C. Corrosion-Resisting Structural-Steel Shapes, Plates, and Bars: ASTM A 588/A 588M, Grade 50 (345).

D. Cold-Formed Hollow Structural Sections: ASTM A 500/A 500M, Grade B, structural tubing.

E. Corrosion-Resisting, Cold-Formed Hollow Structural Sections: ASTM A 847/A 847M, structural tubing.

F. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

A. Headed Anchor Rods: ASTM F 1554, Grade 36, straight.

1. Nuts: ASTM A 563 (ASTM A 563M) heavy-hex carbon steel.
2. Plate Washers: ASTM A 36/A 36M carbon steel.
3. Washers: ASTM F 436 (ASTM F 436M), Type 1, hardened carbon steel.
4. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.

B. Threaded Rods: ASTM A 36/A 36M.

1. Nuts: ASTM A 563 (ASTM A 563M) heavy-hex carbon steel.
2. Washers: ASTM A 36/A 36M carbon steel.
3. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.

C. Eye Bolts and Nuts: Made from cold-finished carbon steel bars, ASTM A 108, Grade 1030.

D. Bolts: ASTMA325N.

2.3 GROUT

A. Metallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.

B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.4 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," and to AISC 360.

1. Camber structural-steel members where indicated.
2. Fabricate beams with rolling camber up.
3. Identify high-strength structural steel according to ASTM A 6/A 6M and maintain markings until structural steel has been erected.
4. Mark and match-mark materials for field assembly.
5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. Bolt Holes: Cut, drill, mechanically thermal cut, or punch standard bolt holes perpendicular to metal surfaces. Bolt holes shall be 1/16” oversize unless otherwise noted on the drawings. Burning of bolt holes shall not be permitted.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Welded Door Frames: Build up welded door frames attached to structural-steel frame. Weld exposed joints continuously and grind smooth. Plug-weld fixed steel bar stops to frames. Secure removable stops to frames with countersunk machine screws, uniformly spaced not more than 10 inches (250 mm) o.c. unless otherwise indicated.

F. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.

1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.5 SHOP CONNECTIONS

A. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.

2.6 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M. Steel bolts, nuts and washers shall be hot-dipped galvanized in conformance with ASTM A153.

1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.

2.7 SOURCE QUALITY CONTROL

A. Welded Connections: Visually inspect shop-welded connections according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

1. Liquid Penetrant Inspection: ASTM E 165.
2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
3. Ultrasonic Inspection: ASTM E 164.
4. Radiographic Inspection: ASTM E 94.

B. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

1. Prepare a certified survey of existing conditions. Include bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.

1. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.

3.3 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

B. Baseplates Bearing Plates and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of baseplate.
3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

C. Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.

E. Splice members only where indicated.

F. Do not use thermal cutting during erection.

G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.4 FIELD CONNECTIONS

A. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Remove backing bars or runoff tabs where indicated, back gouge, and grind steel smooth.
3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," for mill material.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: City will engage a qualified testing agency to perform tests and inspections.

B. Welded Connections: Visually inspect field welds according to AWS D1.1/D1.1M.

3.6 REPAIRS AND PROTECTION

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION 051200

SECTION 055000 - MISCELLANEOUS METALS

PART 1 -- GENERAL

1.1 WORK OF THIS SECTION

A. The CONTRACTOR shall provide miscellaneous metals and appurtenances, complete, in accordance with the Contract Documents.

B. Work Included in this Section. Principal items are:

1. Shop/erection drawings and samples.
2. Metal grating with incidental supports and attachments.
3. Checkered plate.
4. Iron castings.
5. Steel channels and/or angle frames and thresholds with anchors.
6. Welding electrodes.
7. Shop prime paint.
8. Pipe supports with saddles, hangers, bracing and attachments as detailed and required, except as provided by other trades.
9. Miscellaneous iron and steel items indicated, specified, or required for completion of the Contract, unless included under other Sections.
10. Warning signs.
11. Galvanizing and shop primer finishes, including field touch-up.

1.2 RELATED SECTIONS

A. The Work of the following Sections apply to the Work of this Section. Other, not referenced below, shall also apply to the extent required for proper performance of this Work.

1. Section 032000 Reinforcement Steel
2. Section 033000 Cast-in-Place Concrete
3. Section 042320 Reinforced Concrete Block Masonry
4. Section 051200 Structural Steel

5. Section 074113.16 Standing-Seam Metal Roof Panels

6. Section 099600 High-Performance Coatings

7. Sections 265100 Interior Lighting and 265600 Exterior Lighting

8. Steel supports, hangers, brackets and other miscellaneous items accessory to mechanical and electrical installations indicated on the Drawings, or covered in the specifications.

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. Except as otherwise indicated in this Section of the Specifications, the CONTRACTOR shall comply with the latest adopted edition of the Standard Specifications for Public Works Construction (SSPWC), together with the latest adopted editions of the Regional and City of San Diego Supplement Amendments.

B. The current edition of the California Building Code (CBC) as adopted by the City of San Diego Municipal Code.

C. Except as otherwise indicated, the current editions of the following commercial standards apply to the Work of this Section:

1. Commercial Standards:

a.	AASHTO	HS-20 Truck Loading
b.	AISC	Steel Construction Manual
c.	AISC 303	Code of Standard Practice for Structural Steel Buildings and Bridges
d.	AISC 360	Specification for Structural Steel Buildings
e.	AISI	Design of Light Gauge, Cold-Formed Steel Structural Members
f.	AWS	A5 Series
g.	AWS-D1.1	Structural Welding Code - Steel
h.	AWS-B2.1	Welding Procedure and Performance Qualification
i.	NFPA 101	Life Safety Code

j.	NAAMM AMP 510	Metal Stairs Manual
k.	AWS-D1.6	Structural Welding Code – Stainless Steel

2. ASTM Standards in Building Codes:

a.	ASTM A6	General Requirements for Rolled Steel Bars, Plates, Shapes and Sheet Piling
b.	ASTM A36	Carbon Structural Steel
c.	ASTM A48	Gray Iron Castings
d.	ASTM A53	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
e.	ASTM A123	Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products
f.	ASTM A125	Steel Springs, Helical, Heat Treated
g.	ASTM A153	Zinc Coating (Hot-Dip) on Iron and Steel Hardware
h.	ASTM A167	Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip
i.	ASTM A193	Alloy Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications
j.	ASTM A194	Carbon and Alloy Steel Nuts for Bolts for High Pressure and High Temperature Service, or Both
k.	ASTM A276	Stainless Steel Bars and Shapes
l.	ASTM A283	Low and Intermediate Tensile Strength Carbon Steel Plates
m.	ASTM A307	Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength
n.	ASTM A320	Alloy Steel and Stainless Steel Bolting for Low Temperature Service
o.	ASTM A424	Steel, Sheet, for Porcelain Enameling
p.	ASTM A500	Cold Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

q.	ASTM A536	Ductile Iron Casting
r.	ASTM A563	Carbon and Alloy Steel Nuts
s.	ASTM A1011	Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
t.	ASTM A575	Steel Bars, Carbon, Merchant Quality, M-Grades
u.	ASTM A786	Hot Rolled Carbon, Low Alloy, High Strength Low Alloy, and Alloy Steel Floor Plates
v.	ASTM B98	Copper-Silicon Alloy Rod, Bar, and Shapes
w.	ASTM B438	Bronze Base Powder Metallurgy (PM) Bearings (Oil-Impregnated)

3. Trade Standards:

   a. Welded Austenitic Chromium-Nickel Stainless Steel Technique and Properties, as Published by the International Nickel Company, Inc., New York, New York.

   b. Porcelain Enamel Institute, Inc.

1.4 CONTRACTOR SUBMITTALS

A. Shop Drawings: Shop drawings shall be submitted in accordance with the General Provisions.

B. Layout Drawings: Layout drawings for grating shall be submitted showing the direction of span, type and depth of grating, size and shape of grating panels, seat angle details, and details of grating hold down fasteners. Load and deflection tables shall be submitted for each style and depth of grating used.

C. Product List and Product Data Sheets:
A product list shall be submitted with product data sheets of intended shop coats. Shop coats shall be the same products and manufacturer as those of deferred field-applied systems.

1.5 QUALITY ASSURANCE

A. Miscellaneous metals shall be fabricated and erected in accordance with the latest edition of the AISC "Specification for Structural Steel Buildings ", and "Code of Standard Practice for

Structural Steel Buildings and Bridges ", except whenever there is a discrepancy between the design drawings and this specification, the Drawings shall govern.

B. Continuous Inspections: All welding and high strength bolting of structural steel assemblies shall be conducted under the continuous inspection of an International Code Council (ICC) certified "Special Inspector" selected by the CONTRACTOR with costs borne by the CONTRACTOR. Should such fabrication be performed in the shop of a licensed fabricator approved by the governing building official and certified by the ICC Evaluation Services, Inc. Only the field welding and high strength bolting of structural steel assemblies will be required to be performed under continuous inspection of the ICC-certified "Special Inspector." The CITY shall be notified at least 24 hours in advance of needed inspections. Copies of inspection reports for shall be provided for the CITY , CONTRACTOR, and governing building official.

PART 2 -- PRODUCTS

2.1 MATERIALS

A. Steel: Steel shall conform to the following requirements:

1.	Shapes, Plates, Bars	ASTM A36 unless otherwise indicated on the Drawings
2.	Pipe, Pipe Columns, Bollards	ASTM A53, Type E or S, Grade B Schedule 40, unless noted otherwise
3.	Tubes	ASTM A500, Grade B

B. Stainless Steel: Unless otherwise designated or approved, stainless steel alloy types shall conform to ASTM A167 and ASTM A276 as follows:

1. Stainless steel plates, pipe and structural shapes: Type 316L.
2. Stainless steel bolts, nuts and washers: Type 316L where connecting or bearing on aluminum.

B. Cast Iron: Cast iron shall conform to ASTM A48, except as otherwise noted.

C. Ductile Iron: Ductile iron shall conform to ASTM A536, using Grade 60-40-18 or better, except as otherwise noted.

2.2 STEEL PIPE HANDRAILS / GUARDRAILS

A. Steel Pipe Handrails: Steel pipe handrails, including brackets and related hardware, which may be partially or wholly submerged, or which are located inside a hydraulic structure, shall be entirely of Type 316L stainless steel. All other steel pipe handrail shall be as specified on the Drawings and shall be picked at fabrication plant and hot-dip galvanized after fabrication.

B. Railings and handrails: per CBC Section 11B-505

1. Top of gripping surfaces of handrails shall be 34” minimum and 38” maximum vertically above walking surfaces, stair nosing, and ramp surfaces. Handrails shall be at a consistent height above such surfaces.
2. Clearance between handrail gripping surfaces and adjacent surfaces shall be 1 ½” minimum. Handrail may be located in a recess if the recess is 3” maximum deep and 18” minimum clear above the top of the handrail.
3. Handrail gripping surfaces shall be continuous along their length and shall not be obstructed along their tops or sides. The bottoms of handrail gripping surfaces shall not be obstructed for more than 20% of their length. Where provided, horizontal projections shall occur 1 ½” minimum below the bottom of the handrail gripping surfaces.
4. Handrail gripping surfaces with a circular cross section shall have an outsider diameter of 1 ¼” minimum and 2” maximum.
5. Handrail gripping surfaces with a non-circular cross section shall have an outside dimension of 4” minimum and 6 ¼” maximum, and a cross-sectional dimension of 2 ¼” maximum.
6. Handrail gripping surfaces and any surfaces adjacent to them shall be free of sharp or abrasive elements and shall have rounded edges.
7. Handrails shall not rotate within their fittings.
8. Handrail gripping surfaces shall extend beyond and in the same direction of stair flights and ramp runs in accordance with CBC Section 11B-505.10. Such extensions are not required for continuous handrails at the inside turn of switchback or dogleg stairs and ramps.
9. The orientation of at least one handrail shall be int eh direction of the stair run, perpendicular to the direction of the stair nosing, and shall not reduce the minimum required width of the stair. CBC Section 11B-505.2.1.
10. A 2” minimum high curb or barrier shall be provided to prevent the passage of a 4” diameter sphere rolling off the edges on a ramp or landing surface. Such a curb or barrier shall be continuous and uninterrupted along the length of a ramp. CBC Section 11B-405.9.2.

2.3 METAL GRATING

A. General: Metal grating shall be of the design, sizes, and types indicated. All grating shall be completely banded at all edges and cutouts using material and cross section equivalent to the bearing bars. Such banding shall be welded to each cut bearing bar. Grating shall be supported on all sides of an opening by support members. Where grating is supported on concrete, embedded support angles matching grating material shall be used on all sides, unless indicated otherwise. Such angles shall be mitered and welded at corners. Grating shall conform to the following requirements:

1. All pieces of grating shall be fastened in two locations to each support.

2. Where grating forms the landing at the top of a stairway, the edge of the grating, which forms the top riser, shall have an integral nonslip nosing, width equal to that of the stairway.

3. Where grating depth is not given, grating shall be provided which will be within allowable stress levels, and which shall not exceed a deflection of 3 inch or the span divided by 180, whichever is less. For standard duty plank, and safety grating, the loading to be used for determining stresses and deflections shall be the uniform live load of the adjacent floor or 100 psf, whichever is greater or a concentrated load of 1,000 pounds. For heavy duty grating, the loading used for determining stresses and deflections shall be AASHTO HS-20.

B. Grating Materials: Grating materials shall conform to the following requirements:

1. Grating which may be partially or wholly submerged shall be fabricated entirely of Type 316 stainless steel. All other grating shall be as specified on the Drawings and shall be hot-dip galvanized after fabrication.

C. Standard-Duty Grating:

1. No single piece of grating shall weigh more than 80 pounds, unless indicated otherwise. Standard duty grating shall be serrated bar grating.

2. Cross bars shall be welded or mechanically locked tightly into position so that there is no movement allowed between bearing and cross bars.

D. Safety Grating: Safety grating shall be made of sheet metal punched into an open serrated diamond pattern and formed into plank sections. The open diamond shapes shall be approximately 1/2 inch by 11/16 inch in size.

E. Heavy-Duty Grating: Heavy-duty grating shall be of welded steel, galvanized after fabrication. Cross bars shall be welded in position.

F. Pressure-Locked Steel Grating: Fabricated by swaging crossbars between bearing bars.

1. Bearing Bar Spacing: 15/16 inch (24 mm) o.c.
2. Bearing Bar Depth: 1-1/2 inches (38 mm).
3. Bearing Bar Thickness: 1/8 inch (3.2 mm).
4. Crossbar Spacing: 4 inches (102 mm) o.c.
5. Steel Finish: Hot-dip galvanized with a coating weight of not less than 1.8 oz./sq. ft. (550 g/sq. m) of coated surface.

G. Grating Fastening Devices: For metal gratings, either welded or mechanical attachments shall be used except where otherwise noted for locations such as stair treads and incidental landings.

2.4 CHECKERED PLATE

A. Checkered Plate: Checkered plate shall conform to Federal Specification QQ-F461. Checkered plate shall be not less than 3/16 inch thick, and shall have a pattern of raised lugs on one face and shall be smooth on the opposite face. Lugs shall be a minimum of one inch in length and raised a minimum of 0.050 inch above the surface. The lugs shall be

located in a pattern in which the lugs are oriented at 90 degrees from the adjacent lugs in two orthogonal directions. The rows of lugs shall be oriented at 45 degrees from the edges of the plates.

B. Plate material: Where no plate material is indicated, stainless steel shall be provided. Unless indicated otherwise, the minimum plate thickness shall be as required to limit deflection, resulting from a live load of 100 psf, to 3 inch or the span divided by 240, whichever is less.

2.5 IRON CASTINGS

A. General: Iron castings shall be of uniform quality, free from blowholes, porosity, hard spots, shrinkage, distortion, or other defects. They shall be smooth and well cleaned by shotblasting.

B. Covers and Grates: Covers and grates shall fit together evenly, so that the cover fits flush with the surrounding surface and so that the cover does not rock or rattle when loading is applied. Round covers and frames shall have machined bearing surfaces.

C. Design Loads: Covers and grates with matching frames shall be designed to support the following loadings:

1. Where located within a structure, the design loading shall match that required for the adjacent floor area, or, if no loading is given, a minimum of 300 pounds per square foot, unless indicated otherwise.

2. Exterior covers and grates shall be designed for AASHTO HS-20 loading unless indicated otherwise.

D. Cover Details: Unless indicated otherwise, access manway covers shall be two-part street type removable covers. Larger cover shall be for a 48-inch diameter clear opening with 24-inch diameter cover offset from the center as indicated. Raised lettering shall be as indicated.

2.6 METAL DOWNSPOUT BOOTS

A. Provide downspout boots made from cast iron in heights indicated with inlets of size and shape to suit downspouts. Provide units with flanges and holes for countersunk anchor bolts.

1. Outlet: Vertical, to discharge into pipe.

B. Prime cast-iron downspout boots with zinc-rich primer.

2.7 GALVANIZING

D. Galvanizing for Iron and Steel: Galvanizing for iron and steel shall conform to ASTM A123, with the average weight of 2.0 ounces per square foot, and not less than 1.8 ounces per square foot.

E. Ferrous Metal Hardware Items: Ferrous metal hardware items shall conform to ASTM A153, with average coating weight of 1.3 ounces per square foot.

2.8 WELDING ELECTRODES

A. Steel Electrodes: Welding electrodes shall conform with AWS D1.1, except E7024 rods or electrodes shall not be used.

B. Stainless Steel Electrodes: Welding of stainless steel with electrodes and techniques shall conform to the pertinent AWS A5 series specification, and as recommended in Welded Austenitic Chromium-Nickel Stainless Steel Techniques and Properties as published by the International Nickel Company, Inc., New York, New York.

2.9 BOLTS

A. Bolt Requirements: Bolts shall comply with the following:

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 all 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.

B. Standard Service Bolts (Not Buried or Inside Tanks or Channels): Except where otherwise indicated, bolts and nuts shall be steel and shall be galvanized after fabrication. Threads on galvanized bolts and nuts shall be formed with suitable taps and dies such that they retain their normal clearance after hot-dip galvanizing. Except as otherwise indicated herein, steel for bolts, anchor bolts and cap screws shall be in accordance with the requirements of ASTM A307, or threaded parts of ASTM A36.

C. Bolts Buried or Inside Tanks or Channels: Unless otherwise indicated, bolts, anchor bolts, nuts and washers which are buried, submerged, or below the top of the wall inside any hydraulic structure shall be of Type 316 stainless steel.

2.10 SHOP PRIME PAINT

A. Shop Prime Paint: To ensure compatibility with deferred field-applied paint or coating systems, for ferrous metals other than stainless steel, galvanized steel and cast iron, provide surface preparations, and use shop prime paint product and manufacturer as painting, or protective coating system intended for field application.

Shop prime shall not be provided on portions of work

immediately adjacent to intended field welds, or on portions intended for embedment. Steel stair nosings shall be painted with industrial "Safety Yellow" enamel prime and finish coats conforming with California OSHA requirements.

2.11 MANUFACTURERS

A. Products of the type or model (if any) indicated shall be manufactured by one of the following (or approved alternate):

1 Steel Gratings:

a. Irving Type IWA
b. Gary Type GW

2. Floor and Cover Plates:

a. Steel Tread Plate

3. Fall Prevention System:

a. Research and Trading Corporation, Wilmington, Delaware Everest Lifeline System Model No. 6006
b. North Consumer Products, Inc., California Saf-T-Climb

4. Manhole Frames and Covers:

a. Neenah Foundry Company R-1642 with Self-Sealing Cover
b. Phoenix Iron Works P-1090 R/G

5. Field Repairs to Galvanizing:

a. “Carbozinc 11 HS”
b. “AMCO 321”
c. “Galvalloy”

PART 3 -- EXECUTION

3.1 FABRICATION AND INSTALLATION REQUIREMENTS

A. Fabrication and Erection: Except as otherwise indicated, the fabrication and erection of structural steel shall conform to the requirements of the American Institute of Steel Construction "Steel Construction Manual."

1. The Work of this Section shall be coordinated with related trades. Particular attention is required for items to be embedded in concrete work. All punchings and drillings, indicated or required, shall be provided for attachment of other work to that of this Section.

2. Compliance with Safety Requirements. Dimensions required for the fabrication and installation of handrails, ladders, grating, plate, pipe hangers and etc. which are not shown on the Drawings, shall conform to the Division of Occupational Health and Safety, General Industrial Safety Orders, State of California.

B. Protection: The CONTRACTOR shall provide and be responsible for protection and repair of adjacent surfaces and areas which may become damaged as a result of work in this Section. Work performed hereunder shall be protected until completion and final acceptance of project by the CITY . The CONTRACTOR shall repair or replace all damaged or defective work to original specified condition at no additional cost to the CITY .

1. Finished floor surfaces and adjacent work shall be protected from damage. Concrete floors shall not be overloaded. Mobile equipment used in placing steel shall have pneumatic tires. Steel members shall not be placed directly on floors; pads of timber or other material shall be used for cushioning.

2. Where welding is done in proximity to glass or finished surfaces, such surfaces shall be protected from damage due to weld sparks, spatter or tramp metal.

C. Pipe Rails and Railings: Pipe rails and railing shall be fabricated complete with stanchions, toe plates, welded and bolted fittings, attachments and expansion/contraction provisions true to size configurations to meet or exceed the requirements of CAL/OSHA, and as shown on the Drawings. The CONTRACTOR shall grind and polish welds flush and smooth. Curves, where indicated or necessary, shall be bent on a radius of not less than 5 inches.

1. Safety chains shall be 1/2-inch link chain of same material as the railing with stainless steel harness-type snap to meet or exceed the requirements of CAL/OSHA.

2. Provisions shall be made to drain water from rail systems by drilling weep holes in concealed locations at the lowest possible elevations.

D. Pipe and Conduit Supports and Bracing: Supports and bracing for pipe and conduit shall be fabricated and installed as detailed on the Drawings, in a fully coordinated manner with the Work of other trades. Where shown or indicated, hot-dip galvanized shall be provided after fabrication, with touch-up of abraded or burned galvanizing using materials specified in this Section. Unless otherwise indicated, members shall be shop primed with a rust-inhibitive primer.

E. Embedded Steel Channel and Angle Frames: Embedded steel channel and angle frames shall have continuously welded joints. Exposed welds shall be ground flush. Hot-dip galvanizing shall be provided after fabrication.

F. Warning Signs: Warning signs shall be furnished and installed in the locations specified below. Provide signs that are not less than designated sizes. Fabricate signs of porcelain enamel safety blanks with red lettering on a white background. Fabricate using 18 ga vitreous enameling steel (ASTM A424 - type II). Equip each with 6 eyeleted holes for No.

10 fastener. Provide fused porcelain enamel, both sides, suitable for exterior or industrial end use by experienced fabricators in strict conformance with pertinent requirements as published by Porcelain Enamel Institute, Inc.

1. Attach a 7-inch by 10-inch sign to each hose bib that reads:

"DO NOT DRINK"
"NO TOMAR AGUA"

2. Provide and post near all automatic machinery, a 10 inch by 14 inch sign that reads:

“CAUTION: AUTOMATIC MACHINERY MAY START AT ANY TIME”
“PRECAUCION: MAQUINARIA PUEDE EMPEZAR EN CUALQUIER MOMENTO”

3. Provide and attach to the interior side of all access doors which provide egress to the outside a 7 inch by 10 inch sign that reads:

“EXIT”
“SALIDA”

Where shown on the Drawings, provide illuminated exit signs specified in Section 16500 - Lighting.

3.2 WELDING

A. Welding Steel: 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-B2.1.

3.3 GALVANIZING

A. Galvanizing: All 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 A123. Any galvanized part that becomes warped during the galvanizing operation shall be straightened. Bolts, anchor bolts, nuts and similar threaded fasteners, after being properly cleaned, shall be galvanized in accordance with the requirements of ASTM A153. Field repairs to galvanizing shall be made using "Galvalloy," "AMCO 321," or approved alternate.

3.4 PAINTING

A. Painting: One or more shop coats of paint shall be given on all ferrous metals, except cast-iron, ductile iron, stainless steel and galvanized metals. Before priming, surfaces shall be thoroughly cleaned. Shop coats shall be allowed to dry before materials are loaded for delivery to the job site. After erection, all areas shall be painted where the shop coats have been rubbed off or omitted, and all field bolting and welding areas as specified for shop

priming.

B. Isolation of Dissimilar Metals: Aluminum members shall be isolated from contact with dissimilar metals, concrete and masonry to provide protection from electrolytic deterioration. The CONTRACTOR shall 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.

END OF SECTION 055000

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Framing with dimension lumber.
2. Framing with timber.
3. Framing with engineered wood products.
4. Wood blocking and nailers.
5. Wood furring.

B. Related Requirements:

1. Section 061600 "Sheathing" for sheathing, subflooring, and underlayment.

1.3 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal (38 mm actual) size in least dimension.

B. Dimension Lumber: Lumber of 2 inches nominal (38 mm actual) size or greater but less than 5 inches nominal (114 mm actual) size in least dimension.

C. Exposed Framing: Framing not concealed by other construction.

D. OSB: Oriented strand board.

E. Timber: Lumber of 5 inches nominal (114 mm actual) size or greater in least dimension.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

B. Fastener Patterns: Full-size templates for fasteners in exposed framing.

1.5 INFORMATIONAL SUBMITTALS

A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Fire-retardant-treated wood.
3. Engineered wood products.
4. Power-driven fasteners.
5. Post-installed anchors.
6. Metal framing anchors.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Dress lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 15 percent for 2-inch nominal (38-mm actual) thickness or less; 19 percent for more than 2-inch nominal (38-mm actual) thickness unless otherwise indicated.

C. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.

1. Allowable design stresses, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Retain subparagraph below for exposed framing if considered necessary.
2. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece or omit marking and provide certificates of treatment compliance issued by inspection agency.

D. Application: Treat items indicated on Drawings, and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, and similar concealed members in contact with masonry or concrete.
3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood framing members that are less than 18 inches (460 mm) above the ground in crawlspaces or unexcavated areas.
5. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.

1. Treatment shall not promote corrosion of metal fasteners.
2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
4. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D 5664 and design value adjustment factors shall be calculated according to ASTM D 6841.

C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent. Kiln-dry plywood after treatment to maximum moisture content of 15 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.

1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece or omit marking and provide certificates of treatment compliance issued by testing agency.

E. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not bleed through, contain colorants, or otherwise adversely affect finishes.

F. Application: Treat items indicated on Drawings, and the following:
1. Concealed blocking.
2. Concealed roof construction.

2.4 DIMENSION LUMBER FRAMING

A. Joists, Rafters, and Other Framing: No. 1 grade.

1. Species:

a. Douglas Fir-Larch; WCLIB.

2.5 DIMENSION LUMBER FRAMING

A. Joists, Rafters, and Other Framing Not Listed Above: No. 1 grade.

1. Species:

a. Alaskan Yellow Cedar; WCLIB.

B. Joists, Rafters, and Other Framing Not Listed Above: Any species and grade with a modulus of elasticity of at least 1,100,000 psi (7590 MPa) and an extreme fiber stress in bending of at least 1000 psi (6.9 MPa) for 2-inch nominal (38-mm actual) thickness and 12-inch nominal (286-mm actual) width for single-member use.

2.6 ENGINEERED WOOD PRODUCTS

A. Source Limitations: Obtain each type of engineered wood product from single source from a single manufacturer.

2.7 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Rooftop equipment bases and support curbs.
4. Cants.

5. Furring.
6. Grounds.
7. Utility shelving.

B. Dimension Lumber Items: Construction or No. 2 grade lumber of any of the following species:

1. Hem-fir (north); NLGA.
2. Mixed southern pine or southern pine; SPIB.
3. Spruce-pine-fir; NLGA.
4. Hem-fir; WCLIB or WWPA.
5. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
6. Western woods; WCLIB or WWPA.
7. Northern species; NLGA.
8. Eastern softwoods; NeLMA.

C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.8 FASTENERS

A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or of Type 304 stainless steel.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 ICC-ES AC58 ICC-ES AC193 or ICC-ES AC308 as appropriate for the substrate.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.

2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Grade A1 or A4).

2.9 METAL FRAMING ANCHORS

A. Allowable design loads, as published by manufacturer, shall meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.

B. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.

1. Use for interior locations unless otherwise indicated.

C. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 (Z550) coating designation; and not less than 0.036 inch (0.9 mm) thick.

1. Use for wood-preservative-treated lumber and where indicated.

D. Stainless-Steel Sheet: ASTM A 666, Type 316.

1. Use for exterior locations and where indicated.

E. Joist Hangers: U-shaped joist hangers with 2-inch- (50-mm-) long seat and 1-1/4-inch- (32-mm-) wide nailing flanges at least 85 percent of joist depth.

1. Thickness: As indicated .

F. Post Bases: Adjustable-socket type for bolting in place with standoff plate to raise post 1 inch (25 mm) above base and with 2-inch- (50-mm-) minimum side cover, socket 0.062 inch (1.6 mm) thick, and standoff and adjustment plates 0.108 inch (2.8 mm) thick.

G. Joist Ties: Flat straps, with holes for fasteners, for tying joists together over supports.

1. Width: As indicated .
2. Thickness: As indicated .
3. Length: As indicated.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

D. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

E. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.

F. Do not splice structural members between supports unless otherwise indicated.

G. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches (406 mm) o.c.

H. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:

1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches (2438 mm) o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches (2438 mm) o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal (38-mm actual) thickness.
3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. (9.3 sq. m) and to solidly fill space below partitions.
4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 10 feet (3 m) o.c.

I. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that

interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

J. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

K. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

L. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).
2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.
3. ICC-ES evaluation report for fastener.

M. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

N. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.

1. Comply with indicated fastener patterns where applicable.
2. Use finishing nails unless otherwise indicated. Countersink nail heads and fill holes with wood filler.
3. Use common nails unless otherwise indicated. Drive nails snug but do not countersink nail heads.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches (38 mm) wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 WOOD FURRING INSTALLATION

A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

3.4 CEILING JOIST AND RAFTER FRAMING INSTALLATION

A. Rafters: Notch to fit exterior wall plates and toe nail or use metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing, if any, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.

1. At valleys, provide double-valley rafters of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches (50 mm) deeper. Bevel ends of jack rafters for full bearing against valley rafters.
2. At hips, provide hip rafter of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches (50 mm) deeper. Bevel ends of jack rafters for full bearing against hip rafter.

B. Provide collar beams (ties) as indicated or, if not indicated, provide 1-by-6-inch nominal- (19-by-140-mm actual-) size boards between every third pair of rafters, but not more than 48 inches (1219 mm) o.c. Locate below ridge member, at third point of rafter span. Cut ends to fit roof slope and nail to rafters.

C. Provide special framing as indicated for eaves, overhangs, dormers, and similar conditions if any.

3.5 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet , apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 061600 - SHEATHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Roof sheathing.
   2. Sheathing joint and penetration treatment.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

   1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.
   2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Include physical properties of treated materials.
   3. For fire-retardant treatments, include physical properties of treated plywood both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5516.
   4. For products receiving waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

1.4 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:

   1. Wood-preservative-treated plywood.
   2. Fire-retardant-treated plywood.
   3. Foam-plastic sheathing.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance Ratings: As tested according to ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 WOOD PANEL PRODUCTS

A. Emissions: Products shall meet the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

B. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.

C. Factory mark panels to indicate compliance with applicable standard.

2.3 PRESERVATIVE-TREATED PLYWOOD

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.

C. Application: Treat items indicated on Drawings and plywood in contact with masonry or concrete or used with roofing, flashing, vapor barriers, and waterproofing.

2.4 FIRE-RETARDANT-TREATED PLYWOOD

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.

1. Use treatment that does not promote corrosion of metal fasteners.
2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201/D 3201M at 92 percent relative humidity. Use where exterior type is not indicated.
4. Design Value Adjustment Factors: Treated lumber plywood shall be tested according to ASTM D 5516 and design value adjustment factors shall be calculated according to ASTM D 6305. Span ratings after treatment shall be not less than span ratings specified.

C. Kiln-dry material after treatment to a maximum moisture content of 15 percent. Do not use material that is warped or does not comply with requirements for untreated material.

D. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.

E. Application: Treat plywood indicated on Drawings, and the following:
1. Roof sheathing.

2.5 ROOF SHEATHING

A. Plywood Sheathing: Exterior, Structural I sheathing.

1. Span Rating: Not less than 32/16.
2. Nominal Thickness: Not less than 15/32 inch (11.9 mm).

2.6 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. For roof sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or of Type 304 stainless steel.
2. For roof sheathing, provide fasteners with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

D. Screws for Fastening Sheathing to Wood Framing: ASTM C 1002.

2.7 MISCELLANEOUS MATERIALS

A. Adhesives for Field Gluing Panels to Wood Framing: Formulation complying with APA AFG-01 or ASTM D 3498 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in the ICC's International Building Code.
2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in the ICC's International Residential Code for One- and Two-Family Dwellings.
3. ICC-ES evaluation report for fastener.

D. Use common wire nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.

E. Coordinate roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 WOOD STRUCTURAL PANEL INSTALLATION

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:

1. Wall and Roof Sheathing:

a. Nail to wood framing.
b. Screw to cold-formed metal framing.
c. Space panels 1/8 inch (3 mm) apart at edges and ends.

END OF SECTION 061600

SECTION 061800 - GLUED-LAMINATED CONSTRUCTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. Section includes framing using structural glued-laminated timber.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for dimension lumber items associated with structural glued-laminated timber.

1.3 DEFINITIONS

A. Structural Glued-Laminated (Glulam) Timber: An engineered, stress-rated timber product assembled from selected and prepared wood laminations bonded together with adhesives and with the grain of the laminations approximately parallel longitudinally.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include data on lumber, adhesives, fabrication, and protection.
2. For preservative-treated wood products. Include chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
3. For connectors. Include installation instructions.

B. Shop Drawings:

1. Show layout of structural glued-laminated timber system and full dimensions of each member.
2. Indicate species and laminating combination.
3. Include large-scale details of connections.

C. Samples: Full width and depth, 24 inches (600 mm) long, showing the range of variation to be expected in appearance of structural glued-laminated timber.

1. Apply specified factory finish to three sides of half length of each Sample.

1.5 INFORMATIONAL SUBMITTALS

A. Certificates of Conformance: Issued by a qualified testing and inspecting agency indicating that structural glued-laminated timber complies with requirements in AITC A190.1.

B. Material Certificates: For preservative-treated wood products, from manufacturer. Indicate type of preservative used and net amount of preservative retained.

C. Research/Evaluation Reports: For structural glued-laminated timber, from ICC-ES.

1.6 QUALITY ASSURANCE

1.7 DELIVERY, STORAGE, AND HANDLING

A. General: Comply with provisions in AITC 111.

B. Individually wrap members using plastic-coated paper covering with water-resistant seams.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

B. Basis-of-Design Products: Subject to compliance with requirements, provide products indicated on Drawings.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer to design structural glued-laminated timber and connectors.

B. Structural Performance: Structural glued-laminated timber and connectors shall withstand the effects of structural loads shown on Drawings without exceeding

allowable design working stresses listed in AITC 117 or determined according to ASTM D 3737 and acceptable to authorities having jurisdiction.

C. Seismic Performance: Structural glued-laminated timber and connectors shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

2.3 STRUCTURAL GLUED-LAMINATED TIMBER

A. General: Provide structural glued-laminated timber that complies with AITC A190.1 and AITC 117 or research/evaluation reports acceptable to authorities having jurisdiction.

1. Factory mark each piece of structural glued-laminated timber with AITC Quality Mark or APA-EWS trademark. Place mark on surfaces that are not exposed in the completed Work.
2. Provide structural glued-laminated timber made from single species.
3. Provide structural glued-laminated timber made from solid lumber laminations; do not use laminated veneer lumber.
4. Provide structural glued-laminated timber made with wet-use adhesive complying with AITC A190.1.

B. Species and Grades for Structural Glued-Laminated Timber: Alaska cedar in grades needed to comply with "Performance Requirements" Article.

C. Species and Grades for Structural Glued-Laminated Timber: Alaska cedar that complies with structural properties combination symbols beam stress classifications indicated.

D. Species and Grades for Beams and Purlins:

1. Species and Beam Stress Classification: Alaska cedar, 20F-1.5E
2. Lay-up: Balanced.
3. Species and Combination Symbol: 20F-V13.

E. Appearance Grade: Architectural, complying with AITC 110.

1. For Architectural appearance grades, fill voids as required by AITC 110. For Premium appearance grade, use clear wood inserts, of matching grain and color, for filling voids and knot holes more than 1/4 inch (6 mm) wide.

2.4 TIMBER CONNECTORS

A. Manufacturers: Subject to compliance with requirements, [provide products by the following] [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:

B. Basis-of-Design Products: Subject to compliance with requirements, provide products indicated on Drawings or comparable product by one of the following:

1. Cleveland Steel Specialty Co. or approved equal.
2. Simpson Strong-Tie Co., Inc. or approved equal.
3. USP Structural Connectors. or approved equal.

C. Fabricate beam seats from steel with 1/2-inch (9.5-mm) bearing plates, 3/4-inch- (19-mm-) diameter-by-12-inch- (300-mm-) long deformed bar anchors, and 0.239-inch (6-mm) side plates.

D. Provide bolts, 3/4 inch (19 mm) unless otherwise indicated, complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); nuts complying with ASTM A 563 (ASTM A 563M); and, where indicated, flat washers.

E. Materials: Unless otherwise indicated, fabricate from the following materials:

1. Structural-steel shapes, plates, and flat bars complying with ASTM A 36/A 36M.
2. Round steel bars complying with ASTM A 575, Grade M 1020.
3. Hot-rolled steel sheet complying with ASTM A 1011/A 1011M, Structural Steel, Type SS, Grade 33.
4. Stainless-steel plate and flat bars complying with ASTM A 666, Type 316.
5. Stainless-steel bars and shapes complying with ASTM A 276, Type 316.
6. Stainless-steel sheet complying with ASTM A 240/A 240M or ASTM A 666, Type 316.

F. Finish steel assemblies and fasteners with rust-inhibitive primer, 2-mil (0.05-mm) dry film thickness.

G. Hot-dip galvanize steel assemblies and fasteners after fabrication to comply with ASTM A 123/A 123M or ASTM A 153/A 153M.

2.5 MISCELLANEOUS MATERIALS

A. End Sealer: Manufacturer's standard, transparent, colorless wood sealer that is effective in retarding the transmission of moisture at cross-grain cuts and is compatible with indicated finish.

B. Penetrating Sealer: Manufacturer's standard, transparent, penetrating wood sealer that is compatible with indicated finish.

2.6 FABRICATION

A. Shop fabricate for connections to greatest extent possible, including cutting to length and drilling bolt holes.

1. Dress exposed surfaces as needed to remove planning and surfacing marks.

B. Camber: Fabricate horizontal and inclined members of less than 1:1 slope with either circular or parabolic camber equal to 1/500 of span.

C. End-Cut Sealing: Immediately after end cutting each member to final length, apply a saturation coat of end sealer to ends and other cross-cut surfaces, keeping surfaces flood coated for not less than 10 minutes.

D. Seal Coat: After fabricating, sanding, and end-coat sealing, apply a heavy saturation coat of penetrating sealer on surfaces of each unit.

2.7 FACTORY FINISHING

A. Clear Finish: Manufacturer's standard, two-coat, clear varnish finish; resistant to mildew and fungus.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates in areas to receive structural glued-laminated timber, with Installer present, for compliance with requirements, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Erect structural glued-laminated timber true and plumb and with uniform, close-fitting joints. Provide temporary bracing to maintain lines and levels until permanent supporting members are in place.

1. Handle and temporarily support glued-laminated timber to prevent surface damage, compression, and other effects that might interfere with indicated finish.

B. Framing Built into Masonry: Provide 1/2-inch (13-mm) clearance at tops, sides, and ends of members built into masonry; bevel cut ends 3 inches (76 mm); and do not embed more than 4 inches (102 mm) unless otherwise indicated.

C. Cutting: Avoid extra cutting after fabrication. Where field fitting is unavoidable, comply with requirements for shop fabrication.

D. Fit structural glued-laminated timber by cutting and restoring exposed surfaces to match specified surfacing and finishing.

1. Predrill for fasteners using timber connectors as templates.
2. Finish exposed surfaces to remove planning or surfacing marks and to provide a finish equivalent to that produced by machine sanding with No. 120 grit sandpaper.
3. Coat cross cuts with end sealer.

E. Install timber connectors as indicated.

1. Unless otherwise indicated, install bolts with same orientation within each connection and in similar connections.
2. Install bolts with orientation as indicated or, if not indicated, as directed by Architect.

3.3 ADJUSTING

A. Repair damaged surfaces and finishes after completing erection. Replace damaged structural glued-laminated timber if repairs are not approved by Architect.

3.4 PROTECTION

A. Do not remove wrappings on individually wrapped members until they no longer serve a useful purpose, including protection from weather, sunlight, soiling, and damage from work of other trades.

1. Coordinate wrapping removal with finishing work. Retain wrapping where it can serve as a painting shield.
2. Slit underside of wrapping to prevent accumulation of moisture inside the wrapping.

END OF SECTION 061800

SECTION 07 41 13.16 - STANDING-SEAM METAL ROOF PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract - Standard Specifications for Public Works Construction 'The GREENBOOK' and City Supplement 'The WHITEBOOK', latest editions, including Supplemental Supplementary Provisions (SSPs), apply to this Section.

1.2 SUMMARY

A. Section includes standing-seam metal roof panels.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with City, Engineer, City's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of roof accessories and roof-mounted equipment.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review structural loading limitations of deck during and after roofing.
6. Review flashings, special details, drainage, penetrations, equipment curbs, and condition of other construction that affect metal panels.
7. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
8. Review temporary protection requirements for metal panel systems during and after installation.
9. Review procedures for repair of metal panels damaged after installation.
10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches (1:10).

C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.

1. Metal Panels: 12 inches (305 mm) long by actual panel width. Include clips, fasteners, closures, and other metal panel accessories.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Field quality-control reports.

D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

B. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

   a. Structural failures including rupturing, cracking, or puncturing.
   b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

   a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
   b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
   c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Energy Performance: Provide roof panels that are listed on the EPA/DOE's ENERGY STAR "Roof Product List" for low-slope roof products.

B. Energy Performance: Provide roof panels according to the following when tested according to CRRC-1 (applies to roofing panels only at ≤2:12 slope):

1. Three-year, aged solar reflectance of not less than 0.63 and thermal emittance of not less than 0.75.

C. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.
3. Deflection Limits: For wind loads, no greater than 1/240 of the span.

D. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.

1. Uplift Rating: UL 90.

E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

F. Install in accordance with ICC ESR-2385, Class A application.

2.2 STANDING-SEAM METAL ROOF PANELS

A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.

1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1514.

B. Integral-Standing-Seam Metal Roof Panels: Formed with integral ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and lapping and interconnecting side edges of adjacent panels.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Metal Sales Manufacturing Corporation. ICC ESR-2385

   b. Approved Equal with ICC ESR report and Class A roofing system.

2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A 653/A 653M, G90 (Z275) coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A 792/A 792M, Class AZ50 (Class AZM150) coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

   a. Nominal Thickness: 24 GAUGE
   b. Exterior Finish: Two-coat fluoropolymer.
   c. Color: As selected by Engineer from manufacturer's full range.

3. Clips: One-piece fixed to accommodate thermal movement.

   a. Material: 0.064-inch- (1.63-mm-) nominal thickness, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.

4. Panel Coverage: 16 inches
5. Panel Height: 1.75 inch.

2.3 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 30 mils (0.76 mm) thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: Stable after testing at 240 deg F (116 deg C); ASTM D 1970.
2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F (29 deg C); ASTM D 1970.

B. Fire-Resistant Slip Sheet: VersaShield Fire-Resistant Roof Deck Protection as required by ICC ESR-2385.

2.4 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C 645; cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, G90 (Z275 hot-dip galvanized) coating designation or ASTM A 792/A 792M, Class AZ50 (Class AZM150) coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

D. Panel Fasteners: Self-tapping screws designed to withstand design loads.

E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
2. Joint Sealant: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

2.5 FABRICATION

A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
3. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application, but not less than thickness of metal being secured.

2.6 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Steel Panels and Accessories:
1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
2. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

3.3 UNDERLAYMENT INSTALLATION

A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated below, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches (152 mm) staggered 24 inches (610 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps with roller. Cover underlayment within 14 days.

1. Apply over the entire roof surface.

B. Fire-Resistant Slip Sheet: Apply slip sheet over underlayment before installing metal roof panels.

C. Flashings: Install flashings to cover underlayment to comply with requirements specified in Section 076200 "Sheet Metal Flashing and Trim."

3.4 METAL PANEL INSTALLATION

A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Steel Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.

C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.

D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

E. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.

1. Install clips to supports with self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.

F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips,

and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, types recommended by metal roof panel manufacturer.

G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

H. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

3.5 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.6 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect metal roof panel installation, including accessories. Report results in writing.

B. Remove and replace applications of metal roof panels where tests and inspections indicate that they do not comply with specified requirements.

C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

D. Prepare test and inspection reports.

3.7 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation

instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 41 13.16

SECTION 074646 - FIBER-CEMENT SOFFIT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract - Standard Specifications for Public Works Construction 'The GREENBOOK' and City Supplement 'The WHITEBOOK', latest editions, including Supplemental Supplementary Provisions (SSPs), apply to this Section.

1.2 SUMMARY

A. Section includes fiber-cement soffit.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for wood furring, grounds, nailers, and blocking.

1.3 COORDINATION

A. Coordinate siding installation with flashings and other adjoining construction to ensure proper sequencing.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Samples for Initial Selection: For fiber-cement soffit including related accessories.

C. Samples for Verification: For each type, color, texture, and pattern required.
1. 12-inch- (300-mm-) long-by-actual-width Sample of soffit.
2. 12-inch- (300-mm-) long-by-actual-width Samples of trim and accessories.

1.6 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of fiber-cement soffit.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for fiber-cement siding.

C. Research/Evaluation Reports: For each type of fiber-cement siding required, from ICC-ES. Install per ICC-ESR 2273.

D. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of product, including related accessories, to include in maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Furnish full lengths of fiber-cement soffit including related accessories, in a quantity equal to 2 percent of amount installed.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with labels intact until time of use.

B. Store materials on elevated platforms, under cover, and in a dry location.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace products that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including cracking and deforming.
b. Deterioration of materials beyond normal weathering.

2. Warranty Period: **10** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain products, including related accessories, from single source from single manufacturer.

2.2 FIBER-CEMENT SOFFIT

A. General: ASTM C 1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E 136; with a flame-spread index of 25 or less when tested according to ASTM E 84.
   1. Manufacturers: Subject to compliance with requirements, provide products by the following:
      a. James Hardie Building Products, Inc.
      b. Approved equal.

B. Nominal Thickness: Not less than 5/16 inch (8 mm).

C. Pattern: 12-inch- (300-mm-) wide sheets with smooth texture.

D. Ventilation: Provide perforated soffit.

E. Factory Priming: Manufacturer's standard acrylic primer.

F. Weight: 1.8 lb/sf.

2.3 ACCESSORIES

A. Siding Accessories, General: Provide starter strips, edge trim, outside and inside corner caps, and other items as recommended by siding manufacturer for building configuration.

   1. Provide accessories matching color and texture of adjacent siding unless otherwise indicated.

B. Fasteners:

   1. For fastening to wood, use ICC-tested screws, as indicated on Drawings, of sufficient length to penetrate a minimum of 1 inch (25 mm) into substrate.
   2. For fastening fiber cement, use stainless-steel fasteners.

C. Sealant per “Section 07 92 00 Joint Sealants”. Provide continuous sealant in all joints between panels, perimeter and penetrations prior to painting.

D. Paint finish per “Section 099600 – High-Performance Coatings”.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of fiber-cement soffit and related accessories.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of projections and substances detrimental to application.

3.3 INSTALLATION

A. General: Comply with manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.

1. Do not install damaged components.
2. Install fasteners no more than 16 inches o.c.
3. Provide continuous 2x4 backing at all joints not backed up by structural members.

B. Install joint sealants as specified in Section 079200 "Joint Sealants" and to produce a weathertight installation.
1. All perimeter and panel-to-panel joints shall be sealed and tooled flush with panel face.

C. Finish in accordance with “Section 099600 – High-Performance Coatings”.

3.4 ADJUSTING AND CLEANING

A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.

B. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

END OF SECTION 074646

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract - Standard Specifications for Public Works Construction 'The GREENBOOK' and City Supplement 'The WHITEBOOK', latest editions, including Supplemental Supplementary Provisions (SSPs), apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Low slope roof sheet metal fabrications.

B. Related Requirements:

   1. Section 061000 "Rough Carpentry" for wood nailers, curbs, and blocking.
   2. Section 074113.16 "Standing-Seam Metal Roof Panels" for materials and installation of sheet metal flashing and trim integral with roofing.

1.3 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

   1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   2. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.
   3. Review requirements for insurance and certificates if applicable.
   4. Review sheet metal flashing observation and repair procedures after flashing installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each of the following

1. Underlayment materials.
2. Elastomeric sealant.
3. Butyl sealant.
4. Epoxy seam sealer.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work.
3. Include identification of material, thickness, weight, and finish for each item and location in Project.
4. Include details for forming, including profiles, shapes, seams, and dimensions.
5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Include details of termination points and assemblies.
7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
8. Include details of roof-penetration flashing.
9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, flashings, and counterflashings.
10. Include details of special conditions.
11. Include details of connections to adjoining work.
12. Detail formed flashing and trim at scale of not less than 3 inches per 12 inches.

C. Samples: For each exposed product and for each color and texture specified, 12 inches (300 mm) long by actual width.

D. Samples for Verification: For each type of exposed finish.

1. Sheet Metal Flashing: 12 inches (300 mm) long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches (300 mm) long and in required profile. Include fasteners and other exposed accessories.
3. Unit-Type Accessories and Miscellaneous Materials: Full-size Sample.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

B. Product Certificates: For each type of coping and roof edge flashing that is ANSI/SPRI/FM 4435/ES-1 tested.

C. Product Test Reports: For each product, for tests performed by a qualified testing agency.

D. Evaluation Reports: For copings and roof edge flashing, from an agency acceptable to authority having jurisdiction showing compliance with ANSI/SPRI/FM 4435/ES-1.

E. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

B. Special warranty.

1.8 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1. For copings and roof edge flashings that are ANSI/SPRI/FM 4435/ES-1 tested, shop shall be listed as able to fabricate required details as tested and approved.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Build mockup of typical roof eave, including fascia, approximately 10 feet (3.0 m) long – including corner, including supporting construction cleats, seams, attachments, underlayment, and accessories.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless City specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
2. Protect stored sheet metal flashing and trim from contact with water.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.10 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. SPRI Wind Design Standard: Manufacture and install roof edge flashings tested in accordance with ANSI/SPRI/FM 4435/ES-1 and capable of resisting the following design pressure:

1. Design Pressure: As indicated on Drawings.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet in accordance with ASTM A653/A653M, G90 (Z275) coating designation; prepainted by coil-coating process to comply with ASTM A755/A755M.
   1. Surface: Smooth, flat.
   2. Exposed Coil-Coated Finish:

      a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

   3. Color: As selected by Engineer from manufacturer's full range.
   4. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil (0.013 mm).

2.3 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Sheet Underlayment: Minimum 30 mils (0.76 mm) thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer in accordance with underlayment manufacturer's written instructions.
   1. Source Limitations: Obtain underlayment from single source from single manufacturer.
   2. Low-Temperature Flexibility: ASTM D1970/D1970M; passes after testing at minus 20 deg F (29 deg C) or lower.

B. Slip Sheet: VersaShield Fire-Resistant Roof Deck Protection as required by ICC ESR-2385 Class A installation.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws as indicated on Drawings, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.

2. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel in accordance with ASTM A153/A153M or ASTM F2329.
3. Fasteners for Zinc Sheet: Series 300 stainless steel or hot-dip galvanized steel in accordance with ASTM A153/A153M or ASTM F2329.

C. Solder:
1. For Zinc-Coated (Galvanized) Steel: ASTM B32, Grade Sn50, 50 percent tin and 50 percent lead or Grade Sn60, 60 percent tin and 40 percent lead.

D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.

E. Elastomeric Sealant: ASTM C920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

F. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

G. Bituminous Coating: Cold-applied asphalt emulsion in accordance with ASTM D1187/D1187M.

2.5 FABRICATION, GENERAL

A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.

1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.

4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances:

1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than one gauge heavier than thickness of metal being secured.

G. Seams:
1. Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.

H. Do not use graphite pencils to mark metal surfaces.

2.6 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing and Fascia Cap: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 12-foot- (3.6-m-) long sections. Furnish with 6-inch- (150-mm-) wide, joint cover plates. Shop fabricate interior and exterior corners.

1. Joint Style: Butted with expansion space and 6-inch- (150-mm-) wide, concealed backup plate.
2. Fabricate from the following materials:
   a. Same material as metal roof panels, refer to Section 071113.16 "Standing-Seam Metal Roof Panels".

B. Roof-Penetration Flashing: Fabricate from the following materials:
   1. Galvanized Steel: 0.028 inch (0.71 mm) thick. Factory finished to match roofing materials.
   2. Manufacturer's roof jack, as compatible and coordinated with roof system and warranty.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.

   1. Verify compliance with requirements for installation tolerances of substrates.
   2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF UNDERLAYMENT

A. Self-Adhering, High-Temperature Sheet Underlayment:

   1. Install self-adhering, high-temperature sheet underlayment; wrinkle free.
   2. Prime substrate if recommended by underlayment manufacturer.
   3. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures.
   4. Apply in shingle fashion to shed water, with end laps of not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses.
   5. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps and edges with roller.
   6. Roll laps and edges with roller.
   7. Cover underlayment within 14 days.

B. Install slip sheet, wrinkle free, over underlayment before installing sheet metal flashing and trim.

   1. Install in shingle fashion to shed water.
   2. Lapp joints not less than 4 inches (100 mm).

3.3 INSTALLATION, GENERAL

A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.

1. Install fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of sealant.
3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
5. Install continuous cleats with fasteners spaced not more than 12 inches (300 mm) o.c.
6. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
7. Do not field cut sheet metal flashing and trim by torch.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Coat concealed side of stainless steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.

1. Space movement joints at maximum of 10 feet (3 m) with no joints within 24 inches (600 mm) of corner or intersection.
2. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.

D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated.

    a. Embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant.
    b. Form joints to completely conceal sealant.
    c. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way.
    d. Adjust setting proportionately for installation at higher ambient temperatures.

1) Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).

2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

3.4 INSTALLATION OF ROOF FLASHINGS

A. Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard.

1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Roof Edge Flashing:

1. Install roof edge flashings in accordance with ANSI/SPRI/FM 4435/ES-1.

C. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches (100 mm) over base flashing. Install stainless steel draw band and tighten.

D. Counterflashing: Coordinate installation of counterflashing with installation of base flashing.

1. Insert counterflashing in reglets or receivers and fit tightly to base flashing.
2. Extend counterflashing 4 inches (100 mm) over base flashing.
3. Lap counterflashing joints minimum of 4 inches (100 mm).
4. Secure in waterproof manner by means of snap-in installation and sealant or lead wedges and sealant unless otherwise indicated.

E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with butyl sealant and clamp flashing to pipes that penetrate roof.

3.5 INSTALLATION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.6 CLEANING

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

3.7 PROTECTION

A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

B. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended in writing by sheet metal flashing and trim manufacturer.

C. Maintain sheet metal flashing and trim in clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Engineer.

END OF SECTION 076200

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract - Standard Specifications for Public Works Construction 'The GREENBOOK' and City Supplement 'The WHITEBOOK', latest editions, including Supplemental Supplementary Provisions (SSPs), apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Nonstaining silicone joint sealants.
3. Urethane joint sealants.
4. Mildew-resistant joint sealants.
5. Butyl joint sealants.
6. Latex joint sealants.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Product Test Reports: For each kind of joint sealant, for tests performed by manufacturer and witnessed by a qualified testing agency, or a qualified testing agency.

C. Preconstruction Laboratory Test Schedule: Include the following information for each joint sealant and substrate material to be tested:

1. Joint-sealant location and designation.
2. Manufacturer and product name.
3. Type of substrate material.
4. Proposed test.
5. Number of samples required.

D. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.

E. Field-Adhesion-Test Reports: For each sealant application tested.

F. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

B. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.7 PRECONSTRUCTION TESTING

A. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Engineer.
2. Conduct field tests for each kind of sealant and joint substrate.

3. Notify Engineer seven days in advance of dates and times when test joints will be erected.
4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.

    a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

        1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.8 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.9 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Engineer from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

A. Silicone, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade P, Class 25, Uses T and NT.

B. Silicone, M, P, 100/50, T, NT: Multicomponent, pourable, plus 100 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type M, Grade P, Class 100/50, Uses T and NT.

2.3 NONSTAINING SILICONE JOINT SEALANTS

A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C 1248.

B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Use NT.

2.4 URETHANE JOINT SEALANTS

A. Urethane, S, NS, 25, NT: Single-component, nonsag, nontraffic-use, plus 25 percent and minus 25 percent movement capability, urethane joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.

2.5 MILDEW-RESISTANT JOINT SEALANTS

A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.

B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.

2.6 BUTYL JOINT SEALANTS

A. Butyl-Rubber-Based Joint Sealants: ASTM C 1311.

2.7 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
   1. 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:
      a. Adfast.
      b. Alcot Plastics Ltd.
      c. BASF Corporation.
      d. Construction Foam Products; a division of Nomaco, Inc.
      e. Approved Equal.

B. Cylindrical Sealant Backings: ASTM C 1330,
   1. Type C (closed-cell material with a surface skin),
   2. Type O (open-cell material),
   3. Type B (bicellular material with a surface skin),
   4. or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.8 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

    a. Concrete.
    b. Masonry.

3. Remove laitance and form-release agents from concrete.

4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

    a. Metal.
    b. Porcelain enamel.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs

below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.
4. Provide flush joint profile at joints between soffit panels according to Figure 8B in ASTM C 1193.

    a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:

    a. Perform 4 tests for the first 500 feet of joint length for each kind of sealant and joint substrate.

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

    a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect tested joints and report on the following:

    a. Whether sealants filled joint cavities and are free of voids.
    b. Whether sealant dimensions and configurations comply with specified requirements.
    c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces <JS-1>.

1. Joint Locations:

    a. Construction joints in cast-in-place concrete.
    b. Joints between plant-precast architectural concrete units.
    c. Control and expansion joints in unit masonry.
    d. Joints in dimension stone cladding.
    e. Joints in glass unit masonry assemblies.
    f. Joints in exterior insulation and finish systems.
    g. Joints between metal panels.
    h. Joints between different materials listed above.
    i. Perimeter joints between materials listed above and frames of doors, louvers and screening panels.
    j. Control and expansion joints in ceilings, soffits, and other overhead surfaces.
    k. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, nonstaining, S, NS, 50, NT.
3. Joint-Sealant Color: As selected by Engineer from manufacturer's full range of colors.

B. Joint-Sealant Application: Interior joints in horizontal traffic surfaces <JS-2>.

1. Joint Locations:

    a. Isolation joints in cast-in-place concrete slabs.
    b. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, S, P, 25, T, NT.
3. Joint-Sealant Color: As selected by Engineer from manufacturer's full range of colors.

C. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces <JS-3>.

1. Joint Locations:

    a. Control and expansion joints on exposed interior surfaces of exterior walls.
    b. Tile control and expansion joints.
    c. Vertical joints on exposed surfaces of unit masonry, concrete, walls and partitions.
    d. Other joints as indicated on Drawings.

2. Joint Sealant: Urethane, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Engineer from manufacturer's full range of colors.

D. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces <JS-4>.

1. Joint Locations:

    a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
    b. Tile control and expansion joints where indicated.
    c. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Engineer from manufacturer's full range of colors.

E. Joint-Sealant Application: Concealed mastics <JS-5>.

1. Joint Locations:

    a. Aluminum thresholds.
    b. Sill plates.
    c. Other joints as indicated on Drawings.

2. Joint Sealant: Butyl-rubber based.
3. Joint-Sealant Color: As selected by Engineer from manufacturer's full range of colors.

CITY OF SAN DIEGO
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FINAL DESIGN

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract - Standard Specifications for Public Works Construction 'The GREENBOOK' and City Supplement 'The WHITEBOOK', latest editions, including Supplemental Supplementary Provisions (SSPs), apply to this Section.

1.2 SUMMARY

A. Section includes:

1. Interior standard steel doors and frames.
2. Exterior standard steel doors and frames.

B. Related Requirements:
1. Section 087100 "Door Hardware**"** for door hardware for hollow-metal doors.

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.4 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, core descriptions, and finishes.

B. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, joints, field splices, and connections.
7. Details of accessories.

C. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

1. Provide additional protection to prevent damage to factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch- (102-mm-) high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 EXTERIOR STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Extra-Heavy-Duty Doors and Frames: SDI A250.8, Level 3; SDI A250.4, Level A. Locations include all doors accessing Storage Rooms including Doors 103, 104, 203 and 204.

1. Doors:

a. Type: As indicated in the Door and Frame Schedule.
b. Thickness: 1-3/4 inches (44.5 mm).
c. Face: Metallic-coated steel sheet, minimum thickness of 0.059 inch (1.52 mm), with minimum A60 (ZF180) coating.
d. Edge Construction: Model 2, Seamless.

e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
g. Bottom Edges: Close bottom edges of doors with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
h. Core: Vertical steel stiffener.

2. Frames:

a. Materials: Metallic-coated steel sheet, minimum thickness of 0.074 inch (1.9 mm), with minimum A60 (ZF180) coating.
b. Construction: Full profile welded.
c. Provide 4” high head component as indicated, to coordinate overall frame height with masonry coursing.

3. Exposed Finish: Prime.

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

2.3 FABRICATION

A. Door Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch (19 mm) beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

B. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by welding.
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
    b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

4. Terminated Stops: Terminate stops 6 inches (152 mm) above finish floor with a 45-degree angle cut, and close open end of stop with steel sheet closure. Cover opening in extension of frame with welded-steel filler plate, with welds ground smooth and flush with frame.

C. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

2.4 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

A. General: Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

B. Hollow-Metal Frames: Comply with SDI A250.11.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.

    a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
    b. Install frames with removable stops located on secure side of opening.
2. Floor Anchors: Secure with postinstalled expansion anchors.
3. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
4. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:

    a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
    c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.

C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.

1. Non-Fire-Rated Steel Doors: Comply with SDI A250.8.

3.3 CLEANING AND TOUCHUP

A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

B. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 08 11 13

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract - Standard Specifications for Public Works Construction 'The GREENBOOK' and City Supplement 'The WHITEBOOK', latest editions, including Supplemental Supplementary Provisions (SSPs), apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Mechanical door hardware for the following:

a. Swinging doors.

2. Cylinders for door hardware specified in other Sections.

B. Intent of Hardware Groups

1. Should items of hardware not definitely specified be required for completion of the Work, furnish such items of type and quality comparable to adjacent hardware and appropriate for service required.
2. Where items of hardware aren't definitively or correctly specified, and are required for completion of the Work, a written statement of such omission, error, or other discrepancy to be submitted to the City , prior to date specified for receipt of bids for clarification by addendum; or, furnish such items in the type and quality established by this specification, and appropriate to the service intended.

1.3 COORDINATION

A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

B. Security: Coordinate installation of door hardware, keying, and access control with City's security consultant.

C. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

D. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field

verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Conference participants shall include Installer's Architectural Hardware Consultant, City Facilities Maintenance, City Public Works Project Manager, City Field Division Resident Engineer (RE), Architect.

B. Keying Conference: Conduct conference at Project site.

1. Conference participants shall include Installer's Architectural Hardware Consultant, City Field Division Resident Engineer (RE) and representative from City Lock Shop.
2. Incorporate conference decisions into keying schedule after reviewing door hardware keying system including, but not limited to, the following:

    a. Flow of traffic and degree of security required.
    b. Preliminary key system schematic diagram.
    c. Requirements for key control system.
    d. Requirements for access control.
    e. Address for delivery of keys.
    f. Review of the above, and any other CITY SPECIFIC keying requirements as indicated by Facilities Maintenance and City Lock Shop representative.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Samples for Verification: For each type of exposed product, in each finish specified.

1. Sample Size: Full-size units or minimum 2-by-4-inch (51-by-102-mm) Samples for sheet and 4-inch (102-mm) long Samples for other products.

    a. Full-size Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.

2. Tag Samples with full product description to coordinate Samples with door hardware schedule.

C. Door Hardware Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant. Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
2. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
3. Content: Include the following information:

a. Identification number, location, hand, fire rating, size, and material of each door and frame.
b. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
c. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
d. Fastenings and other installation information.
e. Explanation of abbreviations, symbols, and designations contained in door hardware schedule.
f. Mounting locations for door hardware.
g. List of related door devices specified in other Sections for each door and frame.

D. Keying Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing City's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and Architectural Hardware Consultant.

B. Product Test Reports: For compliance with accessibility requirements, for tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.

C. Field quality-control reports.

D. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of door hardware to include in maintenance manuals.
1. Submit 3 sets, in appropriately sized 3-ring binders, with cover sheets including project name, location, installer contact information, and project completion date.

B. Schedules: Final door hardware and keying schedule.
   1. Edit Schedule(s) to reflect “AS-INSTALLED” for each item.
   2. Final “AS-INSTALLED” wiring diagrams for each electrified product.

C. One set of special tools special tools required for maintenance and adjustment of hardware, including changing of cylinders.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, Architect, and CITY about door hardware and keying.

   1. Warehousing Facilities: In Project's vicinity.
   2. Scheduling Responsibility: Preparation of door hardware and keying schedule.

B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as an Architectural Hardware Consultant (AHC).

1.9 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

C. Deliver keys and permanent cores to CITY by registered mail or overnight package service.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

   1. Failures include, but are not limited to, the following:

      a. Structural failures including excessive deflection, cracking, or breakage.
      b. Faulty operation of doors and door hardware.
      c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:

    a. Locks and Cylinders: Lifetime years from date of Substantial Completion.
    b. Exit Devices: Five years from date of Substantial Completion.
    c. Manual Closers: 10 years from date of Substantial Completion.
    d. Concealed Floor Closers: 10 years from date of Substantial Completion.
    e. All other Hardware: Two years from date of Substantial Completion.

1.11 REGULATORY REQUIREMENTS

A. Door and Gate Hardware – (All requirements below shall apply to gates as well):
1. Door/doorways as part of an accessible route shall comply with CBC Sections 11B-404.
2. The clear opening width for a door shall be 32 inches minimum. For a swinging door it shall be measured between the face of the door and the stop, with the door open 90 degrees. There shall be no projections into it below 34 inches and 4 inches maximum projections into it between 34 inches and 80 inches above the finish floor or ground. Door closers and stops shall be permitted to be 78 inches minimum above the finish floor or ground. CBC Section 11B-404.2.3
3. Handles, pulls, latches, locks and other operable parts on accessible door shall comply with CBC Section 11B-309.4 and shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. Operable parts of such hardware shall be 34 inches minimum and 44 inches maximum above the finish floor or ground. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable from both sides. CBC Section 11B-404.2.7
4. The force for pushing or pulling open a door shall be as follows: CBC 11B-404.2.9.
    a. Interior hinged doors, sliding or folding doors, and exterior hinged doors: 5 pounds (22.2 N) maximum. Required fire doors: the minimum opening force allowable by the DSA authority, not to exceed 15 pounds (66.7 N). These forces do not apply to the force required to retract latch bolts or disengage other deviced that hold the door in a closed position.
    b. The force required for activating any operable parts, such as lever hardware, or disengaging other devices shall be 5 pounds (22.2 N) maximum to comply with CBC Section 11B-309.4
5. Door closing speed shall be as follows: CBC Section 11B-404.2.8
    a. Closer shall be adjusted so that the required time to move a door from an open position of 90 degrees to a position of 12 degrees from the latch is 5 seconds minimum.
    b. Spring hinges shall be adjusted so that the required time to move a door from an open position of 70 degrees to the closed position is 1.5 seconds minimum.
6. Thresholds shall comply with CBC 11B-404.2.5
7. Floor stops shall not be located in the path of travel and 4 inches maximum from walls.
8. Hardwdare (including panic hardware) shall not be provided with “Night Latch” (NL) function for any accessible doors or gates unless the following conditions are met: (Such conditions must be clearly demonstrated and indicated in the specifications)
    a. Such hardware has a ‘dogging’ feature.

b. It is dogged during the time the facility is open.
c. Such 'dogging' operation is performed only be employees as their job function (non-public use).

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. City-approved manufacturers are Best Access Systems, or Folger Adams with Best Lock.

2.2 PERFORMANCE REQUIREMENTS

A. Means of Egress Doors: Latches do not require more than 5 lbf (22 N) to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

B. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the DOJ's "2010 ADA Standards for Accessible Design" and California Title 24 Building Standards Code.

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22.2 N).
2. Comply with the following maximum opening-force requirements:

    a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
    b. Sliding or Folding Doors: 5 lbf (22.2 N) applied parallel to door at latch.
    c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.
4. Adjust door closer sweep periods so that, from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch.
5. Adjust spring hinges so that, from an open position of 70 degrees, the door will take at least 1.5 seconds to move to the closed position.

C. City Requirement: Door in the following locations will have locks which are ANSI series 1000 Grade 1 SECURITY and Grade 1 OPERATIONAL. Locks will meet UL 437 requirements.
1. Rooms containing narcotics.
2. Rooms that contain an armory.
3. Exterior doors for Police Facilities.
4. Exterior doors for Court Facilities.
5. Doors to Judges Chambers.
6. Any exterior door in a remote location or subject to high vandalism.

D. City Requirement: Cylindrical lock sets may be used only on interior non-high-traffic openings. Locks will have a replaceable sheer lug which when broken will disable the lever. Clutch mechanisms will not be allowed. Locks will have 7-pin interchangeable cores. Cylindrical locks MAY NOT be installed on exterior doors.

2.3 SCHEDULED DOOR HARDWARE

A. Provide products for each door that comply with requirements indicated in Part 2 and door hardware schedule.

1. Door hardware is scheduled in Part 3.

2.4 HINGES

A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.

B. Self-Closing Hinges and Pivots: BHMA A156.17.

C. Center-Hung and Offset Pivots: BHMA A156.4.

D. Tested and approved by BHMA for all applicable ANSI Standards for type, size, function and finish

E. UL10C listed for Fire rated doors

F. Quantity per Door Leaf (Minimum) unless otherwise specified:

Door Height	Hinges
Up to 5’-0”	2
5’-1” to 7’-7’	3
7’-8” to 10’-0”	4
10’-1” to 12’-6”	5

G. Hinge Height (Minimum) unless otherwise specified:

Door Width	Hinge Height
Up to 3’-0”	4-1/2”
3’-1” to 4’-0’	5”
Over 4’-0”	6”

H. Width: Minimum for clearance of trim and 180-degree swing.

I. Exterior Hinges: Nonremovable pin.
1. Non Removable Pin screws shall be slotted stainless steel screws.

J. Joint Tolerance: 0.012 inch maximum, gauged in CLOSED position.

K. Bearings are to be fully hardened.

L. Bearing shell is to be consistent shape with barrel.

M. Minimum of 2 permanently lubricated non-detachable bearings on standard weight hinge and 4 permanently lubricated bearing on heavy weight hinges.

N. Equip with easily seated, non-rising pins.

O. Hinges shall be full polished, front, back and barrel.

P. Hinge pin is to be fully plated.

Q. Bearing assembly is to be installed after plating.

R. Furnish five knuckles with flush ball bearings.

S. Provide hinge type as listed in schedule.

T. Types and Manufacturers:

Description	Manufacturer	Model/Series	Finish
Mortise Hinge	McKinney	55860 TA 2714 26D NRP at reverse bevel door locks.	630 / US32D
Alternate	Stanley		
Full Surface Hinge	McKinney	57717B TA2714 26D NRP. Use for retrofit doors as appropriate.	630 / US32D
Alternate	Stanley		
Continuous Hinge	Pemko	For high traffic doors	628 / US28
Alternate	Markar		
Pivot Hinge	Rixon	180 626 Offset Top Pivot	626 / US26D
Alternate	Dorma	75120 626 Offset Top Pivot 75220 626 Intermediate Pivot	

NO ADDITIONAL ALTERNATES WILL BE CONSIDERED.

2.5 CONTINUOUS HINGES

A. Continuous Hinges: Tested and approved by BHMA A156.26, Grade 1; minimum 0.120-inch- (3.0-mm-) thick, hinge leaves with minimum overall width of 4 inches (102 mm); fabricated to full height of door and frame and to template screw locations; with components finished after milling and drilling are complete.

B. Continuous, Gear-Type Hinges: Extruded-aluminum, pinless, geared hinge leaves joined by a continuous extruded-aluminum channel cap; with concealed, self-lubricating thrust bearings.

C. Width: Minimum for clearance of trim and 180-degree swing.

D. Joint Tolerance: 0.012 inch maximum, gauged in CLOSED position.

E. Anti-spinning through fastener.

F. Non-handed.

G. Lifetime Warranty.

H. Types and Manufacturers:

Description	Manufacturer	Model/Series	Finish
Continuous Hinge	Pemko	For high traffic doors	628 / US28
Alternate	Markar		

2.6 MECHANICAL LOCKS AND LATCHES

A. Lock Functions: As indicated in door hardware schedule.

B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Bored Locks: Minimum 1/2-inch (13-mm) latchbolt throw.
2. Mortise Locks: Minimum 3/4-inch (19-mm) latchbolt throw.
3. Deadbolts: Solid Stainless Steel without internal riveted actuator. Minimum 1-inch (25-mm) bolt throw. Minimum 2-inch length of deadbolt to remain in lock case.

C. Lock Backset: 2-3/4 inches (70 mm) unless otherwise indicated.

D. Lock Trim:

1. Description: As scheduled.
2. Levers: Cast, solid.
   a. Hollow levers will NOT be allowed.
3. Escutcheons (Roses): Cast.
4. Dummy Trim: Match lever lock trim and escutcheons.

E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Manufacturer's special strike box fabricated for aluminum framing.
4. Rabbet Front and Strike: Provide on locksets for rabbeted meeting stiles.

F. Bored Locks: BHMA A156.2; Grade 1; Series 4000.

Description	Manufacturer	Model/Series	Finish
Cylinders	Best	Mortise 1E74 x RP3 x cam	626 / US26D

Description	Manufacturer	Model/Series	Finish
Key System	Best	See Requirements below:	626 / US26D

- Removeable interchangeable core
- 7-pin Best “Patented/Standard” at Existing Improvements.
- 7-pin Best “Patented/CorMax” at New Construction.
- Best key system.
- 2 keys per lockset.
- All cylinder and cores must be manufactured by BEST.
- All cores are to be keyed into the existing Best Master key system.
- Provide all locksets and cylinders with construction cores for contractor use.
- Permanent cores provided at project completion.

Description	Model/Series
Deadbolt Lock/Single & Cylinder 2-3/4” BS	8T37KSTK 626 –
Deadbolt Lock/Single & Cylinder 2-3/8” BS	7T27KSTK 626 –

G. Mortise Locks: Tested and approved by BHMA A156.13; Operational Grade 1, Extra Heavy-Duty; Security Grade 2; UL10C certified; stamped steel case with steel or brass parts; Series 1000.

1. Furnish UL or recognized independent laboratory certified mechanical operational testing to 4 million cycles minimum.
2. Provide 9001-Quality Management and 14001-Environmental Management.
3. Fit ANSI A115.1 door preparation
4. Functions and design as indicated in the hardware groups
5. Solid, one-piece, 3/4-inch (19mm) throw, anti-friction latchbolt made of self-lubricating stainless steel
6. Deadbolt functions shall have 1 inch (25mm) throw bolt made of hardened stainless steel
7. Latchbolt and Deadbolt are to extend into the case a minimum of 3/8 inch (9.5mm) when fully extended
8. Auxiliary deadlatch to be made of one piece stainless steel, permanently lubricated
9. Provide sufficient curved strike lip to protect door trim
10. Lever handles must be of forged or cast brass, bronze or stainless steel construction and conform to ANSI A117.1. Levers that contain a hollow cavity are not acceptable
11. Lock shall have self-aligning, thru-bolted trim
12. Levers to operate a roller bearing spindle hub mechanism
13. Mortise cylinders of lock shall have a concealed internal setscrew for securing the cylinder to the lockset. The internal setscrew will be accessible only by removing the core, with the control key, from the cylinder body.
14. Spindle to be designed to prevent forced entry from attacking of lever
15. Provide locksets with 7-pin removable and interchangeable core cylinders

16. Each lever to have independent spring mechanism controlling it
17. Core face must be the same finish as the lockset
18. Types and Manufacturers:

Description	Manufacturer	Model/Series	Finish
Mortise Lock Set	Best	45H x J Escutcheon lever, as scheduled –	626 / US26D

Lock Function	Room Type
A	Entrance Lock
R	Classroom Function
D	Storeroom Function
N	Passage
L	Privacy

Description	Manufacturer	Model/Series	Finish
Lock Set	Best	93K x D Rose lever, as scheduled –	626 / US26D

Lock Function	Room Type
AB	Entrance Lock 9K37 AB 53 626
R	Classroom Function 9K37 RD4D 53 626
D	Storeroom Function 9K37 D14D 53 626
N	Passage 9K30 N14D 53 626
L	Privacy 9K30 L14D 53 626

2.7 LOCK CYLINDERS

A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.

1. Removeable and interchangeable core system: BEST CORMAX™ Patented 7-pin.
2. All cylinder and cores must be manufactured by BEST.
3. Best key system.
4. 2 keys per lockset.
5. All cores are to be keyed into the existing Best Master key system.
6. Provide all locksets and cylinders with construction cores for contractor use.
7. Permanent cores provided at project completion.
8.

Description	Manufacturer	Model/Series	Finish
Cylinders	Best	Mortise 1E74 x RP3 x cam required –	626 / US26D

Description	Manufacturer	Model/Series	Finish
Key System	Best	See Requirements below:	626 / US26D

B. Standard Lock Cylinders: BHMA A156.5; Grade 1 permanent cores; face finished to match lockset.

1. Core Type: Interchangeable, Removable.

C. High-Security Lock Cylinders: BHMA A156.30; Grade 1 permanent cores that are removable; face finished to match lockset.

1. Type: M, mechanical.

D. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.
1. Construction Cores will be installed by Contractor for security purposes. Construction cores will be keyed alike and interchangeable with Best cores. Cores provided by manufacturer.
2. Contractor will provide to the City Lock Shop copies of Control Key and Operating Key upon completion.

E. Electric Meter Room: To have SDG&E lock installed. The cylinder will be keyed to Schlage keyway VTQP AA-10. Three keys shall be provided with lock. All keys are to be turned over to the City of San Diego Lock Shop at completion of project. The contractor will obtain lock from any contracted SDG&E Locksmith for installation.

F. Any questions, contact:
1. Carpenter Supervisor Martin Sorrell at 619-525-8550; or
2. Lock Shop at 619-525-8552.

2.8 KEYING

A. Provide keyed brass construction cores and keys during the construction period. Construction control and operating keys and core shall not be part of the City's permanent keying system or furnished in the same keyway (or key section) as the City's permanent keying system. Permanent cores and keys (prepared according to the accepted keying schedule) will be furnished to the City .

B. The City or the City's agent, will install permanent cores and return the construction cores to the Hardware Supplier. Construction cores and keys remain the property of the Hardware Supplier.

C. Keying Schedule: Arrange for a keying meeting, and programming meeting with Architect, City, and hardware supplier, and other involved parties to ensure locksets and locking hardware, are functionally correct and keying and programming complies with project requirements. Furnish 3 typed copies of keying and programming schedule to Architect.

D. Keying System: Factory registered, complying with guidelines in BHMA A156.28, appendix. Provide one extra key blank for each lock.

1. Existing Factory-Registered Grand Master Key System:

   a. Grand master key locks to City's existing system.
2. Transmit Grand Masterkeys, Masterkeys and other Security keys to City by Registered Mail, return receipt requested.
3. Furnish keys in the following quantities:
   a. 1 each Grand Masterkeys.
   b. 4 each Masterkeys.
   c. 2 each Change keys each keyed core.
   d. 15 each Construction masterkeys.
   e. 1 each Control keys.

E. Permanent Keys and Cores: Brass.

1. Stamping: Stamped with the applicable key mark for identification. These visual key control marks or codes will not include the actual key cuts. Permanently inscribe each key with a visual key control number and include the following notation:
   a. Notation: “CITY OF SAN DIEGO," and “DO NOT DUPLICATE."
2. All keys will have visual key control.

F. Electric Meter Room: To have SDG&E lock installed. The cylinder will be keyed to Schlage keyway VTQP AA-10. Three keys shall be provided with lock. All keys are to be turned over to the City of San Diego Lock Shop at completion of project. The contractor will obtain lock from any contracted SDG&E Locksmith for installation.

G. Any questions, contact:
1. Carpenter Supervisor Martin Sorrell at 619-525-8550; or
2. Lock Shop at 619-525-8552.

2.9 KEY CONTROL SYSTEM

A. Key Control Cabinet: BHMA A156.28; metal cabinet with baked-enamel finish; containing key-holding hooks, labels, two sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers; with key capacity of 150 percent of the number of locks.

Description	Manufacturer	Model/Series
Manual Key Control	Telkee or approved equal	Aristocrat wall-mounted AWC series Dual tag system. Key capability to accept all keyed locksets plus 50% expansion.

1. Wall-Mounted Cabinet: Grade 1 cabinet with hinged-panel door equipped with key-holding panels and pin-tumbler cylinder door lock.

B. Key Lock Boxes: Designed for storage of two keys.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. GE Security, Inc.
b. HPC, Inc.
c. Knox Company.

2.10 OPERATING TRIM

A. Operating Trim: BHMA A156.6; stainless steel unless otherwise indicated.

2.11 ACCESSORIES FOR PAIRS OF DOORS

A. Coordinators: BHMA A156.3; consisting of active-leaf, hold-open lever and inactive-leaf release trigger; fabricated from steel with nylon-coated strike plates; with built-in, adjustable safety release; and with internal override.

Description	Manufacturer	Model/Series	Finish
Coordinator	Trimco	Mounting bracket as required.	600
Alternate	Rockwood		

B. Astragals: BHMA A156.22.

Description	Manufacturer	Model/Series	Finish
Astragal	Pemko	357 SP	600
Alternate	or approved equal		

2.12 SURFACE CLOSERS

A. Surface Closers: Tested and approved by BHMA A156.4, Grade 1; UL10C Certified; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

1. Provide 9001-Quality Management and 14001-Environmental Management.
2. Closer shall have extra-duty arms and knuckles
3. Conform to ANSI 117.1
4. Maximum 2 7/16 inch case projection with non-ferrous cover
5. Separate adjusting valves for closing and latching speed, and backcheck
6. Provide adapter plates, shim spacers and blade stop spacers as required by frame and door conditions

7. Full rack and pinion type closer with 1½“ minimum bore
8. Mount closers on non-public side of door, unless otherwise noted in specification
9. Closers shall be non-handed, non-sized and multi-sized.
10. Types and Manufacturers:

Description	Manufacturer	Model/Series	Finish
Closers	LCN	See Below	689
4040XP RW/PA TBSRT			
4040XP SHCNS TBSRT			
1461 RW/PA TBSRT			
	All door frames to be reinforced at closer.		
	Provide ‘SNB’ Sex nuts and bolts as needed.		
	35-40-EN		
Alternate	Sargent		

2.13 CONCEALED CLOSERS

A. Concealed Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

2.14 CLOSER HOLDER RELEASE DEVICES

A. Closer Holder Release Devices: BHMA A156.15; Grade 1; closer connected with separate or integral releasing and fire- or smoke-detecting devices. Door shall become self-closing on interruption of signal to release device. Automatic release is activated by loss of power.

2.15 MECHANICAL STOPS AND HOLDERS

A. Wall- and Floor-Mounted Stops: BHMA A156.16.

Description	Manufacturer	Model/Series	Finish
Door Stop	Trimco	Allow for max swing of doors. Backing required at wall stops.	630 / US32D 626 / US26D
Alternate	Rockwood		

2.16 OVERHEAD STOPS AND HOLDERS

A. Overhead Stops and Holders: BHMA A156.8.

Description	Manufacturer	Model/Series	Finish
Overhead Stop and Holder	Glynn & Johnson		630 / US32D
Alternate	Sargent		

2.17 DOOR GASKETING

A. Door Gasketing: BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.

B. Weatherstripping: Provide at head and jambs only those units where resilient or flexible seal strip is easily replaceable. Where bar-type weatherstrip is used with parallel arm mounted closers install weatherstrip first.
   1. Weatherstrip shall be resilient seal of (Neoprene, Polyurethane, Vinyl, Pile, Nylon Brush, Silicone)
   2. UL10C Positive Pressure rated seal set when required.

C. Door Bottoms/Sweeps: Surface mounted or concealed door bottom where listed in the hardware sets.
   1. Door seal shall be resilient seal of (Neoprene, Polyurethane, Nylon Brush, Silicone)
   2. UL10C Positive Pressure rated seal set when required.

D. Types and Manufacturers:

Description		Manufacturer	Model/Series	Finish
Smoke Seal		Pemko	S88 (verify color)	
Alternate		or approved equal		
Weather Seal		Pemko	303_S (at head/jambs)	628
Alternate		or approved equal		

E. Maximum Air Leakage: When tested according to ASTM E 283 with tested pressure differential of 0.3-inch wg (75 Pa), as follows:
   1. Gasketing on Single Doors: 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) of door opening.
   2. Gasketing on Double Doors: 0.50 cfm per foot (0.000774 cu. m/s per m) of door opening.

2.18 THRESHOLDS

A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.

B. Thresholds shall be aluminum beveled type with maximum height of ½" for conformance with ADA requirements. Furnish as specified and per details. Provide fasteners and screws suitable for floor conditions.

C. Types and Manufacturers:

Description	Manufacturer	Model/Series	Finish
Threshold	Pemko	Furnish as detailed on Drawings	628
Alternate	or approved equal		

2.19 METAL PROTECTIVE TRIM UNITS

A. Metal Protective Trim Units: BHMA A156.6; fabricated from 0.050-inch- (1.3-mm-) thick stainless steel; with manufacturer's standard machine or self-tapping screw fasteners.

2.20 AUXILIARY DOOR HARDWARE

A. Auxiliary Hardware: BHMA A156.16.

Description	Manufacturer	Model/Series	Finish
Pull	Trimco		630
Alternate	Rockwood		
Push Plate	Trimco		630
Alternate	Rockwood		
Kick Plate	Trimco		630
Alternate	Rockwood		
Armor Plate	Trimco		630
Alternate	Rockwood		
Door Sweep	Pemko	345V	628
Alternate	or approved equal		

2.21 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rating labels and as otherwise approved by Architect.

1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.

C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
2. Fire-Rated Applications:

    a. Wood or Machine Screws: For the following:

        1) Hinges mortised to doors or frames; use threaded-to-the-head wood screws for wood doors and frames.
        2) Strike plates to frames.
        3) Closers to doors and frames.

    b. Steel Through Bolts: For the following unless door blocking is provided:

        1) Surface hinges to doors.
        2) Closers to doors and frames.
        3) Surface-mounted exit devices.

3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
4. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.22 FINISHES

A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Powder coat door closers to match other hardware, unless otherwise noted.

E. Aluminum items shall be finished to match predominant adjacent material. Seals to coordinate with frame color.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance of the Work.

B. DOOR AND FRAME PREP (City requirements): Before hardware installation, verify that all doors and frames are properly prepared to receive the specified hardware. Hollow metal frames shall be prepared for ANSI strike plates per A115.1-2 (4-7/8" high), hinge preps will be mortised and reinforced with a minimum of 10 gauge reinforcement material; minimum of 14 gauge reinforcement material for closer. Hollow metal doors shall be properly prepared and reinforced with a minimum of 16 gauge material for either mortised or cylindrical locks as specified.
   1. Closer Reinforcement: All hollow metal doors receiving door closers shall have 14 gauge reinforcement. In the event this is not possible, the use of sex bolts is mandatory.
   2. Wood doors shall be factory prepared to receive the scheduled hardware.

C. HARDWARE INSTALLATION (City requirement): The manufacturer's representative for the locking devices and closing devices must inspect the prepared doors and frames, and approve in writing, prior to the installation of their product.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights indicated on Drawings unless otherwise indicated or required to comply with governing regulations.

B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.

   1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
   2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
   3. Installed hardware using the manufacturers fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use "Riv-Nuts" or similar products.

C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

D. Intermediate Offset Pivots: Where offset pivots are indicated, provide intermediate offset pivots in quantities indicated in door hardware schedule, but not fewer than one intermediate offset pivot per door and one additional intermediate offset pivot for every 30 inches (750 mm) of door height greater than 90 inches (2286 mm).

E. Lock Cylinders: Install construction cores to secure building and areas during construction period.
   1. Furnish permanent cores to City for installation.

F. Key Control System:

   1. Key Control Cabinet: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
   2. Key Lock Boxes: Install where indicated or approved by Architect to provide controlled access for fire and medical emergency personnel.
   3. Key Control System Software: Set up multiple-index system based on final keying schedule.

G. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 "Joint Sealants."

H. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.

I. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

   1. Do not notch perimeter gasketing to install other surface-applied hardware.

J. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

K. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.3 FIELD QUALITY CONTROL

A. Independent Architectural Hardware Consultant: Engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.

   1. Independent Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

B. HARDWARE INSTALLATION (City requirement): The manufacturer’s representative for the locking devices and closing devices must inspect the installed hardware, and approve in writing, following the installation of their product. Hardware installed incorrectly must be reported to the Engineer prior to Final Punch List.

3.4 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
2. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 70 degrees and so that closing time complies with accessibility requirements of authorities having jurisdiction.
3. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
4. Exit Devices: Check latchset, lockset, and exit devices are properly installed and adjusted to ensure proper operation.
    a. Verify levers are free from binding.
    b. Ensure latchbolts and dead bolts are engaged into strike and hardware is functioning.
5. Report findings, in writing, to architect indicating that all hardware is installed and functioning properly. Include recommendations outlining corrective actions for improperly functioning hardware if required.

3.5 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.6 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for City's continued adjustment, maintenance, and removal and replacement of door hardware.

3.8 DOOR HARDWARE SCHEDULE

Manufacturer List

Code	Name
AB	ABH Manufacturing Inc.
BE	Best Access Systems
LC	LCN Closers
NA	National Guard
ST	Stanley
TR	Trimco

Finish List

Code	Description
AL	Aluminum
AL	Aluminum (BHMA 689)
626	Satin Chromium Plated
630	Satin Stainless Steel
US32D	Stainless Steel, Dull

Option List

Code	Description
B4E	Beveled 4 Edges
CSK	Counter Sunk Screw Holes
VIB	Double Visual Indictor Option

Hardware Sets

SET #1

Doors: 1, 11

2	Continuous Hinge	661HD UL	AL	ST
2	Automatic Flush Bolt	3810-12	626	TR
1	Lockset	45H-7A14J PATD	626	BE
2	Overhead Holder	4430 Series	US32D	AB
2	Kick Plate	K0050 10" x 1" LDW B4E CSK	630	TR
1	Weatherstrip	160SA Head & Jambs		NA
1	Astragal	196NA		NA
1	Drip Cap	16 A - 4" ODW		NA
2	Door Sweep	200NA		NA
1	Handicap Threshold	513A	AL	NA

SET #2

Doors: 2, 6

1	Continuous Hinge	661HD UL	AL	ST
1	Lockset	45H-7A14J PATD	626	BE
1	Closer	4040 XP SCUSH	AL	LC
1	Kick Plate	K0050 10" x 2" LDW B4E CSK	630	TR
1	Weatherstrip	160SA Head & Jambs		NA
1	Drip Cap	16 A - 4" ODW		NA
1	Door Sweep	200NA		NA
1	Handicap Threshold	513A	AL	NA

SET #3

Doors: 3, 4, 5, 7, 8, 9, 10

1	Continuous Hinge	661HD UL (W/ LARGE	AL	ST
1	Privacy Set	45H-0L14J VIB THUMB TURN)	626	BE
1	Closer	4040 XP SCUSH	AL	LC
1	Drip Cap	16 A - 4" ODW		NA
1	Gasketing	5050B Head & Jambs		NA

END OF SECTION 087100

SECTION 099600 - HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract - Standard Specifications for Public Works Construction 'The GREENBOOK' and City Supplement 'The WHITEBOOK', latest editions, including Supplemental Supplementary Provisions (SSPs), apply to this Section.

1.2 SUMMARY

A. Section includes surface preparation and the application of high-performance coating systems on the following substrates:

1. Exterior Substrates:

   a. Concrete, vertical surfaces.
   b. Fiber-cement board.
   c. Concrete masonry units (CMUs).
   d. Steel.
   e. Galvanized metal.
   f. Wood.

2. Interior Substrates:
   a. NOT APPLICABLE. ALL SUBSTRATES ARE CONSIDERED EXTERIOR ON ALL SURFACES.

B. Related Requirements:

1. Section 05 12 00 "Structural Steel Framing" for shop priming of structural steel with primers specified in this Section.

1.3 DEFINITIONS

A. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

B. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

C. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
2. Indicate VOC content.

B. Samples for Initial Selection: For each type of topcoat product indicated.

C. Samples for Verification: For each type of coating system and each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches (200 mm) square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: Cross-reference to coating system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run**,** that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Coatings: 5 gallons of each material and color applied.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

A. Apply coatings only when temperature of surfaces to be coated and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

C. Do not apply exterior coatings in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide product listed in the Exterior High-Performance Coating Schedule for the coating category indicated.

2.2 HIGH-PERFORMANCE COATINGS, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
3. Products shall be of same manufacturer for each coat in a coating system.

C. Colors: Match Engineer’s samples**.**

2.3 SOURCE QUALITY CONTROL

A. Testing of Coating Materials: City reserves the right to invoke the following procedure:

1. City will engage the services of a qualified testing agency to sample coating materials. Contractor will be notified in advance and may be present when samples are taken. If coating materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. City may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying coating materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. Contractor will be required to remove rejected materials from previously coated surfaces if, on recoating with complying materials, the two coatings are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Fiber-Cement Board: 12 percent.
3. Masonry (Clay and CMUs): 12 percent.
4. Wood: 15 percent.
5. Gypsum Board: 12 percent.
6. Plaster: 12 percent.

C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

D. Plaster Substrates: Verify that plaster is fully cured.

E. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

F. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and coating systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
1. Abrasive blast clean surfaces to comply with SSPC-SP 7/NACE No. 4.

E. Masonry Substrates: Remove efflorescence and chalk. Do not coat surfaces if moisture content, alkalinity of surfaces, or alkalinity of mortar joints exceeds that permitted in manufacturer's written instructions.

1. Clean surfaces with pressurized water. Use pressure range of 1500 to 4000 psi (10 350 to 27 580 kPa) at 6 to 12 inches (150 to 300 mm).

F. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

G. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied coatings.

H. Wood Substrates:

1. Scrape and clean knots. Before applying primer, apply coat of knot sealer that is recommended in writing by topcoat manufacturer for coating system indicated.
2. Sand surfaces that will be exposed to view and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with filler that is recommended in writing by topcoat manufacturer for coating system indicated. Sand smooth when dried.

3.3 APPLICATION

A. Apply high-performance coatings according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

1. Use applicators and techniques suited for coating and substrate indicated.
2. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Coat backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
4. Do not apply coatings over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

B. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.

C. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: City may engage the services of a qualified testing and inspecting agency to inspect and test coatings for dry film thickness.

1. Contractor shall touch up and restore coated surfaces damaged by testing.
2. If test results show that dry film thickness of applied coating does not comply with coating manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with coating manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from coating operation. Correct damage to work of other trades by cleaning, repairing, replacing, and recoating, as approved by Engineer, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

3.6 EXTERIOR HIGH-PERFORMANCE COATING SCHEDULE

A. Concrete Substrates, Vertical Surfaces:

1. Clear Anti-graffiti system:

a. Manufacturer: Monopole, Inc. or approved equal.

b. First Coat: Aquaseal ME12 (Item 5200).
c. Second Coat: Permashield Base (Item 6100).
d. Third Coat: Permasheild Premium (Item 5600) Matte finish.
e. Fourth Coat: Permasheild Permium (Item 5600) Matte finish.

B. Cement Board Substrates:

1. Epoxy-Modified Latex System MPI EXT 3.3D

a. Prime Coat: Epoxy-modified latex, matching topcoat.
b. Intermediate Coat: Epoxy-modified latex, matching topcoat.
c. Topcoat: Epoxy-modified latex, semi-gloss (MPI Gloss Level 5), MPI #215.

1) AkzoNobel; Devoe High Performance Coatings – True Glaze WB 4426 Water Borne Epoxy.

C. CMU Substrates:

1. Clear Anti-graffiti system:

a. Manufacturer: Monopole, Inc. or approved equal.

b. First Coat: Aquaseal ME12 (Item 5200).
c. Second Coat: Permashield Base (Item 6100).
d. Third Coat: Permasheild Premium (Item 5600) Matte finish.

e. Fourth Coat: Permasheild Permium (Item 5600) Matte finish.

D. Steel Substrates:

1. Pigmented Polyurethane over Epoxy Zinc-Rich Primer System MPI EXT 5.1P:

a. Prime Coat: Primer, zinc rich, epoxy**,** MPI #20.

1) Sherwin Williams Zinc Clad IV.

b. Intermediate Coat: Epoxy, gloss**,** MPI #77.

1) Sherwin Williams Tile-Clad HS Epoxy.

c. Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6), MPI #72.

1) Sherwin Williams Acrolon 218 HS.

E. Galvanized-Metal Substrates:

1. Pigmented Polyurethane over Epoxy Primer System MPI EXT 5.3L:

a. Prime Coat: Primer, epoxy, anti-corrosive, for meta, MPI #101.

1) Sherwin Williams Dura-Plate 235 Multi-Purpose Epoxy.

b. Intermediate Coat: Polyurethane, two component, pigmented, gloss matching topcoat.
c. Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6)**,** MPI #72.

1) Sherwin Williams Acrolon 218 HS.

F. Wood Substrates: Exposed framing.

1. Pigmented Polyurethane System MPI EXT 6.2J:

a. Prime Coat: Polyurethane, two component, pigmented, gloss, matching topcoat.
b. Intermediate Coat: Polyurethane, two component, pigmented, gloss, matching topcoat.
c. Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6), MPI #72.

1) Sherwin Williams Acrolon 218 HS.

END OF SECTION 099600

SECTION 101423.13 - ROOM-IDENTIFICATION SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract - Standard Specifications for Public Works Construction 'The GREENBOOK' and City Supplement 'The WHITEBOOK', latest editions, including Supplemental Supplementary Provisions (SSPs), apply to this Section.

1.2 SUMMARY

A. Section includes room-identification signs that are directly attached to the building.

1.3 DEFINITIONS

A. Accessible: In accordance with the accessibility standard.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For room-identification signs.

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each sign at least half size.

C. Product Schedule: For room-identification signs. Use same designations indicated on Drawings or specified.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer.

B. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Tools: One set(s) of specialty tools for assembling signs and replacing variable sign components.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

   1. Failures include, but are not limited to, the following:

      a. Deterioration of finishes beyond normal weathering.
      b. Deterioration of embedded graphic image.
      c. Separation or delamination of sheet materials and components.

   2. Warranty Period: Five years from date of Substantial Completion.

1.9 REGULATORY REQUIREMENTS

A. Signage and Graphics – Raised Characters shall comply with CBC Section 11B-703.2:
   1. Depth: It shall be 1/32 inch (0.8mm) minimum above their background and shall be sans serif uppercase and be duplicated in Braille.
   2. Height: It shall be 5/8 inch (15.9 mm) minimum and 2 inches (51 mm) maximum based on the height of the uppercase letter ‘I’. CBC Section 11b-703.2.5
   3. Finish and Contrast: Characters and their background shall have a non-glare finish. Character shall contrast with their background with either light characters on a dark background or dark characters on a light background. CBC Section 11B-703.5.1
   4. Proportions: It shall be selected from fonts where the width of the uppercase letter “O” is 60% minimum and 110% maximum of the height of the uppercase letter “I”. Stroke thickness of the uppercase letter “I” shall be 15% maximum of the height of the character. CBC Section 11B-703.2.4 and 11B-703.2.6
   5. Character Spacing: Spacing between individual raised characters shall comply with CBC Section 11B-703.2.7 and 11B-703.2.8
   6. Format: Text shall be in a horizontal format. CBC Section 11B-703.2.9
   7. Braille: It shall be contracted (Grade 2) and shall comply with CBC Section 11B-703.3 and 11B-703.4. Braille dots shall have a domed or rounded shape and shall comply with CBC Table and Figure 11B-703.3.1
   8. Mounting Height: Tactile characters on signs shall be located 48 inches minimum to the baseline of the lowest Braille cells and 60 inches maximum to the baseline of the highest line of raised characters above the finish floor or ground surface. CBC Section and Figure 11B-703.4.1
   9. Mounting Location: A tactile sign shall be located per CBC Section and Figure 11B-703.4.2 as follows:
      a. Alongside a single door at the latch side.

b. On the inactive leaf at double door with one active leaf.
c. To the right of the right hand door at double doors with two active leafs.
d. On the nearest adjacent wall where there is no wall space at the latch side of a single door or at the right side of double doors with two active leafs.
e. So that a clear floor space of 18” x 18” minimum, centered on the tactile characters, is provided beyond the arc of any door swing between the closed position and 45 degree open position.

B. Signage and Graphics – Visual Characters shall comply with CBC Section 11B-703.5 and shall be 40 inches minimum above finish floor or ground.

C. Signage and Graphics – Pictograms shall comply with CBC Section 11B-703.6

D. Signage and Graphics – Symbols of Accessibility shall comply with CBC Section 11B-703.7

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" and 2016 California Building Code.

2.2 ROOM-IDENTIFICATION SIGNS

A. Room-Identification Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, eased or rounded corners, eased or chamfered edges, and precisely formed lines and profiles; and as follows:
1. Panel Sign: Aluminum plate with raised graphics.
    a. Thickness: .125 inch.
    b. Color(s): As selected by Engineer from manufacturer's full range.
2. Mounting: Surface mounted to wall with countersunk flathead vandal-proof through fasteners and either adhesive or VHB two-face tape.
3. Text and Typeface: Accessible raised characters and Braille. Finish raised characters to contrast with background color, and finish Braille to match background color.
    a. Neue Helvetica, or approved equal.

2.3 SIGN MATERIALS

A. Aluminum Sheet and Plate: ASTM B 209 (ASTM B 209M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

B. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

C. Braille: 100% domed, direct 3D-print Braille dots, coated with exterior grade acrylic polyurethane paint.

D. Letters: Integrally colored 1/32” thick, adhesive-backed raised letters are applied after exterior grade paint application.

2.4 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:

1. Use concealed fasteners and anchors unless indicated to be exposed.
2. For exterior exposure, furnish stainless-steel devices.
3. Exposed Metal-Fastener Components, General:

    a. Fabricated from same basic metal and finish of fastened sign unless otherwise indicated.
    b. Fastener Heads: Use flathead or oval countersunk screws and bolts with tamper-resistant spanner-head slots unless otherwise indicated.

4. Sign Mounting Fasteners:
    a. Through Fasteners: Exposed metal fasteners matching sign finish, with type of head indicated, and installed in predrilled holes.
5. All fasteners must be stainless steel 300 series or better, and color-coated to match sign background color.

B. Adhesive: As recommended by sign manufacturer.

C. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch (1.14 mm) thick, with adhesive on both sides.

2.5 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.

3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
4. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

2.6 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.7 ALUMINUM FINISHES

A. Color Anodic Finish: AAMA 611, Class I, 0.018 mm or thicker.

B. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils (0.04 mm). Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

C. Exterior grade high-performance acrylic polyurethane paint.
1. Matthews Satin Acrylic Polyurethane, or equal.
    a. Gloss level: in compliance with ADA and CBC.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.

1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Install signs so they do not protrude or obstruct according to the accessibility standard.
3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.

B. Accessibility: Install signs in locations on walls as indicated on Drawings and according to the accessibility standard.

C. Mounting Methods: Installer of signs MUST provide option 1 or 2 below at each sign, and installation MAY be augmented with either of options 3 or 4. Ensure signs are fabricated with factory pre-drilled holes if utilizing option 2.

1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.

    a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place sign in position and push until flush to surface, embedding studs in holes. Temporarily support sign in position until adhesive fully sets.
    b. Thin or Hollow Surfaces: Place sign in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.

2. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.
3. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position, and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.
4. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.

3.2 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by City.

END OF SECTION 101423.13

SECTION 102800 - TOILET ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract - Standard Specifications for Public Works Construction 'The GREENBOOK' and City Supplement 'The WHITEBOOK', latest editions, including Supplemental Supplementary Provisions (SSPs), apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Public-use washroom accessories.
2. Air dryers.
3. Custodial accessories.

1.3 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
3. Include electrical characteristics.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated.
2. Identify accessories using designations indicated.

1.5 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For manufacturer's special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For accessories to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

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.

2.2 PUBLIC-USE WASHROOM ACCESSORIES

A. Source Limitations: Obtain public-use washroom accessories from single source from single manufacturer.

B. Toilet Tissue (Roll) Dispenser < C >:
   1. Description: Roll-in-reserve dispenser with hinged front secured with tumbler lockset.
   2. Mounting: Recessed at accessible toilet compartments.
   3. Operation: Noncontrol delivery with theft-resistant spindle.
   4. Capacity: Designed for 5-inch- (127-mm-) diameter tissue rolls.
   5. Material and Finish: Stainless steel, No. 4 finish (satin).

C. Toilet Tissue (Roll) Dispenser < D >:
   1. Description: Two-piece, three-roll, slow-rolling, narrow-bar with neoprene friction sleeve toilet tissue dispenser and the following:

   2. Mounting: Surface mounted.
   3. Toilet Tissue Dispenser Capacity: 4-1/2- or 5-inch- (114- or 127-mm-) diameter tissue rolls.
   4. Toilet Tissue Dispenser Operation: Controlled delivery with neoprene friction sleeve.
   5. Material and Finish: Stainless steel, No. 4 finish (satin).
   6. Lockset: Keyed Padlock.

D. Liquid-Soap Dispenser < E >:

   1. Description: Designed for dispensing soap in liquid form.
   2. Mounting: Horizontally oriented, surface mounted.
   3. Capacity: 40 oz. (1.2 L).

4. Materials: Stainless steel, 22 Ga, No. 4 finish (satin). Body is drawn, one-piece, seamless construction. Clear acrylic refill-indicator window. Black molded plastic push button and spout.
5. Lockset: Tumbler type.
6. Refill Indicator: Window type.

E. Grab Bar < A >:
1. Mounting: Flanges with concealed fasteners.
2. Material: Stainless steel, 0.05 inch (1.3 mm) thick.

a. Finish: Smooth, No. 4 finish (satin).

3. Outside Diameter: 1-1/2 inches (38 mm**)**.
4. Configuration and Length: Straight, 54 inches long**.**

F. Grab Bar < B >:
1. Mounting: Flanges with concealed fasteners.
2. Material: Stainless steel, 0.05 inch (1.3 mm) thick.

a. Finish: Smooth, No. 4 finish (satin).

3. Outside Diameter: 1-1/2 inches (38 mm**)**.
4. Configuration and Length: Straight, 42 inches long**.**

2.3 HIGH-SPEED AIR DRYERS

A. Source Limitations: Obtain high-speed air dryers from single source from single manufacturer. If a warming/heating element exists, it must be removed from unit prior to installation.

B. High-Speed Air Dryer < G >:
1. Description: High-speed, air hand dryer for rapid hand drying.
2. Mounting: Recessed, Chase-mount.
3. Operation: Push-button activated with operation time of 10 to 20 seconds.
4. Cover Material and Finish: Cast aluminum, with enamel finish.
5. Electrical Requirements: 120 V, 7.5 A, 60Hz.

2.4 UNDERLAVATORY GUARDS

A. Underlavatory Guard < H >:
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
a. Plumberex Specialty Products, Inc.
b. Approved equal.
2. Description: Insulating pipe covering for supply and drain piping assemblies that prevents direct contact with and burns from piping; allow service access without removing coverings.
3. Material and Finish: Antimicrobial, molded plastic, white.

2.5 CUSTODIAL ACCESSORIES

A. Source Limitations: Obtain custodial accessories from single source from single manufacturer.

B. Utility Shelf with Mop and Broom Holder < J >:
   1. Description: With exposed edges turned down not less than 1/2 inch (13 mm) and supported by two triangular brackets welded to shelf underside.
   2. Size: 36 inches long by 8 deep.
   3. Material and Finish: Not less than nominal 18 gauge thick stainless steel, No. 4 finish (satin).
   4. Description: Unit with shelf, hooks, holders, and rod suspended beneath shelf .
   5. Hooks: Three.
   6. Mop/Broom Holders: Four, spring-loaded, rubber hat, cam type.
   7. Material and Finish: Stainless steel, No. 4 finish (satin).

      a. Shelf: Not less than nominal 18 gauge thick stainless steel.
      b. Rod: Approximately 1/4-inch- (6-mm-) diameter stainless steel.

2.6 DIAPER CHANGING STATION

A. Diaper Changing Station < F >:
   1. Polyethylene body with stainless steel exterior.
   2. Stainless Steel: Type 304, brushed finish.
   3. Standard with molded-in dual liner dispensers
   4. ADA cam-buckle is adjustable with one hand.
   5. Smooth nylon safety belt.
   6. Integral bag hooks on either side of tray.
   7. ANSI compliant labels utilizing universal safety symbols.
   8. 4 inch maximum profile as measured from supporting wall.
   9. Pneumatic gas shock mechanism for smooth, safe open and close operations.
   10. Steel support hinges.
   11. ASTM G21 Anti-Bacterial: No measurable bacterial growth.
   12. ASTM G22 Anti-Fungal: No measurable fungal growth.
   13. Meets or exceeds ASTM F2285 Safety specifications for commercial changing stations.
   14. Open changing surface projects 17 inches from supporting wall during use.

2.7 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch (0.8-mm) minimum nominal thickness unless otherwise indicated.

B. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

C. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

2.8 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to City's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Grab Bars: Install to withstand allowable stresses for materials used when a vertical or horizontal force of 250 lbf (1112 N) is applied at any point on the grab bar, fastener, mounting device, or supporting structure, when tested according to ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION 102800

SECTION 104416 - FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract - Standard Specifications for Public Works Construction 'The GREENBOOK' and City Supplement 'The WHITEBOOK', latest editions, including Supplemental Supplementary Provisions (SSPs), apply to this Section.

1.2 SUMMARY

A. Section includes portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.

1.4 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

    a. Failure of hydrostatic test according to NFPA 10.
    b. Faulty operation of valves or release levers.

2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

C. Comply with requirements of CCR, Title 19.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Fire Extinguishers: Type, size, and capacity for each mounting bracket indicated.
   1. Valves: Manufacturer's standard.
   2. Handles and Levers: Stainless steel.
   3. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.

B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 2-A:10-B:C, 5-lb (2.3-kg) nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

2.3 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard galvanized steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or red baked-enamel finish.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Engineer.

   1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.

      a. Orientation: Vertical.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fire extinguishers for proper charging and tagging.

   1. Remove and replace damaged, defective, or undercharged fire extinguishers.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.

1. Mounting Brackets: 38 inches (1372 mm) above finished floor to top of fire extinguisher.

B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION 104416

SECTION 220518 - ESCUTCHEONS FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Escutcheons.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 ESCUTCHEONS

A. One-Piece, Steel Type: With polished, chrome-plated finish and setscrew fastener.

B. Split-Plate, Stamped-Steel Type: With polished, chrome-plated finish; concealed hinge; and spring-clip fasteners.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.

B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of insulated piping and with OD that completely covers opening.

1. Escutcheons for New Piping:

a. Piping with Fitting or Sleeve Protruding from Wall: One-piece stamped steel or split-plate, stamped steel with concealed hinge.

3.2 FIELD QUALITY CONTROL

A. Using new materials, replace broken and damaged escutcheons.

SECTION 220523.12 - BALL VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Bronze ball valves.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of valve.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.

B. ASME Compliance:

   1. ASME B1.20.1 for threads for threaded end valves.
   2. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
   3. ASME B16.18 for solder-joint connections.

C. NSF Compliance: NSF 61 and California Assembly Bill AB1953 for valve materials for potable-water service.

D. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.

E. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

F. Valve Sizes: Same as upstream piping unless otherwise indicated.

G. Valve Actuator Types:
   1. Handlever: For quarter-turn valves smaller than NPS 4.

2.2 BRONZE BALL VALVES

A. Bronze Ball Valves, Two-Piece with Full Port, and Bronze or Brass Trim, Threaded or Soldered Ends:
   1. Description:

      a. Standard: MSS SP-110 or MSS-145.
      b. CWP Rating: 600 psig.
      c. Body Design: Two piece.
      d. Body Material: Bronze.
      e. Ends: Threaded and soldered.
      f. Seats: PTFE.
      g. Stem: Bronze or brass.
      h. Ball: Chrome-plated brass.
      i. Port: Full.

PART 3 - EXECUTION

3.1 VALVE INSTALLATION

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Locate valves for easy access and provide separate support where necessary.

C. Install valves in horizontal piping with stem at or above center of pipe.

D. Install valves in position to allow full stem movement.

3.2 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valves with specified CWP ratings are unavailable, the same types of valves with higher CWP ratings may be substituted.

B. Select valves with the following end connections:

   1. For Copper Tubing, NPS 2 and Smaller: Threaded ends except where solder-joint valve-end option is indicated in valve schedules below.

3.3 DOMESTIC HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 2 and Smaller:
   1. Bronze ball valves, two-piece with full port and bronze or brass trim. Provide with threaded or solder-joint ends.

END OF SECTION 220523.12

SECTION 220529 - HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Fastener systems.
3. Pipe-positioning systems.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Galvanized Metallic Coatings: Pregalvanized, hot-dip galvanized, or electro-galvanized.
3. Nonmetallic Coatings: Plastic coated or epoxy powder coated.
4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
5. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel .

2.2 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

B. Mechanical-Expansion Anchors: Insert-wedge-type anchors, for use in hardened portland cement concrete, with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
1. Indoor Applications: Zinc-coated steel.
2. Outdoor Applications: Stainless steel.

2.3 PIPE-POSITIONING SYSTEMS

A. Description: IAPMO PS 42 positioning system composed of metal brackets, clips, and straps for positioning piping in pipe spaces; for plumbing fixtures in commercial applications.

2.4 MATERIALS

A. Carbon Steel: ASTM A1011/A1011M.

B. Structural Steel: ASTM A36/A36M carbon-steel plates, shapes, and bars; black and galvanized.

PART 3 - EXECUTION

3.1 APPLICATION

A. Strength of Support Assemblies: Where not indicated, select sizes of components, so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

3.2 HANGER AND SUPPORT INSTALLATION

A. Metal Pipe-Hanger Installation: Comply with MSS SP-58. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.

B. Fastener System Installation:

1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete, after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
2. Install mechanical-expansion anchors in concrete, after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

C. Pipe-Positioning-System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture.

D. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

E. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

F. Install lateral bracing with pipe hangers and supports to prevent swaying.

G. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2] and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

H. Load Distribution: Install hangers and supports, so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

I. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

3.3 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches] .

3.4 PAINTING

A. Touchup: Clean field welds and abraded, shop-painted areas. Paint exposed areas immediately after erecting hangers and supports. Use same materials as those used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas, and apply galvanizing-repair paint to comply with ASTM A780/A780M.

3.5 HANGER AND SUPPORT SCHEDULE

A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.

B. Comply with MSS SP-58 for pipe-hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finishes.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use carbon-steel pipe hangers and supports and attachments for general service applications.

F. Use corrosion-resistant attachments for hostile environment applications.

G. Use copper-plated pipe hangers and copper attachments for copper piping and tubing.

H. Use padded hangers for piping that is subject to scratching.

I. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30.
2. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes NPS 1/2 to NPS 24 if little or no insulation is required.
3. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
4. Adjustable, Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8.
5. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.

J. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.
2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 if longer ends are required for riser clamps.

K. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel Turnbuckles (MSS Type 13): For adjustment of up to 6 inches for heavy loads.
2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11 split pipe rings.
4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.

L. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel or Malleable-Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
2. Malleable-Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.

M. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

N. Use pipe-positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.

END OF SECTION 220529

SECTION 220553 - IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Pipe labels.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.

B. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.

C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings; also include pipe size and an arrow indicating flow direction.

   1. Flow-Direction Arrows: Integral with piping-system service lettering to accommodate both directions or as separate unit on each pipe label to indicate flow direction.
   2. Lettering Size: At least 1/2 inch for viewing distances up to 72 inches and proportionately larger lettering for greater viewing distances.

PART 3 - EXECUTION

3.1 PIPE LABEL INSTALLATION

A. Pipe Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:

1. Near each valve and control device.
2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations and on both sides of through walls, floors, ceilings, and inaccessible enclosures.
4. At access doors, manholes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 25 feet along each run. Reduce intervals to 10 feet in areas of congested piping and equipment.
7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

B. Pipe Label Color Schedule:

1. Domestic Water Piping

   a. Background: Safety green.
   b. Letter Colors: White.

2. Sanitary Waste Piping:

   a. Background Color: Safety white.
   b. Letter Color: Black.

END OF SECTION 220553

SECTION 221116 - DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copper tube and fittings.
2. Piping joining materials.
3. Transition fittings.
4. Dielectric fittings.

1.2 ACTION SUBMITTALS

A. Product Data: For transition fittings and dielectric fittings.

1.3 INFORMATIONAL SUBMITTALS

A. System purging and disinfecting activities report.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

B. Potable-water piping and components shall comply with NSF 14, NSF 61, and NSF 372

2.2 COPPER TUBE AND FITTINGS

A. Hard Copper Tube: ASTM B88, Type L water tube, drawn temper.

B. Soft Copper Tube: ASTM B88, Type K water tube, annealed temper.

C. Cast-Copper, Solder-Joint Fittings: ASME B16.18, pressure fittings.

D. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.

E. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.

F. Copper Unions:

1. MSS SP-123.
2. Cast-copper-alloy, hexagonal-stock body.
3. Ball-and-socket, metal-to-metal seating surfaces.
4. Solder-joint or threaded ends.

2.3 PIPING JOINING MATERIALS

A. Solder Filler Metals: ASTM B32, lead-free alloys.

B. Flux: ASTM B813, water flushable.

C. Brazing Filler Metals: AWS A5.8M/A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

2.4 TRANSITION FITTINGS

A. General Requirements:

1. Same size as pipes to be joined.
2. Pressure rating at least equal to pipes to be joined.
3. End connections compatible with pipes to be joined.

B. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

C. Plastic-to-Metal Transition Fittings:
1. Description:

a. PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions.
b. One end with threaded brass insert and one solvent-cement-socket or threaded end.

D. Plastic-to-Metal Transition Unions:
1. Description:

a. PVC four-part union.
b. Brass threaded end.
c. Solvent-cement-joint or threaded plastic end.
d. Rubber O-ring.
e. Union nut.

2.5 DIELECTRIC FITTINGS

A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.

B. Dielectric Unions:
   1. Standard: ASSE 1079.
   2. Pressure Rating: 125 psig minimum at 180 deg F.
   3. End Connections: Solder-joint copper alloy and threaded ferrous.

C. Dielectric Nipples:
   1. Standard: IAPMO PS 66.
   2. Electroplated steel nipple complying with ASTM F1545.
   3. Pressure Rating and Temperature: 300 psig at 225 deg F] .
   4. End Connections: Male threaded or grooved.
   5. Lining: Inert and noncorrosive, propylene.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."

C. Install domestic water piping level and plumb.

D. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.

E. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

F. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.

G. Install piping to permit valve servicing.

H. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than the system pressure rating used in applications below unless otherwise indicated.

I. Install piping free of sags and bends.

J. Install fittings for changes in direction and branch connections.

K. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.

L. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

3.2 JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

C. Brazed Joints for Copper Tubing: Comply with CDA's "Copper Tube Handbook," "Brazed Joints" chapter.

D. Soldered Joints for Copper Tubing: Apply ASTM B813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B828 or CDA's "Copper Tube Handbook."

E. Joints for Dissimilar-Material Piping: Make joints using adapters compatible with materials of both piping systems.

3.3 TRANSITION FITTING INSTALLATION

A. Install transition couplings at joints of dissimilar piping.

B. Transition Fittings in Underground Domestic Water Piping:

1. Fittings for NPS 1-1/2 and Smaller: Fitting-type coupling.
2. Fittings for NPS 2 and Larger: Sleeve-type coupling.

C. Transition Fittings in Aboveground Domestic Water Piping NPS 2 and Smaller: Plastic-to-metal transition fittings or unions.

3.4 DIELECTRIC FITTING INSTALLATION

A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.

B. Dielectric Fittings for NPS 2 and Smaller: Use dielectric unions or nipples.

3.5 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for pipe hanger, support products, and installation in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."

1. Vertical Piping: MSS Type 8 or 42, clamps.
2. Individual, Straight, Horizontal Piping Runs:

    a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
    b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.

B. Support vertical piping and tubing at base and at each floor.

C. Rod diameter may be reduced one size for double-rod hangers, to a minimum of 3/8 inch.

D. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 3/4 and Smaller: 60 inches with 3/8-inch rod.
2. NPS 1 and NPS 1-1/4: 72 inches with 3/8-inch rod.
3. NPS 1-1/2 and NPS 2: 96 inches with 3/8-inch rod.

E. Install supports for vertical copper tubing every 10 feet.

F. Support piping and tubing not listed in this article according to MSS SP-58 and manufacturer's written instructions.

3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. When installing piping adjacent to equipment and machines, allow space for service and maintenance.

C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.

D. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:
1. Plumbing Fixtures: Cold- -supply piping in sizes indicated, but not smaller than that required by plumbing code.

3.7 IDENTIFICATION

A. Identify system components. Comply with requirements for identification materials and installation in Section 220553 "Identification for Plumbing Piping and Equipment."

3.8 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Piping Inspections:

a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
b. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:

1) Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after roughing in and before setting fixtures.
2) Final Inspection: Arrange for authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.

c. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

2. Piping Tests:

a. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
b. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
c. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
d. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
e. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.
f. Prepare reports for tests and for corrective action required.

B. Domestic water piping will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.9 ADJUSTING

A. Perform the following adjustments before operation:

1. Close drain valves, hydrants, and hose bibbs.
2. Open shutoff valves to fully open position.

3. Remove plugs used during testing of piping and for temporary sealing of piping during installation.
4. Remove filter cartridges from housings and verify that cartridges are as specified for application where used and are clean and ready for use.
5. Check plumbing specialties and verify proper settings, adjustments, and operation.

3.10 CLEANING

A. Clean and disinfect potable domestic water piping as follows:

1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:

    a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
    b. Fill and isolate system according to either of the following:

        1) Fill system or part thereof with water/chlorine solution with at least 50 ppm of chlorine. Isolate with valves and allow to stand for 24 hours.
        2) Fill system or part thereof with water/chlorine solution with at least 200 ppm of chlorine. Isolate and allow to stand for three hours.

    c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
    d. Repeat procedures if biological examination shows contamination.
    e. Submit water samples in sterile bottles to authorities having jurisdiction.

B. Prepare and submit reports of purging and disinfecting activities. Include copies of water-sample approvals from authorities having jurisdiction.

C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

3.11 PIPING SCHEDULE

A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.

C. Fitting Option: Extruded-tee connections and brazed joints may be used on aboveground copper tubing.

D. Under-building-slab, domestic water piping, NPS 2 and smaller, shall be the following:

1. Soft copper tube, ASTM B88, Type K; wrought-copper, solder-joint fittings; and brazed joints.

E. Aboveground domestic water piping, NPS 2 and smaller , shall be the following:
1. Hard copper tube, ASTM B88, Type L wrought-copper, solder-joint fittings; and soldered joints.

END OF SECTION 221116

SECTION 221119 - DOMESTIC WATER PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Water pressure-reducing valves.
   2. Wall hydrants.
   3. Water-hammer arresters.
   4. Trap-seal primer valves.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

A. Potable-water piping and components shall comply with NSF 61 and California Assembly Bill AB1953. Comply with NSF 372 for low lead.

2.2 PERFORMANCE REQUIREMENTS

A. Minimum Working Pressure for Domestic Water Piping Specialties: 125 psig unless otherwise indicated.
   1. .

2.3 WATER PRESSURE-REDUCING VALVES

A. Water Regulators:
   1. Standard: ASSE 1003.
   2. Pressure Rating: Initial working pressure of 150 psig.
   3. Body: Bronze for NPS 2 and smaller.
   4. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and NPS 3.

B. Moderate-Climate Wall Hydrants:
   1. Standard: ASME A112.21.3M for concealed-outlet, self-draining wall hydrants.
   2. Pressure Rating: 125 psig.
   3. Operation: Loose key.
   4. Inlet: NPS 3/4 .
   5. Outlet:
      a. Concealed, with integral vacuum breaker or nonremovable hose-connection vacuum breaker complying with ASSE 1011 or backflow preventer complying with ASSE 1052.
      b. Garden-hose thread complying with ASME B1.20.7.
   6. Box: Deep, flush mounted with cover.
   7. Box and Cover Finish: Chrome plated.
   8. Outlet:
      a. Concealed, with integral vacuum breaker complying with ASSE 1011 or backflow preventer complying with ASSE 1052.
      b. Garden-hose thread complying with ASME B1.20.7.
   9. Nozzle and Wall-Plate Finish: Rough bronze.
   10. Operating Key(s): [Two with each wall hydrant.

2.4 WATER-HAMMER ARRESTERS

A. Water-Hammer Arresters:
   1. Standard: ASSE 1010 or PDI-WH 201.
   2. Type: Metal bellows.
   3. Size: ASSE 1010, Sizes AA and A through F, or PDI-WH 201, Sizes A through F.

2.5 TRAP-SEAL PRIMER DEVICE

A. Supply-Type, Trap-Seal Primer Device:
   1. Standard: ASSE 1018.
   2. Pressure Rating: 125 psig minimum.
   3. Body: Bronze.
   4. Inlet and Outlet Connections: NPS 1/2 threaded, union, or solder joint.
   5. Gravity Drain Outlet Connection: NPS 1/2 threaded or solder joint.

6. Finish: Chrome plated, or rough bronze for units used with pipe or tube that is not chrome finished.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Water Regulators: Install with inlet and outlet shutoff valves.

B. Supply-Type, Trap-Seal Primer Device: Install with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust valve for proper flow.

3.2 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. When installing piping specialties adjacent to equipment and machines, allow space for service and maintenance.

3.3 ADJUSTING

A. Set field-adjustable pressure set points of water pressure-reducing valves.

END OF SECTION 221119

SECTION 221316 - SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Hubless, cast-iron soil pipe and fittings.
2. Copper tube and fittings.
3. PVC pipe and fittings.
4. Specialty pipe fittings.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B.

1.4 FIELD CONDITIONS

A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by City or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:

1. Notify Architect no fewer than two days in advance of proposed interruption of sanitary waste service.
2. Do not proceed with interruption of sanitary waste service without Architect's] written permission.

1.5 WARRANTY

A. Listed manufacturers to provide labelling and warranty of their respective products.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water.

2.2 PIPING MATERIALS

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.3 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A888 or CISPI 301.

B. Heavy-Duty, Hubless-Piping Couplings:
1. Standards: ASTM C1277 and ASTM C1540.
2. Description: Stainless-steel shield with stainless-steel bands and tightening devices; and ASTM C564, rubber sleeve with integral, center pipe stop.

2.4 COPPER TUBE AND FITTINGS

A. Copper Type DWV Tube: ASTM B306, drainage tube, drawn temper.

B. Copper Drainage Fittings: ASME B16.23, cast copper or ASME B16.29, wrought copper, solder-joint fittings.

C. Hard Copper Tube: ASTM B88, Type L, water tube, drawn temper.

D. Solder: ASTM B32, lead free with ASTM B813, water-flushable flux.

2.5 PVC PIPE AND FITTINGS

A. Comply with NSF 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.

B. Solid-Wall PVC Pipe: ASTM D2665, drain, waste, and vent.

C. PVC Socket Fittings: ASTM D2665, made to ASTM D3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.

D. Adhesive Primer: ASTM F656.

E. Solvent Cement: ASTM D2564.

2.6 SPECIALTY PIPE FITTINGS

A. Transition Couplings:

1. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

2. Shielded, Nonpressure Transition Couplings:
   a. Standard: ASTM C1460.
   b. Description: Elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.
   c. End Connections: Same size as and compatible with pipes to be joined.

B. Dielectric Fittings:

1. Dielectric Unions:
   a. Description:

      1) Standard: ASSE 1079.
      2) Pressure Rating: 125 psig minimum at 180 deg F] .
      3) End Connections: Solder-joint copper alloy and threaded ferrous.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems.

1. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations.
2. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping at indicated slopes as noted below.

F. Install piping free of sags and bends.

G. Install fittings for changes in direction and branch connections.

H. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends.

1. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical.
2. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe.

    a. Straight tees, elbows, and crosses may be used on vent lines.

3. Do not change direction of flow more than 90 degrees.
4. Use proper size of standard increasers and reducers if pipes of different sizes are connected.

    a. Reducing size of waste piping in direction of flow is prohibited.

I. Lay buried building waste piping beginning at low point of each system.

1. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream.
2. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
3. Maintain swab in piping and pull past each joint as completed.

J. Install soil and waste and vent piping at the following minimum slopes unless otherwise indicated:

1. Building Sanitary Waste: 2 percent downward in direction of flow for piping NPS 3 and smaller; 1 percent downward in direction of flow for piping NPS 4 and larger.
2. Horizontal Sanitary Waste Piping: 2 percent downward in direction of flow.
3. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.

K. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."

1. Install encasement on underground piping according to ASTM A674 or AWWA C105/A 21.5.

L. Install aboveground copper tubing according to CDA's "Copper Tube Handbook."

M. Install underground PVC piping according to ASTM D2321.

N. Plumbing Specialties:

1. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary waste gravity-flow piping.

a. Install cleanout fitting with closure plug inside the building in sanitary drainage force-main piping.
b. Comply with requirements for cleanouts specified in Section 221319 "Sanitary Waste Piping Specialties."

2. Install drains in sanitary waste gravity-flow piping.

a. Comply with requirements for drains specified in Section 221319 "Sanitary Waste Piping Specialties."

O. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

P. Install escutcheons for piping penetrations of walls, ceilings, and floors.

1. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

3.2 JOINT CONSTRUCTION

A. Join hubless, cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-piping coupling joints.

B. Join copper tube and fittings with soldered joints according to ASTM B828. Use ASTM B813, water-flushable, lead-free flux and ASTM B32, lead-free-alloy solder.

C. Plastic, Nonpressure-Piping, Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F402 for safe-handling practice of cleaners, primers, and solvent cements.
2. PVC Piping: Join according to ASTM D2855 and ASTM D2665 appendixes.

3.3 SPECIALTY PIPE FITTING INSTALLATION

A. Transition Couplings:

1. Install transition couplings at joints of piping with small differences in ODs.
2. In Waste Drainage Piping: Shielded, nonpressure transition couplings.

B. Dielectric Fittings:

1. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
2. Dielectric Fittings for NPS 4 and Smaller: Use dielectric unions.

3.4 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for pipe hanger and support devices and installation specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment**.**

1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
2. Install stainless-steel pipe hangers for horizontal piping in corrosive environments.
3. Install carbon-steel pipe support clamps for vertical piping in noncorrosive environments.
4. Install stainless-steel pipe support clamps for vertical piping in corrosive environments.
5. Vertical Piping: MSS Type 8 or Type 42, clamps.
6. Install individual, straight, horizontal piping runs:

    a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.

B. Support horizontal piping and tubing within 12 inches of each fitting and coupling.

C. Support vertical piping and tubing at base and at each floor.

D. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch minimum rods.

E. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/2 and NPS 2: 60 inches with 3/8-inch rod.
2. NPS 3: 60 inches with 1/2-inch rod.
3. NPS 4 and NPS 5: 60 inches with 5/8-inch rod.

F. Install supports for vertical cast-iron soil piping every 15 feet.

G. Support piping and tubing not listed above according to MSS SP-58 and manufacturer's written instructions.

3.5 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

C. Connect waste and vent piping to the following:

1. Plumbing Fixtures: Connect waste piping in sizes indicated, but not smaller than required by plumbing code.
2. Plumbing Specialties: Connect waste and vent piping in sizes indicated, but not smaller than required by plumbing code.
3. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.

3.6 IDENTIFICATION

A. Identify exposed sanitary waste and vent piping.

B. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.7 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.

1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test sanitary waste and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired.

    a. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.

2. Leave uncovered and unconcealed new, altered, extended, or replaced waste and vent piping until it has been tested and approved.

    a. Expose work that was covered or concealed before it was tested.

3. Roughing-in Plumbing Test Procedure: Test waste and vent piping except outside leaders on completion of roughing-in.

    a. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water.
    b. From 15 minutes before inspection starts to completion of inspection, water level must not drop.
    c. Inspect joints for leaks.

4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight.

    a. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg.
    b. Use U-tube or manometer inserted in trap of water closet to measure this pressure.
    c. Air pressure must remain constant without introducing additional air throughout period of inspection.
    d. Inspect plumbing fixture connections for gas and water leaks.

5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
6. Prepare reports for tests and required corrective action.

3.8 CLEANING AND PROTECTION

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect sanitary waste and vent piping during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

D. Repair damage to adjacent materials caused by waste and vent piping installation.

3.9 PIPING SCHEDULE

A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.

B. Aboveground, soil and waste piping NPS 4 and smaller shall be the following:

1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
2. Hubless, cast-iron soil pipe and fittings, heavy-duty hubless-piping couplings; and coupled joints.
3. Copper Type DWV tube, copper drainage fittings, and soldered joints.

C. Aboveground, vent piping NPS 4 and smaller shall be the following:

1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
2. Hubless, cast-iron soil pipe and fittings; CISPI hubless-piping couplings; and coupled joints.
3. Copper Type DWV tube, copper drainage fittings, and soldered joints.
4. Dissimilar Pipe-Material Couplings: Shielded, nonpressure transition couplings.

D. Underground, soil, waste, and vent piping NPS 4 and smaller shall be any of the following:
1. Hubless, cast-iron soil pipe and fittings; heavy-duty hubless-piping couplings; and coupled joints.
2. Solid wall PVC pipe, PVC socket fittings, and solvent-cemented joints.
3. Dissimilar Pipe-Material Couplings: Shielded, nonpressure transition couplings.

END OF SECTION 221316

SECTION 221319 - SANITARY WASTE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Cleanouts.
   2. Miscellaneous sanitary drainage piping specialties.

1.2 DEFINITIONS

A. PVC: Polyvinyl chloride.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTIONS

A. Sanitary waste piping specialties shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF 14 for plastic sanitary waste piping specialty components.

2.2 CLEANOUTS

A. Cast-Iron Exposed Cleanouts :
   1. Standard: ASME A112.36.2M for cast iron for cleanout test tee.
   2. Size: Same as connected drainage piping
   3. Body Material: Hubless**,** cast-iron soil pipe test tee as required to match connected piping.
   4. Closure: Countersunk or raised-head, plastic plug.
   5. Closure Plug Size: Same as or not more than one size smaller than cleanout size.
   6. Closure: Stainless-steel plug with seal.

B. Cast-Iron Exposed Floor Cleanouts:
   1. Standard: ASME A112.36.2M for adjustable housing cleanout.
   2. Size: Same as connected branch.
   3. Type: Adjustable housing.

4. Body or Ferrule: Cast iron >.
5. Outlet Connection: Inside calk.
6. Closure: Brass plug with straight threads and gasket.
7. Adjustable Housing Material: Cast iron with threads.
8. Frame and Cover Material and Finish: Rough bronze .
9. Frame and Cover Shape: Round .
10. Top Loading Classification: Light Duty.
11. Riser: ASTM A74, Service class, cast-iron drainage pipe fitting and riser to cleanout.

C. Cast-Iron Wall Cleanouts :
1. Standard: ASME A112.36.2M. Include wall access.
2. Size: Same as connected drainage piping.
3. Body: Hubless, cast-iron soil pipe test tee as required to match connected piping.
4. Closure Plug:

a. Brass.
b. Countersunk head.
c. Drilled and threaded for cover attachment screw.
d. Size: Same as or not more than one size smaller than cleanout size.

5. Wall Access: Round, flat, chrome-plated brass or stainless-steel cover plate with screw.

2.3 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

A. Floor-Drain, Trap-Seal Primer Fittings :

1. Description: Cast iron, with threaded inlet and threaded or spigot outlet, and trap-seal primer valve connection.
2. Size: Same as floor drain outlet with NPS 1/2 side inlet.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:

1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.
2. Locate at each change in direction of piping greater than 45 degrees.
3. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
4. Locate at base of each vertical soil and waste stack.

B. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.

C. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.

D. Install floor-drain, trap-seal primer fittings on inlet to floor drains that require trap-seal primer connection.

1. Exception: Fitting may be omitted if trap has trap-seal primer connection.
2. Size: Same as floor drain inlet.

3.2 CONNECTIONS

A. Comply with requirements in Section 221316 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment to allow service and maintenance.

3.3 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION 221319

SECTION 221319.13 - SANITARY DRAINS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Floor drains.

1.2 DEFINITIONS

A. ABS: Acrylonitrile-butadiene styrene.

B. FRP: Fiberglass-reinforced plastic.

C. PE: Polyethylene.

D. PP: Polypropylene.

E. PVC: Polyvinyl chloride.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 DRAIN ASSEMBLIES

A. Sanitary drains shall bear label, stamp, or other markings of specified testing agency.

2.2 FLOOR DRAINS

A. Cast-Iron Floor Drains:
1. Standard: ASME A112.6.3.
2. Pattern: Floor drain.
3. Body Material: Gray iron.
4. Seepage Flange: Not required.
5. Anchor Flange: Not required.
6. Clamping Device: Not required.
7. Outlet: Bottom.
8. Backwater Valve: Not required.

9. Coating on Interior and Exposed Exterior Surfaces: Acid-resistant enamel.
10. Sediment Bucket: Required.
11. Top or Strainer Material: Stainless steel.
12. Top of Body and Strainer Finish: Stainless steel.
13. Top Shape: Round.
14. Dimensions of Top or Strainer: See Drawing Schedule.
15. Top Loading Classification: Light Duty.
16. Funnel: Not required.
17. Inlet Fitting: Not required.
18. Trap Material: Cast iron.
19. Trap Pattern: Standard P-trap.
20. Trap Features: Trap-seal primer valve drain connection.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install floor drains at low points of surface areas to be drained. Set grates flush with finished floor, unless otherwise indicated.

1. Position floor drains for easy access and maintenance.
2. Set floor drains below elevation of surrounding finished floor to allow floor drainage.
3. Set with grates depressed according to the following drainage area radii:

    a. Radius, 30 Inches or Less: Equivalent to 1 percent slope, but not less than 1/4-inch total depression.
    b. Radius, 30 to 60 Inches: Equivalent to 1 percent slope.
    c. Radius, 60 Inches or Larger: Equivalent to 1 percent slope, but not greater than 1-inch total depression.

4. Install floor-drain flashing collar or flange, so no leakage occurs between drain and adjoining flooring.

    a. Maintain integrity of waterproof membranes where penetrated.

5. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.

3.2 CONNECTIONS

A. Comply with requirements in Section 221316 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment to allow service and maintenance.

3.3 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION 221319.13

SECTION 224600 - SECURITY PLUMBING FIXTURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Water closets.
   2. Lavatories.

1.2 DEFINITIONS

A. Accessible Service Space: Service area in secure space behind wall-mounted fixtures.

B. Back-Access Fixture: Security plumbing fixture designed to mount on wall sleeve built into wall or on wall, so installation and removal of fixture, piping, and other components are accessible only from service space behind wall.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

PART 2 - PRODUCTS

2.1 STAINLESS-STEEL WATER CLOSETS

A. Water Closets WC-1: Back access, off floor, back outlet, extended bowl.
   1. Material: 0.078-inch- minimum-thick stainless steel; corrosion-resistant metal for internal piping and bracing.
   2. Finish: ASTM A480/A480M, No. 4 polished finish on exposed surfaces.

   3. Mounting: Bolts through wall sleeve into accessible service space.
   4. Water Closet:

      a. Standard: IAPMO PS 61.
      b. Bowl:

1) Type: Elongated, with back inlet, integral trap, and [blowout design with back outlet and contoured seat.
2) Type: Elongated, with back inlet, integral trap, and siphon-jet design with bottom outlet and contoured seat.
3) Back-Outlet Connection: NPS 4, horizontal with cleanout and slip joint.
4) Seat Surface: No seat.

5. Flushometer Valve: See Below.
6. Toilet Seat: None.
7. Wall Sleeve: Galvanized-steel frame of dimensions required to match fixture. Include steel bars or other design to prevent escape if fixture is removed.

a. Configuration: Modify wall sleeve for water-closet mounting height according to ICC A117.1.

B. Water Closets WC-2: Back access, off floor, back outlet, extended bowl. Mount at accessible height.
1. Standard: IAPMO PS 61.
2. Material: 0.078-inch- minimum-thick stainless steel; corrosion-resistant metal for internal piping and bracing.
3. Finish: ASTM A480/A480M, No. 4 polished finish on exposed surfaces.
4. Bowl:

a. Type: Elongated, with back inlet, integral trap, and siphon-jet design with back outlet and contoured seat.
b. Type: Elongated, with back inlet, integral trap, and siphon-jet design with bottom outlet and contoured seat.
c. Length to Wall: Minimum of 25 inches.
d. Back-Outlet Connection: NPS 4, horizontal with cleanout and slip joint.
e. Seat Surface: None.

5. Mounting: Bolts through wall sleeve into accessible pipe space.
6. Flushometer Valve: See below.
7. Toilet Seat: None.
8. Wall Sleeve: Galvanized-steel frame of dimensions required to match fixture. Include steel bars or other design to prevent escape if fixture is removed.

a. Configuration: Modify wall sleeve for water-closet mounting height according to ICC A117.1.

2.2 FLUSHOMETER VALVES

A. Flushometer Valves: Push button, diaphragm.
1. Standard: ASSE 1037.
2. Minimum Pressure Rating: 125 psig.
3. Features: Integral check stops and backflow-prevention device.
4. Material: Brass body with corrosion-resistant components.

5. Exposed Flushometer-Valve Finish: Chrome plated.
6. Panel Finish: Chrome plated or stainless steel.
7. Style: Concealed.
8. Consumption: 1.28 gal**.** per flush.
9. Minimum Inlet: NPS 1.
10. Minimum Outlet: NPS 1-1/4.

2.3 STAINLESS-STEEL LAVATORIES

A. Lavatories L-1: Back access.
   1. Fixture:

      a. Standard: ASME A112.19.3/CSA B45.4.
      b. Material: 0.078-inch- minimum-thick stainless steel; corrosion-resistant metal for internal piping and bracing.
      c. Finish: ASTM A480/A480M, No. 4 polished finish on exposed surfaces.
      d. Receptor: Oval bowl with integral soap depression and backsplash.
      e. Cold-Water Supply Valves: Mechanical-metering type with push-button actuation, individual check stops, and backsplash mounted filler spouts complying with ASME A112.18.1/CSA B125.1.
      f. Drain: Integral punched grid with NPS 1-1/4 minimum horizontal waste and trap complying with ASME A112.18.2/CSA B125.2.

   2. Mounting: Bolts through wall into accessible service space.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install security plumbing fixtures level and plumb according to roughing-in drawings.

B. Install back-access, stainless-steel fixtures as follows:

   1. Install wall sleeve in wall.
   2. Install fixture on wall sleeve or wall, as indicated, with access from accessible service space.
   3. Extend supply piping from service space to fixture.
   4. Install soil and waste piping from fixture and extend into service space.
   5. Install fixture trap in service space instead of below fixture drain.

C. Install fixture outlets with gasket seals.

D. Install fixtures designated "accessible" according to ICC A117.1 for heights, dimensions, and clearances.

E. Seal joints between fixtures, floors, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

F. Operate and adjust flushometer valves and flow-control valves on fixtures.

G. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

H. Comply with requirements for water piping specified in Section 221116 "Domestic Water Piping."

I. Comply with requirements for soil and waste drainage piping specified in Section 221316 "Sanitary Waste and Vent Piping."

3.2 CLEANING AND PROTECTION

A. After installing fixtures, inspect and repair damaged finishes.

B. Clean fixtures, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.

C. Provide protective covering for installed fixtures and fittings.

D. Do not allow use of fixtures for temporary facilities unless approved in writing by City.

END OF SECTION 224600

SECTION 224713 - DRINKING FOUNTAINS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes drinking fountains and related components.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of drinking fountains.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: For drinking fountains to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 DRINKING FOUNTAINS

A. Drinking Fountains DF-1 and DF-2: Stainless steel**,** wall mounted. WC-2 is wheelchair accessible.

1. Standards:

a. Comply with ASME A112.19.3/CSA B45.4.
b. Comply with NSF 61 and NSF 372.
c. Comply with ICC A117.1.

2. Type Receptor: Slab.
3. Receptor Shape: Rectangular.
4. Back Panel: Stainless-steel wall plate behind drinking fountain.
5. Bubblers: One, with adjustable stream regulator, located on deck.
6. Maximum Water Flow: 0.5 gpm.
7. Control: Push button.
8. Drain: Grid type with NPS 1-1/4 tailpiece.
9. Supply Piping: NPS 1/2 with shutoff valve.
10. Drain Piping: ASME A112.18.2/CSA B125.2, NPS 1-1/4 chrome-plated brass P-trap and waste.
11. Support: Type I water cooler carrier.
12. Drinking Fountain Mounting Height: DF-1: Standard**.** DF-2**:** Handicapped/elderly according to ICC A117.1.

2.2 SUPPORTS

A. Type I Water Cooler Carrier:
   1. Standard: ASME A112.6.1M.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for water-supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before fixture installation.

B. Examine walls and floors for suitable conditions where fixtures will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install fixtures level and plumb according to roughing-in drawings. For fixtures indicated for children, install at height required by authorities having jurisdiction.

B. Install off-the-floor carrier supports, affixed to building substrate, for wall-mounted fixtures.

C. Install water-supply piping with shutoff valve on supply to each fixture to be connected to domestic-water distribution piping. Use ball or gate valve. Install valves in locations where they can be easily reached for operation. Valves are specified in Section 220523.12 "Ball Valves for Plumbing Piping".

D. Install trap and waste piping on drain outlet of each fixture to be connected to sanitary drainage system.

E. Seal joints between fixtures and walls using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color. Comply with sealant requirements specified in Section 079200 "Joint Sealants."

F. Adjust fixture flow regulators for proper flow and stream height.

3.3 CONNECTIONS

A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Install ball or gate shutoff valve on water supply to each fixture. Comply with valve requirements specified in Section 220523.12 "Ball Valves for Plumbing Piping”.

D. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

3.4 CLEANING

A. After installation, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.

B. Clean fixtures, on completion of installation, according to manufacturer's written instructions.

C. Provide protective covering for installed fixtures.

D. Do not allow use of fixtures for temporary facilities unless approved in writing by City.

END OF SECTION 224713

SECTION 260500 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Electrical equipment coordination and installation.
2. Sleeves for raceways and cables.
3. Sleeve seals.
4. Grout.
5. Common electrical installation requirements.

1.3 DEFINITIONS

A. EPDM: Ethylene-propylene-diene terpolymer rubber.

B. NBR: Acrylonitrile-butadiene rubber.

1.4 SUBMITTALS

A. Product Data: For sleeve seals.

1.5 COORDINATION

A. Coordinate arrangement, mounting, and support of electrical equipment:

1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
3. To allow right of way for piping and conduit installed at required slope.
4. So connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.

B. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

C. Coordinate location of access panels and doors for electrical items that are behind finished surfaces or otherwise concealed.

D. Coordinate sleeve selection and application with selection and application of firestopping specified.

PART 2 - PRODUCTS

2.1 SLEEVES FOR RACEWAYS AND CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

C. Sleeves for Rectangular Openings: Galvanized sheet steel.

1. Minimum Metal Thickness:

a. For sleeve cross-section rectangle perimeter less than 50 inches (1270 mm) and no side more than 16 inches (400 mm), thickness shall be 0.052 inch (1.3 mm).
b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches (1270 mm) and 1 or more sides equal to, or more than, 16 inches (400 mm), thickness shall be 0.138 inch (3.5 mm).

2.2 SLEEVE SEALS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Advance Products & Systems, Inc.
b. Calpico, Inc.
c. Metraflex Co.
d. Pipeline Seal and Insulator, Inc.

2. Sealing Elements: EPDM, NBR interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
3. Pressure Plates: Plastic. Include two for each sealing element.
4. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.3 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

A. Comply with NECA 1.

B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.

C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.

D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.

E. Right of Way: Give to piping systems installed at a required slope.

3.2 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both surfaces of walls.

F. Extend sleeves installed in floors 2 inches above finished floor level.

G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.

H. Seal space outside of sleeves with grout for penetrations of concrete and masonry

1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.

I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants.".

J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with requirements in Division 07 Section "Penetration Firestopping."

K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.

L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.3 SLEEVE-SEAL INSTALLATION

A. Install to seal exterior wall penetrations.

Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.4 FIRESTOPPING

A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly.

END OF SECTION 260500

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.
3. Sleeves and sleeve seals for cables.

1.3 DEFINITIONS

A. EPDM: Ethylene-propylene-diene terpolymer rubber.

B. NBR: Acrylonitrile-butadiene rubber.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Qualification Data: For testing agency.

C. Field quality-control test reports.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: 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 Part 3.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with CEC.

1.6 COORDINATION

A. Set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Alcan Products Corporation; Alcan Cable Division
2. American Insulated Wire Corp.; a Leviton Company.
3. General Cable Corporation.
4. Senator Wire & Cable Company.
5. Southwire Company.

B. Copper Conductors: Comply with NEMA WC 70.

2.2 CONNECTORS AND SPLICES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. AFC Cable Systems, Inc.
2. Hubbell Power Systems, Inc.
3. O-Z/Gedney; EGS Electrical Group LLC.
4. 3M; Electrical Products Division.
5. Tyco Electronics Corp.

B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3 SLEEVES FOR CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

2.4 SLEEVE SEALS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Advance Products & Systems, Inc.
2. Calpico, Inc.
3. Metraflex Co.
4. Pipeline Seal and Insulator, Inc.

B. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.

1. Sealing Elements: EPDM, NBR interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
2. Pressure Plates: Plastic. Include two for each sealing element.
3. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Service Entrance: By SDG&E.

B. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type XHHW, single conductors in raceway.

C. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type XHHW, single conductors in raceway.

D. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway. See Section 260553 for Color Coding requirements.

E. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.

F. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.

G. Class 1 Control Circuits: Type THHN-THWN, in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.

B. 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.

C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

E. Support cables as required by Code.

F. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."

G. Unless specifically shown otherwise, provide branch circuit and feeder homeruns with not more than three phase conductors, three neutral conductors and one ground conductor in a single raceway. The use of gutters or junction boxes to gather several homeruns into a large conduit to the panel will not be permitted.

H. Provide separate neutral wire with each branch circuit. See Section 260553 “Identification for Electrical Systems” for Color Coding requirements.

3.4 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.

B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches (150 mm) of slack.

3.5 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

B. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

C. Rectangular Sleeve Minimum Metal Thickness:

1. For sleeve rectangle perimeter less than 50 inches (1270 mm) and no side greater than 16 inches (400 mm), thickness shall be 0.052 inch (1.3 mm).
2. For sleeve rectangle perimeter equal to, or greater than, 50 inches (1270 mm) and 1 or more sides equal to, or greater than, 16 inches (400 mm), thickness shall be 0.138 inch (3.5 mm).

D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both wall surfaces.

F. Extend sleeves installed in floors 2 inches (50 mm) above finished floor level.

G. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and cable unless sleeve seal is to be installed.

H. Seal space outside of sleeves with grout for penetrations of concrete and masonry.

I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and cable, using joint sealant appropriate for size, depth, and location of joint according to Division 07 Section "Joint Sealants."

J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at cable penetrations. Install sleeves and seal with firestop materials according to Division 07 Section "Penetration Firestopping."

K. Roof-Penetration Sleeves: Seal penetration of individual cables with flexible boot-type flashing units applied in coordination with roofing work.

L. Aboveground Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeves to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.

M. Underground Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between cable and sleeve for installing mechanical sleeve seals.

3.6 SLEEVE-SEAL INSTALLATION

A. Install to seal underground exterior-wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for cable material and size. Position cable in center of sleeve. Assemble mechanical sleeve seals and install in annular

space between cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.7 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly.

3.8 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.

B. Perform tests and inspections and prepare test reports.

C. Tests and Inspections:

1. After installing conductors and cables and before electrical circuitry has been energized, test for compliance with requirements.
2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

D. Test Reports: Prepare a written report to record the following:

1. Test procedures used.
2. Test results that comply with requirements.
3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

E. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION 260519

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. This Section includes methods and materials for grounding systems and equipment.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Other Informational Submittals: Plans showing dimensioned as-built locations of grounding features specified in Part 3 "Field Quality Control" Article, including the following:

1. Ground rods.

C. Qualification Data: For testing agency and testing agency's field supervisor.

D. Field quality-control test reports.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association to supervise on-site testing specified in Part 3.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with UL 467 for grounding and bonding materials and equipment.

2.1 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.
3. Tinned Conductors: ASTM B 33.
4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch (6 mm) in diameter.
5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
6. Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.
7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.

C. Grounding Bus: Rectangular bars of annealed copper, 1/4 by 2 inches (6 by 50 mm) in cross section, unless otherwise indicated; with insulators.

2.2 CONNECTORS

A. Listed and labeled by a nationally recognized testing laboratory 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, bolted pressure-type, with at least two bolts.

1. Pipe Connectors: Clamp type, sized for pipe.

C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.3 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad steel; 3/4 inch by10 feet (19 mm by 3 m) in diameter.

3.1 APPLICATIONS

A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger, unless otherwise indicated.

B. Underground Grounding Conductors: Install bare copper conductor, No. 2/0 AWG minimum.

1. Bury at least 24 inches (600 mm) below grade.
2. Duct-Bank Grounding Conductor: Bury 12 inches (300 mm) above duct bank when indicated as part of duct-bank installation.

C. Grounding Bus: Install in electrical and telephone equipment rooms, in rooms housing service equipment, and elsewhere as indicated.

1. Install bus on insulated spacers 1 inch (25 mm), minimum, from wall 6 inches (150 mm) above finished floor, unless otherwise indicated.
2. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, down to specified height above floor, and connect to horizontal bus.

D. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Exothermically Welded connectors.
3. Connections to Structural Steel: Exothermically Welded connectors.

3.2 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeders and branch circuits.

B. Install insulated equipment grounding conductors with the following items, in addition to those required by CEC:

1. Feeders and branch circuits.
2. Lighting circuits.
3. Receptacle circuits.
4. Single-phase motor and appliance branch circuits.
5. Three-phase motor and appliance branch circuits.
6. Flexible raceway runs.
7. Busway Supply Circuits: Install insulated equipment grounding conductor from grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.

C. Signal and Communication Equipment: For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.

1. Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a 1/4-by-2-by-12-inch (6-by-50-by-300-mm) grounding bus.
2. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.

3.3 INSTALLATION

A. All grounding shall be done in accordance with CEC article 250.

B. 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.

C. Ground Rods: Drive rods until tops are 6 inches (150 mm) below finished floor or final grade, unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor 24” below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.
2. For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.

D. 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. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.

E. Grounding and Bonding for Piping:

1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes, using a bolted clamp connector or by bolting a lug-type connector to a pipe flange, using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

F. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install tinned bonding jumper to bond across flexible duct connections to achieve continuity.

G. Grounding for Steel Building Structure: Install a driven ground rod at base of each corner column and at intermediate exterior columns at distances not more than 60 feet (18 m) apart.

H. Provide grounding for AT&T and Cox cable, per utilities standards.

I. Ufer Ground (Concrete-Encased Grounding Electrode): Fabricate according to CEC, using a minimum of **20 feet (6 m)** of bare copper conductor not smaller than No. **4** AWG.

1. If concrete foundation is less than 20 feet (6 m) long, coil excess conductor within base of foundation.
2. Bond grounding conductor to reinforcing steel in at least four locations and to anchor bolts. Extend grounding conductor below grade and connect to building grounding grid or to grounding electrode external to concrete.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing and inspecting agency to perform the following field tests and inspections and prepare test reports:

B. Perform the following tests and inspections and prepare test reports:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at individual ground rods. Make tests at ground rods before any conductors are connected.
    a. Measure ground resistance not less 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.
3. Prepare dimensioned drawings locating each test well, ground rod and ground rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location, and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.

C. Report measured ground resistances that exceed the following values:

1. Power and Lighting Equipment or System with Capacity 500 kVA and Less: 10 ohms.
2. Power Distribution Units or Panelboards Serving Electronic Equipment: 3 ohm(s).
3. Manhole Grounds: 10 ohms.

D. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

CITY OF SAN DIEGO
SALK NEIGHBORHOOD PARK
FINAL DESIGN
END OF SECTION 260526

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Hangers and supports for electrical equipment and systems.
2. Construction requirements for concrete bases.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. IMC: Intermediate metal conduit.

C. RMC: Rigid metal conduit.

1.4 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.

C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

D. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.5 ACTION SUBMITTALS

A. Product Data: For the following:

1. Steel slotted support systems.
2. Nonmetallic slotted support systems.

B. Shop Drawings: Show fabrication and installation details and include calculations for the following:

1. Trapeze hangers. Include Product Data for components.
2. Steel slotted channel systems. Include Product Data for components.
3. Nonmetallic slotted channel systems. Include Product Data for components.
4. Equipment supports.

1.6 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.7 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Comply with CEC.

1.8 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified together with concrete Specifications.

B. Coordinate installation of roof curbs, equipment supports, and roof penetrations.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Allied Tube & Conduit.
    b. Cooper B-Line, Inc.
    c. ERICO International Corporation.
    d. GS Metals Corp.
    e. Thomas & Betts Corporation.
    f. Unistrut; Atkore International.
    g. Wesanco, Inc.

2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
3. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
4. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
5. Channel Dimensions: Selected for applicable load criteria.

B. Nonmetallic Slotted Support Systems: Structural-grade, factory-formed, glass-fiber-resin channels and angles with 9/16-inch- (14-mm-) diameter holes at a maximum of 8 inches (200 mm) o.c., in at least 1 surface.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. Allied Tube & Conduit.
    b. Cooper B-Line, Inc.
    c. Fabco Plastics Wholesale Limited.
    d. Seasafe, Inc.

2. Fittings and Accessories: Products of channel and angle manufacturer and designed for use with those items.
3. Fitting and Accessory Materials: Same as channels and angles.
4. Rated Strength: Selected to suit applicable load criteria.

C. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

D. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

E. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

F. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

G. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1) Hilti, Inc.
2) ITW Ramset/Red Head; Illinois Tool Works, Inc.
3) MKT Fastening, LLC.
4) Simpson Strong-Tie Co., Inc.

2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.

a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1) Cooper B-Line, Inc.
2) Empire Tool and Manufacturing Co., Inc.
3) Hilti, Inc.
4) ITW Ramset/Red Head; Illinois Tool Works, Inc.
5) MKT Fastening, LLC.

3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

B. Materials: Comply with requirements in Section 055000 "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by CEC. Minimum rod size shall be 1/4 inch (6 mm) in diameter.

C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted [or other]support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with two-bolt conduit clamps.

D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch (38-mm) and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, EMT may be supported by openings through structure members, as permitted in CEC.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.

3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Expansion anchor fasteners.
5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
6. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
7. To Light Steel: Sheet metal screws.
8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

A. Comply with installation requirements in Section 055000 "Metal Fabrications" for site-fabricated metal supports.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

C. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 CONCRETE BASES

A. Construct concrete bases of dimensions indicated but not less than 4 inches (100 mm) larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.

B. Use 3000-psi (20.7-MPa) 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Section 033000 "Cast-in-Place Concrete."

C. Anchor equipment to concrete base.

1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor bolts to elevations required for proper attachment to supported equipment.
3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.5 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).

B. Touchup: Contractor shall perform touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 260529

SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. EPDM: Ethylene-propylene-diene terpolymer rubber.

C. FMC: Flexible metal conduit.

D. LFMC: Liquidtight flexible metal conduit.

E. LFNC: Liquidtight flexible nonmetallic conduit.

F. NBR: Acrylonitrile-butadiene rubber.

G. RNC: Rigid nonmetallic conduit.

1.4 SUBMITTALS

A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

B. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:

1. Structural members in the paths of conduit groups with common supports.
2. HVAC and plumbing items and architectural features in the paths of conduit groups with common supports.

C. Manufacturer Seismic Qualification Certification: Submit certification that enclosures and cabinets and their mounting provisions, including those for internal 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.

    a. The term "withstand" means "the cabinet or enclosure will remain in place without separation of any parts when subjected to the seismic forces specified."
    b. Cabinet or enclosure shall be seismically braced for zone IV as defined in the California Codes and Regulations.

D. Qualification Data: For professional engineer and testing agency.

E. Source quality-control test reports.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with CEC.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems, Inc.
2. Alflex Inc.
3. Allied Tube & Conduit; a Tyco International Ltd. Co.
4. Anamet Electrical, Inc.; Anaconda Metal Hose.
5. Electri-Flex Co.
6. Manhattan/CDT/Cole-Flex.
7. Maverick Tube Corporation.
8. O-Z Gedney; a unit of General Signal.
9. Wheatland Tube Company.

B. Rigid Steel Conduit: ANSI C80.1.

C. EMT: ANSI C80.3.

D. FMC: Zinc-coated steel.

E. LFMC: Flexible steel conduit with PVC jacket.

F. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.

1. Fittings for EMT: , compression type.

G. Joint Compound for Rigid Steel Conduit or IMC: Listed for use in cable connector assemblies, and compounded for use to lubricate and protect threaded raceway joints from corrosion and enhance their conductivity.

2.2 NONMETALLIC CONDUIT AND TUBING

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following.

B. Manufactures: Subject to compliance with requirements, provide product by one of the following:

1. AFC Cable Systems, Inc.
2. Anamet Electrical, Inc.; Anaconda Metal Hose.
3. Arnco Corporation.
4. CANTEX Inc.
5. CertainTeed Corp.; Pipe & Plastics Group.
6. Condux International, Inc.
7. ElecSYS, Inc.
8. Electric-Flex Co.
9. Lamson & Sessions; Carlon Electrical Products.
10. Manhattan/CDT/Cole-Flex.
11. RACO; a Hubbell Company.
12. Thomas & Betts Corporation.

C. RNC: NEMA TC 2 Type EPC-40-PVC unless otherwise indicated.

D. Fittings for RNC: NEMA TC 3; match to conduit or tubing type and material.

2.3 OPTICAL FIBER/COMMUNICATIONS CABLE RACEWAY AND FITTINGS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Arnco Corporation.
2. Endot Industries Inc.
3. IPEX Inc.
4. Lamson & Sessions; Carlon Electrical Products.

B. Description: Comply with UL 2024; flexible type, approved for plenum and riser installation.

2.4 BOXES, ENCLOSURES, AND CABINETS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
2. EGS/Appleton Electric.
3. Erickson Electrical Equipment Company.
4. Hoffman.
5. Hubbell Incorporated; Killark Electric Manufacturing Co. Division.
6. O-Z/Gedney; a unit of General Signal.
7. RACO; a Hubbell Company.
8. Robroy Industries, Inc.; Enclosure Division.
9. Scott Fetzer Co.; Adalet Division.
10. Spring City Electrical Manufacturing Company.
11. Thomas & Betts Corporation.
12. Walker Systems, Inc.; Wiremold Company (The).
13. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.

B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.

D. Metal Floor Boxes: Cast metal, fully adjustable, rectangular.

E. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

F. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.

G. Cabinets:

1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.

2.5 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

A. Description: Comply with SCTE 77.

1. Color of Frame and Cover: Gray

2. Configuration: Units shall be designed to flush burial and have integral closed bottom, unless otherwise indicated.
3. Cover: Weatherproof Galvanized Steel, secured by temper-resistant locking devices and having structural load rating consistent with enclosure.
4. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
5. Cover Legend: Molded lettering “ELECTRIC”, “TELEPHONE” as indicated for each service.
6. Conduit Entrance Provisions: Conduit-terminating fittings shall mate with entering ducts for secure, fixed installation in enclosure wall.
7. Handholes 12 inches wide by 24 inches long (300 mm wide by 600 mm long) and larger shall have inserts for cable racks and pulling-in irons installed before concrete is poured.
8. Handholes shall be traffic rated.

2.6 SLEEVES FOR RACEWAYS

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

2.7 SLEEVE SEALS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Advance Products & Systems, Inc.
2. Calpico, Inc.
3. Metraflex Co.
4. Pipeline Seal and Insulator, Inc.

B. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.

1. Sealing Elements: EPDM, NBR interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
2. Pressure Plates: Plastic. Include two for each sealing element.
3. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.8 SOURCE QUALITY CONTROL FOIR UNDERGROUND ENCLOSURES

A. Handhole and Pull-Box Prototype Test: Test prototype of handholes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.

1. Tests of materials shall be performed by a independent testing agency.
2. Strength tests of complete boxes and covers shall be by either an independent testing agency or manufacturer. A qualified registered professional engineer shall certify tests by manufacture.

3. Testing machine pressure gages shall have current calibration certification complying with ISO 9000 and ISO 10012, and traceable to NIST standards.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:

1. Exposed Conduit: Rigid steel conduit.
2. Concealed Conduit, Aboveground: Rigid steel conduit.
3. Underground Conduit: RNC, Type EPC-40-PVC, direct buried.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.

B. Comply with the following indoor applications, unless otherwise indicated:

1. Exposed, Not Subject to Physical Damage: EMT.
2. Exposed, Not Subject to Severe Physical Damage: EMT.
3. Exposed and Subject to Severe Physical Damage: Rigid steel conduit. Includes raceways in the following locations:

    a. Kitchen
    b. Mechanical rooms.

4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
6. Damp or Wet Locations: Rigid steel conduit.
7. Raceways for Optical Fiber or Communications Cable in Spaces Used for Environmental Air: EMT.
8. Raceways for Optical Fiber or Communications Cable Risers in Vertical Shafts: EMT.
9. Raceways for Concealed General Purpose Distribution of Optical Fiber or Communications Cable: EMT.
10. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, in damp or wet locations.

C. Minimum Raceway Size: 3/4-inch (21-mm) trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.

3.2 INSTALLATION

A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.

B. Keep raceways at least 6 inches (150 mm) 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. Support raceways as required and in compliance with code.

E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.

F. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.

G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.

H. Raceways Embedded in Slabs:

1. Run conduit larger than 1-inch (27-mm) trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.

I. 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.

J. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.

K. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire.

L. Raceways for Optical Fiber and Communications Cable: Install raceways, as follows:

1. 3/4-Inch (19-mm) Trade Size and Smaller: Install raceways in maximum lengths of 50 feet (15 m).
2. 1-Inch (25-mm) Trade Size and Larger: Install raceways in maximum lengths of 75 feet (23 m).
3. Install with a maximum of two 90-degree bends or equivalent for each length of raceway unless Drawings show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements.

M. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where otherwise required by CEC.

N. Flexible Conduit Connections: Use maximum of 72 inches (1830 mm) of flexible conduit for recessed and semirecessed lighting fixtures, 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 or LFNC in damp or wet locations not subject to severe physical damage.

O. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall.

P. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:

1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom for pipe less than 6 inches (150 mm) in nominal diameter.
2. Install backfill.
3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches (300 mm) of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction.
4. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through the floor, unless otherwise indicated. Encase elbows for stub-up ducts throughout the length of the elbow.
5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.

    a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches (75 mm) of concrete.
    b. For stub-ups at equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches (1500 mm) from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.

6. Warning Planks: Bury warning planks approximately 12 inches (300 mm) above direct-buried conduits, placing them 24 inches (600 mm) o.c. Align planks along the width and along the centerline of conduit.

3.4 INSTALLATION OF UNDERGROUND HANHOLES AND BOXES

A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.

B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch (12.5 –mm) sieve to No. 4 (4.75-mm) sieve and compacted to same density as adjacent undisturbed earth.

C. Elevation: In paved areas, set so cover surface will be flush with finished grade. Set covers of other enclosures 1 inch (25 mm) above finished grade.

D. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated. Select arm lengths to be long enough to provide spare spaces for future cables, but short enough to preserve adequate working clearances in the enclosure.

E. Field-cut openings for conduit according to enclosed manufacture's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

3.5 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

B. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

C. Rectangular Sleeve Minimum Metal Thickness:

1. For sleeve cross-section rectangle perimeter less than 50 inches (1270 mm) and no side greater than 16 inches (400 mm), thickness shall be 0.052 inch (1.3 mm).
2. For sleeve cross-section rectangle perimeter equal to, or greater than, 50 inches (1270 mm) and 1 or more sides equal to, or greater than, 16 inches (400 mm), thickness shall be 0.138 inch (3.5 mm).

D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both surfaces of walls.

F. Extend sleeves installed in floors 2 inches (50 mm) above finished floor level.

G. Size pipe sleeves to provide 1/4-inch (6.4-mm) annular clear space between sleeve and raceway unless sleeve seal is to be installed or unless seismic criteria require different clearance.

H. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.

I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway, using joint sealant appropriate for size, depth, and location of joint.

J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway penetrations. Install sleeves and seal with firestop materials.

K. Roof-Penetration Sleeves: Seal penetration of individual raceways with flexible, boot-type flashing units applied in coordination with roofing work.

L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch (25-mm) annular clear space between pipe and sleeve for installing mechanical sleeve seals.

M. Underground, Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch (25-mm) annular clear space between raceway and sleeve for installing mechanical sleeve seals.

3.6 SLEEVE-SEAL INSTALLATION

A. Install to seal underground, exterior wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for raceway material and size. Position raceway in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.7 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly.

3.8 PROTECTION

A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

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FINAL DESIGN
END OF SECTION 260533

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Identification for raceways.
2. Identification of power and control cables.
3. Identification for conductors.
4. Underground-line detectable warning tape.
5. Warning labels and signs.
6. Instruction signs.
7. Equipment identification labels.
8. Miscellaneous identification products.

1.3 SUBMITTALS

A. Product Data: For each electrical identification product indicated.

B. Samples: For each type of label and sign to illustrate size, colors, lettering style, mounting provisions, and graphic features of identification products.

C. Identification Schedule: An index of nomenclature of electrical equipment and system components used in identification signs and labels.

1.4 QUALITY ASSURANCE

A. Comply with ANSI A13.1.

B. Comply with CEC.

C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.

D. Comply with ANSI Z535.4 for safety signs and labels.

E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

1.5 COORDINATION

A. 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.

B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

C. Coordinate installation of identifying devices with location of access panels and doors.

D. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 POWER 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.

C. Self-Adhesive 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 adhesive tape for securing ends of legend label.

2.2 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 raceway and cable size.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

2.3 CONDUCTOR IDENTIFICATION MATERIALS

A. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

2.4 UNDERGROUND-LINE WARNING TAPE

A. Tape:

1. Recommended by manufacturer for the method of installation and suitable to identify, detect and locate underground electrical and communications utility lines.
2. Printing on tape shall be permanent and shall not be damaged by burial operations.
3. Tape material and ink shall be chemically inert, and not subject to degrading with exposed to acids, alkalis, and other destructive substances commonly found in soils.

B. Color and Printing:

1. Comply with ANSI Z535.1 through ANSI Z535.5.
2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE.
3. Inscriptions for Orange-Colored Tapes: TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE.

2.5 WARNING LABELS AND SIGNS

A. Comply with CEC and 29 CFR 1910.145.

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.

C. Baked-Enamel Warning Signs:

1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
2. 1/4-inch (6.4-mm) grommets in corners for mounting.
3. Nominal size, 7 by 10 inches (180 by 250 mm).

D. Warning label and sign shall include, but are not limited to, the following legends:

1. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES (915 MM)."

2.6 INSTRUCTION SIGNS

A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch (1.6 mm) thick for signs up to 20 sq. inches (129 sq. cm) and 1/8 inch (3.2 mm) thick for larger sizes.

1. Engraved legend with black letters on white face.
2. Punched or drilled for mechanical fasteners.
3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.7 EQUIPMENT IDENTIFICATION LABELS

A. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch (10 mm).

2.8 CABLE TIES

A. General-Purpose Cable Ties: Fungus inert, self extinguishing, one piece, self locking, Type 6/6 nylon.

1. Minimum Width: 3/16 inch (5 mm).
2. Tensile Strength at 73 deg F (23 deg C), According to ASTM D 638: 12,000 psi (82.7 MPa).
3. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
4. Color: Black except where used for color-coding.

2.9 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in Division 09 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

3.1 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.

F. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors,

at 50-foot (15-m) maximum intervals in straight runs, and at 25-foot (7.6-m) maximum intervals in congested areas.

G. Cable Ties: For attaching tags. Use general-purpose type.

H. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches (400 mm) overall.

3.2 IDENTIFICATION SCHEDULE

A. Color Coding: Conductors and cables shall be color coded by the manufacturer for the entire length. Wrapping color tapes are not permitted. Color coding shall be as follows:

	120/208V System	277/480V System
Phase A:	Black	Brown
Phase B:	Red	Orange
Phase C:	Blue	Yellow
Neutral:	White	Grey
Ground:	Green	Green
Isolated Ground:	Green/Yellow Stripe	Green/Yellow stripe

B. Neutral Wires shall have color spiral to match associated phase.

C. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.

D. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.

1. Limit use of underground-line warning tape to direct-buried cables.
2. Install underground-line warning tape for both direct-buried cables and cables in raceway.

E. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by CEC and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.

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.
4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:

    a. Power transfer switches.
    b. Controls with external control power connections.

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.

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: Self-adhesive, engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high label; where two lines of text are required, use labels 2 inches (50 mm) high.
    b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
    c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
    d. 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. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be self-adhesive, engraved, laminated acrylic or melamine label.
    b. Enclosures and electrical cabinets.
    c. Access doors and panels for concealed electrical items.
    d. Switchboards.

e. Disconnect switches.

END OF SECTION 260553

SECTION 262200 - LOW-VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. This Section includes the following types of dry-type transformers rated 600 V and less, with capacities up to 1000 kVA:

1. Distribution transformers.

1.3 ACTION SUBMITTALS

A. 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.

B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

1. Wiring Diagrams: Power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

A. Manufacturer Seismic Qualification Certification: Submit certification that transformers, 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.

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."
b. 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.

B. Qualification Data: For testing agency.

C. Source quality-control test reports.

D. Field quality-control test reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For transformers to include in emergency, operation, and maintenance manuals.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: 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 Part 3.

B. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7.

C. Source Limitations: Obtain each transformer type through one source from a single manufacturer.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

E. Comply with IEEE C57.12.91, "Test Code for Dry-Type Distribution and Power Transformers."

1.7 DELIVERY, STORAGE, AND HANDLING

A. 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.

1.8 COORDINATION

A. Coordinate size and location of concrete bases with actual transformer provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.

B. Coordinate installation of wall-mounting and structure-hanging supports with actual transformer provided.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Acme Electric Corporation.
2. Challenger Electrical Equipment Corp.
3. Controlled Power Company.
4. Eaton Electrical Sector; Eaton Corporation; Cutler-Hammer Products.
5. Federal Pacific Transformer Company.
6. General Electric Company.
7. Hammond Co.
8. Magnetek Power Electronics Group.
9. Micron Industries Corp.
10. Myers Power Products, Inc.
11. Siemens Energy & Automation, Inc.
12. Sola/Hevi-Duty.
13. Square D Co./Groupe Schneider NA; Schneider Electric.

2.2 GENERAL TRANSFORMER REQUIREMENTS

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. Coil Material: Copper.

2.3 DISTRIBUTION TRANSFORMERS

A. Comply with NEMA ST 20, and list and label as complying with UL 1561.

B. Provide transformers that are constructed to withstand seismic forces.

C. Cores: One leg per phase.

D. Enclosure: Ventilated NEMA 250, Type 2.

1. Core and coil shall be encapsulated within resin compound, sealing out moisture and air.

E. Enclosure: Ventilated NEMA 250.

1. Core and coil shall be encapsulated within resin compound, sealing out moisture and air.

F. Transformer Enclosure Finish: Comply with NEMA 250.

1. Finish Color: Gray

G. Taps for Transformers 25 kVA and Larger: [Two 2.5 percent taps above and two 2.5 percent taps below normal full capacity] [Two 2.5 percent taps above and four 2.5 percent taps below normal full capacity].

H. Insulation Class: 220 deg C, UL-component-recognized insulation system with a maximum of 115 deg C rise above 40 deg C ambient temperature.

I. Energy Efficiency for Transformers Rated 15 kVA and Larger:

1. Complying with NEMA TP 1, Class 1 efficiency levels.
2. Tested according to NEMA TP 2.

J. Electrostatic Shielding: Each winding shall have an independent, single, full-width copper electrostatic shield arranged to minimize interwinding capacitance.

1. Arrange coil leads and terminal strips to minimize capacitive coupling between input and output terminals.
2. Include special terminal for grounding the shield.
3. Shield Effectiveness:

a. Capacitance between Primary and Secondary Windings: Not to exceed 33 picofarads over a frequency range of 20 Hz to 1 MHz.
b. Common-Mode Noise Attenuation: Minimum of minus 120 dBA at 0.5 to 1.5 kHz; minimum of minus 65 dBA at 1.5 to 100 kHz.
c. Normal-Mode Noise Attenuation: Minimum of minus 52 dBA at 1.5 to 10 kHz.

K. Wall Brackets: Manufacturer's standard brackets.

L. Fungus Proofing: Permanent fungicidal treatment for coil and core.

M. Low-Sound-Level Requirements: Minimum of 3 dBA less than NEMA ST 20 standard sound levels when factory tested according to IEEE C57.12.91.

N. Low-Sound-Level Requirements: Maximum sound levels, when factory tested according to IEEE C57.12.91, as follows:
1. 51 to 150 kVA: 50 dBA value

2.4 IDENTIFICATION DEVICES

A. Nameplates: Engraved, laminated-plastic or metal nameplate for each distribution transformer, mounted with corrosion-resistant screws. Nameplates and label products are specified in Section 260553 "Identification for Electrical Systems."

2.5 SOURCE QUALITY CONTROL

A. Test and inspect transformers according to IEEE C57.12.91.

B. Factory Sound-Level Tests: Conduct sound-level tests on equipment for this Project.

PART 3 - EXECUTION

3.1 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 CEC and manufacturer's written instructions.

C. Examine walls, floors, roofs, and concrete bases for suitable mounting conditions where transformers will be installed.

D. Verify that ground connections are in place and requirements in Section 260526 "Grounding and Bonding for Electrical Systems" have been met. Maximum ground resistance shall be 5 ohms at location of transformer.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install wall-mounting transformers level and plumb with wall brackets fabricated by transformer manufacturer.

1. Brace wall-mounting transformers to Seismic Zone 4 requirements.

B. Construct concrete bases and anchor floor-mounting transformers according to manufacturer's written instructions and requirements in Section 260529 "Hangers and Supports for Electrical Systems."

3.3 CONNECTIONS

A. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

B. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.

C. Perform tests and inspections and prepare test reports.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

D. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

E. Remove and replace units that do not pass tests or inspections and retest as specified above.

F. Infrared Scanning: Two months after Substantial Completion, perform an infrared scan of transformer connections.

1. Use an infrared-scanning device designed to measure temperature or detect significant deviations from normal values. Provide documentation of device calibration.
2. Perform 2 follow-up infrared scans of transformers, one at 4 months and the other at 11 months after Substantial Completion.
3. Prepare a certified report identifying transformer checked and describing results of scanning. Include notation of deficiencies detected, remedial action taken, and scanning observations after remedial action.

G. Test Labeling: On completion of satisfactory testing of each unit, attach a dated and signed "Satisfactory Test" label to tested component.

3.5 ADJUSTING

A. Record transformer secondary voltage at each unit for at least 48 hours of typical occupancy period. 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 3 percent at maximum load conditions. Submit recording and tap settings as test results.

B. Connect buck-boost transformers to provide nameplate voltage of equipment being served, plus or minus 5 percent, at secondary terminals.

C. Output Settings Report: Prepare a written report recording output voltages and tap settings.

3.6 CLEANING

A. Vacuum dirt and debris; do not use compressed air to assist in cleaning.

END OF SECTION 262200

SECTION 262416 - PANELBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Distribution panelboards.
2. Lighting and appliance branch-circuit panelboards.

1.3 DEFINITIONS

A. SVR: Suppressed voltage rating.

1.4 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Panelboards shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.

1. 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."
2. Panelboards shall be seismically braced for zone IV as defined in the California Codes and Regulations.

1.5 SUBMITTALS

A. Product Data: For each type of panelboard, switching and overcurrent protective device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

B. 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.
8. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards. Submit on translucent log-log graft paper; include selectable ranges for each type of overcurrent protective device.

C. Qualification Data: For qualified testing agency.

D. 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.

E. 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.

F. Panelboard Schedules: For installation in panelboards. Submit final versions after load balancing.

G. Operation and Maintenance Data: For panelboards and components to include in emergency, operation, and maintenance manuals. Include the following:

1. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.

1.6 QUALITY ASSURANCE

A. 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.

B. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.

C. Product Selection for Restricted Space: Drawings indicate maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

E. Comply with NEMA PB 1.

F. Comply with CEC.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Remove loose packing and flammable materials from inside panelboards; install temporary electric heating (250 W per panelboard) to prevent condensation.

B. Handle and prepare panelboards for installation according to NEMA PB 1.

1.8 PROJECT CONDITIONS

A. 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, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
2. Rate equipment for continuous operation under the following conditions unless otherwise indicated:

    a. Ambient Temperature: Not exceeding 23 deg F (minus 5 deg C) to plus 104 deg F (plus 40 deg C).

B. Service Conditions: NEMA PB 1, usual service conditions, as follows:

1. Ambient temperatures within limits specified.

C. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by City or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

1. Notify Architect no fewer than 14 days in advance of proposed interruption of electric service.
2. Do not proceed with interruption of electric service without Architect's written permission.
3. Comply with NFPA 70E.

1.9 COORDINATION

A. 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.

B. 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 03.

PART 2 - PRODUCTS

2.1 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. Indoor Dry and Clean Locations: NEMA 250, Type 1.
    b. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.
    c. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 5.

2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
4. Skirt for Surface-Mounted Panelboards: Same gage and finish as panelboard front with flanges for attachment to panelboard, wall, and ceiling or floor.
5. Gutter Extension and Barrier: Same gage and finish as panelboard enclosure; integral with enclosure body. Arrange to isolate individual panel sections.
6. Finishes:

    a. Panels and Trim: Steel and galvanized steel, factory finished immediately after cleaning and pretreating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
    b. Back Boxes: Same finish as panels and trim.
    c. Fungus Proofing: Permanent fungicidal treatment for overcurrent protective devices and other components.

7. Directory Card: Inside panelboard door, mounted in metal frame with transparent protective cover.

C. Incoming Mains Location: Top.

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: Mechanical type.
4. Feed-Through Lugs: Mechanical type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
5. Subfeed (Double) Lugs: Mechanical type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.
6. Gutter-Tap Lugs: Mechanical type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.
7. Extra-Capacity Neutral Lugs: Rated 200 percent of phase lugs mounted on extra-capacity neutral bus.

F. Service Equipment Label: NRTL labeled for use as service equipment for panelboards or load centers with one or more main service disconnecting and overcurrent protective devices.

G. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.

H. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.2 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

A. Manufacturers: Subject to compliance with requirements, provide products by one of 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.

B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.

C. Mains: lugs only.

D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

E. Contactors in Main Bus: NEMA ICS 2, Class A, electrically held, general-purpose controller, with same short-circuit interrupting rating as panelboard.

1. Internal Control-Power Source: Control-power transformer, with fused primary and secondary terminals, connected to main bus ahead of contactor connection.
2. External Control-Power Source: 120-V branch circuit.

F. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

G. Column-Type Panelboards: Narrow gutter extension, with cover, to overhead junction box equipped with ground and neutral terminal buses.

2.3 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. Manufacturers: Subject to compliance with requirements, provide products by one of 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.

B. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interruptive capacity 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.
2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
3. Electronic trip circuit breakers with rms sensing; field-replaceable rating plug or field-replicable electronic trip; and the following field-adjustable settings:

    a. Instantaneous trip.
    b. Long- and short-time pickup levels.
    c. Long- and short-time time adjustments.
    d. Ground-fault pickup level, time delay, and I^2t response.

4. 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. Shunt Trip: 120V trip coil energized from separate circuit, set to trip at 55 percent of rated voltage.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Receive, inspect, handle, and store panelboards according to NEMA PB 1.1.

B. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.

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.

3.2 INSTALLATION

A. Install panelboards and accessories according to NEMA PB 1.1.

B. Comply with mounting and anchoring requirements for seismic considerations.

C. Mount top of trim 90 inches (2286 mm) above finished floor unless otherwise indicated.

D. 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.

E. Install overcurrent protective devices and controllers not already factory installed.

1. Set field-adjustable, circuit-breaker trip ranges.

F. Install filler plates in unused spaces.

G. Stub four 1-inch (27-GRC) empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in the future. Stub four 1-inch (27-GRC) empty conduits into raised floor space or below slab not on grade.

H. Arrange conductors in gutters into groups and bundle and wrap with wire ties after completing load balancing.

I. Comply with NECA 1.

3.3 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Section 260553 "Identification for Electrical Systems."

B. Create a directory to indicate installed circuit loads after balancing panelboard loads; incorporate City'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 Section 260553 "Identification for Electrical Systems."

D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

C. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

D. Acceptance Testing Preparation:

1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

E. 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.
3. Perform the following infrared scan tests and inspections and prepare reports:

a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each panelboard. Remove front panels so joints and connections are accessible to portable scanner.
b. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each panelboard 11 months after date of Substantial Completion.
c. Instruments and Equipment:

1) Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

F. Panelboards will be considered defective if they do not pass tests and inspections.

G. 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.

3.5 ADJUSTING

A. Adjust moving parts and operable component to function smoothly, and lubricate as recommended by manufacturer.

B. Load Balancing: After Substantial Completion, but not more than 60 days after Final Acceptance, measure load balancing and make circuit changes.

1. Measure as directed during period of normal system loading.
2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility and at time directed. Avoid disrupting critical 24-hour services such as fax machines and on-line data processing, computing, transmitting, and receiving equipment.
3. After circuit changes, recheck loads during normal load period. Record all load readings before and after changes and submit test records.
4. Tolerance: Difference exceeding 20 percent between phase loads, within a panelboard, is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

3.6 PROTECTION

A. Temporary Heating: Apply temporary heat to maintain temperature according to manufacturer's written instructions.

END OF SECTION 262416

SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Receptacles, receptacles with integral GFCI, and associated device plates.
2. Wall-box motion sensors.
3. Snap switches and wall-box dimmers.
4. Solid-state fan speed controls.
5. Wall-switch.
6. Floor service outlets.

1.3 DEFINITIONS

A. EMI: Electromagnetic interference.

B. GFCI: Ground-fault circuit interrupter.

C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.

D. RFI: Radio-frequency interference.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Field quality-control test reports.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer. Insofar as they are available, obtain all wiring devices and associated wall plates from a single manufacturer and one source.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with CEC.

1.6 COORDINATION

A. Receptacles for City-Furnished Equipment: Match plug configurations.

1. Cord and Plug Sets: Match equipment requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:

1. Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).
2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
3. Leviton Mfg. Company Inc. (Leviton).
4. Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).

2.2 STRAIGHT BLADE RECEPTACLES

A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

a. Cooper; 5351 (single), 5352 (duplex).
b. Hubbell; HBL5351 (single), CR5352 (duplex).
c. Leviton; 5891 (single), 5352 (duplex).
d. Pass & Seymour; 5381 (single), 5352 (duplex).

2.3 GFCI RECEPTACLES

A. General Description: Straight blade, non-feed-through type. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.

B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:

1. Products: Subject to compliance with requirements, provide one of the following:

    a. Cooper; GF20.
    b. Pass & Seymour; 2084.

2.4 CORD AND PLUG SETS

A. Description: Match voltage and current ratings and number of conductors to requirements of equipment being connected.

1. Cord: Rubber-insulated, stranded-copper conductors, with Type SOW-A jacket; with green-insulated grounding conductor and equipment-rating ampacity plus a minimum of 30 percent.
2. Plug: Nylon body and integral cable-clamping jaws. Match cord and receptacle type for connection.

2.5 SNAP SWITCHES

A. Comply with NEMA WD 1 and UL 20.

B. Switches, 120 V, 20 A:

1. Products: Subject to compliance with requirements, provide one of the following:

    a. Cooper; 2221 (single pole), 2222 (two pole), 2223 (three way), 2224 (four way).
    b. Hubbell; CS1221 (single pole), CS1222 (two pole), CS1223 (three way), CS1224 (four way).
    c. Leviton; 1221-2 (single pole), 1222-2 (two pole), 1223-2 (three way), 1224-2 (four way).
    d. Pass & Seymour; 20AC1 (single pole), 20AC2 (two pole), 20AC3 (three way), 20AC4 (four way).

2.6 FAN SPEED CONTROLS

A. Modular, 120-V, full-wave, solid-state units with integral, quiet on-off switches and audible frequency and EMI/RFI filters. Comply with UL 1917.

1. Continuously adjustable rotary knob, 5 A.
2. Three-speed adjustable rotary knob, 1.5 A.

2.7 WALL PLATES

A. Single and combination types to match corresponding wiring devices.

1. Plate-Securing Screws: Metal with head color to match plate finish.

2. Material for Finished Spaces: Smooth, high-impact thermoplastic.
3. Material for Unfinished Spaces: Smooth, high-impact thermoplastic.
4. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."

B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant, die-cast aluminum with lockable cover.

2.8 FINISHES

A. Color: Wiring device color shall be white. Switched receptacles (Title 24) shall be gray. Wiring devices on Emergency Power shall be red color.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.

B. Coordination with Other Trades:

1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
4. Install wiring devices after all wall preparation, including painting, is complete.

C. Conductors:

1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of CEC, Article 300, without pigtails.

D. Device Installation:

1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.

2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the right.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Dimmers:

1. Install dimmers within terms of their listing.
2. Verify that dimmers used for fan speed control are listed for that application.
3. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' device listing conditions in the written instructions.

H. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

I. Adjust locations of floor service outlets and service poles to suit arrangement of partitions and furnishings.

3.2 IDENTIFICATION

A. Comply with Section 260553 "Identification for Electrical Systems."

1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with white-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

1. Test Instruments: Use instruments that comply with UL 1436.
2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.

B. Tests for Convenience Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.
2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

END OF SECTION 262726

SECTION 264313 - SURGE PROTECTION FOR LV ELECTRICAL POWER CIRCUITS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes field-mounted SPDs for low-voltage (120 to 600 V) power distribution and control equipment. SPDs are also shown as EMP on this project.

B. Related Requirements:

1. Section 26 24 16 "Panelboards" for factory-installed SPDs.

1.2 DEFINITIONS

A. Inominal: Nominal discharge current.

B. MCOV: Maximum continuous operating voltage.

C. Mode(s), also Modes of Protection: The pair of electrical connections where the VPR applies.

D. MOV: Metal-oxide varistor; an electronic component with a significant non-ohmic current-voltage characteristic.

E. OCPD: Overcurrent protective device.

F. SCCR: Short-circuit current rating.

G. SPD: Surge protective device.

H. VPR: Voltage protection rating.

I. EMP: Electromagnetic Pulse.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
2. Copy of UL Category Code VZCA certification, as a minimum, listing the tested values for VPRs, Inominal ratings, MCOVs, type designations, OCPD requirements, model numbers, system voltages, and modes of protection.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

B. Sample Warranty: For manufacturer's special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For SPDs to include in maintenance manuals.

1.6 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to replace or replace SPDs that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Ten (10) years from date of Substantial Completion.

1.7 QUALITY ASSURANCE:

A. Contractor shall ensure that the manufacturer has experience in the production of Surge Suppression Devices (SPD) similar to the type and size specified in this project.

B. Manufacturer shall have ISO 9001 Certification.

C. Manufacturer shall have ability to readily provide replacement parts for a minimum period of ten (10) years, from the date of completion of the project. Furnish a letter from the manufacturer confirming the availability.

D. Surge Suppression Devices (SPD) shall be assembled at the manufacturer’s own manufacturing facility using its own major components for the assembly. These devices shall be normally carried by the manufacturer as standard catalog items.

E. Provide certified test reports of shake table test done by manufacturer on similar units.

F. Materials and equipment shall be new, modern in design and shall not have been in prior service except as required by factory tests. Controllers shall be manufactured within six months of installation.

G. Materials and equipment shall be new, modern in design and shall not have been in prior service except as required by factory tests. Controllers shall be manufactured within six months of installation.

H. Source Limitations: Obtain Surge Suppression Devices (SPD), overcurrent protective devices, components, and accessories, within same product category, through one source from a single manufacturer through a local distributor unless otherwise noted.

I. Comply with CEC.

J. Installer Qualifications: An employer of workers qualified as defined in NEMA PB 2.1 and trained in electrical safety as required by NFPA 70E.

K. Product Options: Drawings indicate size, profiles, and dimensional requirements of Surge Suppression Devices (SPD) are based on the specific system indicated. Refer to Part 2 "Product Requirements."

L. Electrical Components, Devices, and Accessories: UL Listed and labeled as defined in CEC, Article 100 and marked for intended location and application.

M. Testing Agency Qualifications:

1. Testing agency shall be an independent company; shall have been a member of NETA and has permanent in-house testing engineers and technicians involved with testing of Surge Protective Devices, OCPDs, switches and breakers similar to those specified on this project.
2. Testing company shall be located with 50 miles radius of the project.
3. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing to supervise on-site testing specified in Part 3.
4. Field Testing technician and supervisor shall have experience in field testing of Transient Voltage Surge Suppression Devices (TVSS), OCPDs, switches and circuit breakers similar to the type and rating specified on this project.

PART 2 - PRODUCTS

2.1 GENERAL SPD REQUIREMENTS

A. SPD with Accessories: UL Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

B. Comply with CEC.

C. Comply with UL 1449.

D. MCOV of the SPD shall be the nominal system voltage.

2.2 SERVICE ENTRANCE AND TRANSFER SWITCH SUPPRESSOR

A. Subject to compliance with the requirements, provide products by one of the following manufacturers:

1. Square D - Schneider Electric
2. Eaton
3. Or equal

B. SPDs: Comply with UL 1449, **Type 1**.

C. SPDs: UL Listed and labeled as complying with UL 1449, **Type 1**

1. SPDs with the following features and accessories:

a. Integral disconnect switch.
b. Internal thermal protection that disconnects the SPD before damaging internal suppressor components.
c. Indicator light display for protection status.
d. Form-C contacts rated at 5 A and 250-V ac, one normally open and one normally closed, for remote monitoring of protection status. Contacts shall reverse on failure of any surge diversion module or on opening of any current-limiting device. Coordinate with building power monitoring and control system.
e. Surge counter.

D. Comply with UL 1283.

E. Peak Surge Current Rating: The minimum single-pulse surge current withstand rating per phase shall not be less than **200 kA**. The peak surge current rating shall be the arithmetic sum of the ratings of the individual MOVs in a given mode.

F. Protection modes and UL 1449 VPR for grounded wye circuits with **208Y/120 V**, three-phase, four-wire circuits shall not exceed the following:

1. Line to Neutral: **700 V for 208Y/120 V**.
2. Line to Ground:**1200 V for 208Y/120 V**.
3. Line to Line: **1000 V for 208Y/120 V**.

G. Protection modes and UL 1449 VPR for 240/120 V, single-phase, three-wire circuits shall not exceed the following:

1. Line to Neutral: 700 V.
2. Line to Ground: 700 V.
3. Line to Line: 1000 V.

H. SCCR: Equal or exceed 200 kA.

I. Inominal Rating: 20 kA.

2.3 PANEL SUPPRESSORS

A. Subject to compliance with the requirements, provide products by one of the following manufacturers:

1. Square D - Schneider Electric
2. Eaton
3. Or equal

B. SPDs: Comply with UL 1449, **Type 1**. Refer to drawings for additional information

1. Include LED indicator lights for power and protection status.
2. Internal thermal protection that disconnects the SPD before damaging internal suppressor components.
3. Include Form-C contacts rated at 5 A and 250-V ac, one normally open and one normally closed, for remote monitoring of protection status. Contacts shall reverse on failure of any surge diversion module or on opening of any current-limiting device. Coordinate with building power monitoring and control system**.**

C. Peak Surge Current Rating: The minimum single-pulse surge current withstand rating per phase shall not be less than 100 kA. The peak surge current rating shall be the arithmetic sum of the ratings of the individual MOVs in a given mode.

D. Comply with UL 1283.

E. Protection modes and UL 1449 VPR for grounded wye circuits with **208Y/120 V**, three-phase, four-wire circuits shall not exceed the following:

1. Line to Neutral: **700 V for 208Y/120 V**.
2. Line to Ground: **700 V for 208Y/120 V**.
3. Neutral to Ground: **700 V for 208Y/120 V**.
4. Line to Line: **1200 V for 208Y/120 V**

F. Protection modes and UL 1449 VPR for 240/120-V, single-phase, three-wire circuits shall not exceed the following:

1. Line to Neutral: 700 V.
2. Line to Ground: 700 V.
3. Neutral to Ground: 700 V.
4. Line to Line: 1200 V.

G. SCCR: Equal or exceed 200 kA.

H. Inominal Rating: 20 kA.

2.4 ENCLOSURES

A. Indoor Enclosures: NEMA 250, Type 1 when installed external to the switchboard, panelboard, MCC etc.

B. Outdoor Enclosures: NEMA 250, Type 4X Stainless steel.

2.5 CONDUCTORS AND CABLES

A. Power Wiring: Same size as SPD leads, complying with Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

B. Class 2 Control Cables: Multiconductor cable with copper conductors not smaller than No. 18 AWG, complying with Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

C. Class 1 Control Cables: Multiconductor cable with copper conductors not smaller than No. 14 AWG, complying with Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1.

B. Install an OCPD or disconnect as required to comply with the UL listing of the SPD.

C. Factory install SPDs internal to the switchboard, panelboard, bus connected via a circuit breaker.

D. Install SPDs with conductors between suppressor and points of attachment as short and straight as possible, and adjust circuit-breaker positions to achieve shortest and straightest leads. Do not splice and extend SPD leads unless specifically permitted by manufacturer. Do not exceed manufacturer's recommended lead length. Do not bond neutral and ground.

E. Use crimped connectors and splices only. Wire nuts are unacceptable.

F. Wiring:

1. Power Wiring: Comply with wiring methods in Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."
2. Controls: Comply with wiring methods in Section 26 05 19 "Low-Voltage Electrical Power Conductors and Cables."

3.2 FIELD QUALITY CONTROL

A. Perform the following tests and inspections with the assistance of a factory-authorized service representative.

1. Compare equipment nameplate data for compliance with Drawings and Specifications.
2. Inspect anchorage, alignment, grounding, and clearances.
3. Verify that electrical wiring installation complies with manufacturer's written installation requirements.

B. Testing: Engage a qualified testing and inspecting agency to perform following field tests and inspections and prepare test reports:

1. Complete startup checks according to manufacturer's written instructions.
2. Perform each visual and mechanical inspection and electrical test stated in NETA ATS, "Surge Arresters, Low-Voltage Surge Protection Devices" Section. Certify compliance with test parameters.

C. An SPD will be considered defective if it does not pass tests and inspections.

D. Submit test and inspection reports for review within two weeks of completion of field tests.

3.3 STARTUP SERVICE

A. Complete startup checks according to manufacturer's written instructions.

B. Do not perform insulation-resistance tests of the distribution wiring equipment with SPDs installed. Disconnect SPDs before conducting insulation-resistance tests, and reconnect them immediately after the testing is over.

C. Energize SPDs after power system has been energized, stabilized, and tested.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train University's maintenance personnel to operate and maintain SPDs.

END OF SECTION 26 43 13

SECTION 265100 - INTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Interior lighting fixtures, lamps, and ballasts.
2. Emergency lighting units.
3. Exit signs.
4. Lighting fixture supports.

1.3 DEFINITIONS

A. CCT: Correlated color temperature.

B. CRI: Color-rendering index.

C. LER: Luminaire efficacy rating.

D. Lumen: Measured output of lamp and luminaire, or both.

1.4 SUBMITTALS

A. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, finishes, and the following:

1. Physical description of lighting fixture including dimensions.
2. Emergency lighting units including battery and charger.
3. Ballast, including BF.
4. Energy-efficiency data.
5. Life, output (lumens, CCT, and CRI), and energy-efficiency data for lamps.
6. Photometric data and adjustment factors based on laboratory tests, complying with IESNA Lighting Measurements Testing & Calculation Guides, of each lighting fixture type. The adjustment factors shall be for lamps, ballasts, and accessories identical to those indicated for the lighting fixture as applied in this Project.

a. Testing Agency Certified Data: For indicated fixtures, photometric data shall be certified by a qualified independent testing agency. Photometric data for remaining fixtures shall be certified by manufacturer.
b. Manufacturer Certified Data: Photometric data shall be certified by a manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.

B. Shop Drawings: For nonstandard or custom lighting fixtures. Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Wiring Diagrams: For power, signal, and control wiring.

C. Installation instructions.

D. Qualification Data: For qualified agencies providing photometric data for lighting fixtures.

E. Product Certificates: For each type of dimmer-controlled fixtures, from manufacturer.

F. Field quality-control reports.

G. Operation and Maintenance Data: For lighting equipment and fixtures to include in emergency, operation, and maintenance manuals.

1. Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.

H. Warranty: Sample of special warranty.

1.5 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910, complying with the IESNA Lighting Measurements Testing & Calculation Guides.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

C. Comply with CEC.

1.6 COORDINATION

A. Coordinate layout and installation of lighting fixtures and suspension system with other construction that penetrates ceilings or is supported by them, including HVAC equipment, fire-suppression system, and partition assemblies.

1.7 WARRANTY

A. Special Warranty for Emergency Lighting Batteries: Manufacturer's standard form in which manufacturer of battery-powered emergency lighting unit agrees to repair or replace components of rechargeable batteries that fail in materials or workmanship within specified warranty period.

1. Warranty Period for Emergency Lighting Unit Batteries: 10 years from date of Substantial Completion. Full warranty shall apply for first year, and prorated warranty for the remaining nine years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide product indicated on Drawings.

2.2 GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS

A. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.

B. Metal Parts: Free of burrs and sharp corners and edges.

C. Sheet Metal Components: Steel unless otherwise indicated. Form and support to prevent warping and sagging.

D. 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.

E. Diffusers 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 otherwise indicated.
b. UV stabilized.

F. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps and ballasts. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

1. Label shall include the following lamp and driver characteristics:

a. "USE ONLY" and include specific lamp type.
b. CCT and CRI for all luminaires.

2. Control: Coordinate wiring from ballast to control device to ensure that the driver, controller, and connecting wiring are compatible.

2.3 EMERGENCY POWER UNIT

A. Internal Type: Self-contained, modular, battery-inverter unit, factory mounted within lighting fixture body and compatible with ballast. Comply with UL 924.

1. Emergency Connection: Operate one lamp(s) continuously at an output of 1100 lumens each. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture driver.
2. Test Push Button and Indicator Light: Visible and accessible without opening fixture or entering ceiling space.

a. Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
b. Indicator Light: LED indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

3. Battery: Sealed, maintenance-free, nickel-cadmium type.
4. Charger: Fully automatic, solid-state, constant-current type with sealed power transfer relay.
5. Remote Test: Switch in hand-held remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-installed infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response.
6. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

2.4 EXIT SIGNS

A. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction.

B. Internally Lighted Signs:

1. Lamps for AC Operation: LEDs, 50,000 hours minimum rated lamp life.

2. Self-Powered Exit Signs (Battery Type): Integral automatic charger in a self-contained power pack.

    a. Battery: Sealed, maintenance-free, nickel-cadmium type.
    b. Charger: Fully automatic, solid-state type with sealed transfer relay.
    c. Operation: Relay automatically energizes lamp from battery when circuit voltage drops to 80 percent of nominal voltage or below. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
    d. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
    e. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
    f. Remote Test: Switch in hand-held remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-installed infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response.
    g. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

2.5 EMERGENCY LIGHTING UNITS

A. General Requirements for Emergency Lighting Units: Self-contained units complying with UL 924.

1. Battery: Sealed, maintenance-free, lead-acid type.
2. Charger: Fully automatic, solid-state type with sealed transfer relay.
3. Operation: Relay automatically turns lamp on when power-supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
4. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
5. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
6. Wire Guard: Heavy-chrome-plated wire guard protects lamp heads or fixtures.
7. Integral Time-Delay Relay: Holds unit on for fixed interval of 15 minutes when power is restored after an outage.
8. Remote Test: Switch in hand-held remote device aimed in direction of tested unit initiates coded infrared signal. Signal reception by factory-installed infrared receiver in tested unit triggers simulation of loss of its normal power supply, providing visual confirmation of either proper or failed emergency response.
9. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

2.6 LIGHTING FIXTURE SUPPORT COMPONENTS

A. Single-Stem Hangers: 1/2-inch steel tubing with swivel ball fittings and ceiling canopy. Finish same as fixture.

B. Twin-Stem Hangers: Two, 1/2-inch steel tubes with single canopy designed to mount a single fixture. Finish same as fixture.

C. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gage .

D. Wires for Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage.

E. Rod Hangers: 3/16-inch minimum diameter, cadmium-plated, threaded steel rod.

F. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Lighting fixtures:

1. Set level, plumb, and square with ceilings and walls unless otherwise indicated.
2. Install lamps in each luminaire.

B. Temporary Lighting: If it is necessary, and approved by Architect, to use permanent luminaires for temporary lighting, install and energize the minimum number of luminaires necessary. When construction is sufficiently complete, remove the temporary luminaires, disassemble, clean thoroughly, install new lamps, and reinstall.

C. Lay-in Ceiling Lighting Fixtures Supports: Use grid as a support element.

1. Install ceiling support system rods or wires, independent of the ceiling suspension devices, for each fixture. Locate not more than 6 inches from lighting fixture corners.
2. Support Clips: Fasten to lighting fixtures and to ceiling grid members at or near each fixture corner with clips that are UL listed for the application.
3. Fixtures of Sizes Less Than Ceiling Grid: Install as indicated on reflected ceiling plans or center in acoustical panel, and support fixtures independently with at least two 3/4-inch metal channels spanning and secured to ceiling tees.
4. Install at least one independent support rod or wire from structure to a tab on lighting fixture. Wire or rod shall have breaking strength of the weight of fixture at a safety factor of 3.

D. Suspended Lighting Fixture Support:

1. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.
2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
3. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.
4. Do not use grid as support for pendant luminaires. Connect support wires or rods to building structure.

E. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

3.2 IDENTIFICATION

A. Install labels with panel and circuit numbers on concealed junction and outlet boxes. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.3 FIELD QUALITY CONTROL

A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.

END OF SECTION 265100

SECTION 265600 - EXTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions , apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Exterior luminaires with lamps and ballasts.
2. Poles and accessories.

B. Related Sections:

1. Section 265100 "Interior Lighting" for exterior luminaires normally mounted on exterior surfaces of buildings.

1.3 DEFINITIONS

A. CCT: Correlated color temperature.

B. CRI: Color-rendering index.

C. HID: High-intensity discharge.

D. LER: Luminaire efficacy rating.

E. Luminaire: Complete lighting fixture, including LED drivers if provided.

F. Pole: Luminaire support structure, including tower used for large area illumination.

G. Standard: Same definition as "Pole" above.

1.4 CODES, STANDARDS, AND REFERENCES

A. American Society for Testing and Materials (ASTM) – ASTM A123/A123M: Standard Specification for Zinc Coating (Hot-Dip Galvanized) on Iron and Steel Hardware, 2009.

B. ANSI C136.2: American National Standard for Roadway and Area Lighting Equipment Luminaire Attachments

C. California Code of Regulations (CCR) Title 24, Part 6, California Energy Code, 2008.

D. Illuminating Engineering Society of North America (IESNA) HB-9 Lighting Handbook, 2006

E. Institute of Electrical and Electronics Engineers (IEEE) – IEEE C2: National Electrical Safety Code, 2010.

F. NEMA 250: Enclosures for Electrical Equipment Electrical Equipment (1000 Volts Maximum), 2008

G. NEMA ICS 2: Standard for Controllers, Contactors, and Overload Relays Rated 600 V, 2008

H. NEMA ICS 6: Enclosures, 2006

I. CEC: California Electrical Code, 2019.

1.5 STRUCTURAL ANALYSIS CRITERIA FOR POLE SELECTION

A. Dead Load: Weight of luminaire and its horizontal and vertical supports applied as stated in AASHTO LTS-4-M.

B. Wind Load: Pressure of wind on pole and luminaire calculated and applied as stated in AASHTO LTS-4-M.

1. Basic wind speed for calculating wind load for poles 50 feet (15 m) high or less is 100 mph (45 m/s).

1.6 SUBMITTALS

A. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:

1. Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.
2. Luminaire materials.
3. Photometric data.
4. LED, including life, output, CCT, CRI, lumens, and energy-efficiency data.
5. Materials, dimensions, and finishes of poles.
6. Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.
7. Anchor bolts for poles.

B. Field quality-control reports.

C. Operation and Maintenance Data: For luminaires to include in emergency, operation, and maintenance manuals.

1.7 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

B. Comply with IEEE C2, "National Electrical Safety Code."

C. Comply with CEC.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Package aluminum poles for shipping according to ASTM B 660.

B. Retain factory-applied pole wrappings on metal poles until right before pole installation. For poles with nonmetallic finishes, handle with web fabric straps.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.
   1. Warranty Period for Poles: Repair or replace lighting poles and standards that fail in finish, materials, and workmanship within manufacturer's standard warranty period, but not less than one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide product indicated on Drawings (or equal).

2.2 GENERAL REQUIREMENTS FOR LUMINAIRES

A. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.

B. Metal Parts: Free of burrs and sharp corners and edges.

C. Sheet Metal Components: Corrosion-resistant aluminum unless otherwise indicated. Form and support to prevent warping and sagging.

D. 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.

E. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.

F. Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.

G. 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.

H. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.

I. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.

J. Factory-Applied Finish for Steel Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.

a. Color: Dark bronze.

K. Factory-Applied Labels: Comply with UL 1598. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles.

2.3 GENERAL REQUIREMENTS FOR POLES AND SUPPORT COMPONENTS

A. Structural Characteristics: Comply with AASHTO LTS-4-M.

1. Wind-Load Strength of Poles: Adequate at indicated heights above grade without failure, permanent deflection, or whipping in steady winds of speed indicated in "Structural Analysis Criteria for Pole Selection" Article.
2. Strength Analysis: For each pole, multiply the actual equivalent projected area of luminaires and brackets by a factor of 1.1 to obtain the equivalent projected area to be used in pole selection strength analysis.

B. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts unless otherwise indicated.

C. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.

1. Materials: Shall not cause galvanic action at contact points.
2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication unless otherwise indicated.
3. Anchor-Bolt Template: Plywood or steel.

D. Handhole: Oval-shaped, with minimum clear opening of 2-1/2 by 5 inches (65 by 130 mm), with cover secured by stainless-steel captive screws. Provide on all, except wood poles.

E. Concrete Pole Foundations: Cast in place, with anchor bolts to match pole-base flange.

2.4 STEEL POLES

A. Poles: Comply with ASTM A 500, Grade B, carbon steel with a minimum yield of 46,000 psig (317 MPa); one-piece construction up to 40 feet (12 m) in height with access handhole in pole wall.

1. Shape: As indicated on drawings.
2. Mounting Provisions: As indicated on drawings.

B. Grounding and Bonding Lugs: Welded 1/2-inch (13-mm) threaded lug, complying with requirements in Section 260526 "Grounding and Bonding for Electrical Systems," listed for attaching grounding and bonding conductors of type and size listed in that Section, and accessible through handhole.

C. Factory-Painted Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.

a. Color: Dark bronze.

PART 3 - EXECUTION

3.1 LUMINAIRE INSTALLATION

A. Fasten luminaire to indicated structural supports.

1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.

B. Adjust luminaires that require field adjustment or aiming.

3.2 POLE INSTALLATION

A. Clearances: Maintain the following minimum horizontal distances of poles from surface and underground features unless otherwise indicated on Drawings:

1. Fire Hydrants and Storm Drainage Piping: 60 inches (1520 mm).
2. Water, Gas, Electric, Communication, and Sewer Lines: 10 feet (3 m).
3. Trees: 15 feet (5 m) from tree trunk.

B. Concrete Pole Foundations: Set anchor bolts according to anchor-bolt templates furnished by pole manufacturer. Concrete materials, installation, and finishing requirements are as indicated on the drawings.

3.3 BOLLARD LUMINAIRE INSTALLATION

C. Align units for optimum directional alignment of light distribution.

D. Install on concrete base as indicated on the drawings.

3.4 GROUNDING

A. Ground metal poles and support structures according to Section 260526 "Grounding and Bonding for Electrical Systems."
   1. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.

B. Ground nonmetallic poles and support structures according to Section 260526 "Grounding and Bonding for Electrical Systems. Retain first subparagraph below if lightning damage is of concern.
   1. Install grounding conductor and conductor protector.
   2. Ground metallic components of pole accessories and foundations.

3.5 FIELD QUALITY CONTROL

A. Inspect each installed fixture for damage. Replace damaged fixtures and components.

B. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.

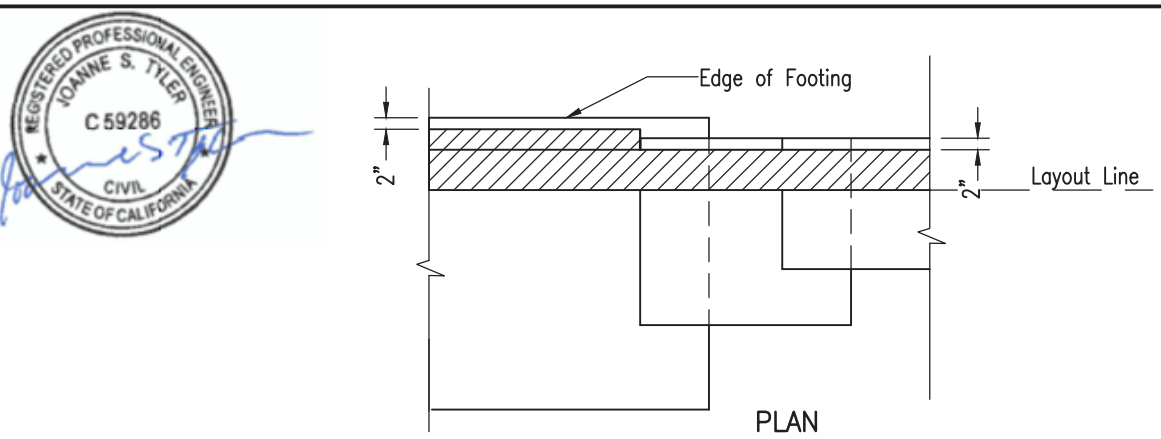
   1. Verify operation of photoelectric controls.

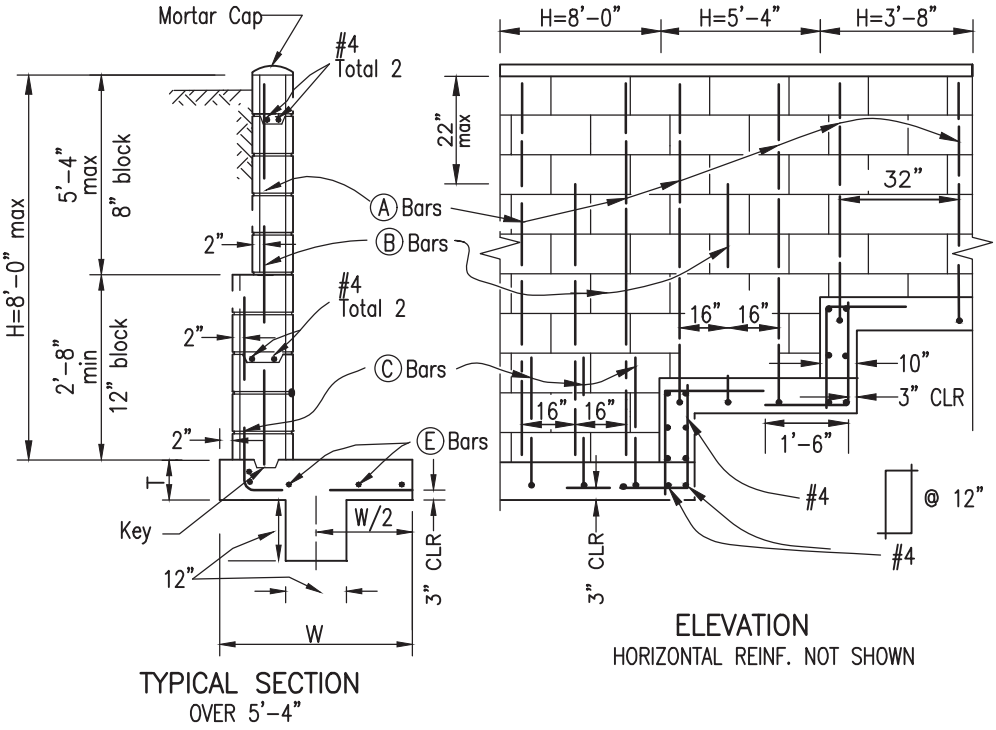
C. Illumination Tests:
   1. Measure light intensities at night. Use photometers with calibration referenced to NIST standards. Comply with the following IESNA testing guide(s):
   2. Retain one or more of five subparagraphs below.

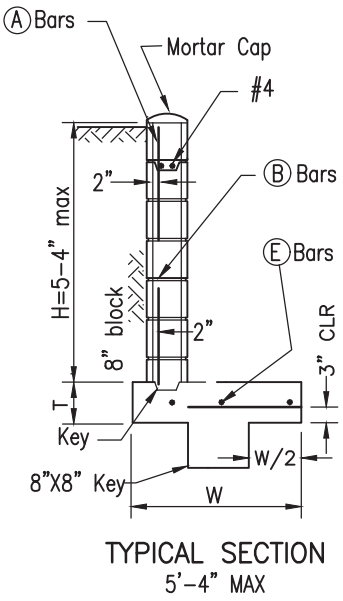
   3. IESNA LM-64, "Photometric Measurements of Parking Areas."
   4. IESNA LM-72, "Directional Positioning of Photometric Data."

END OF SECTION 265600

APPENDIX A







DIMENSIONS AND REINFORCING STEEL			
H (MAX)	3'-8"	5'-4"	8'-0"
T (MIN)	0'-8"	0'-10"	1'-0"
W (MIN)	2'-4"	3'-6"	5'-4"
Ⓐ BARS	#4@32"	#4@32"	#4@32"
Ⓑ BARS	———	#4@32"	#4@32"
Ⓒ BARS	———	———	#6@16"
Ⓔ BARS	#4 TOTAL 4	#4 TOTAL 5	#4 TOTAL 6
MAX SOIL PRESSURE	500PSF	600PSF	800PSF

NOTES: 1. SEE C-7 AND C-8 FOR ADDITIONAL NOTES AND DETAILS.
2. FILL ALL BLOCK CELLS WITH GROUT.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

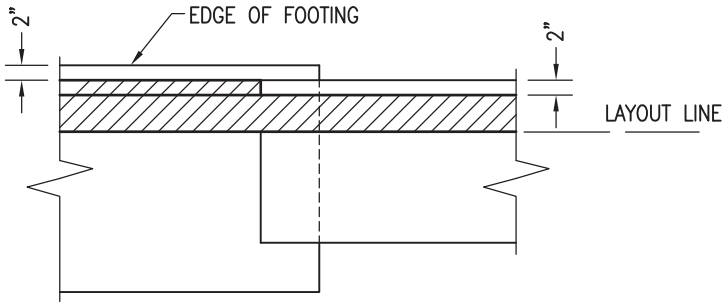
SAN DIEGO REGIONAL STANDARD DRAWING

MASONRY RETAINING WALL TYPE 1
LEVEL BACKFILL WITH 2-IN HEEL

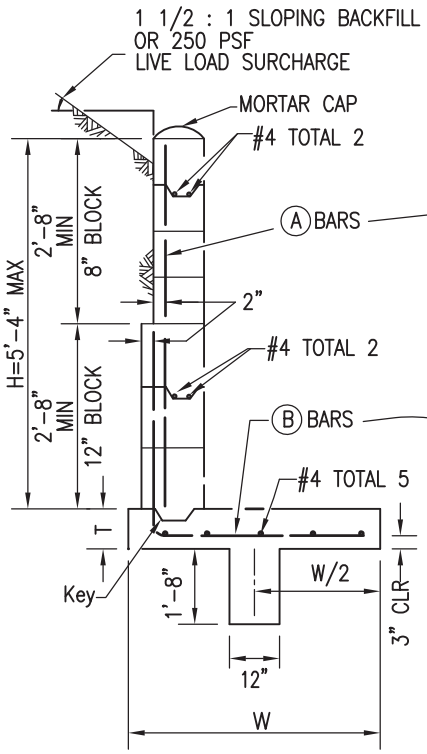
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 12/17/2015

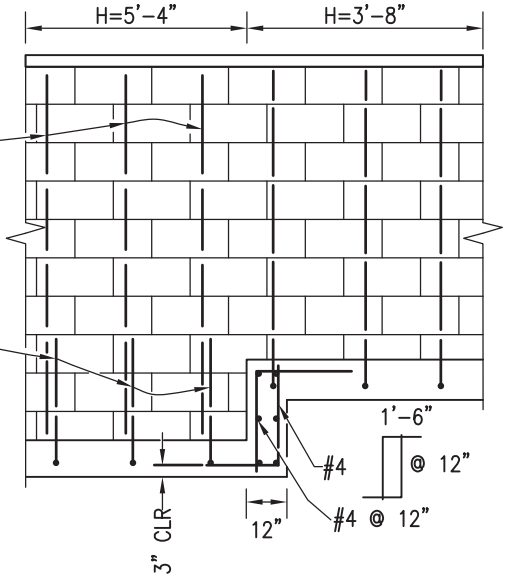
DRAWING NUMBER **C-01**



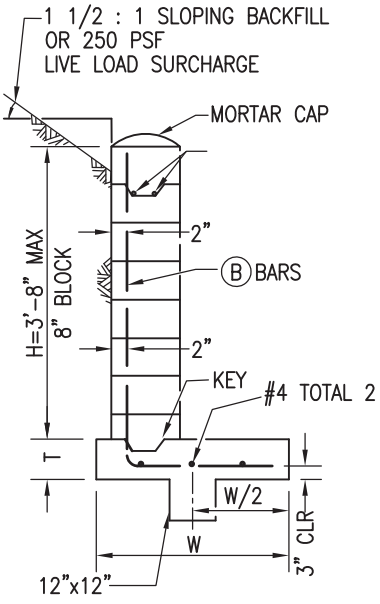
PLAN



TYPICAL SECTION
OVER 3'-8"



ELEVATION
HORIZONTAL REINF. NOT SHOWN



TYPICAL SECTION
3'-8" MAX

DIMENSIONS AND REINFORCING STEEL		
H (MAX)	5'-4"	3'-8"
T (MIN)	0'-10"	0'-10"
W (MIN)	5'-0"	3'-9"
Ⓐ BARS	#4@16"	———
Ⓑ BARS	#6@16"	#4@16"
MAX SOIL PRESSURE	700PSF	550PSF

NOTES:

1. SEE C-7 AND C-8 FOR ADDITIONAL NOTES AND DETAILS.
2. FILL ALL BLOCK CELLS WITH GROUT.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

SAN DIEGO REGIONAL STANDARD DRAWING

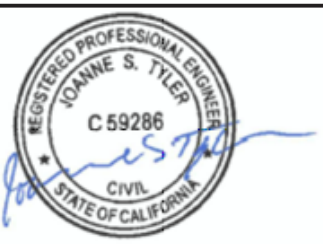
MASONRY RETAINING WALL TYPE 2

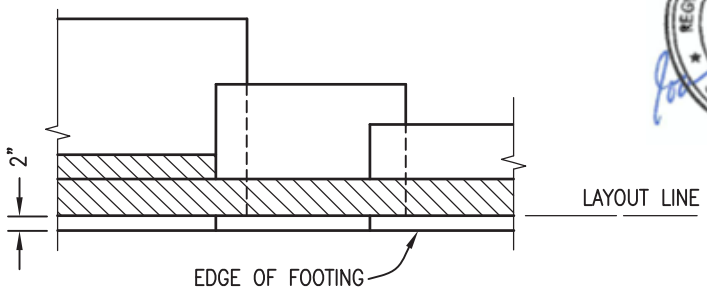
(LIVE LOAD SURCHARGE OR SLOPING BACKFILL)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

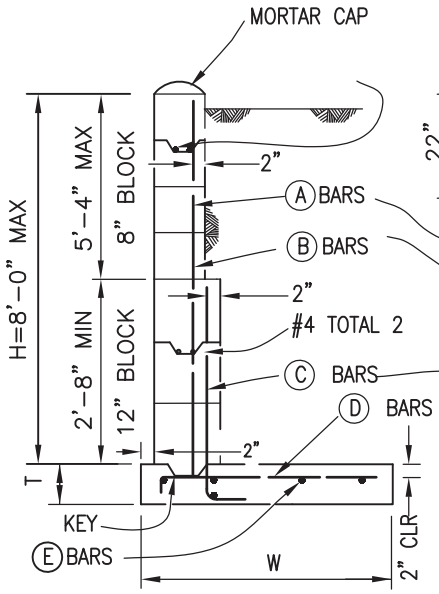
12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER **C-02**

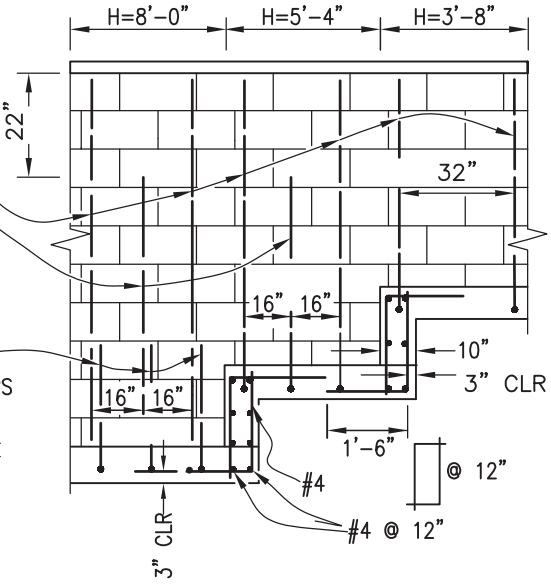




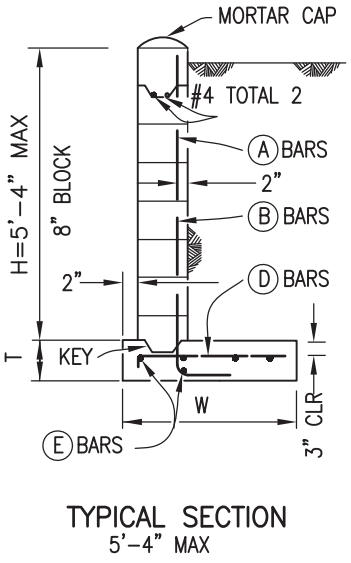
PLAN



TYPICAL SECTION
OVER 5'-4"



ELEVATION
HORIZONTAL REINF. NOT SHOWN



TYPICAL SECTION
5'-4" MAX

DIMENSIONS AND REINFORCING STEEL			
H (MAX)	3'-8"	5'-4"	8'-0"
T (MIN)	0'-8"	0'-10"	1'-0"
W (MIN)	2'-4"	3'-2"	4'-9"
(A) BARS	#4@32"	#4@32"	#4@32"
(B) BARS	———	#4@32"	#4@32"
(C) BARS	———	———	#6@16"
(D) BARS	#4@32"	#4@16"	#6@16"
(E) BARS	#4 TOTAL 4	#4 TOTAL 5	#4 TOTAL 6
MAX SOIL PRESSURE	1100 PSI	1600 PSI	2200 PSI

NOTES: 1. SEE C-7 AND C-8 FOR ADDITIONAL NOTES AND DETAILS.
2. FILL ALL BLOCK CELLS WITH GROUT.

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Add Metric		T. Stanton	03/03
Delete Metric	S.S.	T. Shell	03/11
Reviewed	TS	T. Stanton	11/15

SAN DIEGO REGIONAL STANDARD DRAWING

MASONRY RETAINING WALL TYPE 3 (LEVEL BACKFILL)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

J M Stanton 12/17/2015
Chairperson R.C.E. 19246 Date

DRAWING NUMBER C-03

MINIMUM REQUIREMENTS FOR

Retaining Wall/Level Backfill

CITY OF SAN DIEGO DEVELOPMENT SERVICES
1222 FIRST AVENUE, MS 301 SAN DIEGO, CA 92101-4153
CALL (619) 446-5300 FOR APPOINTMENTS AND (619) 446-5000 FOR INFORMATION

INFORMATION BULLETIN
221
AUGUST 2009

Construction of retaining walls, except those less than three feet high, measured from the top of the footing to the top of the wall and not supporting surcharge, requires a permit and is regulated by City of San Diego Municipal Code.

Information Bulletin 221 outlines the city's requirements for retaining walls with level backfill. Information Bulletin 222 describes retaining walls with sloping backfill. These bulletins are intended to provide a simple alternative to designing minor retaining walls, but should be used only where appropriate soil condition at the site. See Section VII. SOIL.

For information on how to obtain a permit for a retaining wall, see Information Bulletin 220.

I. ZONING REGULATIONS

Retaining walls heights are also regulated by the zoning laws of the city as follows: The height of a retaining wall is measured from grade on the lower side of the retaining wall to the top of the retaining wall (Exposed height E), (SDMC 113.0270(b)(2)).

San Diego Municipal Code Chapter 14, Article 2 , sion 3 regulates the location and the height of retaining walls in the required setbacks and ıe visibility area as follows:

etaining walls in visibility areas shall not xceed 3 feet in height. (SDMC 142.0340(b)).

wo retaining walls with a maximum height f 3 feet each are permitted in the required ront and street side yard if the two retaining walls are separated by a minimum horizontal distance equal to the height of the upper wall. (SDMC 142.0340(c)(1))

3. Two retaining walls with a maximum height of 6 feet each are permitted in the required side and rear yard if the two retaining walls are separated by a minimum horizontal distance equal to the height of the upper wall. (SDMC 142.0340(d)(1)).

Note: Retaining walls higher than 5 feet may require a grading permit.

II. WALL HEIGHT

For the purpose of designing the wall in this information bulletin, wall height is measured from the top of the footing to the top of the wall.

Walls not shown in Tables A on page 3 must be designed specifically for the existing conditions. The walls shown here are designed to retain only level backfill. No building foundation, retaining wall, driveway, parking, fence, or other potential source of loading on the upper level is allowed within a distance equal to the height of the wall. See figure 1.

Documents Referenced in this Information Bulletin

- **2007 California Building Code, (CBC)**
- **San Diego Municipal Code, (SDMC)**
- **Information Bulletin 220, How to Obtain a Permit for a Retaining Wall/Fence**
- **Information Bulletin 222, Minimum Requirements for Retaining Wall/Sloping Backfill**

III. CAL/OSHA PERMIT/WAIVER

A CAL/OSHA construction activity permit is required for construction of trenches or excavations which are five feet or deeper and into which a person is required to descend. For more information please contact:

Cal/OSHA Enforcement Unit district office
7575 Metropolitan Drive, Ste. 207
San Diego 92108
(619) 767-2280
Fax (619) 767-2299

IV. MASONRY BLOCKS

Concrete masonry units shall be of sizes shown on drawings and conform to ASTM C90 (CBC 2103.1) Medium Weight Units with maximum linear shrinkage of 0.06%, F'm=1,500 psi grouted solid reinforced cells.

All head and bed joints shall be 3/8" thick. Bed joints of the starting course over the concrete foundation may be between 1/4" and 3/4". (ACI 530.1-05 section 3.3B)

No special inspection is required for retaining walls up to 6 feet in height.

V. SPECIFICATIONS

A. CONCRETE

Concrete for footings must have a minimum compressive strength of 2,500 psi at 28 days. (CBC 1805.4.2.1). Cement shall conform to ASTM-C150 (ACI 318-05 section 3.2).

Note: Plastic (Stucco) cement ASTM C 1328 is not permitted in retaining walls located in Seismic Design Category D.

B. MORTAR

The mortar mix must have a compressive strength equal to 1,800 psi minimum (CBC Table 2105.2.2.1.2). Mortar for use in masonry

construction shall conform to ASTM C 270 and shall conform to the proportion specifications of Table 2103.8(1) or the property specifications of Table 2103.8(2) of the CBC**.**

C. GROUT

Grout must have a compressive strength equal to 2,000 psi minimum. Grout shall conform to Table 2103.12 or to ASTM C 476. When grout conforms to ASTM C 476, the grout shall be specified by proportion requirements or property requirements (CBC 2103.12)

E. REINFORCING STEEL

Reinforcing steel must be deformed and comply with ASTM A 615 (CBC 2103.13.1), Grade 60. When one continuous bar cannot be used, a lap or splice of 40-bar diameters is required. All bars shall be clean of loose flaky rust, grease or other materials likely to impair bond. (ACI 318-05 section 5.7)

Reinforcement in concrete shall be protected from corrosion and exposure to chlorides. (ACI 318-05 Section 7.7.6). Concrete protection for reinforcement shall be at least 3" to earth when the concrete is poured against the earth. (ACI 318-05 Section 7.7.1).

One #4 reinforcing bar must be placed longitudinally within the wall in a bond beam block every 16 inches as the blocks are laid up. See Figure 2.

F. MORTAR KEY

To insure proper bonding between the footing and the first course of block, a mortar key must be formed by embedding a flat 2x4 flush with and at the top of the freshly placed footing. It should be removed after the concrete has started to harden (about 1 hour). A mortar key may be omitted if the first course of block is set into the fresh concrete and a good bond is obtained.

VI. WALL DRAINS

Wall drains must be placed at 6-foot intervals along the length of the wall and located just above the level of the soil or paving on the front face of the wall. The drains may be formed by placing a block on its side at 6-foot intervals, by leaving out the mortar in the vertical spaces between all the blocks in the first course above the soil or paving (head joint) on the front face of the wall, by installing 4-inch diameter drain line behind the wall, or by any other acceptable equivalent method. Backfill behind wall drains or open head joints must be loose rubble or gravel at least 12 inches wide and extending from the top of the wall to the top of the footing.

VII. SOIL DESIGN CRITERIA

This information bulletin is to be used only when the soils to be retained are **not expansive (i.e. sandy soils)**. The design of this information bulletin is based on the following criteria:

1. Soil type: granular, non-cohesive soil backfill.
2. Active earth pressure with an equivalent fluid weight of 30 pounds per cubic foot.
3. Passive earth pressure with an equivalent fluid weight of 150 pounds per cubic.
4. Allowable bearing value of 1,500 psf.
5. Soil friction factor 0.25.

If existing soil conditions do not meet these design criteria or the conditions are unknown, walls should be designed by a State of California licensed civil engineer or architect. A soil report may be required.

Note: Soil lateral pressure due to earthquake motion is not included**.**

VIII. INSPECTIONS

Inspections must be performed during several phases of construction. Please call for inspections at the following times:

A. A footing inspection is needed when the excavation for a footing has been dug with the steel tied securely in its final position, and the site is ready for the concrete to be placed.

B. A masonry pregrout inspection is required when the block has been laid and the steel is in place, but before the grout has been placed.
   1. If cleanout holes *are* used, block may be laid to the full height at the grout pour before calling for the pregrout inspection. Grout shall be placed in a continuous pour in grout lifts not exceeding 6 feet.
   2. If cleanout holes *are not* used, a masonry pregrout inspection is required prior to each grout pour. Block cannot be laid higher than the grout pour. Note that cleanouts are required for all grout pours over 5 feet in height.

C. After grouting is completed and rock or rubble wall drains are in place, but before earth backfill is placed, call for a backfill/drainage inspection.

D. When all work has been completed, call for a final inspection.

Table A / Requirements for Various Wall Heights [1,2,3,4,5]

Wall Type	I	II			III
Wall Height (H)[6]	3' - 4"	4' -0"	4' - 8"	5' - 4"	6' - 0"
Exposed Wall Height (E)[7]	2' - 4"	3' - 0"	3' - 8"	4' - 4"	5' - 0"
Stem Block Thickness	6"	8"	8"	8"	8" / 12"
Heel Dimension (L)	1' - 3"	1' - 7"	1' - 4"	1' - 4"	1' - 9"
Toe Dimension (T)	6"	6"	11"	1' - 6"	1' - 4"
Vert Bars (A) Vert Bars (B)	#4 @ 24" #4 @ 24"	#4 @ 24" #4 @ 24"	#4 @ 24" #4 @ 24"	#4 @ 16" #4 @ 16"	#4 @ 16" #4 @ 16"
Footing Width (W)	1' - 9"	2' - 1"	2' - 3"	2' - 10"	3' - 1"
Footing Bars (C)	none	none	none	#4 @ 24"	#4 @ 24"
Key Distance from Toe	none	none	6"	12"	12"
Key (W x D)	none	none	6" x 8"	8" x 9"	8" x 12"

FOOTNOTES:

[1] Tables A makes the following assumptions:
f'y= 600000psi
Fs= 24000
Solid grouting
Using half f'm stress

[2] Walls not shown in Table A must be designed specifically for the actual conditions.

[3] All construction must comply with the specifications shown in this information bulletin.

[4] When Wall Type III is required, the first 32 inches of block must be 12-inch wide masonry units.
I=6" Block
II=8" Block
III=12" Block

[5] Footing depth shall be 24 inches below finish grade and 12 inches of compacted soil is required on top of footing to stabilize the wall.

[6] For the purpose of the structural design, wall height shall be measured from the top of the footing to the top of the wall.

[7] For zoning requirements fence height shall be measured from finish grade.

Figure 1 / Surcharge and Slope Setbacks

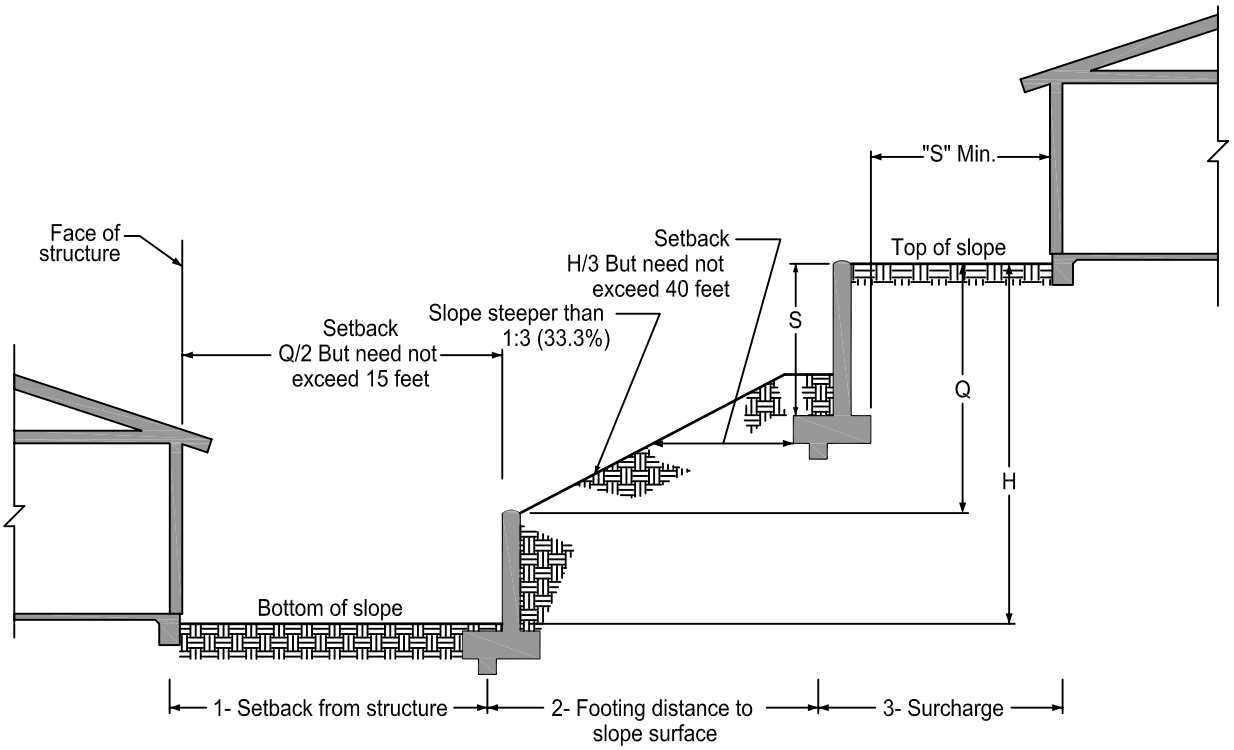
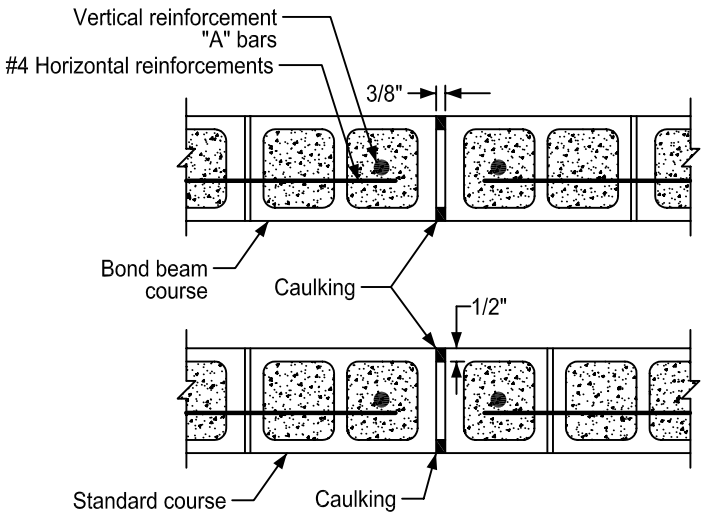


Figure 2 / Typical Control Joints



Note: Control joints shall be spaced no greater than 25 feet O.C.

Figure 3 / Typical I or II Retaining Wall with Level Backfill

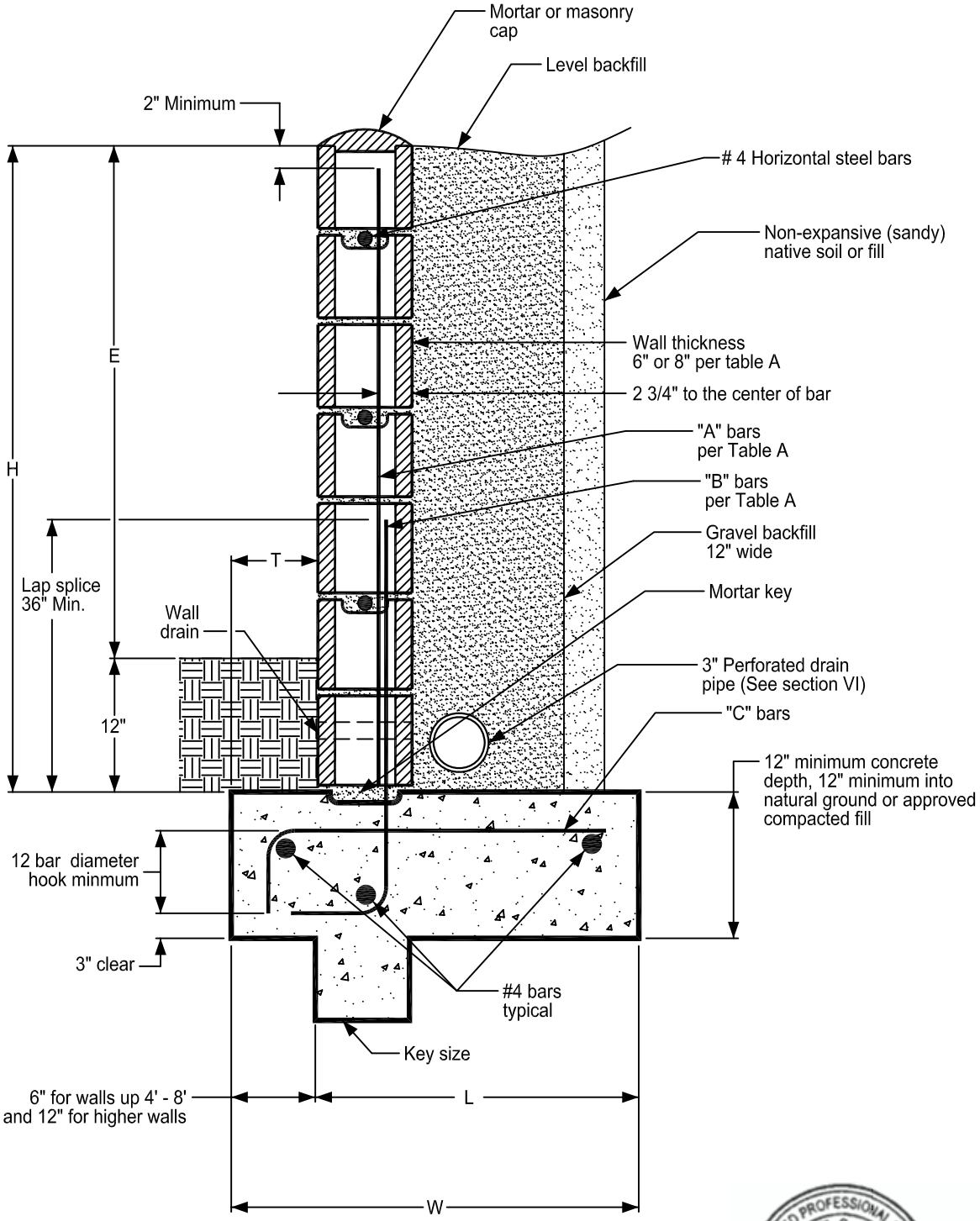
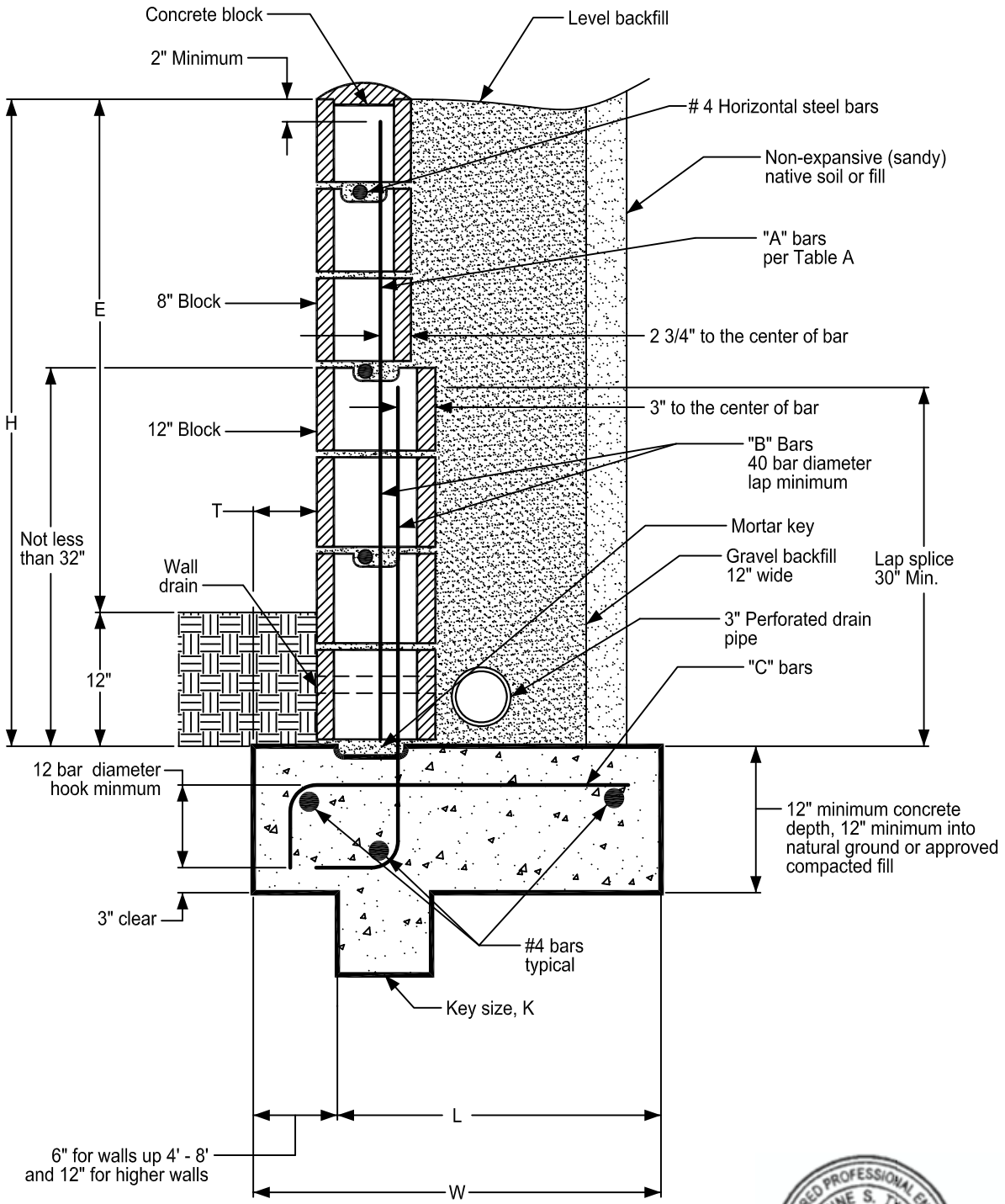


Figure 4 / Type III Retaining Wall with Level Backfill



MINIMUM REQUIREMENTS FOR

Retaining Wall/Sloping Backfill

CITY OF SAN DIEGO DEVELOPMENT SERVICES
1222 FIRST AVENUE, MS 301 SAN DIEGO, CA 92101-4153
CALL (619) 446-5300 FOR APPOINTMENTS AND (619) 446-5000 FOR INFORMATION

INFORMATION BULLETIN
222
JANUARY 2010

Construction of retaining walls, except those less than three feet high, measured from the top of the footing to the top of the wall and not supporting surcharge, requires a permit and is regulated by City of San Diego Municipal Code.

Information Bulletin 222 outlines the city's requirements for retaining walls with sloping backfill. Information Bulletin 221 describes retaining walls with level backfill. These bulletins are intended to provide a simple alternative to designing minor retaining walls, but should be used only where appropriate soil condition at the site. See Section VII. SOIL.

For information on how to obtain a permit for a retaining wall, see Information Bulletin 220.

I. ZONING REGULATIONS

Retaining walls heights are also regulated by the zoning laws of the city as follows: The height of a retaining wall is measured from grade on the lower side of the retaining wall to the top of the retaining wall, (Exposed height E), (SDMC 113.0270(b)(2)).

San Diego Municipal Code Chapter 14, Article 2, ision 3 regulates the location and the height of etaining walls in the required setbacks and e visibility area as follows:

etaining walls in visibility areas shall not xceed 3 feet in height. (SDMC 142.0340(b)).

wo retaining walls with a maximum height 3 feet each are permitted in the required ont and street side yard if the two retaining alls are separated by a minimum horizontal distance equal to the height of the upper wall. (SDMC 142.0340(c)(1)).

3. Two retaining walls with a maximum height of 6 feet each are permitted in the required side and rear yard if the two retaining walls are separated by a minimum horizontal distance equal to the height of the upper wall. (SDMC 142.0340(d)(1)).

Note: Retaining walls higher than 5 feet may require a grading permit.

II. WALL HEIGHT

For the purpose of designing the wall in this information bulletin, wall height is measured from the top of the footing to the top of the wall.

Walls not shown in Tables A and B on page 3 must be designed specifically for the existing conditions. The walls shown here are designed to retain only sloping backfill. No building foundation, retaining wall, driveway, parking, fence, or other potential source of loading on the upper level is allowed within a distance equal to the height of the wall. See figure 1.

Documents Referenced in this Information Bulletin

- **2007 California Building Code, (CBC)**
- **San Diego Municipal Code, (SDMC)**
- **Information Bulletin 220, How to Obtain a Permit for a Retaining Wall/Fence**
- **Information Bulletin 221, Minimum Requirements for Retaining Wall/Level Backfill**

III. CAL/OSHA PERMIT/WAIVER

A CAL/OSHA construction activity permit is required for construction of trenches or excavations which are five feet or deeper and into which a person is required to descend. For more information please contact:

Cal/OSHA Enforcement Unit district office
7575 Metropolitan Drive, Ste. 207
San Diego 92108
(619) 767-2280
Fax (619) 767-2299

IV. MASONRY BLOCKS

Concrete masonry units shall be of sizes shown on drawings and conform to ASTM C90 (CBC 2103.1) Medium Weight Units with maximum linear shrinkage of 0.06%, F'm=1,500 psi grouted solid reinforced cells.

All head and bed joints shall be 3/8" thick. Bed joints of the starting course over the concrete foundation may be between 1/4" and 3/4". (ACI 530.1-05 section 3.3B)

No special inspection is required for retaining walls up to 6 feet in height.

V. SPECIFICATIONS

A. CONCRETE

Concrete for footings must have a minimum compressive strength of 2,500 psi at 28 days. (CBC 1805.4.2.1). Cement shall conform to ASTM-C150 (ACI 318-05 section 3.2).

Note: Plastic (Stucco) cement ASTM C 1328 is not permitted in retaining walls located in Seismic Design Category D.

B. MORTAR

The mortar mix must have a compressive strength equal to 1,800 psi minimum (CBC Table 2105.2.2.1.2). Mortar for use in masonry

construction shall conform to ASTM C 270 and shall conform to the proportion specifications of Table 2103.8(1) or the property specifications of Table 2103.8(2) of the CBC**.**

C. GROUT

Grout must have a compressive strength equal to 2,000 psi minimum. Grout shall conform to Table 2103.12 or to ASTM C 476. When grout conforms to ASTMC476, the grout shall be specified by proportion requirements or property requirements (CBC 2103.12).

E. REINFORCING STEEL

Reinforcing steel must be deformed and comply with ASTM A 615 (CBC 2103.13.1), Grade 60. When one continuous bar cannot be used, a lap or splice of 40-bar diameters is required. All bars shall be clean of loose flaky rust, grease or other materials likely to impair bond. (ACI 318-05 Section 5.7).

Reinforcement in concrete shall be protected from corrosion and exposure to chlorides. (ACI 318-05 Section 7.7.6). Concrete protection for reinforcement shall be at least 3" to earth when the concrete is poured against the earth. (ACI 318-05 Section 7.7.1).

One #4 reinforcing bar must be placed longitudinally within the wall in a bond beam block every 16 inches as the blocks are laid up. See Figure 2.

F. MORTAR KEY

To insure proper bonding between the footing and the first course of block, a mortar key must be formed by embedding a flat 2x4 flush with and at the top of the freshly placed footing. It should be removed after the concrete has started to harden (about 1 hour). A mortar key may be omitted if the first course of block is set into the fresh concrete and a good bond is obtained.

VI. WALL DRAINS

Wall drains must be placed at 6-foot intervals along the length of the wall and located just above the level of the soil or paving on the front face of the wall. The drains may be formed by placing a block on its side at 6-foot intervals, by leaving out the mortar in the vertical spaces between all the blocks in the first course above the soil or paving (head joint) on the front face of the wall, by installing 4-inch diameter drain line behind the wall, or by any other acceptable equivalent method. Backfill behind wall drains or open head joints must be loose rubble or gravel at least 12 inches wide and extending from the top of the wall to the top of the footing.

VII. SOIL DESIGN CRITERIA

This information bulletin is to be used only when the soils to be retained are **not expansive (i.e. sandy soils)**. The design of this information bulletin is based on the following criteria:

1. Soil type: granular, non-cohesive soil backfill.
2. Active earth pressure with an equivalent fluid weight of:
   42 pounds per cubic foot for 2 to 1 slope.
   60 pounds per cubic foot for 1.5 to 1 slope.
3. Passive earth pressure with an equivalent fluid weight of:
   200 pounds per cubic foot for 2 to 1 slope.
   300 pounds per cubic foot for 1.5 to 1 slope.
4. Allowable bearing value of 1,500 psf.
5. Soil friction factor 0.25.

If existing soil conditions do not meet these design criteria or the conditions are unknown, walls should be designed by a State of California licensed civil engineer or architect. A soil report may be required.

Note: Soil lateral pressure due to earthquake motion is not included**.**

VIII. INSPECTIONS

Inspections must be performed during several phases of construction. Please call for inspections at the following times:

A. A footing inspection is needed when the excavation for a footing has been dug with the steel tied securely in its final position, and the site is ready for the concrete to be placed.

B. A masonry pregrout inspection is required when the block has been laid and the steel is in place, but before the grout has been placed.
   1. If cleanout holes *are* used, block may be laid to the full height at the grout pour before calling for the pregrout inspection. Grout shall be placed in a continuous pour in grout lifts not exceeding 6 feet.
   2. If cleanout holes *are not* used, a masonry pregrout inspection is required prior to each grout pour. Block cannot be laid higher than the grout pour. Note that cleanouts are required for all grout pours over 5 feet in height.

C. After grouting is completed and rock or rubble wall drains are in place, but before earth backfill is placed, call for a backfill/drainage inspection.

When all work has been completed, call for a final inspection.

Table A / Requirements for Various Wall Heights 2 to 1 Slope [1,2,3,4,5]

Wall Type	I	II		III	
Wall Height (H)[6]	3' - 4"	4' -0"	4' - 8"	5' - 4"	6' - 0"
Exposed Wall Height (E)[7]	2' - 4"	3' - 0"	3' - 8"	4' - 4"	5' - 0"
Stem Block Thickness	6"	8"	8"	8" / 12"	8" / 12"
Heel Dimension (L)	1' - 0"	1' - 0"	1' - 4"	1' - 6"	1' - 6"
Toe Dimension (T)	1' - 2"	1' - 8"	1' - 8"	1' - 9"	2' - 3"
Vert Bars (A) Vert Bars (B)	#4 @ 24" #4 @ 24"	#4 @ 24" #4 @ 24"	#4 @ 24" #4 @ 24"	#4 @ 16" #4 @ 16"	#4 @ 16" #4 @ 16"
Footing Width (W)	2' - 2"	2' - 8"	3' - 0"	3' - 3"	3' - 9"
Key Distance from Toe	6"	6"	6"	6"	6"
Key (W x D)	6" x 6"	6" x 6"	8" x 12"	12" x 14"	12" x 18"

Table B / Requirements for Various Wall Heights 1.5 to 1 Slope [1,2,3,4,5]

Wall Type	II		III		
Wall Height (H)[6]	3' - 4"	4' -0"	4' - 8"	5' - 4"	6' - 0"
Exposed Height (E)[7]	2' - 4"	3' - 0"	3' - 8"	4' - 4"	5' - 0"
Stem Block Thickness	8"	8"	8" / 12" [5]	8" / 12"	8" / 12"
Heel Dimension (L)	1' - 4"	1' - 4"	1' - 4"	1' - 6"	2' - 0"
Toe Dimension (T)	1' - 5"	2' - 0"	2' - 2"	2' - 6"	2' - 8"
Vert Bars (A) Vert Bars (B)	#4 @ 24" #4 @ 24"	#4 @ 24" #4 @ 24"	#4 @ 24" #4 @ 24"	#4 @ 16" #4 @ 8"	#5 @ 16" #5 @ 8"
Footing Width (W)	2' - 9"	3' - 4"	3' - 6"	4' - 0"	4' - 8"
Key Distance from Toe	6"	6"	6"	12"	12"
Key (W x D)	6" x 6"	8" x 8"	8" x 10"	12" x 15"	12" x 21"

FOOTNOTES:

[1] Tables A makes the following assumptions:
f'y= 600000 psi
Fs= 24000
Solid grouting
Using half f'm stress

[2] Walls not shown in Table A must be designed specifically for the actual conditions.

[3] All construction must comply with the specifications shown in this information bulletin.

[4] Walls less than 3' 4" in height shall be constructed to meet the 3' 4" wall height design criteria.
I= 6 Inches block
II= 8 Inches block
III=12 Inches block

[5] Footing depth shall be 24 inches below finish grade and 12 inches of compacted soil is required on top of footing to stabilize the wall.

[6] For the purpose of the structural design, wall height shall be measured from the top of the footing to the top of the wall.

[7] For zoning requirements fence height shall be measured from finish grade.

Figure 1 / Subcharge and Slope Setbacks

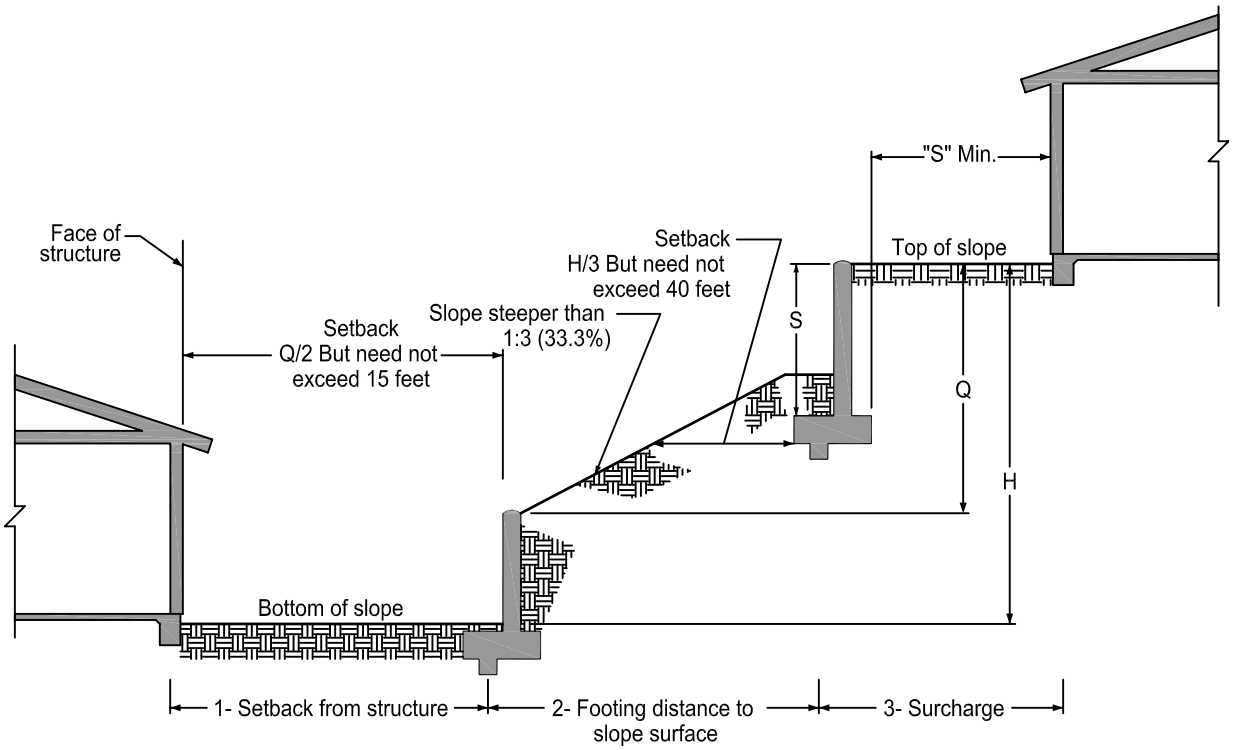
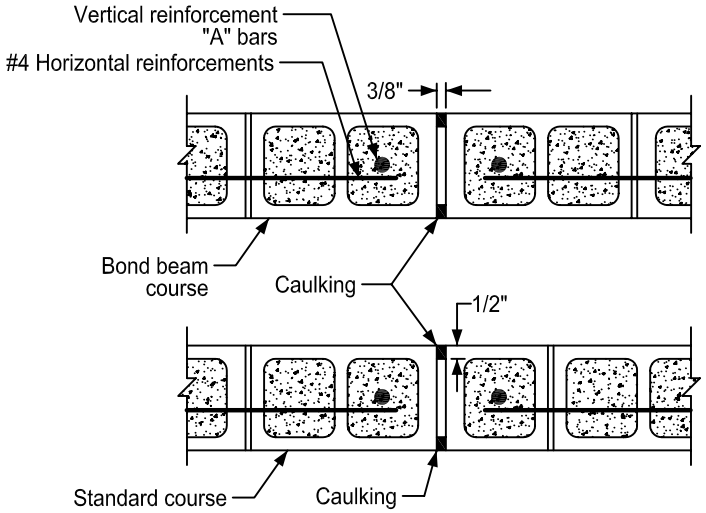


Figure 2 / Typical Control Joints



Note: Control joints shall be spaced no greater than 25 feet O.C.

Figure 3 / Type I and II Retaining Wall with Sloping Backfill

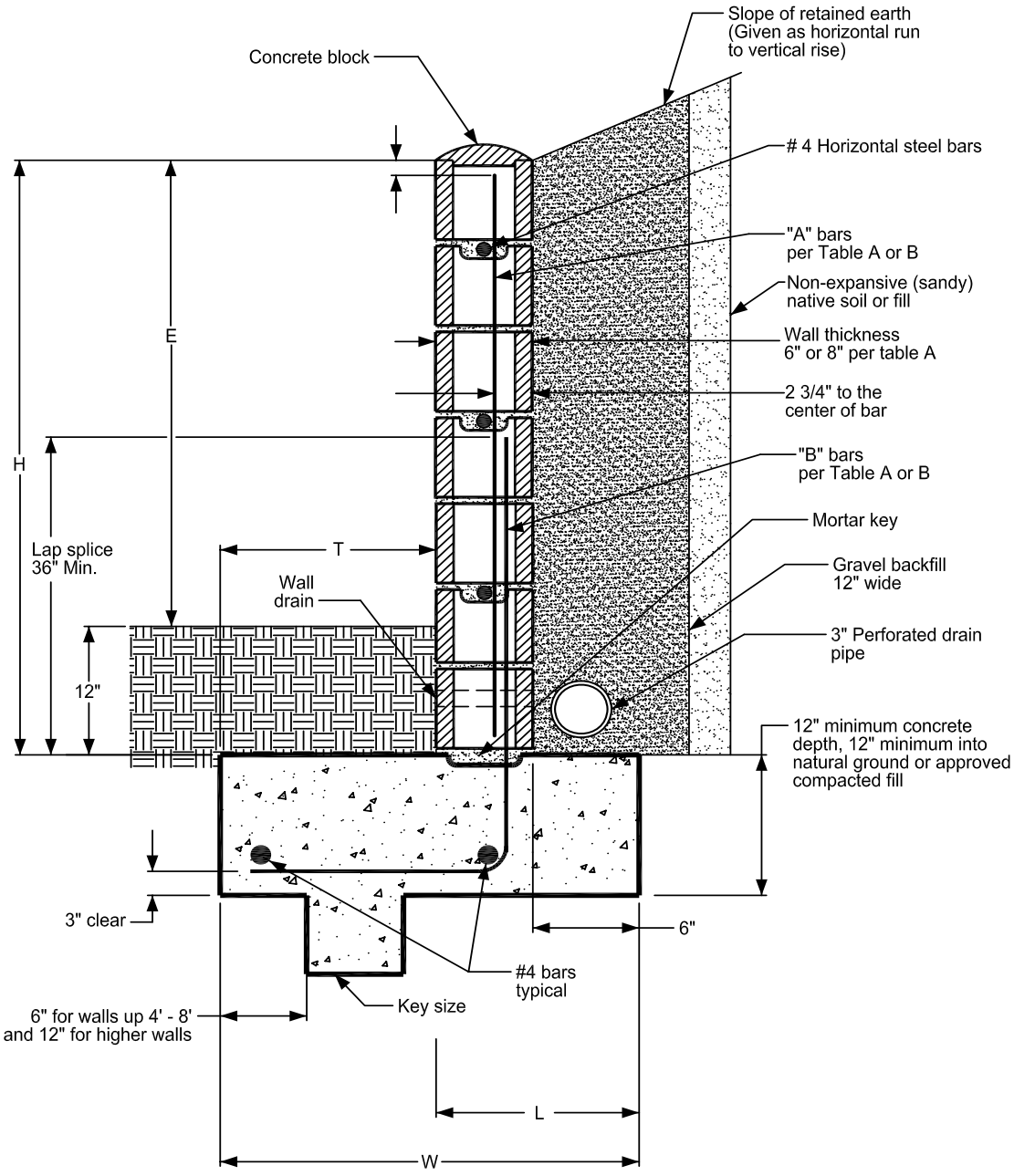
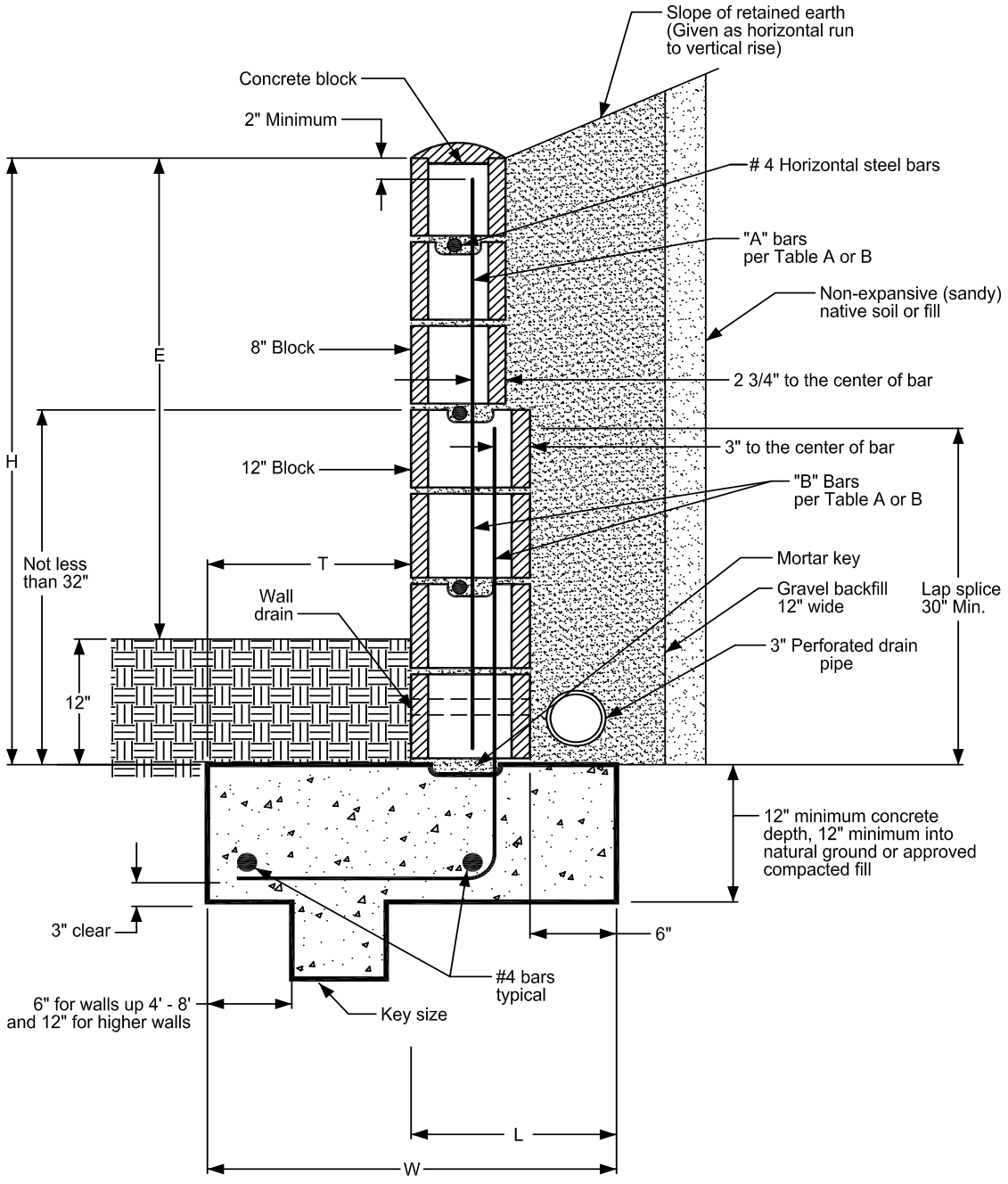
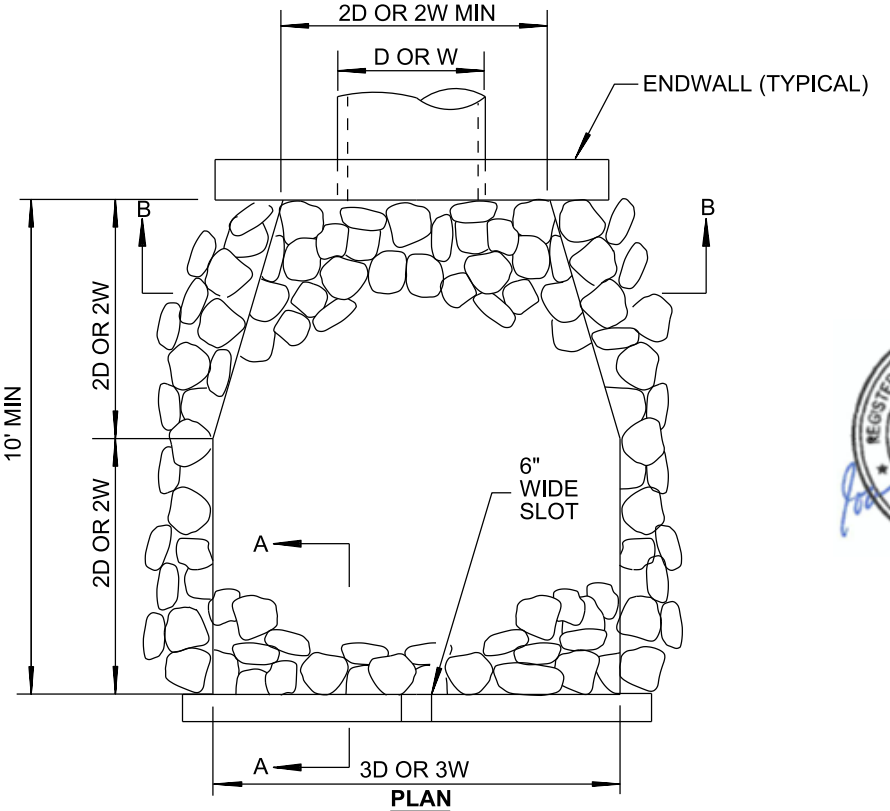
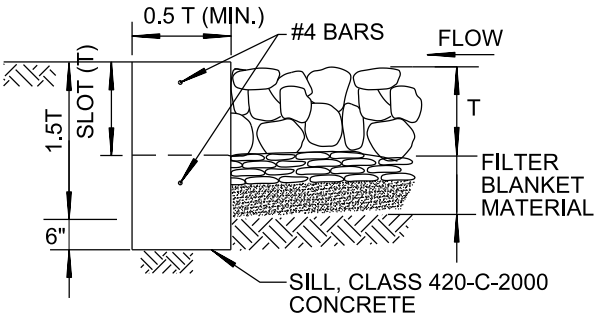


Figure 4 / Type III Retaining Wall with Sloping Backfill

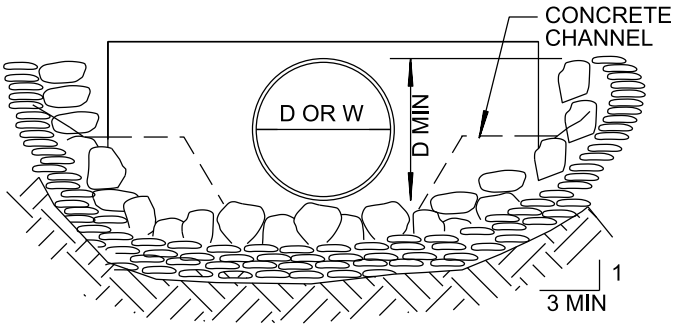




PLAN



SECTION A-A



SECTION B-B

D = PIPE DIAMETER
W = BOTTOM WIDTH OF CHANNEL

NOTES

1. PLANS SHALL SPECIFY:
   A) ROCK CLASS AND THICKNESS (T).
   B) FILTER BLANKET MATERIAL, NUMBER OF LAYERS AND THICKNESS
2. RIP RAP SHALL BE EITHER QUARRY STONE OR BROKEN CONCRETE (IF **SHOWN ON THE PLANS**). COBBLES ARE NOT ACCEPTABLE.
3. RIP RAP SHALL BE PLACED OVER A GEOTEXTILE FILTER FABRIC. FILTER BLANKET MATERIAL SHALL BE PLACED UNDER THE FABRIC WHEN SPECIFIED.
4. **SEE WHITE BOOK** FOR SELECTION OF FILTER MATERIAL.
5. RIP RAP ENERGY DISSIPATORS SHALL BE DESIGNATED AS EITHER TYPE 1 OR TYPE 2. TYPE 1 SHALL BE WITH CONCRETE SILL; TYPE 2 SHALL BE WITHOUT SILL.
6. FOR STRUCTURAL DETAILS, **SEE D-42** FOR PIPELINE SIZES FROM 18" TO 30" AND **SEE D-43** FOR PIPELINE SIZES FROM 36" TO 72".
7. FOR RIP RAP SELECTION **SEE TABLE 200-1.7 OF THE WHITEBOOK**.

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
UPDATED	AB	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

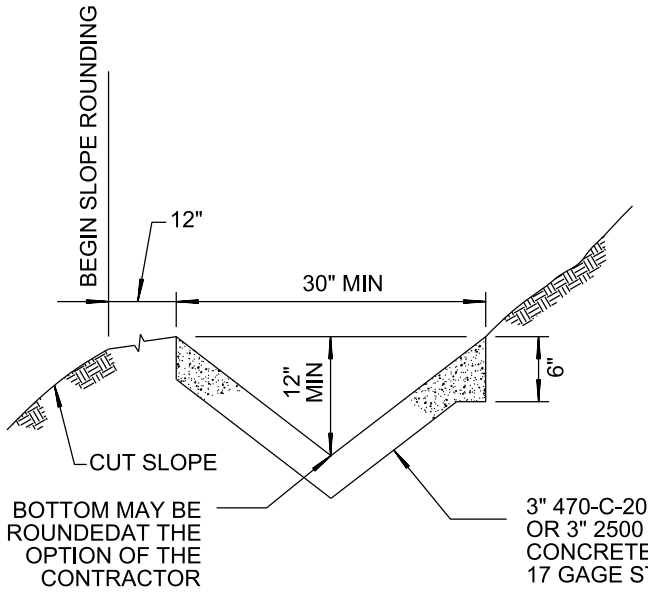
CITY OF SAN DIEGO – STANDARD DRAWING

RIP RAP
ENERGY DISSIPATOR

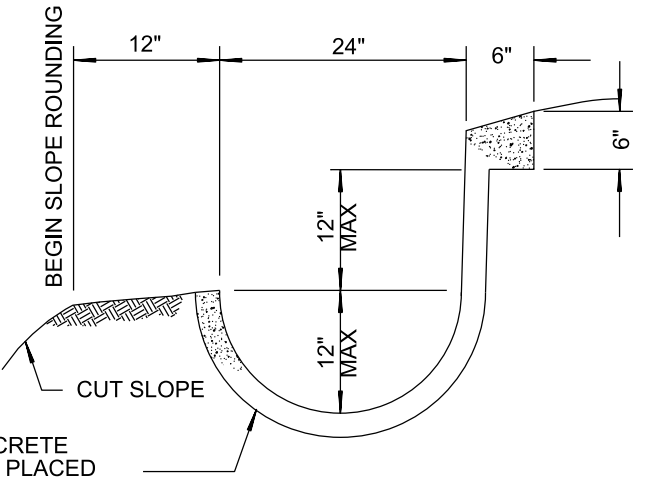
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/10/18 DATE

DRAWING NUMBER **SDD-104**

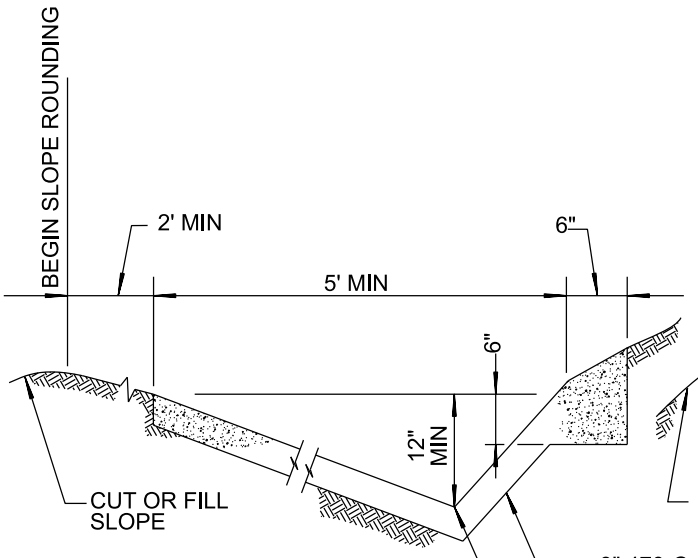


TYPE A

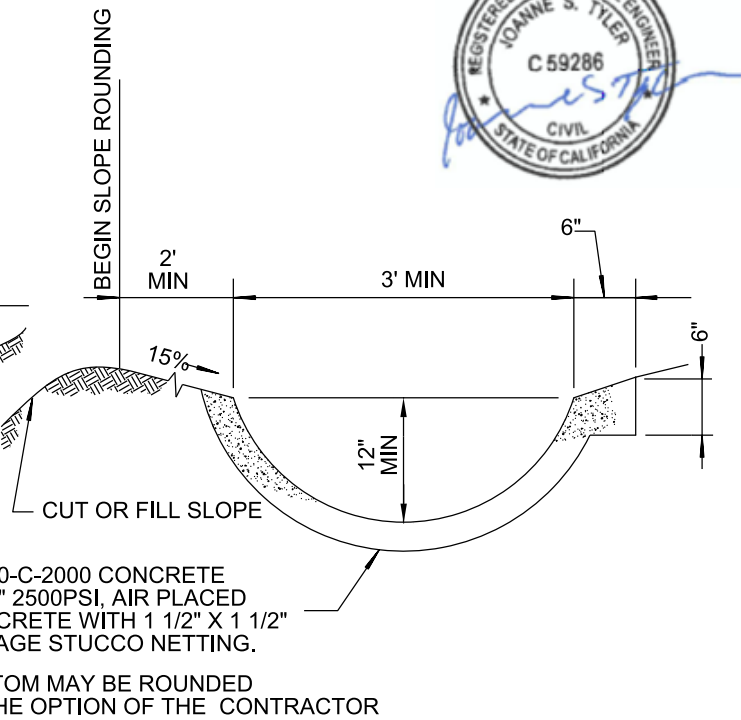


TYPE B

BROW DITCH



TYPE C



TYPE D

TERRACE DITCH

NOTES:

1. LONGITUDINAL SLOPE OF LINED DITCH SHALL BE 2% MINIMUM.
2. OVER SLOPE DOWN DITCHES SHALL EMPLOY 6" THICKENED EDGE SECTION AT BOTH SIDES OF DITCH.
3. STUCCO NETTING SHALL BE GALVANIZED AND SHALL HAVE 1 1/2" COVER.

LEGEND ON PLANS

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

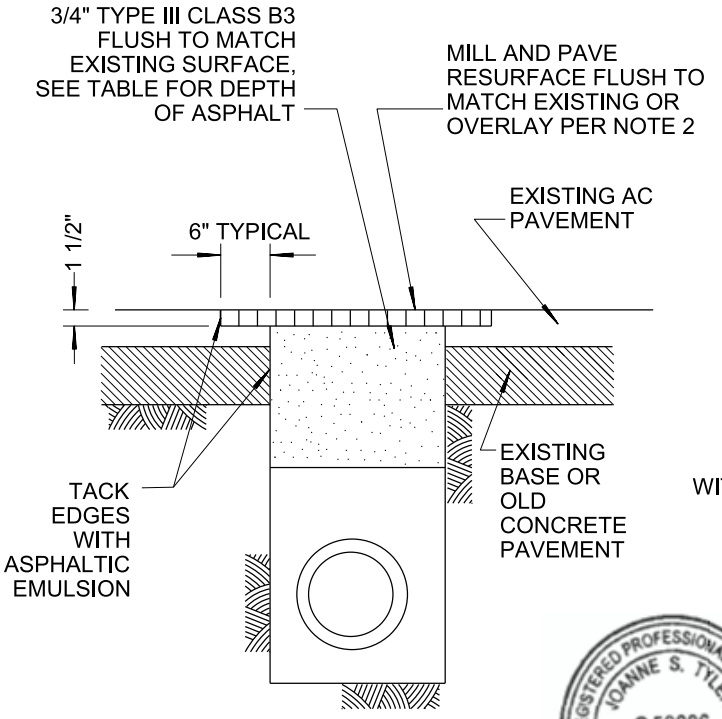
CITY OF SAN DIEGO – STANDARD DRAWING

DRAINAGE DITCHES

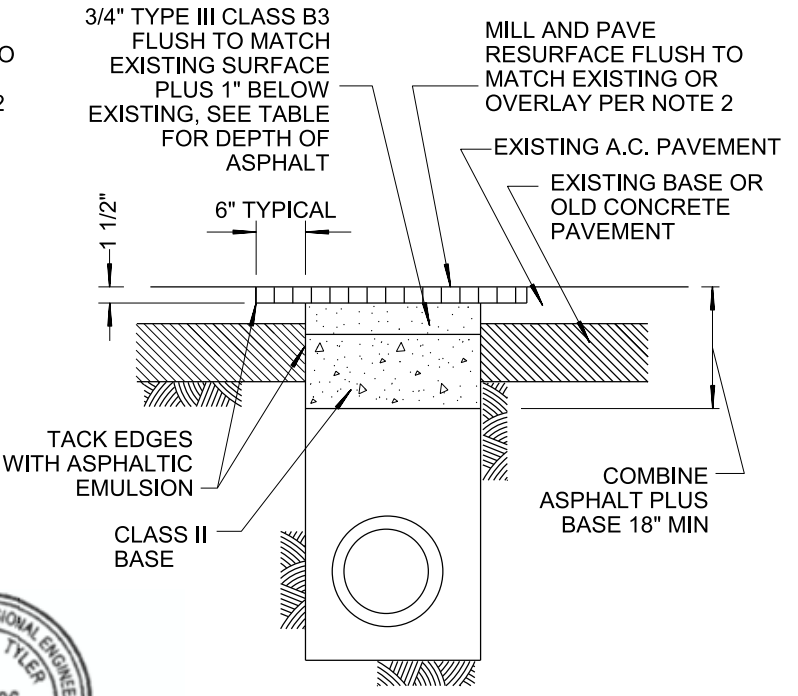
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/10/18 DATE

DRAWING NUMBER **SDD-106**



TYPE 1



TYPE 2

	TYPE 1	TYPE 2
	ASPHALT	ASPHALT PLUS BASE
MIX DESIGN	3/4" TYPE III CLASS B3	3/4" TYPE III CLASS B3 PLUS CLASS II BASE
ALLEYS	8.0"	ASPHALT THICKNESS TO EQUAL EXISTING PLUS 1", MIN 4" TO MAX. 9". COMBINED ASPHALT PLUS BASE 18" MIN.
LOCAL THROUGH 4 LANE COLLECTORS	10.0"	
MAJOR	12.0"	

NOTES:

1. ANY STREET TRENCH 7 FEET IN WIDTH OR GREATER AND LONGER THAN 100 FEET IN OVERALL LENGTH SHALL BE RECONSTRUCTED WITH THE PAVEMENT SECTION FOR THE STREET CLASSIFICATION **PER SCHEDULE "J" (SDG-113).**
2. ASPHALT TRENCH CAPS IN STREETS NOT RECEIVING A FULL WIDTH OVERLAY PRIOR TO ACCEPTANCE SHALL BE MILLED AS SHOWN AND RESURFACED WITH 1/2" TYPE III CLASS C2 ASPHALT NO LESS THAN 30 CALENDAR DAYS AFTER INITIAL ASPHALT PLACEMENT.
3. IF THE STREET IS NOT PLANNING TO DO CURB TO CURB SLURRY SEAL OR RESURFACING, IT MUST COMPLETE FINAL STREET RESTORATION WITHIN 60 DAYS AFTER THE INITIAL EXCAVATION.
4. **WHEN DIRECTED BY CITY ENGINEER OR SHOWN ON THE PLANS**, CONCRETE **PER SDG-108**(NOTE #5) MAY BE PLACED; A 1/8" - 1/4" WEARING SURFACING OF TYPE III CLASS F ASPHALT CONCRETE WILL BE REQUIRED.

REVISION	BY	APPROVED	DATE
ORIGINAL		J.P. CASEY	1/24/89
UPDATED	KA	J. NAGELVOORT	4/13
UPDATED	BB	J. NAGELVOORT	1/14
UPDATED	LS	J. NAGELVOORT	02/16
UPDATED	JN	J. NAGELVOORT	11/17
REDRAFTED	CD	J. NAGELVOORT	09/18

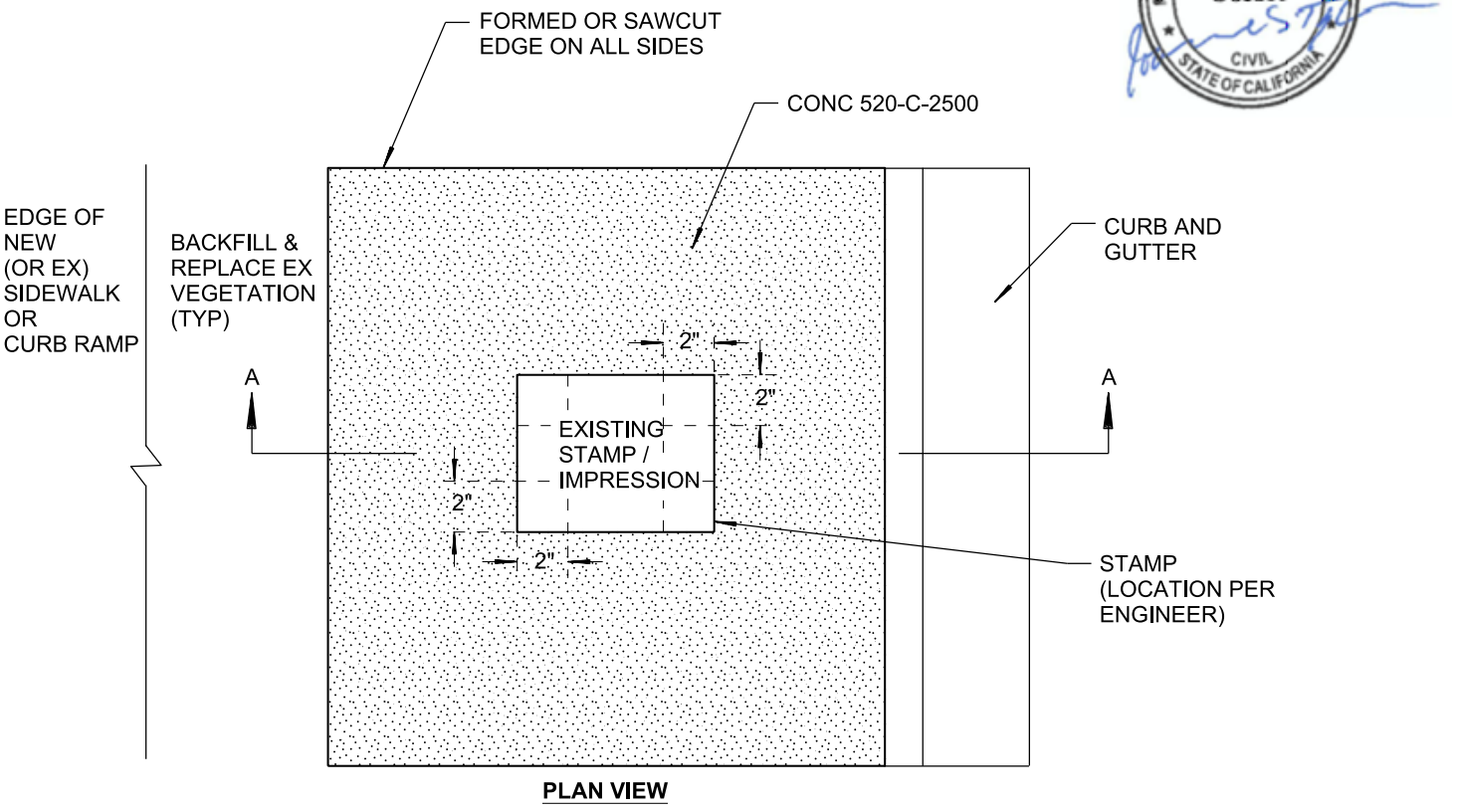
CITY OF SAN DIEGO – STANDARD DRAWING

TRENCH RESURFACING FOR ASPHALT CONCRETE SURFACED STREETS

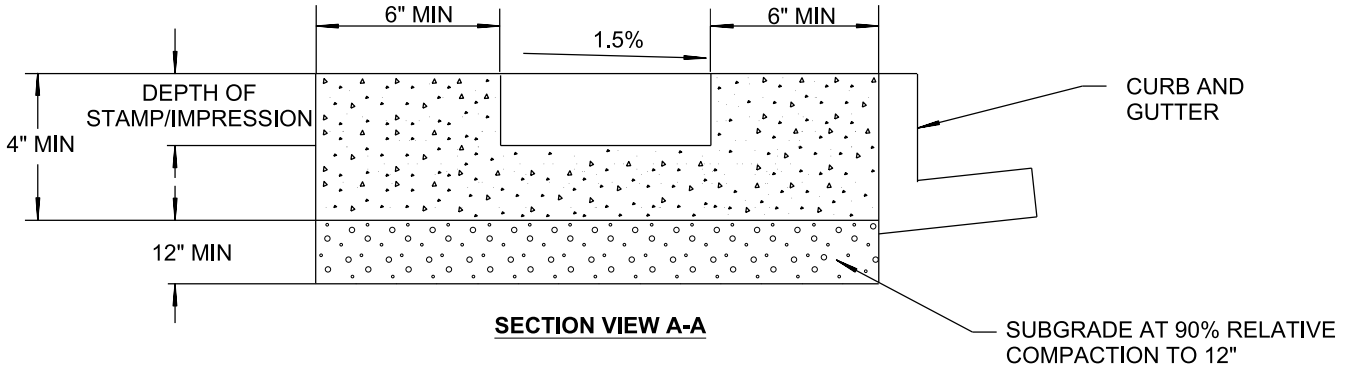
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 DATE 9/4/18

DRAWING NUMBER **SDG-107**



PLAN VIEW



SECTION VIEW A-A

NOTES:

1. ALL STAMP / IMPRESSION (STREET NAME, CONTRACTOR, NAME AND / OR DATE) LOCATIONS AND ORIENTATIONS SHALL BE PRE-APPROVED BY THE ENGINEER.
2. SINGLE STAMP / IMPRESSION SHALL BE PLACED AS CLOSE TO ITS ORIGINAL LOCATION AS CONSTRUCTION ALLOWS.
3. MULTIPLE STAMPS / IMPRESSIONS (EXISTING AND / OR NEW) SHALL BE EVENLY SPACED ALONG THE NEWLY CONSTRUCTED SIDEWALK.
4. EXISTING STAMP / IMPRESSION SHALL BE SAWCUT TO NO LESS THAN 2" FROM STAMP LETTERING OR SYMBOL.

REVISION	BY	APPROVED	DATE
ORIGINAL	NZ	J. SHOAF	8/00
DETAIL	SM	A. OSKOUI	12/03
UPDATED	KA	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

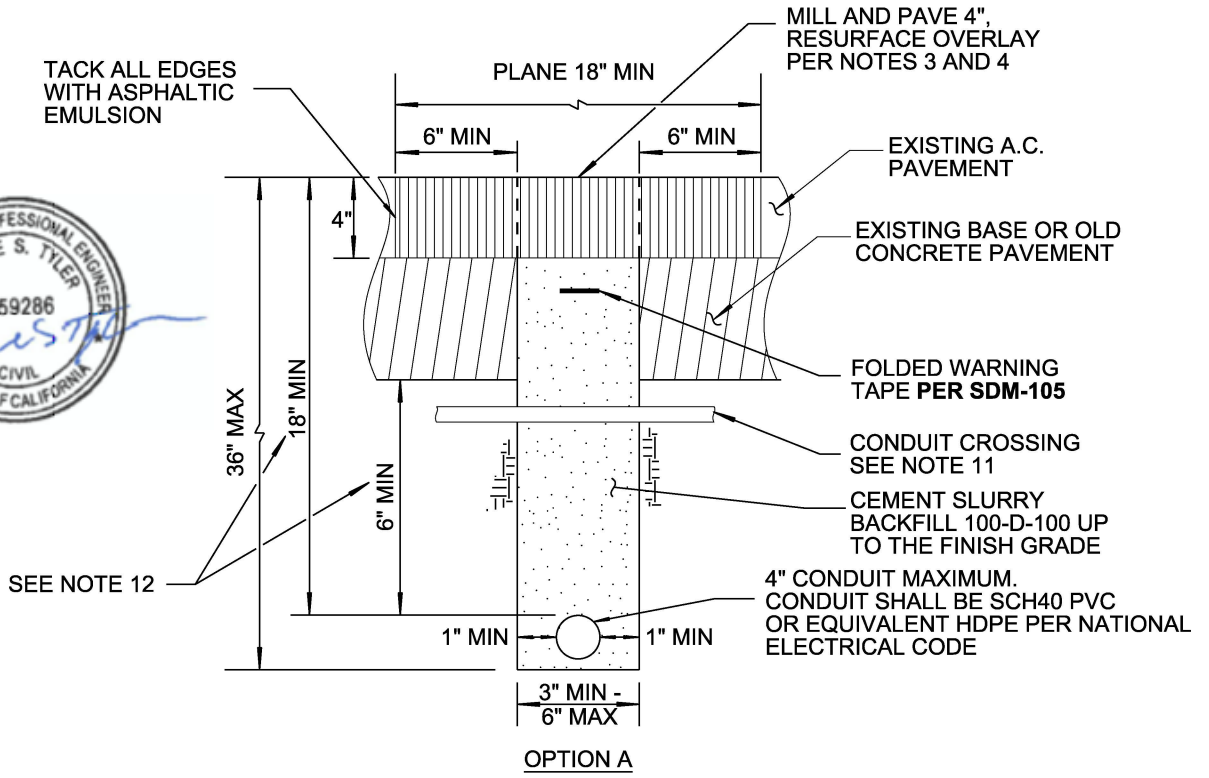
CITY OF SAN DIEGO – STANDARD DRAWING

EXISTING HISTORICAL STAMP OR IMPRESSION PLACEMENT

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/4/18 DATE

DRAWING NUMBER **SDG-115**



OPTION A

NOTES (OPTION A):

1. TRENCH LOCATION SHALL BE 36 INCHES MINIMUM AND 72 INCHES MAXIMUM FROM LIP OF GUTTER, AND AT LEAST 36 INCHES CLEAR FROM ANY CITY UNDERGROUND FACILITIES.

   TRENCHING IN THE BIKE LANE MUST BE APPROVED BY THE RESIDENT ENGINEER.THE BIKE LANE SHALL BE FULLY CLOSED AND RE-ROUTED WITH THE APPROPRIATE TRAFFIC CONTROL AND THE WORK SHALL BE COMPLETED WITHIN 7 DAYS OF TRENCHING. CONTRACTOR IS REQUIRED TO SUBMIT A POTHOLING PLAN FOR REVIEW PRIOR TO WORK AND COMMITMENT TO REPAVING FULL WIDTH OF BIKE LANE TO THE FACE OF CURB (GRIND AND OVERLAY) TO THE SATISFACTION OF THE RESIDENT ENGINEER. ANY TRENCHING IN THE BIKE LANE SHALL BE PERFORMED IN SEGMENTS NOT TO EXCEED 500 LINEAR FEET PER SEGMENT. THE CONTRACTOR SHALL FULLY COMPLETE THE WORK ON EACH SEGMENT PRIOR TO MOVING TO THE NEXT SEGMENT.

2. CEMENT SLURRY BACKFILL SHALL BE THOROUGHLY CONSOLIDATED, HAVE A MAXIMUM SLUMP OF 4 INCHES. FLY ASH MEETING THE REQUIREMENTS OF 201-1.2.5.3 MAY BE ADDED (NOT AS A SUBSTITUTE) TO THE MINIMUM CEMENT REQUIREMENTS. SLURRY COMBINED GRADING SHALL MEET REQUIREMENTS OF 201-1.3.2 (A) GRADING D.

3. BALL DROP TEST PER ASTM D6024 SHALL BE PERFORMED ON SLURRY AND ACHIEVE A MAXIMUM INDENTATION DIAMETER OF 3 INCHES PRIOR TO PLACEMENT OF ASPHALT CONCRETE. SLURRY PLACED IN NARROW TRENCHES WHERE BALL DROP TEST CANNOT BE PERFORMED SHALL BE CURED A MINIMUM OF 48 HOURS PRIOR TO PLACEMENT OF ASPHALT CONCRETE. PERMANENT RESURFACING SHALL BE COMPLETED IN NO MORE THAN 7 DAYS AFTER PLACEMENT OF CEMENT SLURRY.

4. DURING PLACEMENT, CONCAVE SLURRY SURFACE WITH A SHOVEL TO 1/2 INCH - 1 INCH DEPTH.

5. MINIMUM SPECIFIED SEPARATIONS MUST BE MAINTAINED UNTIL SLURRY HAS FULLY CURED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THE CONDUIT DOES NOT SHIFT HORIZONTALLY OR FLOAT VERTICALLY IN THE TRENCH DURING THE APPLICATION OF THE SLURRY. SPOT POUR ONE SACK SLURRY OVER CONDUIT AT 25 FOOT INTERVALS TO PREVENT CONDUIT FROM FLOATING.

6. CUTS SHALL BE STRAIGHT. EXISTING A.C. PAVEMENT WILL NOT REQUIRE SAW CUTTING WHEN USING ROCKWHEEL FOR EXCAVATION PROVIDED THAT A SMOOTH SURFACE IS PRODUCED.

SEE ADDITIONAL NOTES ON SHEET 2

REVISION	BY	APPROVED	DATE
ORIGINAL		BAHMANIAN	04/86
UPDATED	AA	J. NAGELVOORT	02/16
UPDATED	LS	M. GIBSON	05/17
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	LS	J. NAGELVOORT	04/21

CITY OF SAN DIEGO – STANDARD DRAWING

NARROW TRENCH RESURFACING FOR ASPHALT CONCRETE SURFACE STREETS OPTION A - ONE CONDUIT

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 DATE 04/30/21

DRAWING NUMBER **SDG-117A**

NOTES (CONTINUED FOR OPTION A):

7. TRENCH SHALL BE MILLED TO A DEPTH OF 4 INCHES AND A MINIMUM OF 18 INCHES WIDE OR 12 INCHES WIDER THAN TRENCH WIDTH, WHICHEVER IS GREATER, AND RESURFACED WITH 1/2 INCH TYPE III CLASS C2 ASPHALT.
8. WHEN PCC TRENCH RESURFACING IS DIRECTED BY CITY ENGINEER, SHOWN ON THE PLANS, OR REQUIRED FOR A PCC SURFACED STREET, FOR ASPHALT STREETS SEE SDG-107 (NOTE #3) AND FOR CONCRETE SURFACED STREETS SEE SDG-108.
9. SDG-117A SHALL BE USED FOR THE PLACEMENT OF ONE CONDUIT. FOR THE PLACEMENT OF TWO CONDUITS USE SDG-117B AND FOR PLACEMENT OF THREE OR MORE CONDUITS USE SDG-117C OR SDG-119.
10. ALLOW THREE HOURS MINIMUM FOR ONE SACK SLURRY TRENCH BACKFILL CURE TIME FOR TRENCHES PARALLEL TO THE STREET BEFORE OPENING TO TRAFFIC.
11. SLEEVE EXISTING CONDUITS AT CROSSING.
12. TOP OF CONDUIT SHALL BE 18 INCHES MINIMUM FROM TOP OF PAVEMENT OR 6 INCHES MINIMUM FROM BOTTOM OF PAVEMENT SECTION, WHICHEVER IS GREATER.
13. CLEARANCE SEPARATIONS BETWEEN DRY AND WET UTILITIES PER CALIFORNIA PUBLIC UTILITY CODE GENERAL ORDER 128 SHALL BE MAINTAINED

SHEET 2 OF 6

REVISION	BY	APPROVED	DATE
ORIGINAL		BAHMANIAN	04/86
UPDATED	AA	J. NAGELVOORT	02/16
UPDATED	LS	M. GIBSON	05/17
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	LS	J. NAGELVOORT	04/21

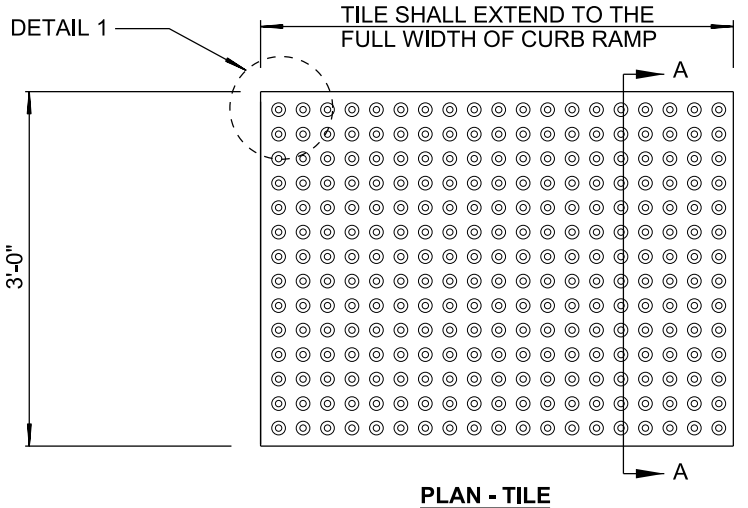
CITY OF SAN DIEGO – STANDARD DRAWING

NARROW TRENCH RESURFACING FOR ASPHALT CONCRETE SURFACE STREETS OPTION A - ONE CONDUIT

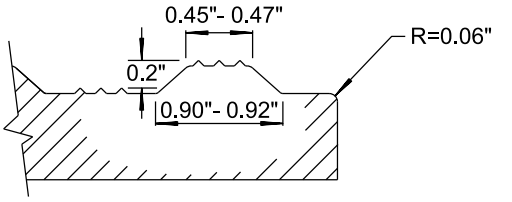
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 04/30/21 DATE

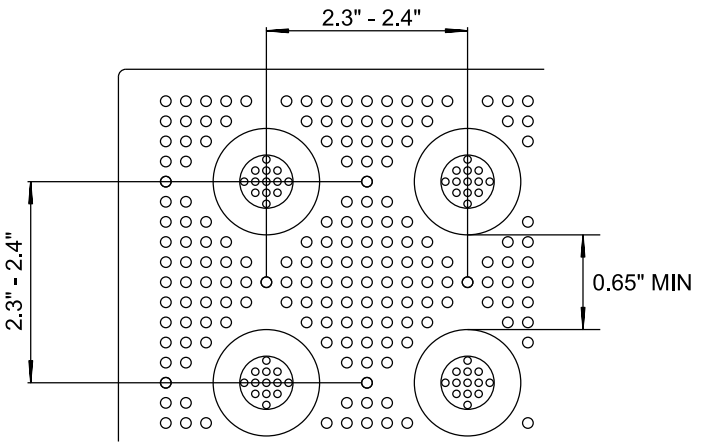
DRAWING NUMBER **SDG-117A**



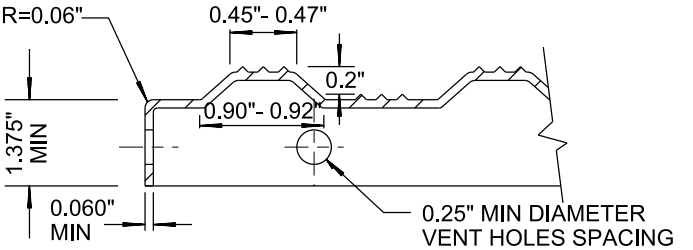
PLAN - TILE



COMPOSITE
SECTION A-A



DETAIL 1



STAINLESS STEEL
SECTION A-A

NOTES:

1. THE DETECTABLE WARNING TILE SHALL BE SLIP RESISTANT AND SHALL CONSIST OF AN INLINE PATTERN OF RAISED TRUNCATED DOMES. THE TILE SHALL BE PLACED WHERE THE DOMES ARE IN LINE WITH THE DIRECTION OF TRAVEL.

2. COLOR: THE DETECTABLE WARNING TILE SHALL BE YELLOW COLOR NO. 33538 OF SAE AMS-STD-595A.

3. MATERIAL: CAST-IN-PLACE STAINLESS STEEL IS THE REQUIRED MATERIAL FOR THE DETECTABLE WARNING TILE.

   EXCEPTION:
   1. CAST-IN-PLACE DETECTABLE WARNING TILE OF COMPOSITE MATERIAL MAY BE USED ON RESIDENTIAL AREAS ONLY. WHEN RESIDENTIAL AREAS ARE WITHIN THE BOUNDARY OF A MIXED-USE OR OTHER NON-RESIDENTIAL ZONES, STAINLESS STEEL IS REQUIRED AT CURB RAMPS.

   2. STAINLESS STEEL DETECTABLE WARNING TILE (DWT) SHALL NOT BE TRIMMED. SITUATIONS WHERE THE DWT MUST BE TRIMMED TO CONFORM TO THE CURB RAMP CONFIGURATION IN MIXED-USED OR NON-RESIDENTIAL ZONE, CONTRACTORS SHALL USE CAST-IN-PLACE REPLACEABLE COMPOSITE DWT. FASTENER/ANCHOR MUST BE RELOCATED TO PROVIDE EQUIVALENT ANCHORAGE ALONG THE TRIMMED EDGE.

4. DETECTABLE WARNING TILE PRODUCTS SHALL BE **PER THE CITY'S APPROVED MATERIALS LIST**.

5. NO VOIDS SHALL BE ALLOWED BELOW THE DETECTABLE WARNING TILES.

6. PROVIDE A ¼" DEEP TOOLED JOINT WITH ¼" RADIUS EDGES AROUND THE PERIMETER OF THE DECTABLE WARNING TILES.

REVISION	BY	APPROVED	DATE
ORIGINAL	FC	A. OSKOUI	12/03
UPDATED	FC	M. GIBSON	12/16
UPDATED	FC	J. NAGELVOORT	09/17
UPDATED	HN	J. NAGELVOORT	06/18
UPDATED	HN	J. NAGELVOORT	04/19
UPDATED	FC	J. NAGELVOORT	09/20

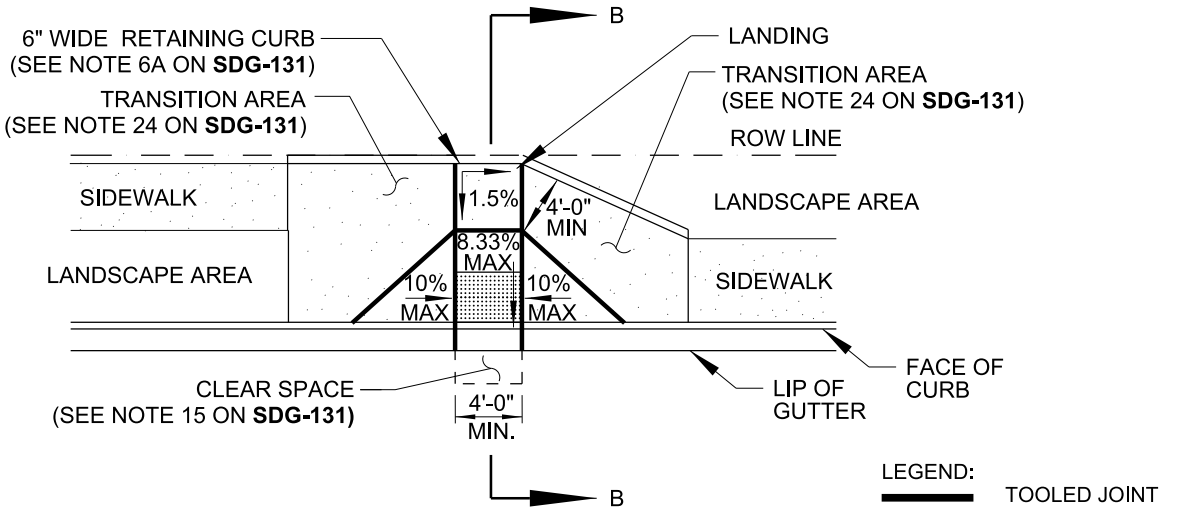
CITY OF SAN DIEGO – STANDARD DRAWING

DETECTABLE WARNING TILES

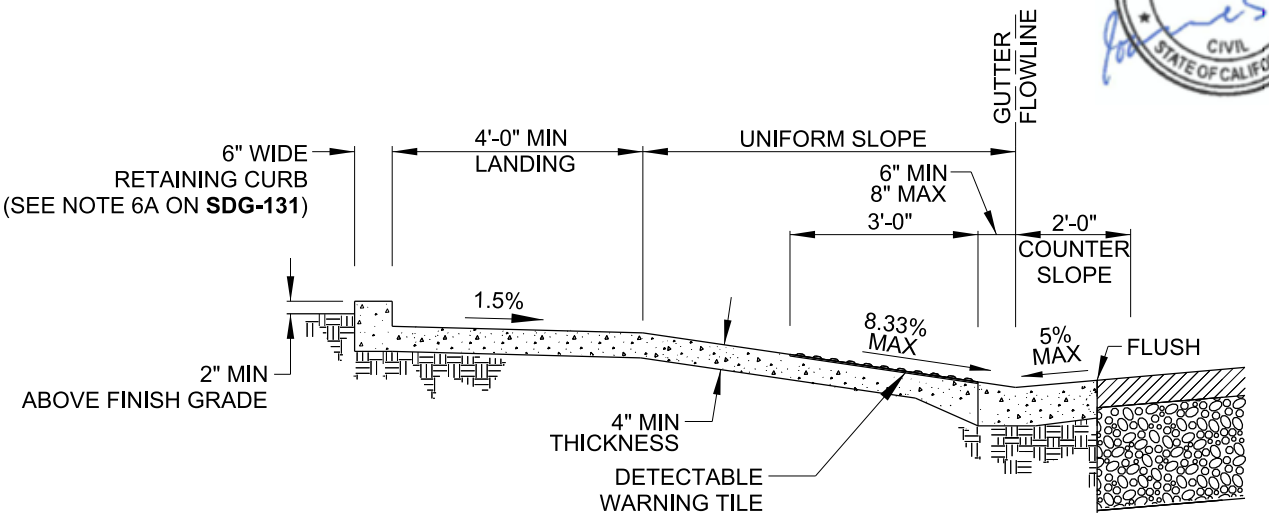
RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/22/20
DATE

DRAWING NUMBER **SDG-130**



PLAN - TYPE B



SECTION B-B

REVISION	BY	APPROVED	DATE
ORIGINAL	FC	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	HN	J. NAGELVOORT	04/19
UPDATED	FC	J. NAGELVOORT	09/20

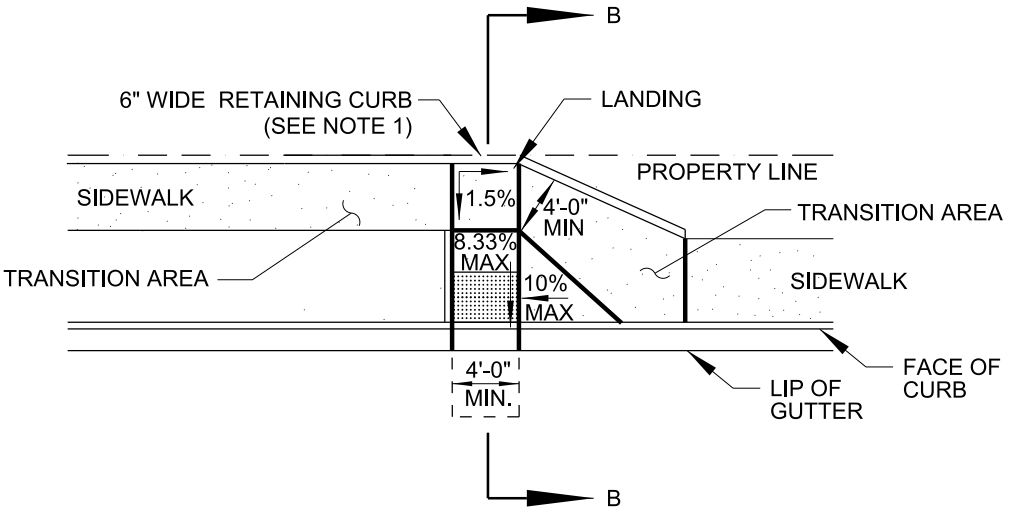
CITY OF SAN DIEGO – STANDARD DRAWING

CURB RAMP - TYPE B

RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

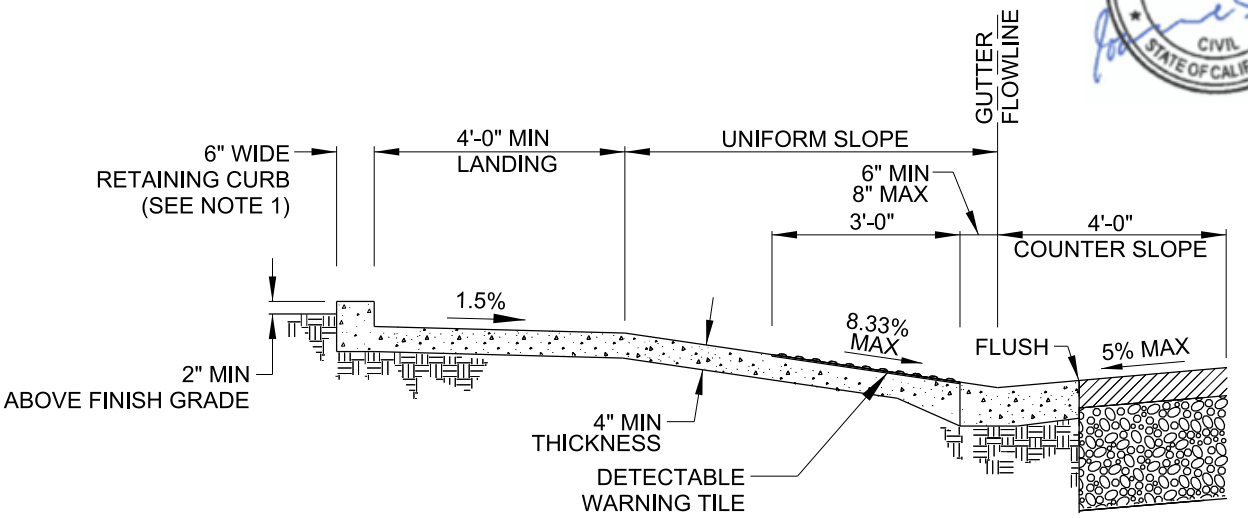
COORDINATOR R.C.E. 56523 9/22/20 DATE

DRAWING NUMBER **SDG-133**



LEGEND: TOOLED JOINT

PLAN - TYPE B



SECTION B-B

NOTE:

1. 6" WIDE RETAINING CURB MAY BE OMITTED IF THE GROUND SURFACE WILL BE AT THE SAME ELEVATION AS THE CURB RAMP SURFACE.
2. IF THE EXISTING SIDEWALK IS LOCATED OUTSIDE OF THE INSIDE FACE OF THE RETAINING CURB, PROVIDE A TRANSITION AREA TO TAPER SIDEWALK TO THE INSIDE FACE OF CURB.

REVISION	BY	APPROVED	DATE
ORIGINAL	FC	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	HN	J. NAGELVOORT	04/19
UPDATED	FC	J. NAGELVOORT	09/20

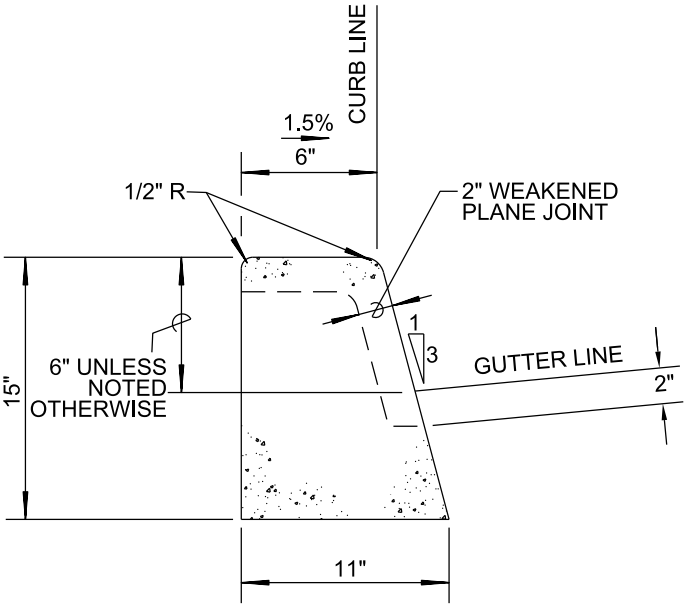
CITY OF SAN DIEGO – STANDARD DRAWING

CURB RAMP - TYPE B

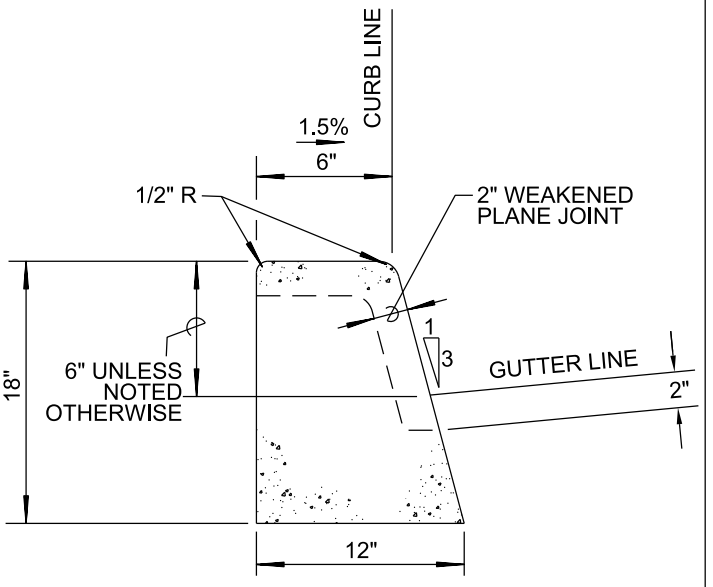
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/22/20 DATE

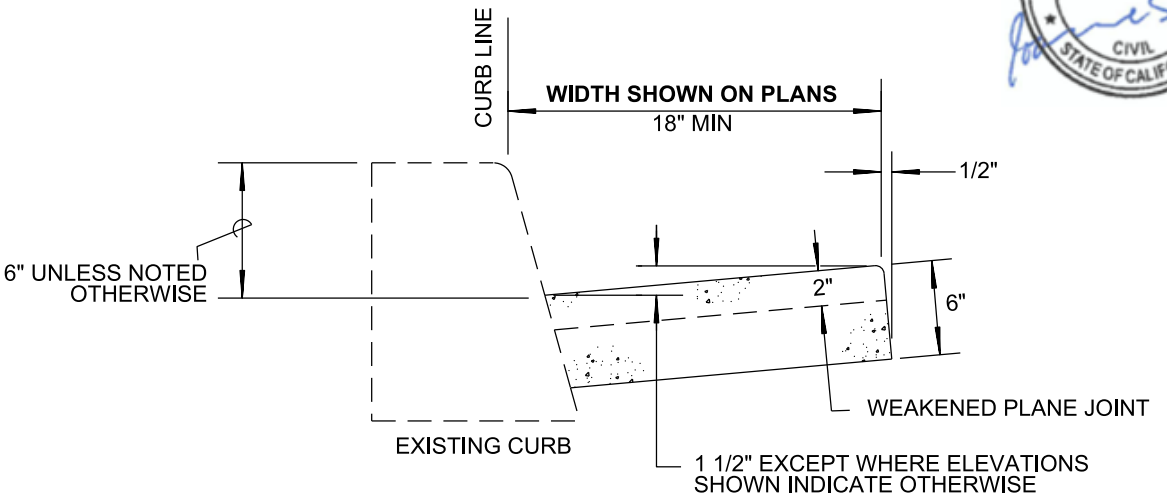
DRAWING NUMBER **SDG-133**



6" CURB
AREA=0.89 SQ FT



8" CURB
AREA=1.09 SQ FT



GUTTER

NOTES:

1. CONCRETE SHALL BE 520-C-2500.
2. SEE **SDG-109** AND **G-10** FOR JOINT DETAILS.
3. ALL HISTORICAL STAMPS / IMPRESSIONS (STREET NAME, CONTRACTOR NAME, AND / OR DATE) SHALL BE PRESERVED **PER SDG-115.**

LEGEND ON PLANS
6" CURB

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
UPDATED	RB	J. NAGELVOORT	10/15
UPDATED	HM	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

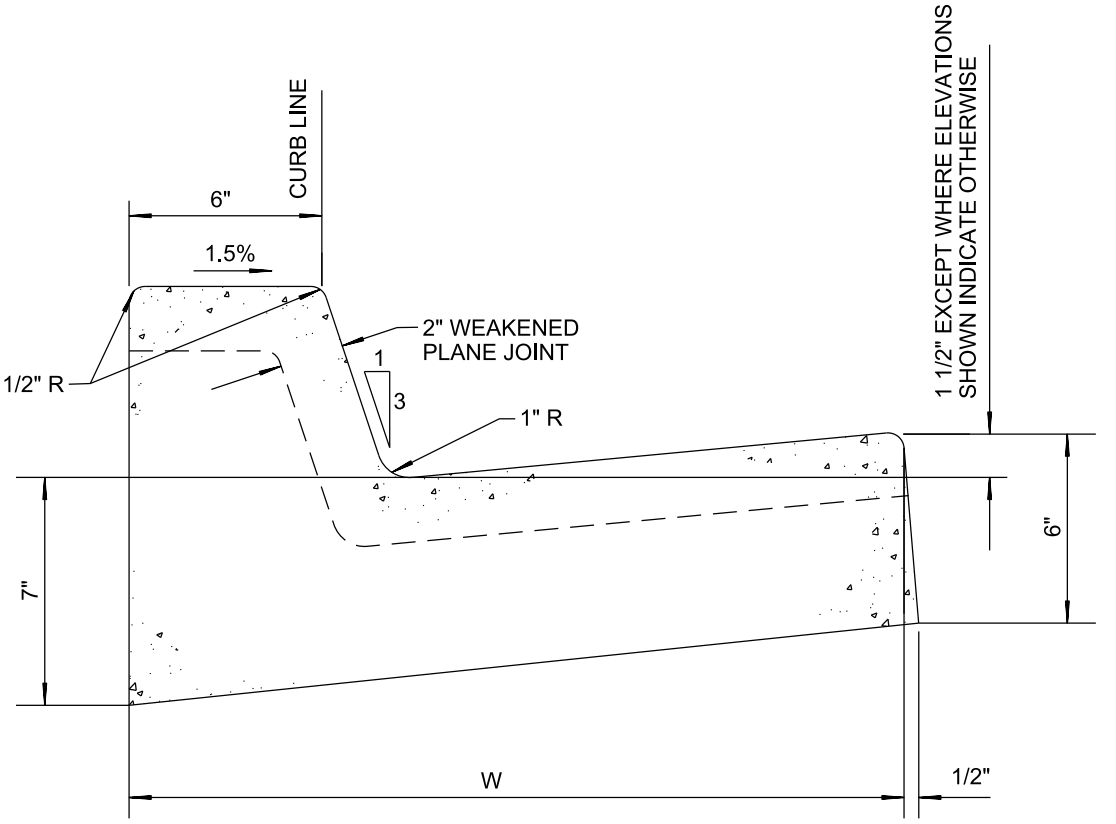
CITY OF SAN DIEGO – STANDARD DRAWING

CURB AND GUTTER - SEPARATE

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/4/18 DATE

DRAWING NUMBER **SDG-150**



TYPE	W	*AREA
G	24"	1.34 SQ FT
H	30"	1.61 SQ FT

* WITH 6" CURB FACE

REGISTERED PROFESSIONAL ENGINEER JOANNE S. TYLER C 59286 CIVIL STATE OF CALIFORNIA

NOTES:

1. CONCRETE SHALL BE 520-C-2500.
2. SEE JOINT DETAIL DRAWING **SDG-109 AND G-10**.
3. ON THE SIDE OF OF SUPER ELEVATED CURVES THE GUTTER SHALL BE SLOPED TO MATCH CROSS SECTION GRADE OF THE ROADWAY.
4. PLACE EXPANSION JOINTS AT CURB RETURNS ADJACENT TO STRUCTURES AND AT NO GREATER THAN 45' INTERVALS.
5. PLACE WEAKENED PLANE JOINTS AT DRIVEWAYS AND AT 15' INTERVALS FROM POINT OF CURB RETURN.
6. ALL HISTORICAL STAMPS / IMPRESSIONS SHALL BE PRESERVED **PER SDG-115**.

LEGEND ON PLANS

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
UPDATED	RB	J. NAGELVOORT	10/15
UPDATED	HM	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

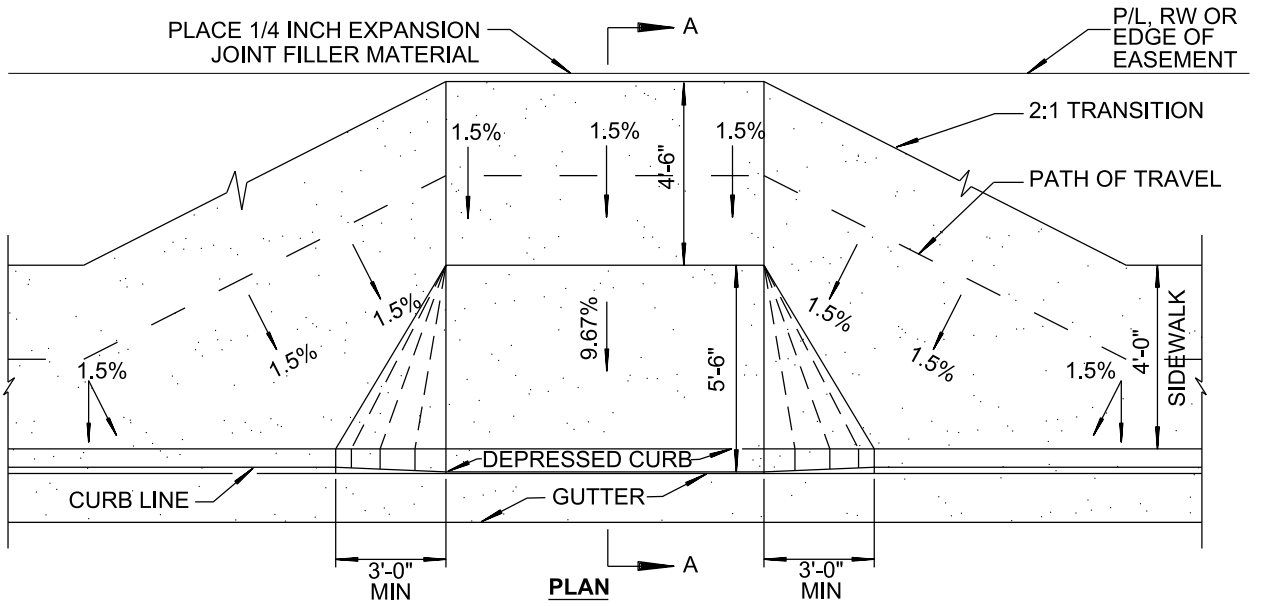
CITY OF SAN DIEGO – STANDARD DRAWING

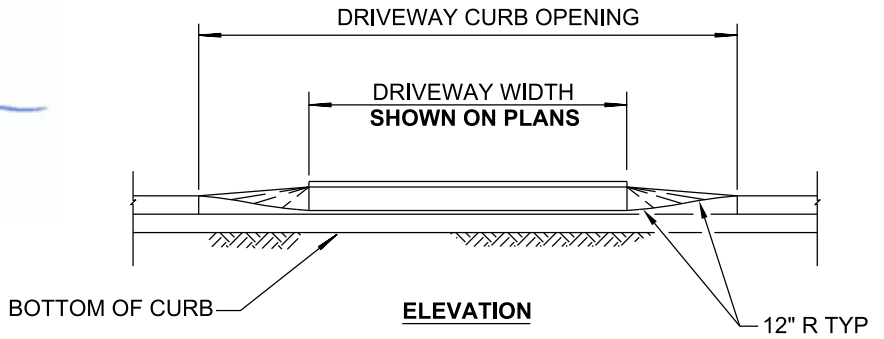
CURB AND GUTTER - COMBINED

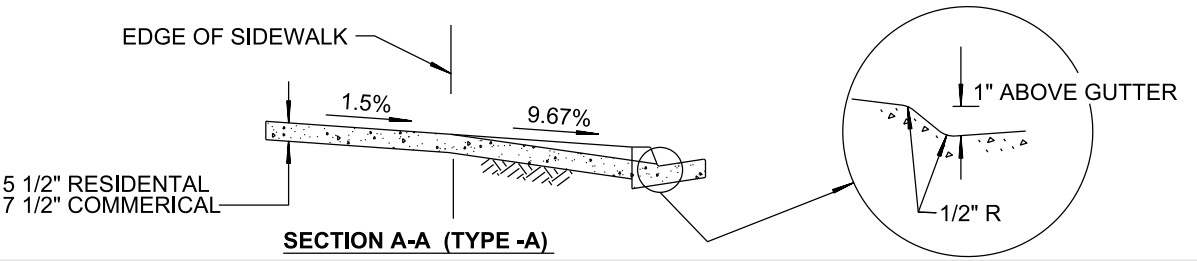
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/4/18 DATE

DRAWING NUMBER **SDG-151**







NOTES:

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED.
2. CONCRETE SHALL BE 520-C-2500 FOR RESIDENTIAL USE; 560-C-3250 FOR COMMERCIAL USE.
3. **SEE STANDARD DRAWINGS SDG-164 AND G-15** FOR WIDTH AND LOCATION REQUIREMENTS.
4. **SEE SDG-151 AND G-10** FOR CURB AND JOINT DETAILS.
5. DRIVEWAY SHALL BE CONTINUOUS POUR FROM BACK OF CURB TO PROPERTY LINE.
6. METER BOXES SHALL NOT BE LOCATED WITHIN DRIVEWAY.
7. DRIVEWAY IN EXCESS OF 150' IN LENGTH FROM CURB FACE SHALL HAVE 7 1/ 2" MINIMUM CONCRETE THICKNESS.
8. ALL HISTORICAL STAMPS / IMPRESSIONS (STREET NAME, CONTRACTOR NAME, AND DATE) SHALL BE PRESERVED **PER SDG-115.**
9. FOR DESIGNATED URBANIZED COMMUNITIES, SIDEWALK DESIGN (SCORING PATTERN, COLOR,TEXTURE) SHALL BE IN CONFORMANCE WITH HISTORIC DESIGN ON ADJACENT PROPERTIES.

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
UPDATED	FC	J. NAGELVOORT	10/15
UPDATED	FC	J. NAGELVOORT	2/16
REDRAFTED	CD	J. NAGELVOORT	09/18

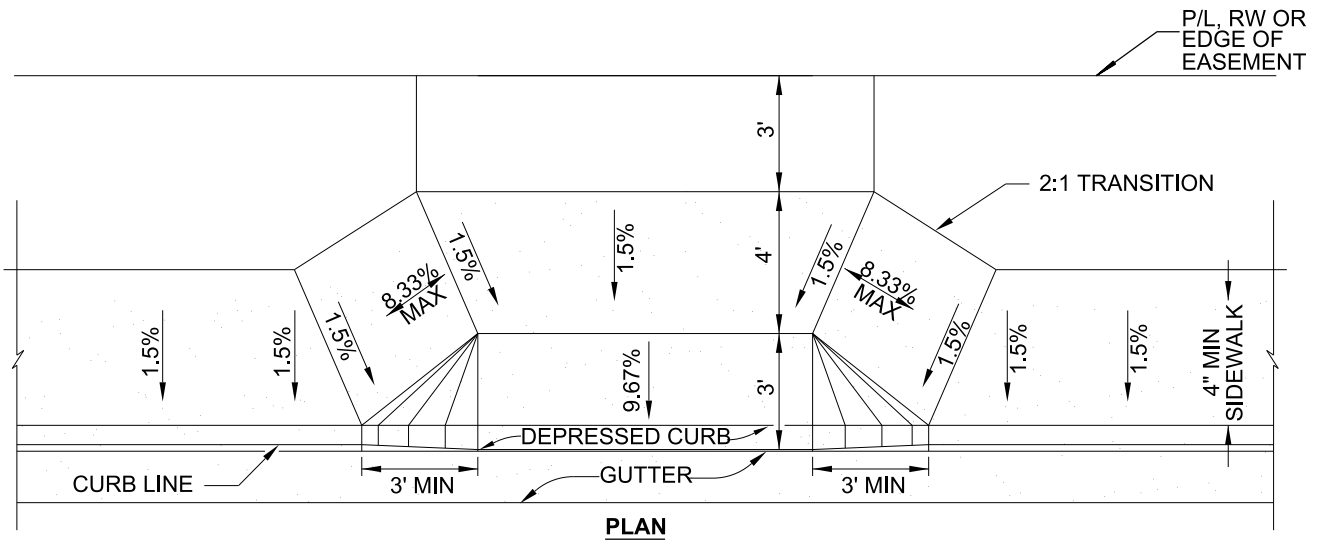
CITY OF SAN DIEGO – STANDARD DRAWING

CONCRETE DRIVEWAY (CONTIGUOUS SIDEWALK)

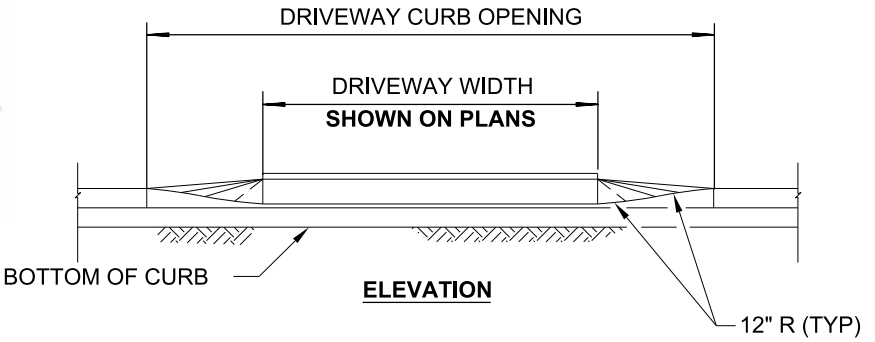
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/4/18 DATE

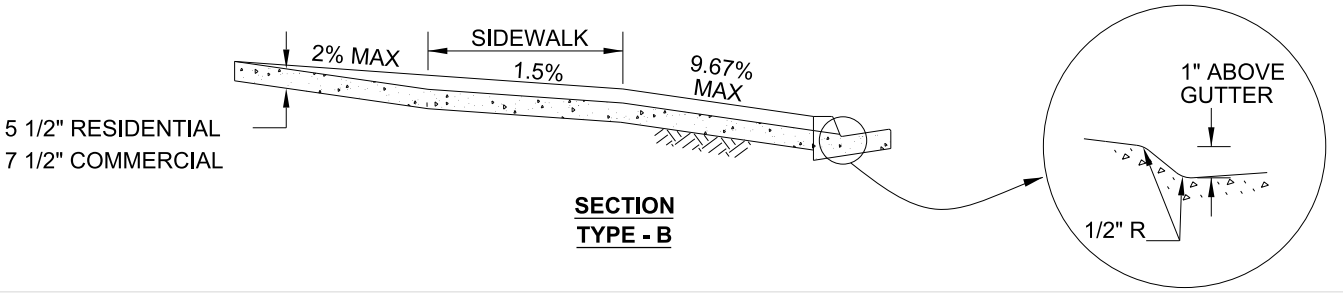
DRAWING NUMBER **SDG-159**



PLAN



ELEVATION



SECTION TYPE - B

NOTES:

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED.
2. FOR RESIDENTIAL USE, CONCRETE SHALL BE 520-C-2500; FOR COMMERCIAL USE, CONCRETE SHALL BE 560-C-3250.
3. **SEE STANDARD DRAWINGS SDG-164 AND G-15** FOR WIDTH AND LOCATION REQUIREMENTS.
4. DRIVEWAY RAMP TO EXTEND TO 10' FROM CURB FACE OR TO RIGHT-OF-WAY, WHICHEVER IS LESS.(FOR COMMERCIAL USE ONLY).
5. PLACE EXPANSION JOINT AT RIGHT-OF-WAY OR 10', WHICHEVER IS LESS.
6. **SEE SDG-151 AND G-10** FOR CURB AND JOINT DETAILS.
7. DIMENSIONS SHOWN REFLECT A 6" CURB HEIGHT.
8. METER BOXES SHALL NOT BE LOCATED WITHIN DRIVEWAY.
9. DRIVEWAY IN EXCESS OF 150' IN LENGTH FROM CURB FACE SHALL HAVE 7 1/ 2" MINIMUM CONCRETE THICKNESS.
10. ALL HISTORICAL STAMPS /IMPRESSIONS (STREET NAME, CONTRACTOR NAME, AND DATE) SHALL BE PRESERVED **PER SDG-115.**
11. FOR DESIGNATED URBANIZED COMMUNITIES, SIDEWALK DESIGN (SCORING PATTERN, COLOR, TEXTURE) SHALL BE IN CONFORMANCE WITH HISTORIC DESIGN ON ADJACENT PROPERTIES.

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/ 12
UPDATED	FC	J. NAGELVOORT	10/ 15
UPDATED	FC	J. NAGELVOORT	2/ 16
REDRAFTED	CD	J. NAGELVOORT	09/18

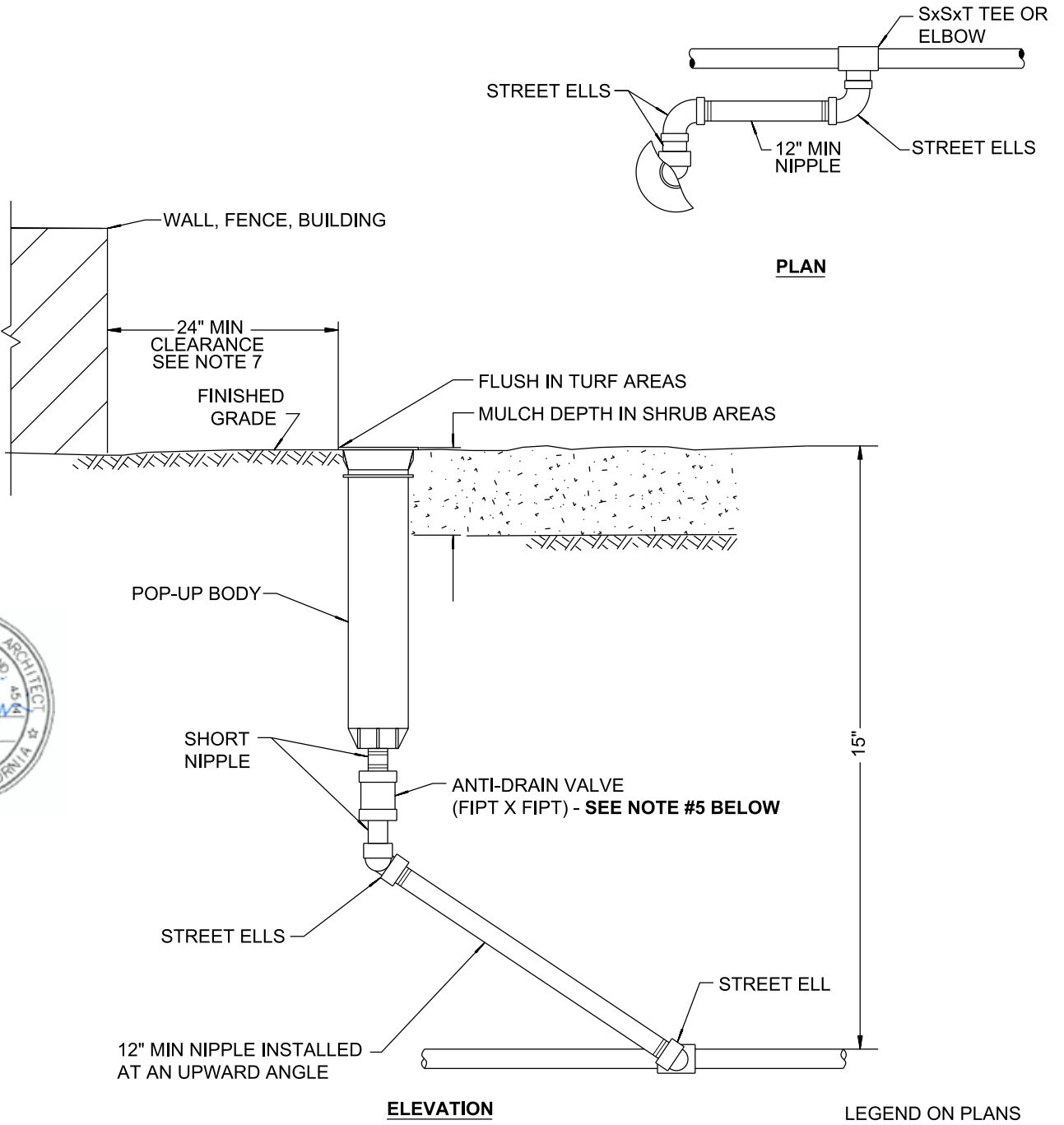
CITY OF SAN DIEGO – STANDARD DRAWING

CONCRETE DRIVEWAY (CONTIGUOUS SIDEWALK)

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/4/18 DATE

DRAWING NUMBER **SDG-159**



LEGEND ON PLANS

SHOW A NUMBER TO INDICATE TYPE HEAD

NOTES:

1. SOLVENT WELD FITTINGS SHALL BE PVC SCHEDULE 40.
2. THREADED FITTINGS AND NIPPLES SHALL BE PVC SCHEDULE 80.
3. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.
4. CLOSE NIPPLES SHALL NOT BE USED.
5. AN ANTI-DRAIN VALVE SHALL BE INSTALLED UNDER ANY SPRINKLER HEAD THAT DOES NOT CONTAIN AN INTEGRAL ANTI-DRAIN VALVE.
6. LATERAL DEPTH SHALL BE 18" WHEN 12" POP-UP BODIES ARE USED.
7. MAINTAIN 3" MAXIMUM DISTANCE FROM POP-UP HEAD TO PAVEMENT OR CURB UNLESS OTHERWISE NOTED ON PLANS.

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	AJ	J. NAGELVOORT	09/21

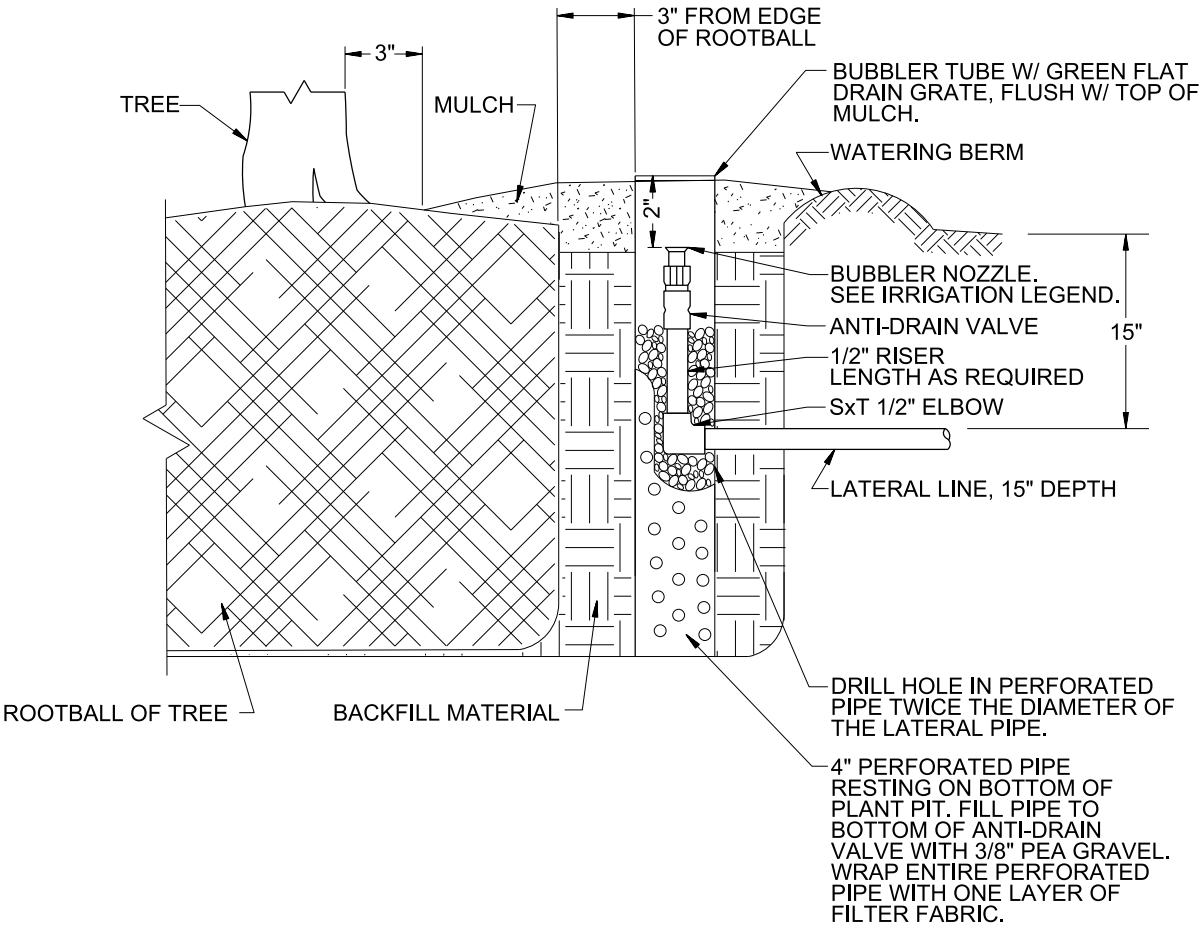
CITY OF SAN DIEGO – STANDARD DRAWING

ROTOR, SPRAY, OR BUBBLER POP-UP HEAD

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

Alaine L. James 09/30/21
COORDINATOR R.C.E. 81047 DATE

DRAWING NUMBER **SDI-103**



NOTES:

1. FOR BUBBLER LOCATION, REFER TO TREE PLANTING AND STAKING DRAWING.
2. EACH TREE SHALL HAVE A 2" POP-UP HEAD WITH BUBBLER NOZZLE **PER SDI-103**, AND A FIXED BUBBLER NOZZLE IN A PERFORATED PIPE.
3. THREADED FITTINGS AND NIPPLES SHALL BE PVC SCHEDULE 80.
4. SOLVENT WELD FITTINGS SHALL BE PVC SCHEDULE 40.
5. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.
6. CLOSE NIPPLES SHALL NOT BE USED.
7. ANTI-DRAIN VALVES SHALL BE INSTALLED UNDER ALL HEADS.

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	AJ	J. NAGELVOORT	09/21

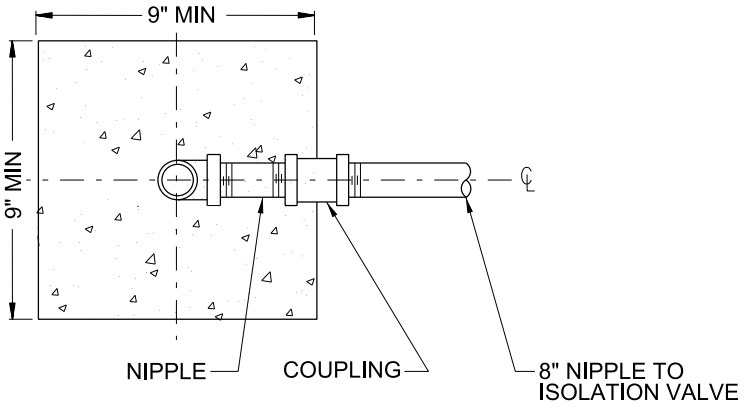
CITY OF SAN DIEGO – STANDARD DRAWING

TREE BUBBLER TUBE

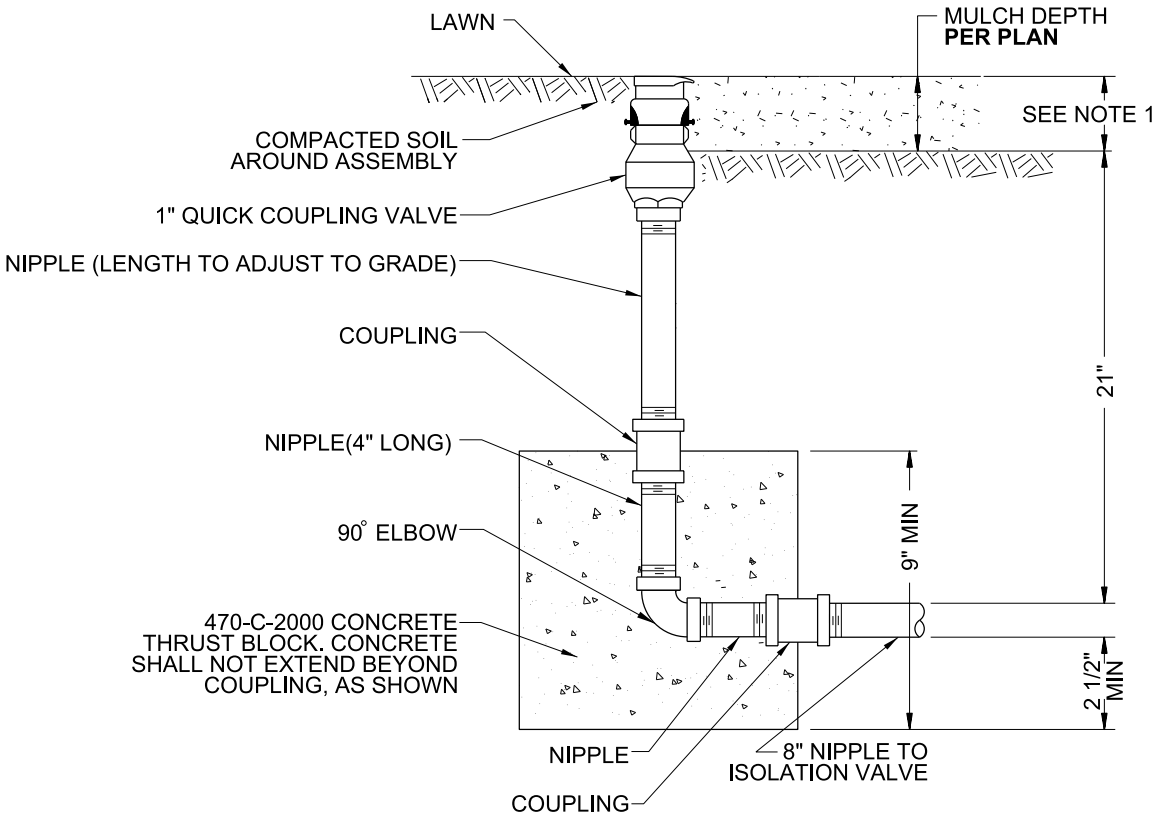
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

Alaine L. James 09/30/21
COORDINATOR R.C.E. 81047 DATE

DRAWING NUMBER **SDI-104**



PLAN



ELEVATION

REGISTERED LANDSCAPE ARCHITECT
JEREMY FRANZINI LIC. NO. 4541
SIGNATURE
JUNE 30 2023
RENEWAL DATE
3/24/20
DATE
STATE OF CALIFORNIA

LEGEND ON PLANS

QCV

NOTES:

1. QUICK COUPLING VALVES SHALL BE SET FLUSH IN LAWN AND PER MULCH DEPTH ABOVE FINISH GRADE INSHRUB / GROUNDCOVER AREAS.
2. CLOSE NIPPLES SHALL NOT BE USED.
3. NIPPLES, COUPLINGS, AND ELBOWS SIZE SHALL BE 1" RED BRASS.
4. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.
5. UPON PROJECT ACCEPTANCE, THE CONTRACTOR SHALL PROVIDE TWO SETS OF APPROPRIATE QUICK CUPLER VALVE KEY WITH 1" BRASS BALL VALVE AND SWIVEL ADAPTER INCLUDED IN THE ASSEMBLY.

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

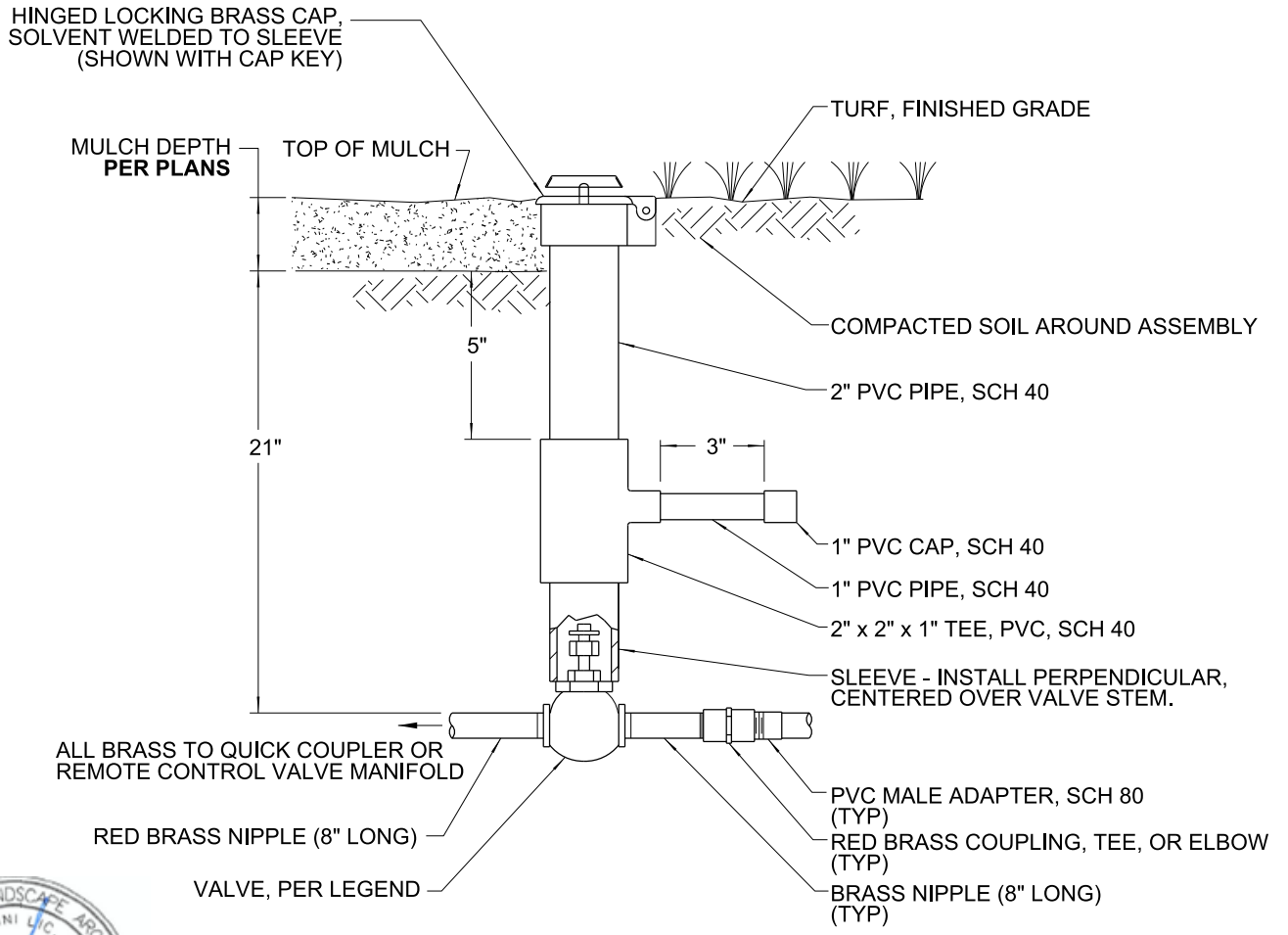
CITY OF SAN DIEGO – STANDARD DRAWING

QUICK COUPLING VALVE

RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/4/18 DATE

DRAWING NUMBER **SDI-105**



LEGEND

GV

NOTES:

1. GLOBE VALVES SHALL BE FURNISHED WITH A STANDARD BRONZE CROSS HANDLE, CENTERED IN PIPE SLEEVE.
2. VALVES SHALL BE INSTALLED WITHIN 12" OF HARDSCAPE.
3. GLOBE VALVES SHALL BE FURNISHED WITH A REMOVABLE BONNET AND PACKING GLAND NUT.
4. CLOSE NIPPLES SHALL NOT BE USED.
5. LOCKING CAP SHALL BE MOUNTED FLUSH WITH FINISHED GRADE IN TURF AREAS AND ABOVE FINISHED GRADE IN SHRUB AREAS, PER DEPTH OF MULCH.
6. PROVIDE APPROPRIATE LOCKING CAP KEY AND VALVE KEY TO OPERATE VALVE AT DEPTH.
7. LOCATE OUTSIDE OF TURF WHEN POSSIBLE.
8. TEFLON TAPE SHALL BE USED ON ALL THREADED CONNECTIONS.
9. WHEN INSTALLED AS MAINLINE ISOLATION VALVE, NIPPLES AND FITTINGS MAY BE SCH 80 PVC.
10. **SEE SDI-126** FOR REMOTE VALVE MANIFOLD INSTALLATION.

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	AJ	J. NAGELVOORT	08/21

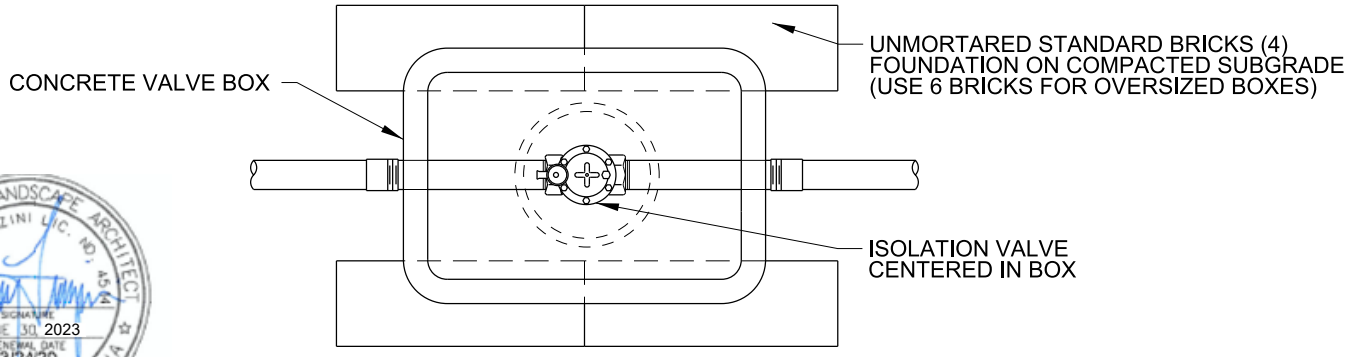
CITY OF SAN DIEGO – STANDARD DRAWING

ISOLATION GLOBE VALVE 2" AND SMALLER

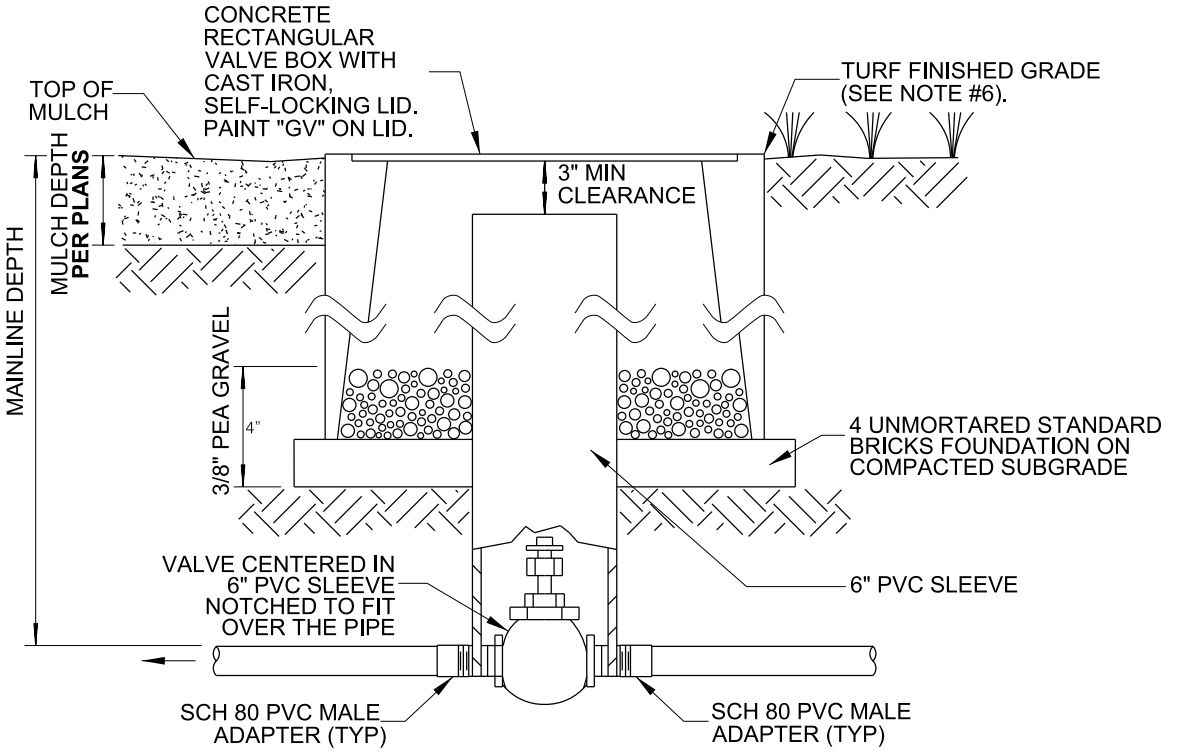
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

Alaine L. James 09/30/21
COORDINATOR R.C.E. 81047 DATE

DRAWING NUMBER **SDI-106**



PLAN



NOTES

1. GLOBE VALVES SHALL BE FURNISHED WITH A STANDARD BRONZE CROSS HANDLE, CENTERED IN PIPE SLEEVE.
2. VALVE SHALL BE INSTALLED WITHIN 12" OF HARDSCAPE.
3. GLOBE VALVES SHALL BE FURNISHED WITH A REMOVABLE BONNET AND PACKING GLAND NUT.
4. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.
5. VALVE BOX SHALL BE MOUNTED FLUSH WITH FINISH GRADE IN TURF AREAS AND PER MULCH DEPTH IN SHRUB AREAS.
6. LOCATE OUTSIDE OF TURF WHEN POSSIBLE.
7. GATE VALVE SHALL BE USED ONLY ON LOOPED MAINLINE.
8. VALVE BOX SHALL BE SET PERPENDICULAR TO HARDSCAPE.
9. PROVIDE TWO VALVE KEYS TO OPERATE VALVE AT DEPTH.

LEGEND ON PLANS

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

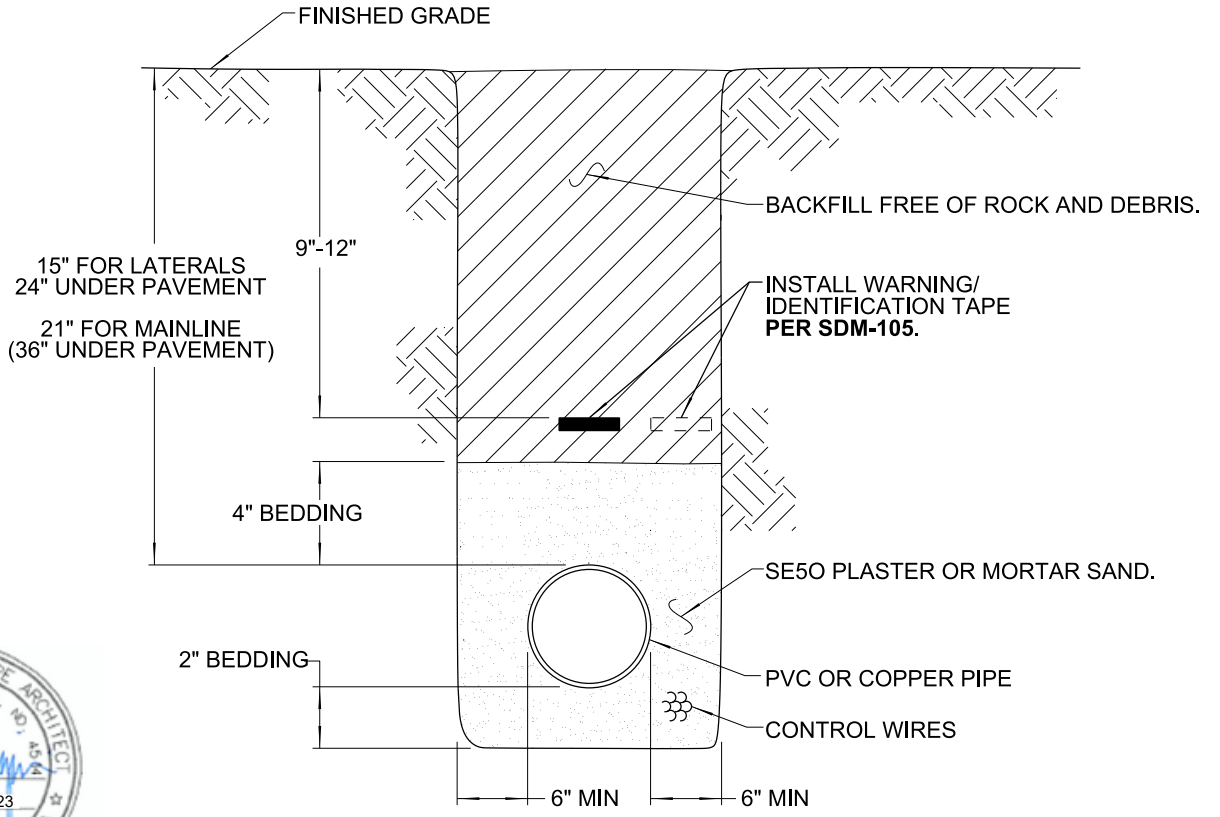
CITY OF SAN DIEGO – STANDARD DRAWING

ISOLATION GLOBE/GATE VALVE 2 1/2" AND LARGER

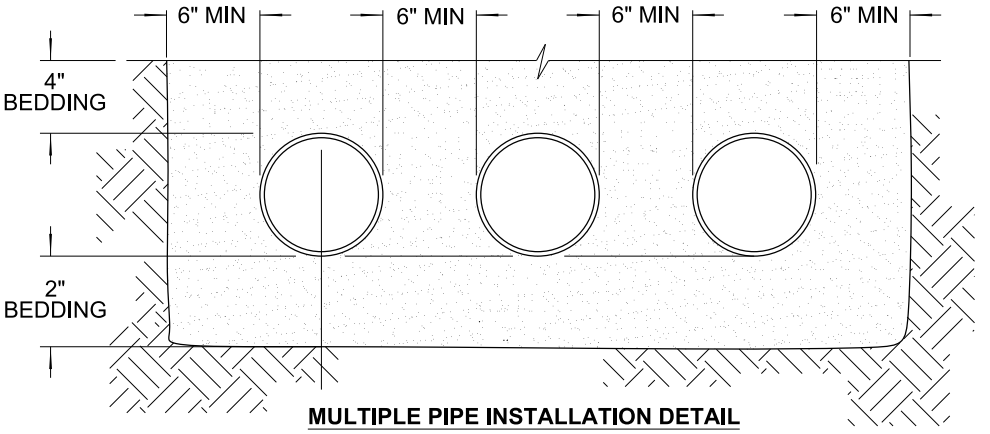
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/4/18 DATE

DRAWING NUMBER **SDI-107**



MAINLINE TRENCH



MULTIPLE PIPE INSTALLATION DETAIL

NOTES:

1. BACKFILL MATERIAL SHALL BE COMPACTED TO A RELATIVE COMPACTION OF 90% MINIMUM.
2. PIPE SHALL LAY FREE IN THE TRENCH WITH NO INDUCED STRAIN AND WITH SUFFICIENT ALLOWANCE FOR EXPANSION AND CONTRACTION.
3. PVC PIPE UNDER PAVEMENT SHALL BE INSTALLED IN A SCH 40 PVC SLEEVE TWICE THE DIAMETER OF THE PIPE (2" MINIMUM SIZE) AND EXTEND 12" MINIMUM BEYOND THE EDGE OF PAVEMENT.
4. THE LETTER "W" SHALL BE STAMPED OR CHISELED ON THE IMPROVEMENT (CURB/ SIDEWALK) DIRECTLY ABOVE THE PRESSURE PIPELINE SLEEVE.
5. NO PVC PRESSURE PIPELINE SHALL BE INSTALLED WITHIN 3' OF ANY UTILITY, UNLESS OTHERWISE SPECIFIED.

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12
UPDATED	AR	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

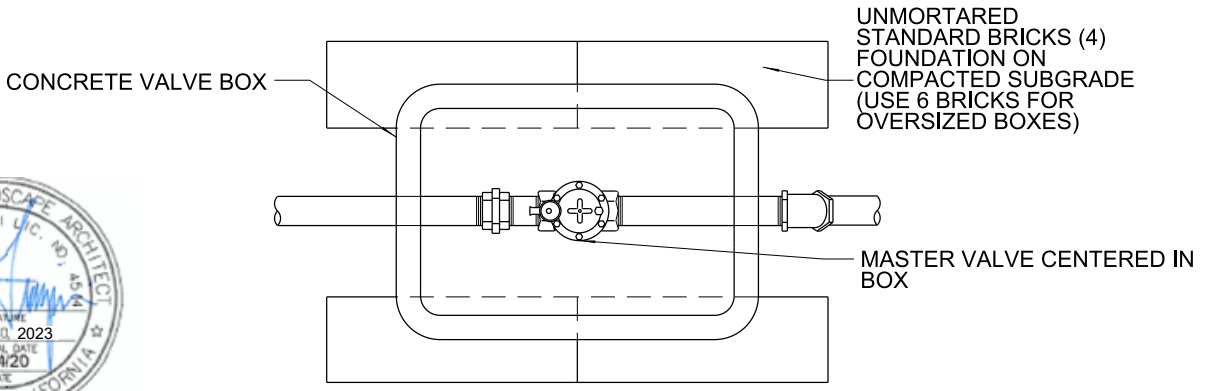
CITY OF SAN DIEGO – STANDARD DRAWING

IRRIGATION TRENCH PVC OR COPPER PIPE

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

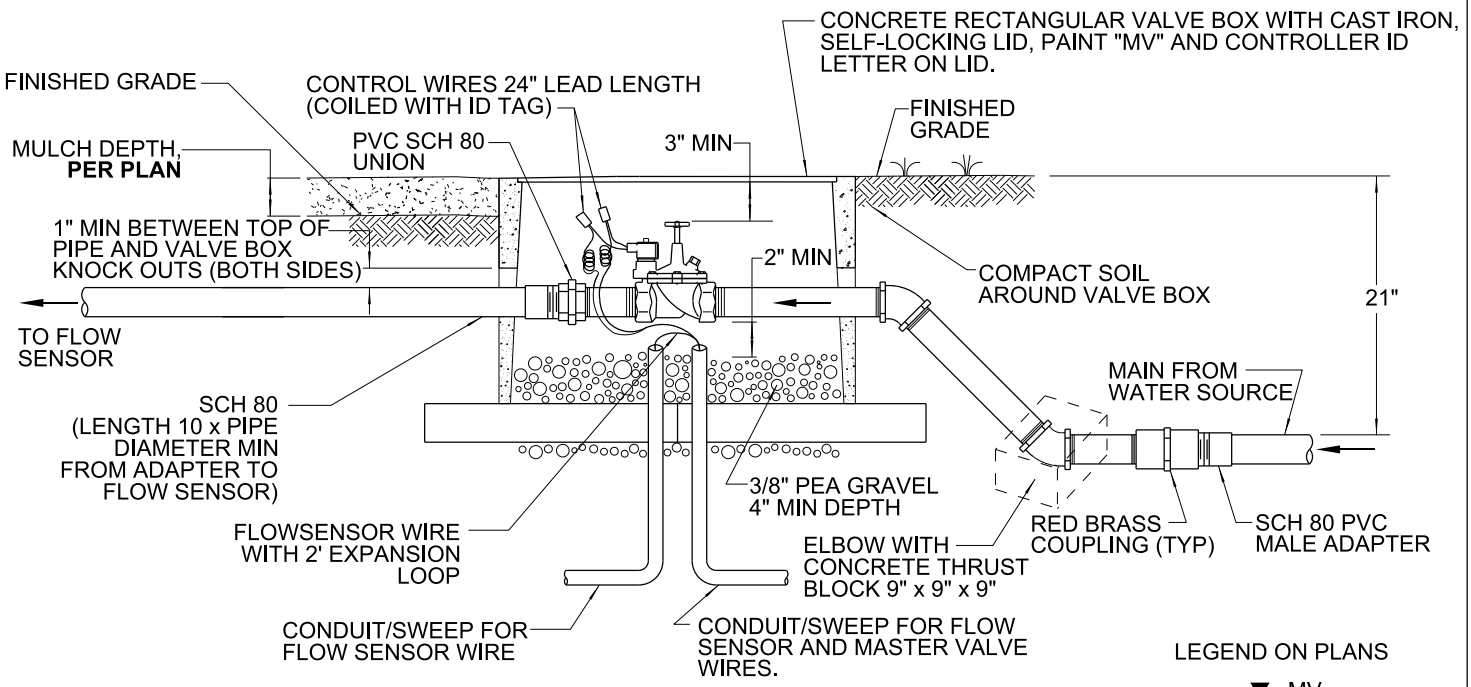
COORDINATOR R.C.E. 56523 9/4/18 DATE

DRAWING NUMBER **SDI-110**



REGISTERED LANDSCAPE ARCHITECT JEREMY FRANZINI LIC. NO. 4574 SIGNATURE JUNE 30, 2023 RENEWAL DATE 3/24/20 DATE STATE OF CALIFORNIA

PLAN



ELEVATION

NOTES:

1. SPLICING SHALL BE MADE IN VALVE BOXES AND PULL BOXES ONLY. SEE STANDARD DRAWING **SDI-115** FOR SPLICE / SOLDERING NOTES.
2. SPLICES SHALL BE SOLDERED WITH A PROPERLY SET MECHANICAL SPLICE CONNECTOR, ENTIRELY ENCLOSED IN SELF-CURING RESIN AND SHALL BE COMPLETELY WATER-PROOF.
3. SEAL CONDUIT OPENINGS WITH ELECTRICAL CONDUIT SEALANT **AS APPROVED BY THE ENGINEER**.
4. PVC CONDUIT SHALL BE 1" MINIMUM.
5. VALVE / CONTROLLER IDENTIFICATION SHALL BE LABELED OUTSIDE ON THE VALVE BOX LID AND TAGGED INSIDE THE BOX ON THE VALVE.
6. KNOCK OUTS SHALL NOT BE ENLARGED.
7. INSTALL ONLY ONE VALVE PER BOX.
8. VALVE BOXES SHALL BE SET PERPENDICULAR TO HARDSCAPE, ABOVE FINISHED GRADE IN SHRUB / GROUNDCOVER AREAS, PER MULCH DEPTH. IF NECESSARY TO BE SET IN TURF, VALVE BOXES SHALL BE SET FLUSH WITH FINISHED GRADE.
9. CLOSE NIPPLES SHALL NOT BE USED.
10. NIPPLES, ELBOWS, AND FITTINGS SHALL BE THREADED RED BRASS, FROM COUPLING THROUGH THE MASTER VALVE. PIPE AND FITTINGS DOWNSTREAM SHALL BE SCH 80 PVC.
11. TEFLON TAPE SHALL BE USED ON THREADED CONNECTOR.

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

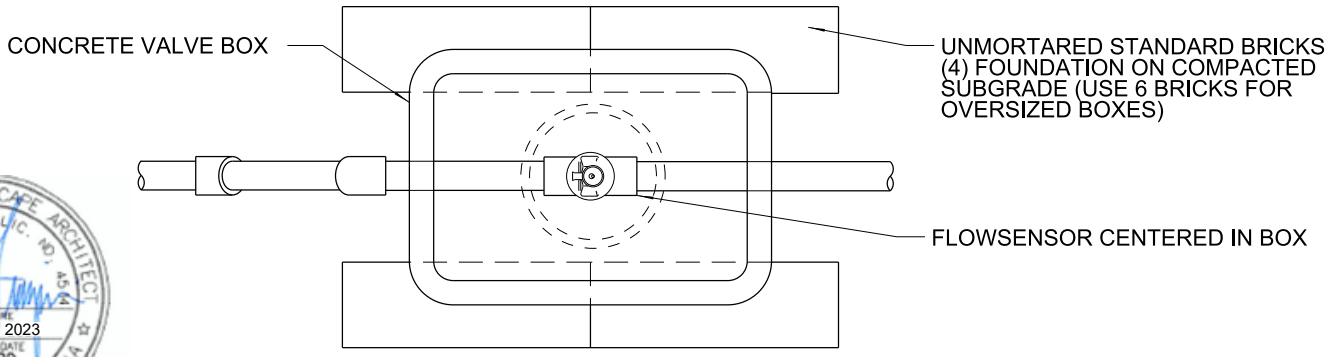
CITY OF SAN DIEGO – STANDARD DRAWING

MASTER VALVE

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

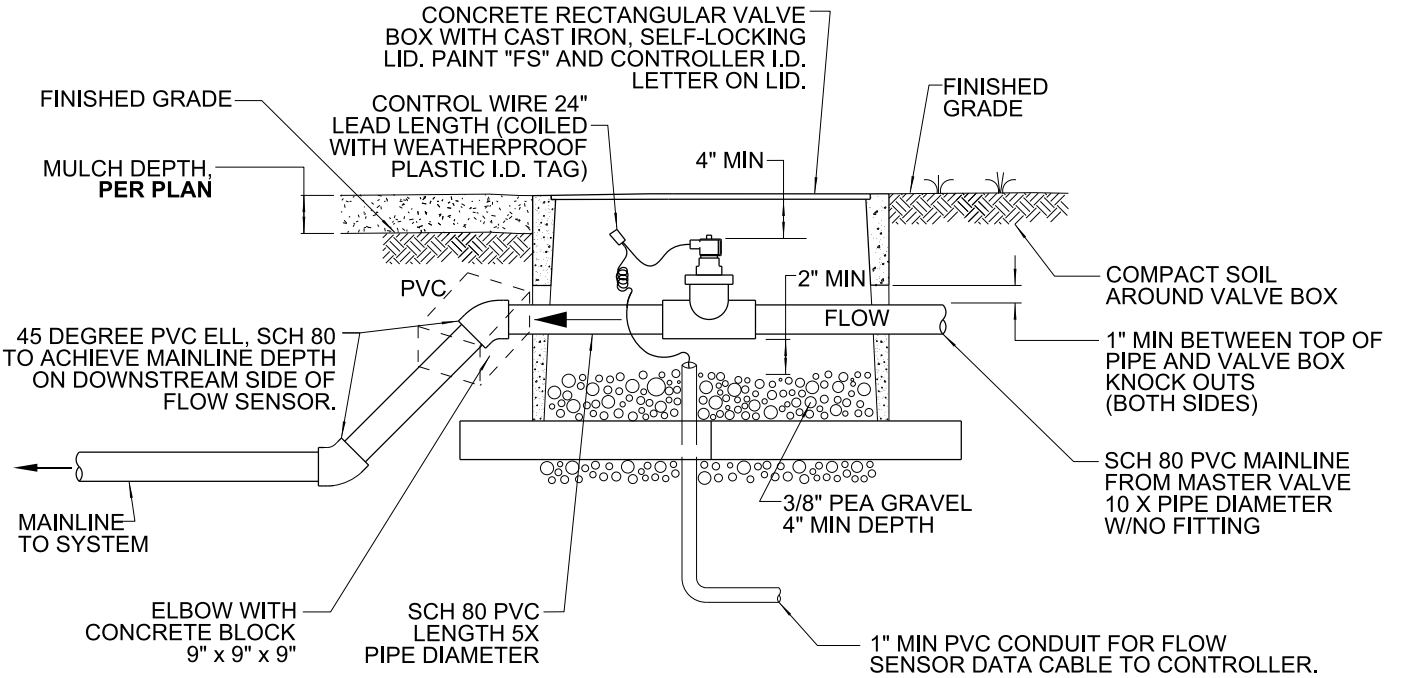
COORDINATOR R.C.E. 56523 9/4/18 DATE

DRAWING NUMBER **SDI-111**



REGISTERED LANDSCAPE ARCHITECT JEREMY FRANZINI LIC. NO. 4574 SIGNATURE JUNE 30 2023 RENEWAL DATE 3/24/20 DATE STATE OF CALIFORNIA

PLAN



ELEVATION

LEGEND ON PLANS

(F) FS

NOTES:

1. SPLICES SHALL BE SOLDERED WITH A PROPERLY SET MECHANICAL SPLICE CONNECTOR, ENTIRELY ENCLOSED IN SELF-CURING RESIN AND SHALL BE COMPLETELY WATER-PROOF.
2. SEAL CONDUIT OPENINGS WITH ELECTRICAL SEALANT.
3. KNOCK OUTS SHALL NOT BE ENLARGED.
4. INSTALL ONLY ONE FLOW SENSOR PER BOX.
5. VALVE BOXES SHALL BE SET PERPENDICULAR TO HARDSCAPE PER MULCH DEPTH IN SHRUB / GROUNDCOVER AREAS. IF NECESSARY TO BE SET IN TURF, VALVE BOXES SHALL BE SET FLUSH WITH FINISHED GRADE.

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

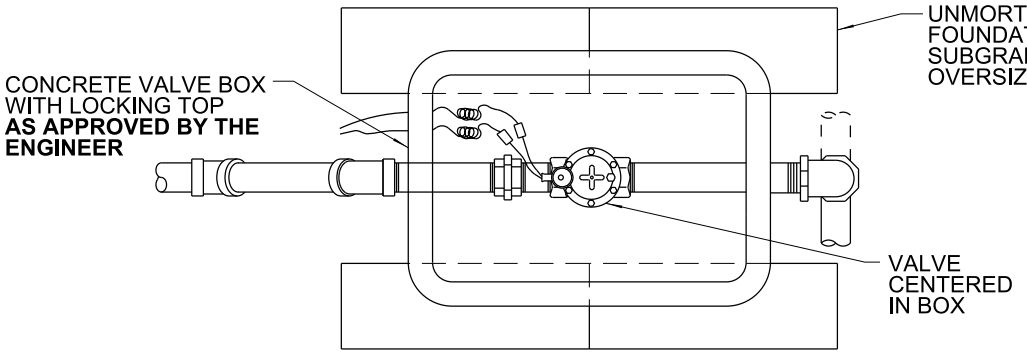
CITY OF SAN DIEGO – STANDARD DRAWING

FLOW SENSOR

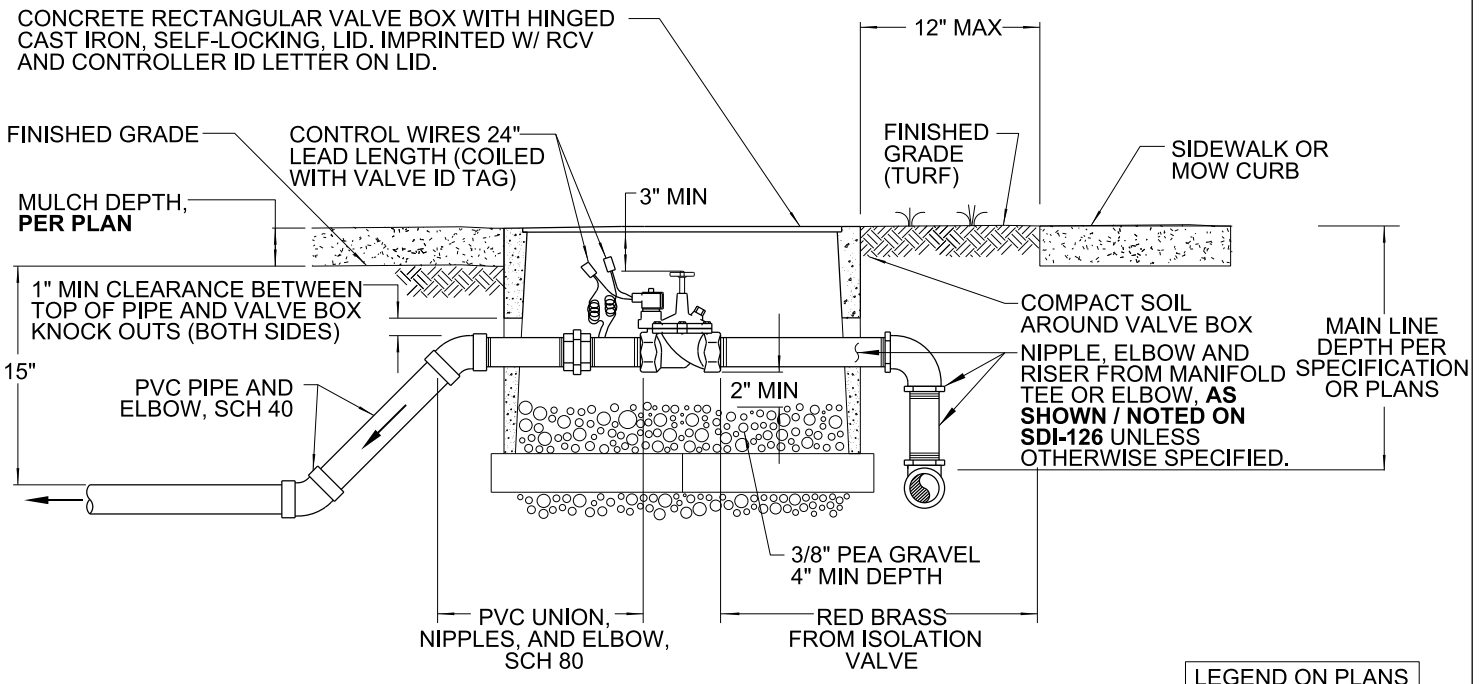
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/4/18 DATE

DRAWING NUMBER **SDI-112**



PLAN



ELEVATION

LEGEND ON PLANS

▼ RCV

NOTES:

1. WIRE SPLICING SHALL BE MADE IN VALVE BOXES AND PULL BOXES ONLY. **SEE SDI-115** FOR SPLICE /SOLDERING NOTES.
2. WIRE SPLICES SHALL BE SOLDERED WITH A PROPERLY SET MECHANICAL SPLICE CONNECTOR, ENTIRELY ENCLOSED IN SELF-CURING RESIN AND SHALL BE COMPLETELY WATER-PROOF.
3. VALVE BOX KNOCK OUTS SHALL NOT BE ENLARGED.
4. INSTALL ONLY ONE VALVE PER BOX.
5. VALVE BOXES SHALL BE SET PERPENDICULAR TO HARDSCAPE, ABOVE FINISHED GRADE IN SHRUB / GROUNDCOVER AREAS, PER MULCH DEPTH. IF NECESSARY TO BE SET IN TURF,VALVE BOXES SHALL BE SET FLUSH WITH FINISHED GRADE.
6. CLOSE NIPPLES SHALL NOT BE USED.
7. NIPPLES, ELBOWS, AND FITTINGS SHALL BE THREADED RED BRASS FROM ISOLATION VALVE THROUGH THE VALVE, UNLESS OTHERWISE SPECIFIED.
8. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12
UPDATED	AR	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	AJ	J. NAGELVOORT	09/21

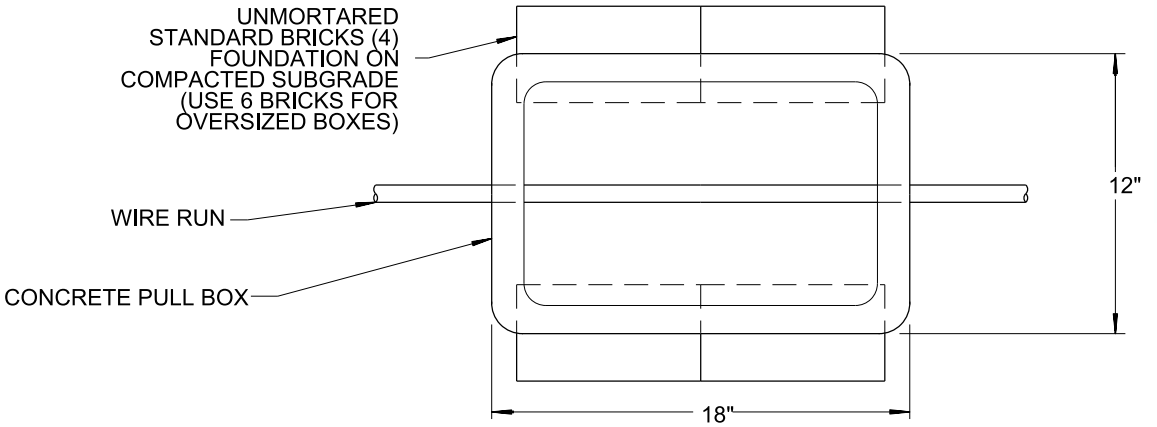
CITY OF SAN DIEGO – STANDARD DRAWING

REMOTE CONTROL VALVE

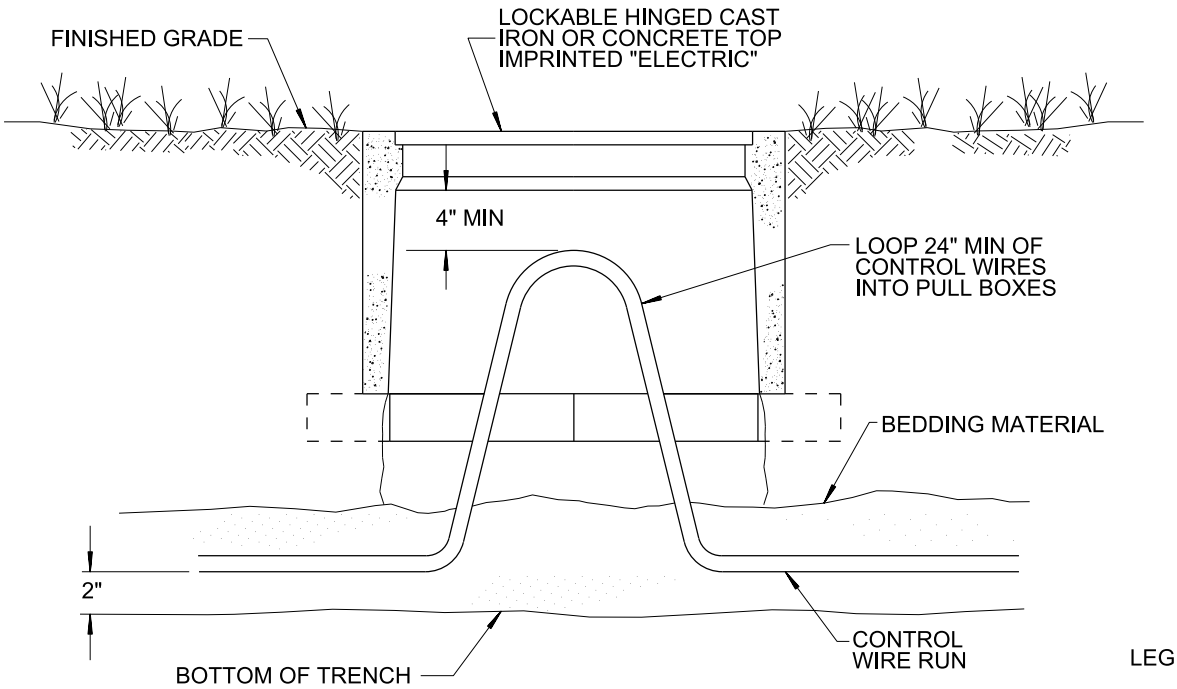
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

Alaine L. James 09/30/21
COORDINATOR R.C.E. 81047 DATE

DRAWING NUMBER **SDI-114**



PLAN VIEW



ELEVATION

LEGEND ON PLANS

PB

NOTES:

1. INSTALL PULL BOXES **AS SHOWN ON PLANS** AND AT EACH END OF PIPE SLEEVES RUNNING UNDER PAVEMENT.
2. PULL BOX COVER SHALL BE PERMANENTLY MARKED "ELECTRIC".
3. CONDUCTORS FOR EACH CONTROLLER CLOCK SHALL BE HARNESSED SEPARATELY AND AT SUFFICIENT INTERVALS TO MAINTAIN A DEFINITE BUNDLE.
4. SPLICES SHALL ONLY BE MADE IN PULL BOXES, WITH A PROPERLY SET MECHANICAL SPLICE CONNECTOR, SOLDERED WITH METALLIC ALLOY, ENTIRELY ENCLOSED IN SELF-CURING RESIN AND SHALL BE COMPLETELY WATER-PROOF.
5. SPARE WIRE ENDS SHALL BE INSULATED IN THE SAME MANNER AS WIRE SPLICES.
6. MINIMUM SIZE PULL BOX SHALL BE AS SHOWN ABOVE. LARGER BOXES MAY BE NECESSARY TO MEET 4" CLEARANCE REQUIRED.
7. NO SPLICES SHALL BE PERMITTED ON WIRE RUNS OF LESS THAN 300'.
8. THE LETTER "E" SHALL BE STAMPED OR CHISELED ON THE IMPROVEMENT (CURB-SIDEWALK) DIRECTLY ABOVE THE CONTROL WIRE.
9. BEDDING MATERIAL SHALL BE SE 50 PLASTER OR MORTAR SAND.

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12
UPDATED	JW	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

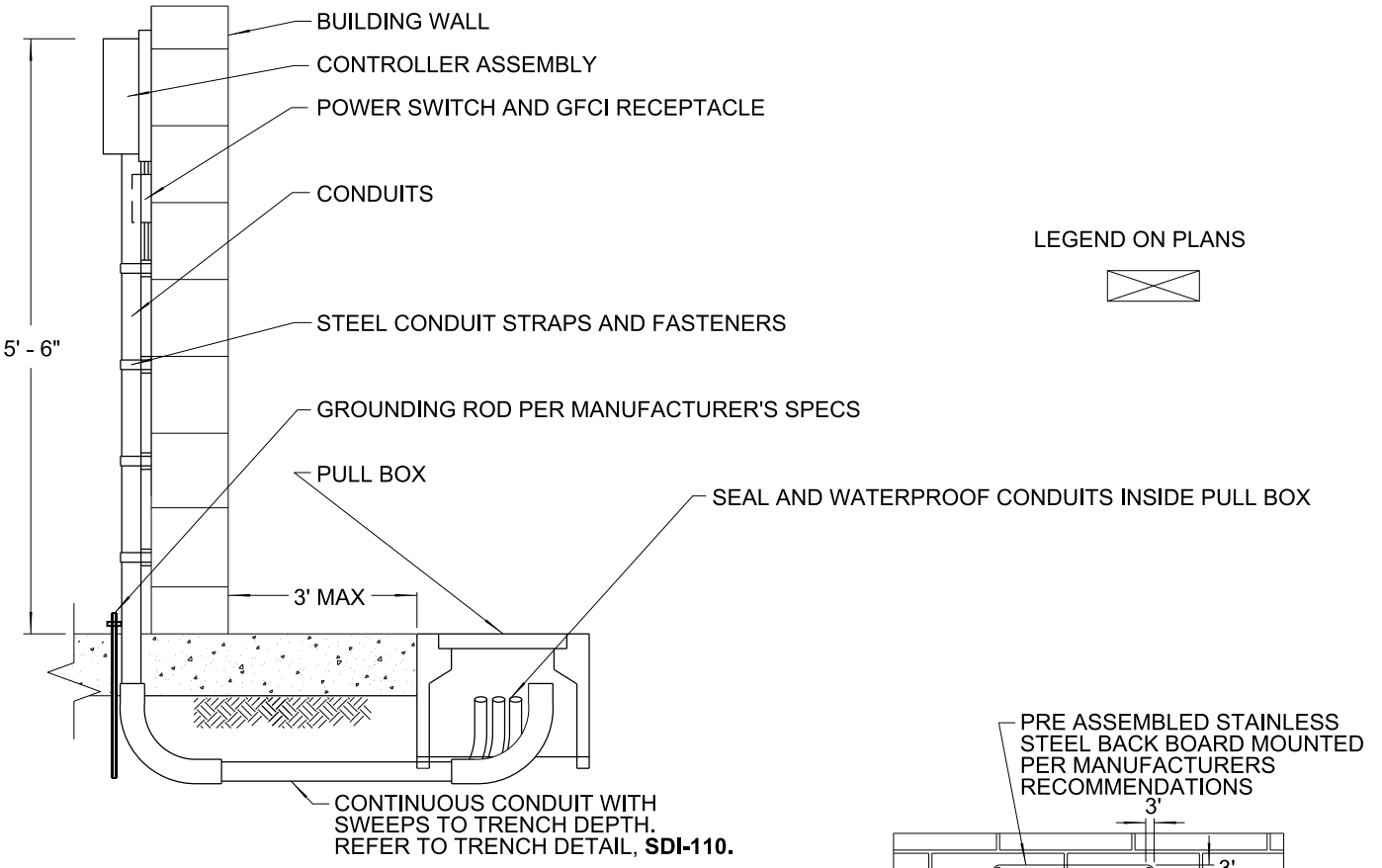
CITY OF SAN DIEGO – STANDARD DRAWING

ELECTRICAL PULL BOX FOR DIRECT BURIAL CONTROL WIRES AND SPLICING NOTES

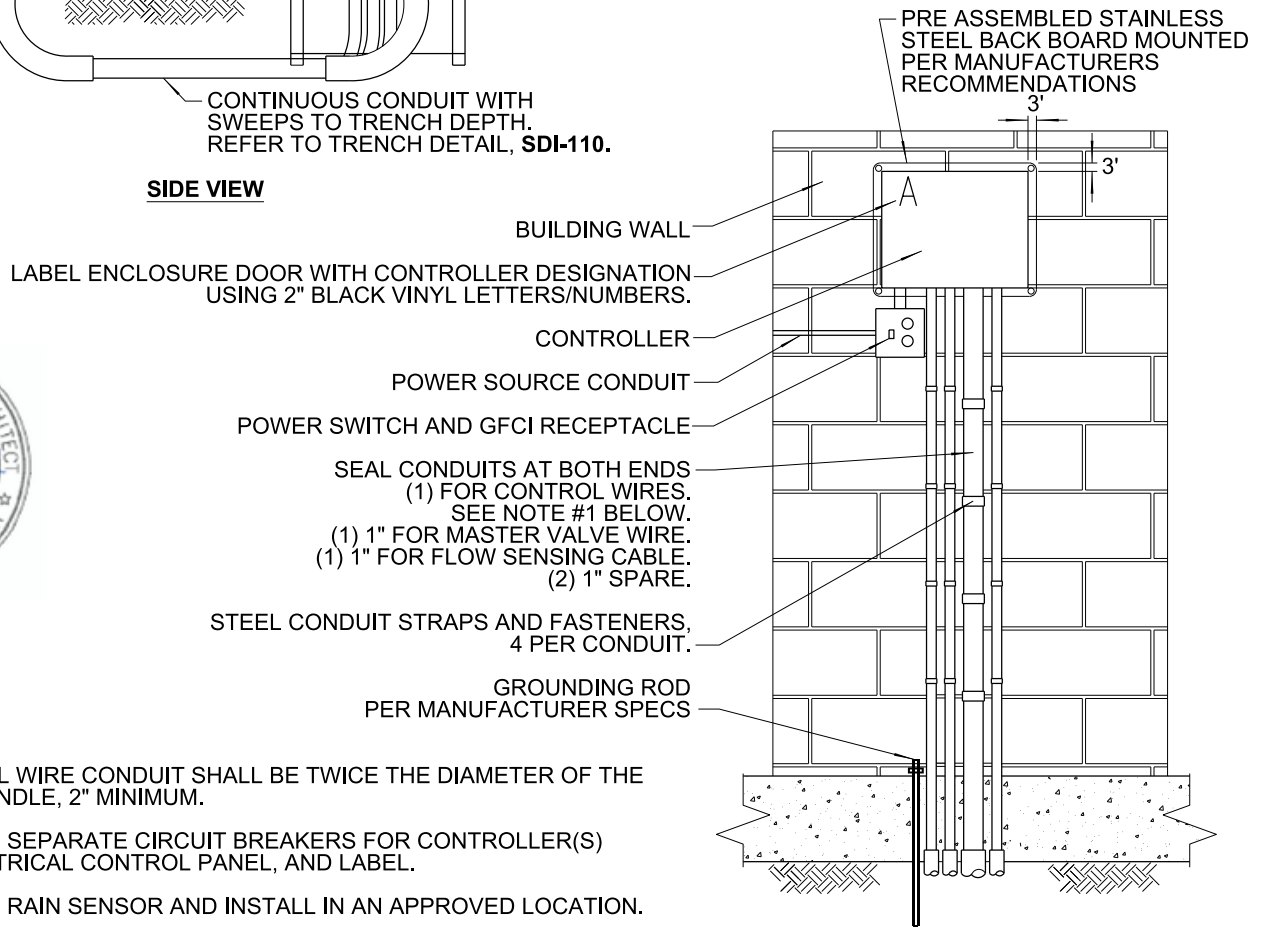
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 DATE 9/4/18

DRAWING NUMBER **SDI-115**



SIDE VIEW



FRONT VIEW

NOTES:

1. CONTROL WIRE CONDUIT SHALL BE TWICE THE DIAMETER OF THE WIRE BUNDLE, 2" MINIMUM.
2. PROVIDE SEPARATE CIRCUIT BREAKERS FOR CONTROLLER(S) AT ELECTRICAL CONTROL PANEL, AND LABEL.
3. PROVIDE RAIN SENSOR AND INSTALL IN AN APPROVED LOCATION.
4. USE GALVANIZED STEEL CONDUIT FOR WALL MOUNTED APPLICATIONS. USE PVC SCHEDULE 40 CONDUITS FOR BELOW GRADE APPLICATIONS.

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12
UPDATED	AR	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	AJ	J. NAGELVOORT	09/21

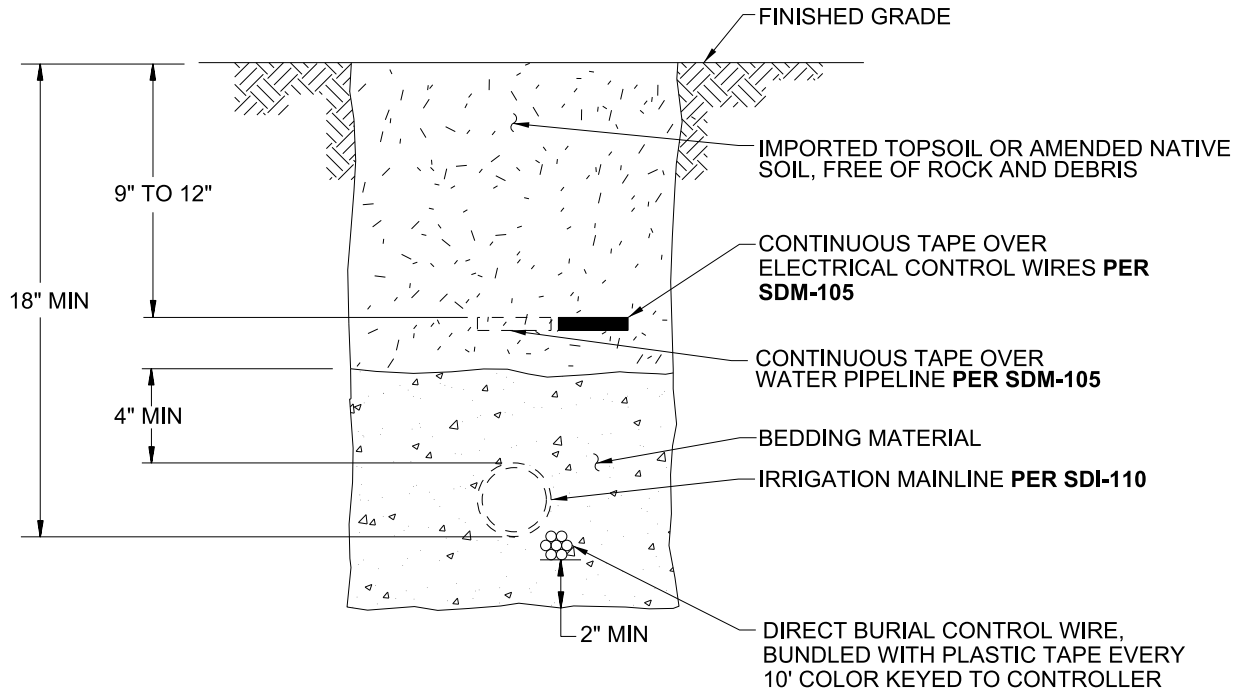
CITY OF SAN DIEGO – STANDARD DRAWING

AUTOMATIC IRRIGATION CONTROLLER INDOOR WALL MOUNTED

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

Alaine L. James 09/30/21
COORDINATOR R.C.E. 81047 DATE

DRAWING NUMBER **SDI-118**



NOTES:

1. BEDDING MATERIAL SHALL BE SE 50 PLASTER OR MORTAR SAND.

2. WIRES WHICH RUN UNDER PAVED AREAS SHALL BE INSTALLED IN PVC PIPE SLEEVES TWICE THE DIAMETER OF THE WIRE BUNDLE (2" MINIMUM SIZE), EXTENDING 12" MINIMUM BEYOND EDGE OF PAVEMENT. INSTALL ELECTRICAL PULL BOX AT EACH END OF PIPE SLEEVES **PER SDI-115**.

3. THE LETTER E SHALL BE STAMPED OR CHISELED ON THE IMPROVEMENT(CURB-SIDEWALK) DIRECTLY ABOVE THE CONTROL WIRE / CABLE.

4. WHEN CONTROL WIRING CANNOT BE INSTALLED IN A PIPE TRENCH, IT SHALL BE INSTALLED A MINIMUM 18" BELOW FINISH GRADE BUNDLED WITH PLASTIC TAPE.

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12
UPDATED	JW	J. NAGELVOORT	08/15
UPDATED	AR	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

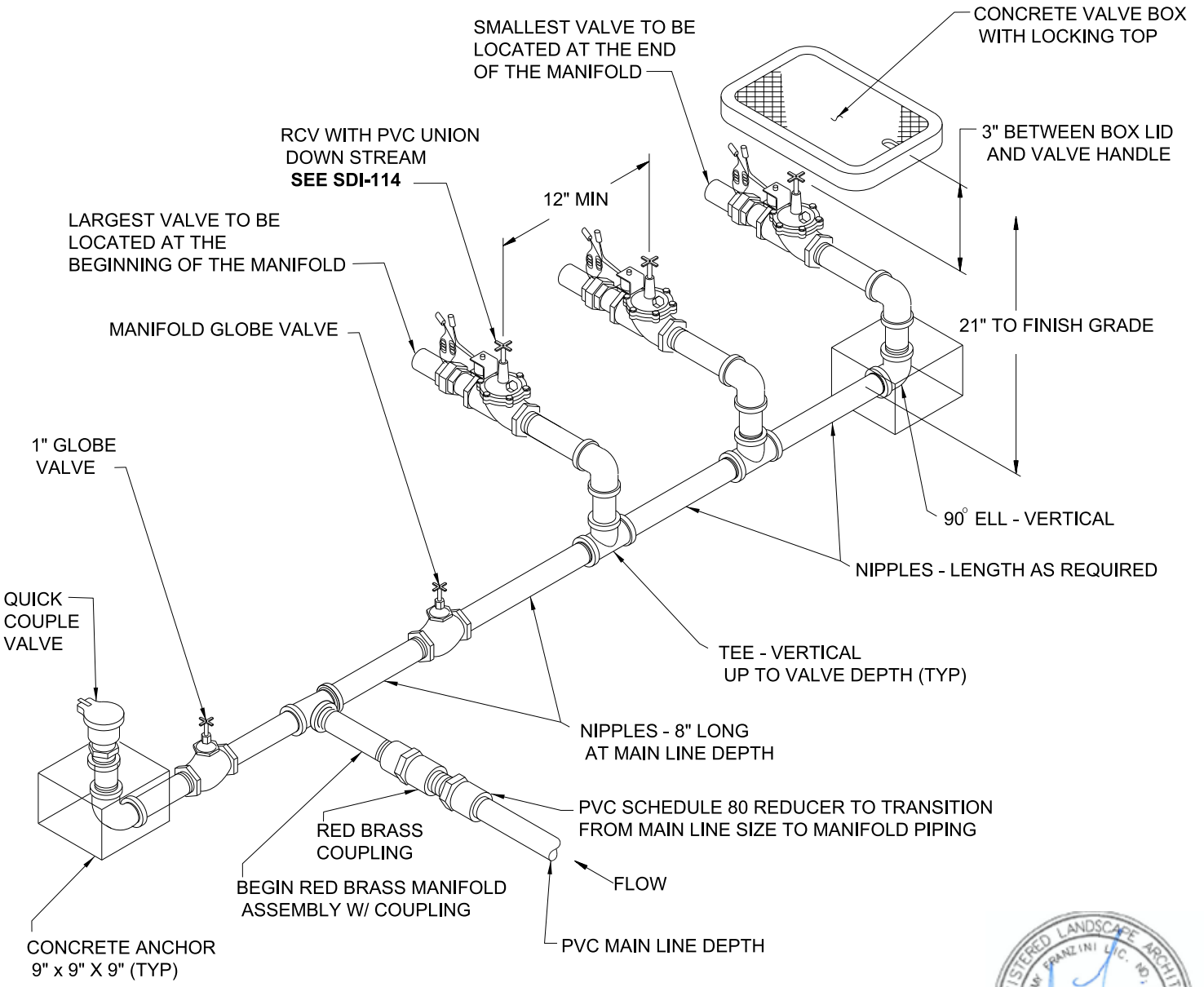
CITY OF SAN DIEGO – STANDARD DRAWING

CONTROL WIRE INSTALLATION

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/4/18 DATE

DRAWING NUMBER **SDI-119**



REGISTERED LANDSCAPE ARCHITECT
JEREMY FRANZINI LIC. NO. 4514
SIGNATURE
JUNE 30 2023
RENEWAL DATE
3/24/20
DATE
STATE OF CALIFORNIA

NOTES:

1. ALL PIPES, NIPPLES, AND FITTINGS AFTER MALE ADAPTER SHALL BE RED BRASS.
2. VALVE AND CONTROLLER IDENTIFICATION SHALL BE LABELED OUTSIDE ON THE VALVE BOX LID AND TAGGED INSIDE THE BOX ON THE VALVE.
3. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.
4. BRASS COUPLING, GLOBE VALVE AND FITTINGS SHALL BE THE SAME SIZE AS THE LARGEST VALVE ON THE MANIFOLD. USE REDUCERS AS REQUIRED WHEN DOWNLINE VALVES ARE SMALLER.

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	AJ	J. NAGELVOORT	09/21

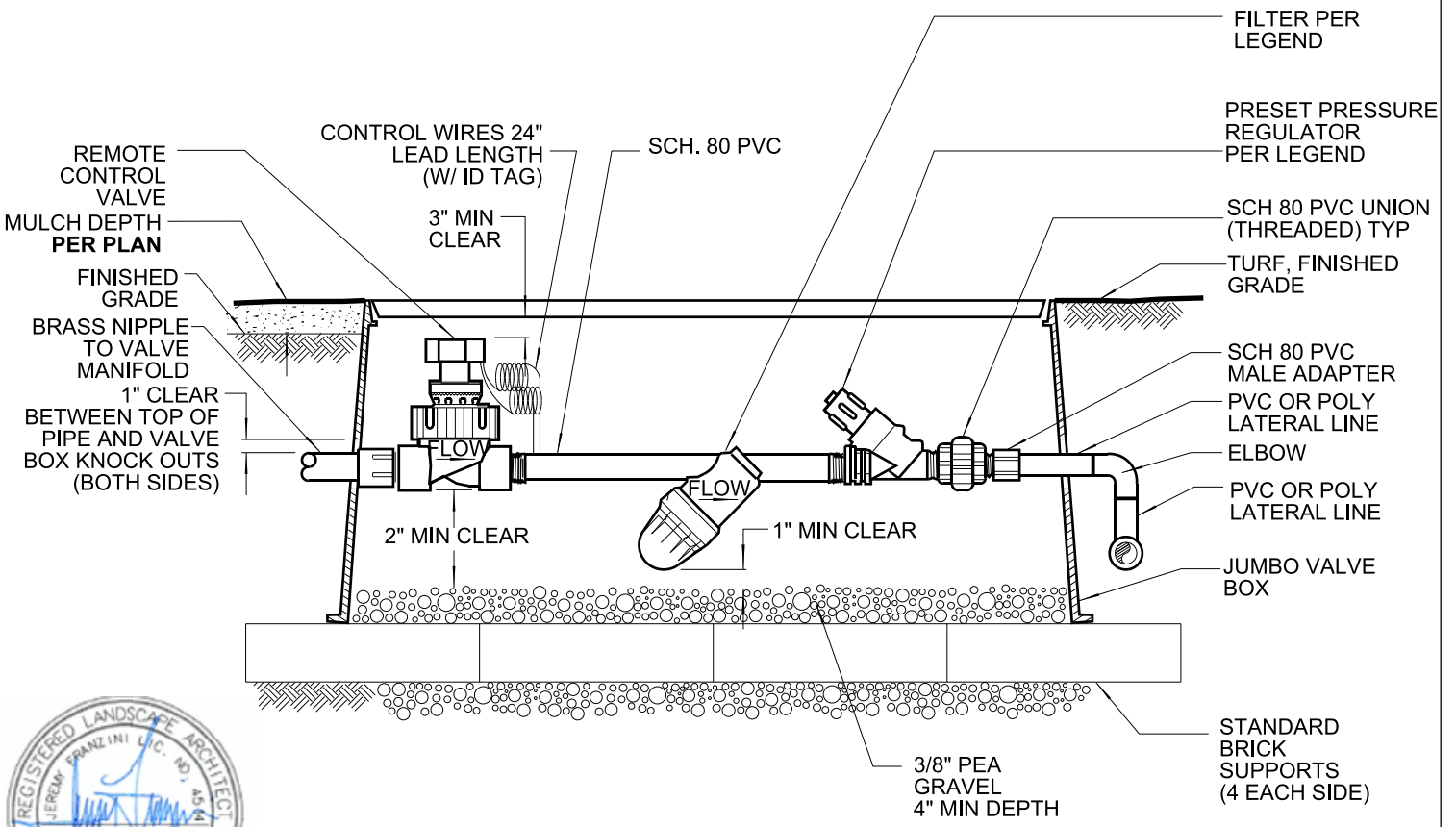
CITY OF SAN DIEGO – STANDARD DRAWING

REMOTE CONTROL VALVE MANIFOLD ASSEMBLY WITH BRASS PIPE

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

Alaine L. James 09/30/21
COORDINATOR R.C.E. 81047 DATE

DRAWING NUMBER **SDI-126**



OPTION A - ELEVATION

LEGEND ON PLANS

NOTES:

1. WIRE SPLICING SHALL BE MADE IN VALVE BOXES AND PULL BOXES ONLY. **SEE SDI-115** FOR SPLICE / SOLDERING NOTES.
2. SPARE WIRES TERMINATING IN VALVE BOXES SHALL HAVE THEIR ENDS INSULATED, THE SAME AS FOR A SPLICE.
3. SEE REMOTE CONTROL VALVE MANIFOLD ASSEMBLY, **SDI-125** AND **SDI-126**.
4. VALVE / CONTROLLER IDENTIFICATION SHALL BE PERMANENTLY LABELED EXTERNALLY ON THE VALVE BOX AND INTERNALLY, WITH A PERMANENT IDENTIFICATION TAG ATTACHED TO THE VALVE.
5. KNOCK OUTS SHALL NOT BE ENLARGED UNLESS **APPROVED BY THE ENGINEER**.
6. INSTALL ONLY ONE VALVE ASSEMBLY PER BOX.
7. VALVE BOXES SHALL BE SET PERPENDICULAR TO HARDSCAPE, A MAXIMUM 12 INCHES FROM EDGE OF HARDSCAPE, FLUSH WITH TOP OF MULCH IN SHRUB / GROUNDCOVER AREAS. IF NECESSARY TO BE SET IN TURF, VALVE BOXES SHALL BE SET FLUSH WITH FINISHED GRADE.
8. CLOSE NIPPLES SHALL NOT BE USED.
9. FILTER SHALL BE INSTALLED TO ALLOW FOR MAINTENANCE ACCESS.
10. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12
UPDATED	RB	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	AJ	J. NAGELVOORT	09/21

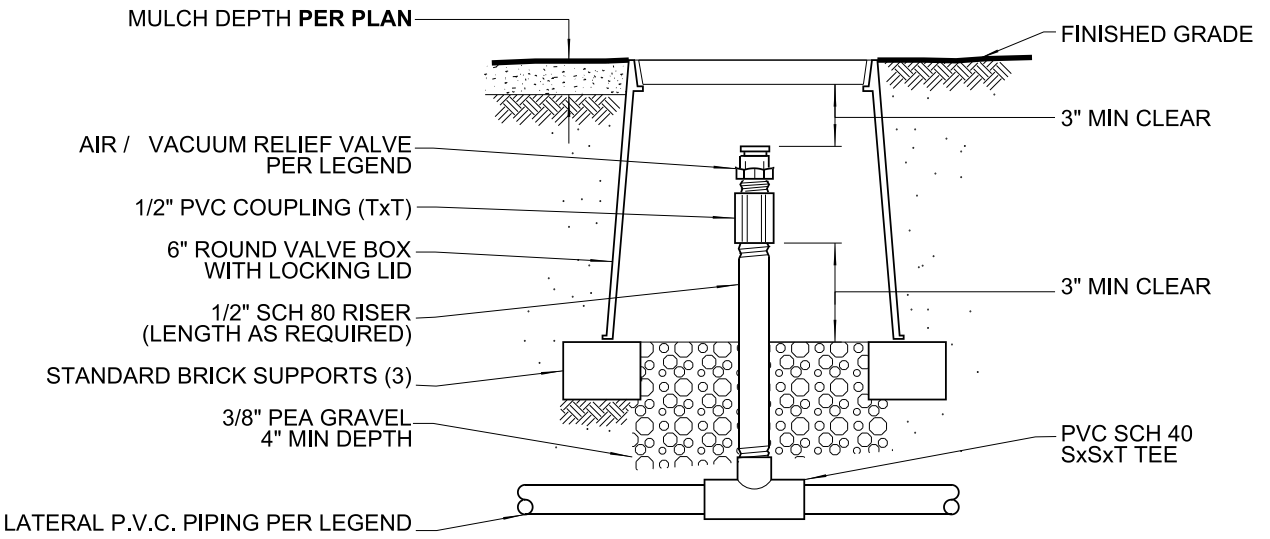
CITY OF SAN DIEGO – STANDARD DRAWING

REMOTE CONTROL VALVE DRIP IRRIGATION

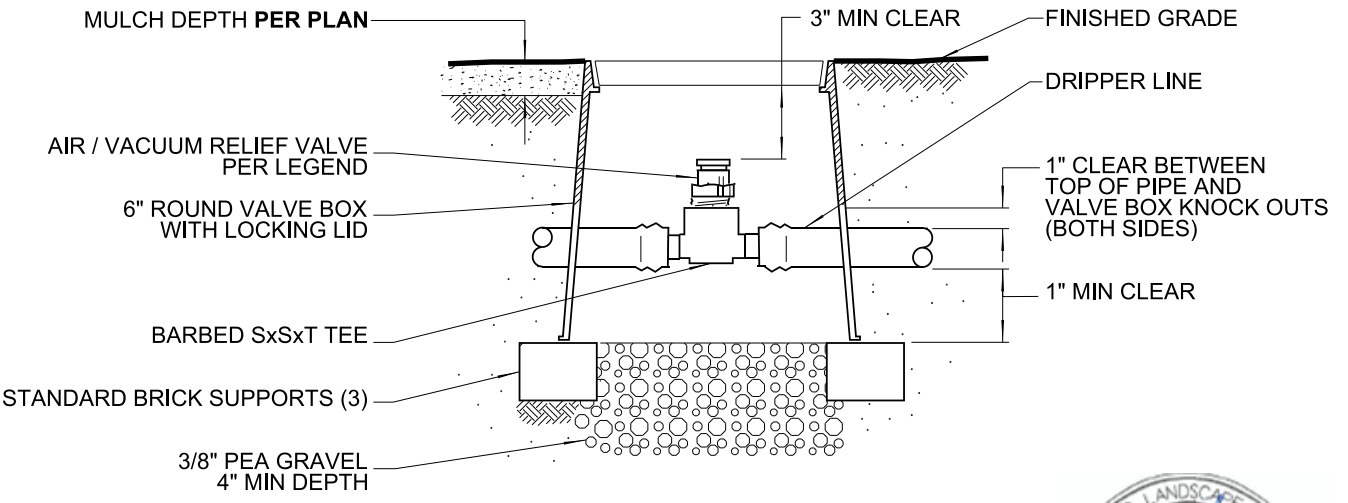
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

Alaine L. James 09/30/21
COORDINATOR R.C.E. 81047 DATE

DRAWING NUMBER **SDI-127**



PLUMBED TO PVC



PLUMBED TO DRIPPER LINE

NOTES:

1. INSTALL AIR / VACUUM RELIEF VALVE AT HIGH POINT(S) IN VALVE CIRCUIT.
2. HEAT-BRAND VALVE BOX LID "AR".
3. VALVE SHALL BE CENTERED IN BOX.
4. TEFLON TAPE SHALL BE USED ON THREADED CONNECTIONS.

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

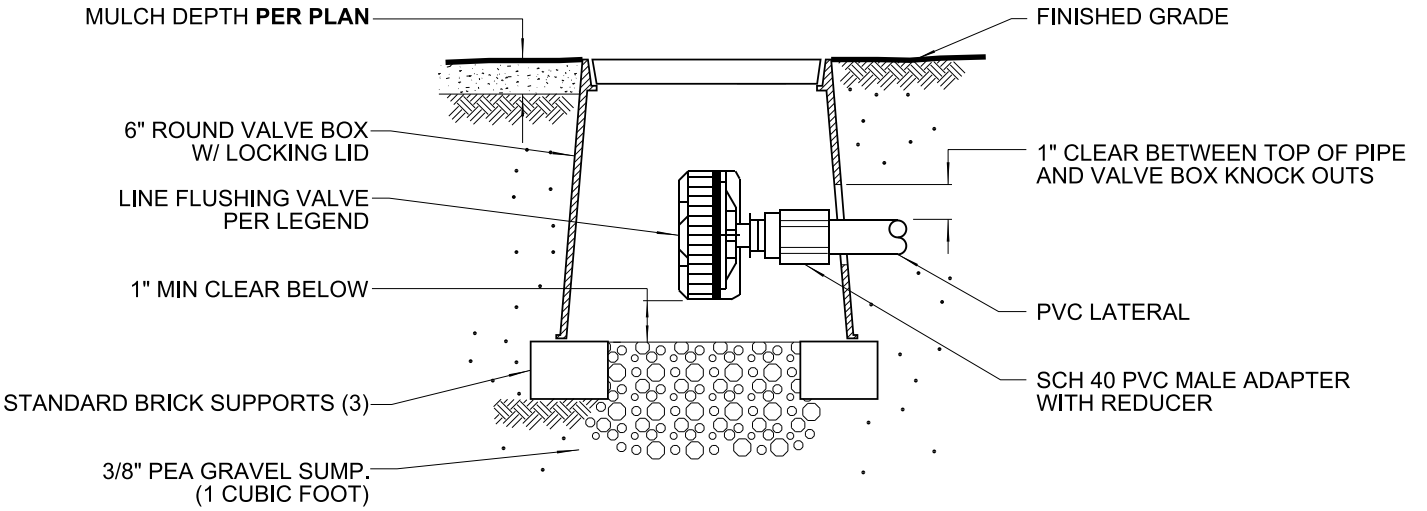
CITY OF SAN DIEGO – STANDARD DRAWING

AIR / VACUUM RELIEF VALVE

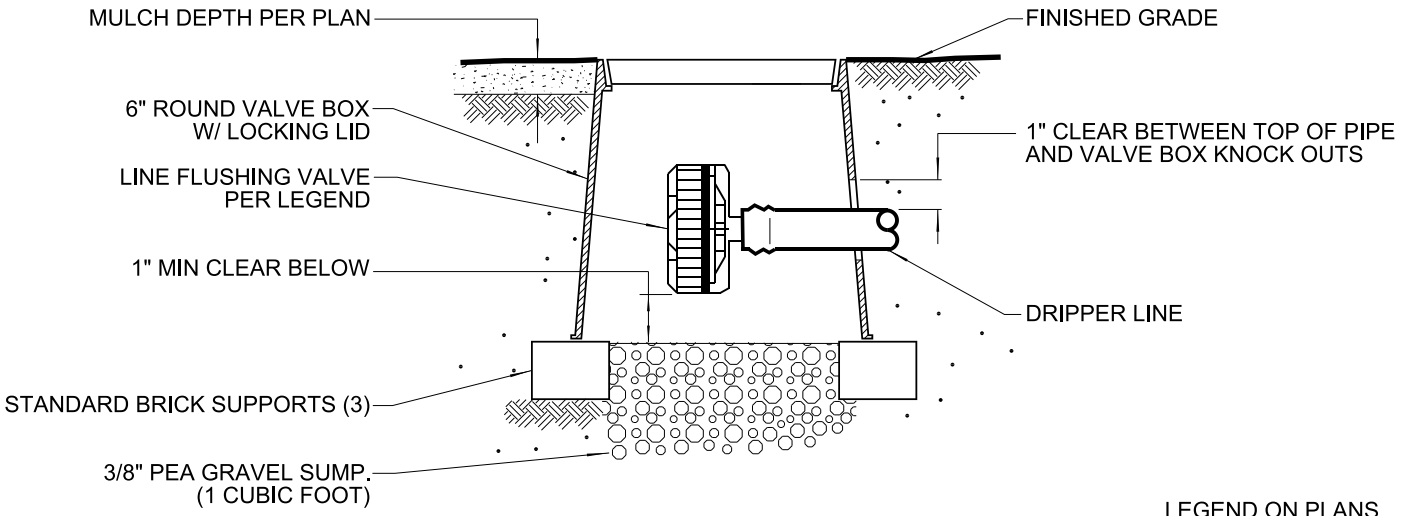
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/4/18 DATE

DRAWING NUMBER **SDI-128**



PLUMBED TO PVC



PLUMBED TO DRIPPER LINE

LEGEND ON PLANS

FV

NOTES:

1. INSTALL FLUSH VALVE(S) AT THE LOWEST POINTS IN THE VALVE CIRCUIT
2. HEAT BRAND VALVE BOX LIDS "FV".
3. VALVE SHALL BE CENTERED IN BOX.

REVISION	BY	APPROVED	DATE
ORIGINAL*	RH	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

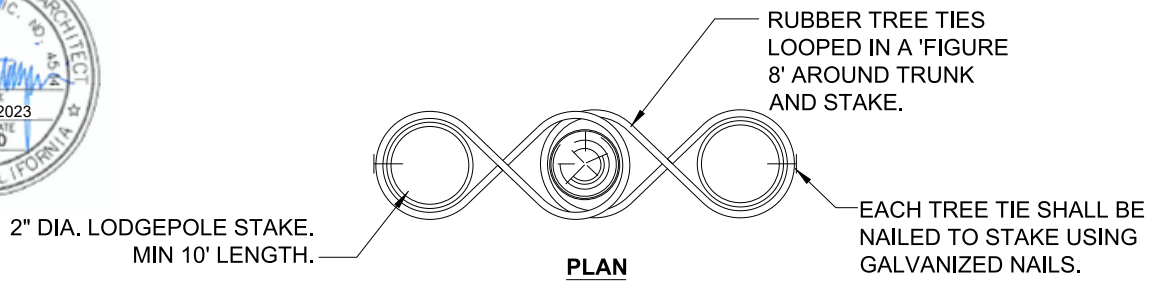
CITY OF SAN DIEGO – STANDARD DRAWING

DRIP IRRIGATION
FLUSH VALVE (AUTOMATIC)

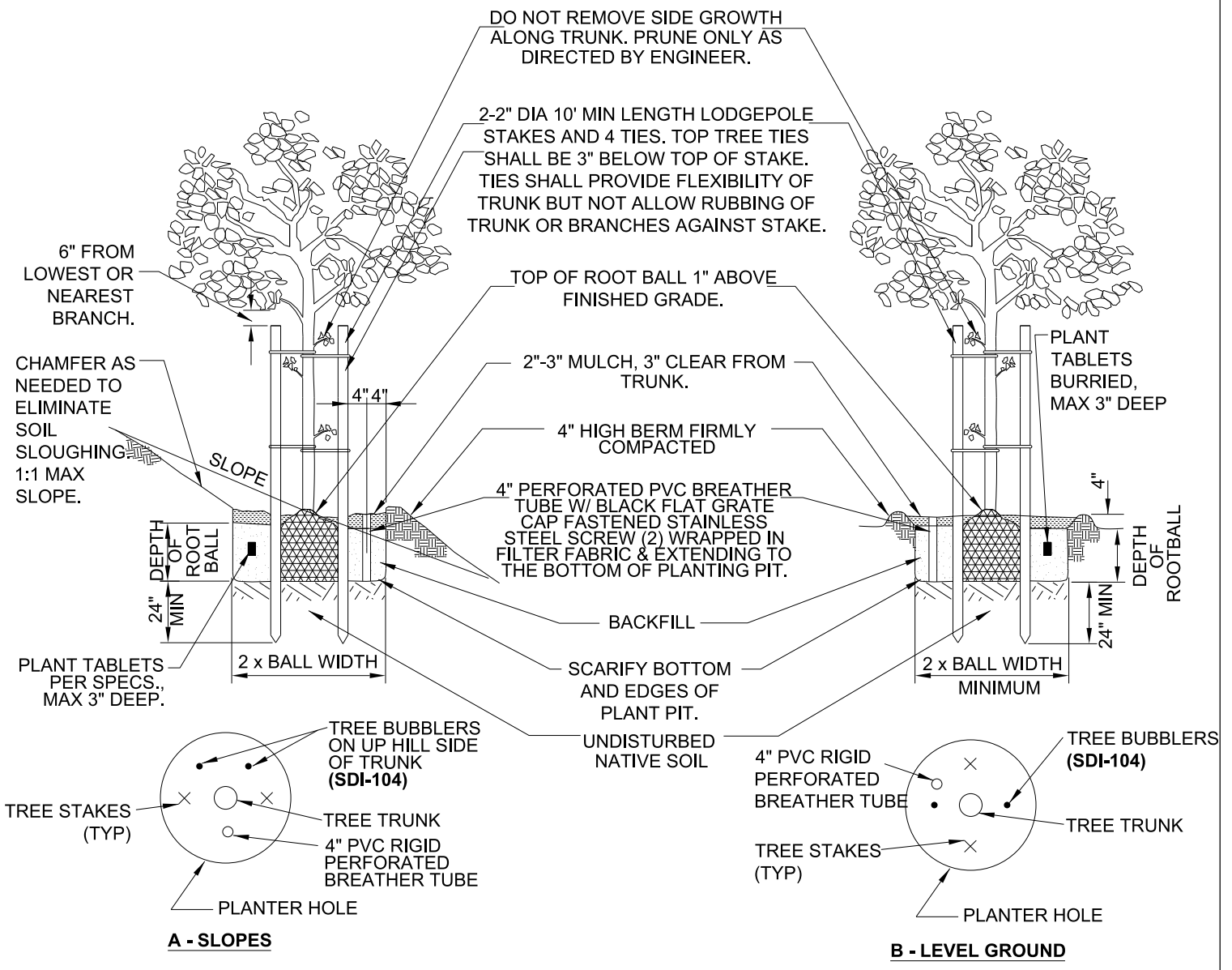
RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/4/18 DATE

DRAWING NUMBER **SDI-129**



PLAN



A - SLOPES

B - LEVEL GROUND

NOTES

1. DOUBLE STAKE 15 GAL. AND LARGER TREES. SINGLE STAKE TREES SMALLER THAN 15 GAL.
2. FOR SINGLE STAKED TREES, PLACE STAKE ON WINDWARD SIDE OF TREE.
3. LOCATE STAKES OUTSIDE OF ROOTBALL.
4. PROVIDE MINIMUM DISTANCE FROM OTHER OBJECTS AS FOLLOWS:
   20' TRAFFIC SIGNALS, 12' STREET LIGHTS, 10' FIRE HYDRANTS, SEWER LINES AND SDG&EFOR PAD MOUNTED EQUIPMENT, AND 5' UNDERGROUND SDG&E ELECTRIC AND GAS LINES.

REVISION	BY	APPROVED	DATE
ORIGINAL*	SG	J. NAGELVOORT	01/12
REDFRATED	CD	J. NAGELVOORT	09/18

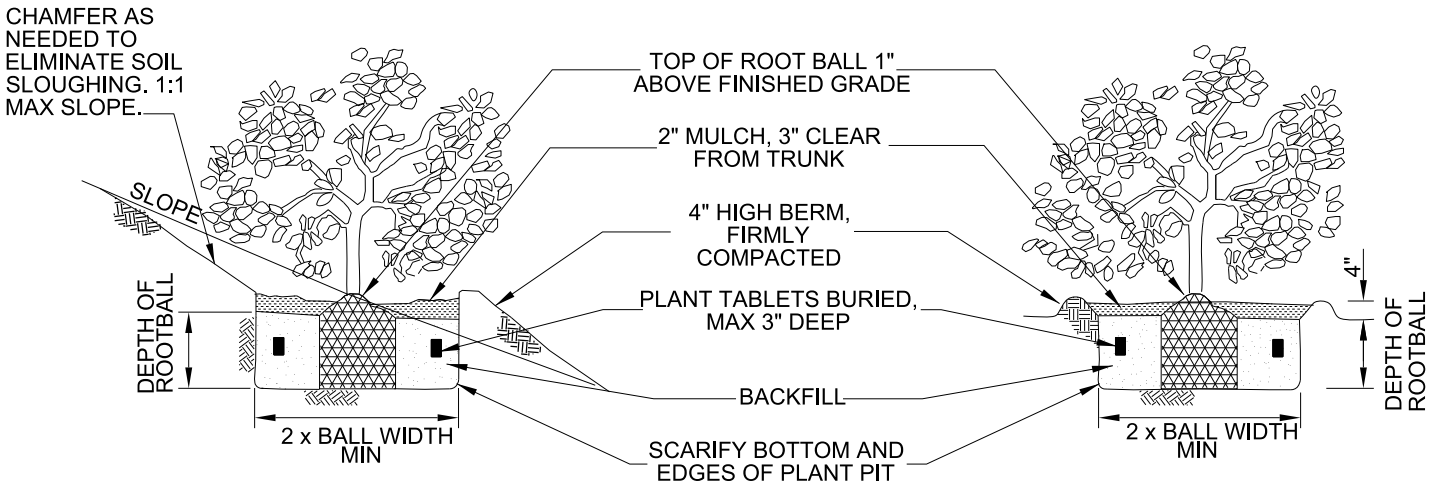
CITY OF SAN DIEGO – STANDARD DRAWING

TREE PLANTING AND STAKING

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

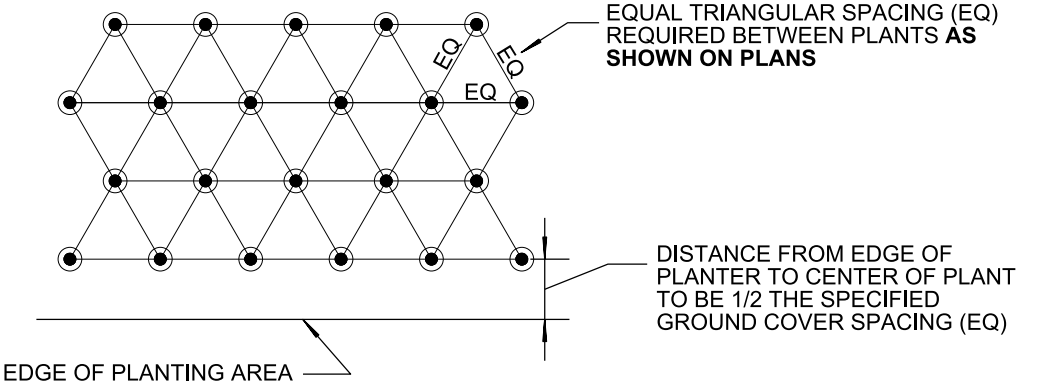
COORDINATOR R.C.E. 56523 — 9/4/18 DATE

DRAWING NUMBER **SDL-101**



SHRUB PLANTING - SLOPES

SHRUB PLANTING - LEVEL GROUND



GROUND COVER SPACING

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
UPDATED	AR	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

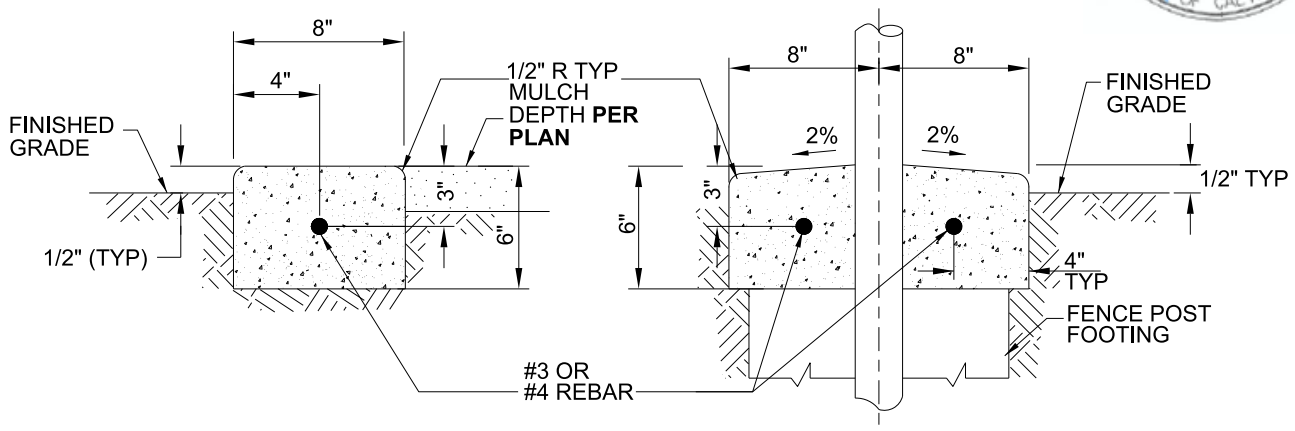
CITY OF SAN DIEGO – STANDARD DRAWING

SHRUB PLANTING/GROUND COVER SPACING

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

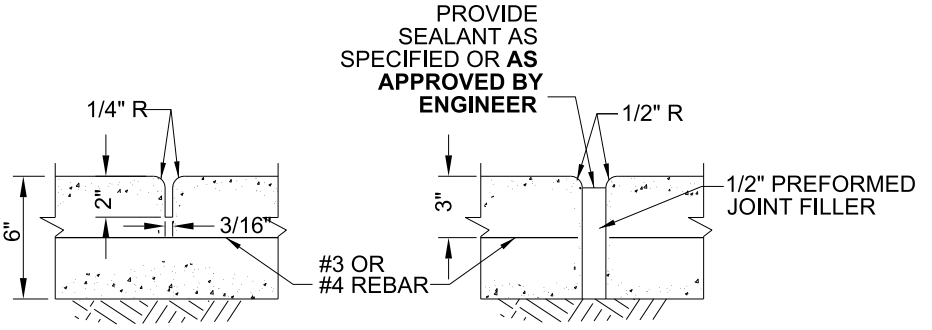
COORDINATOR R.C.E. 56523 — 9/4/18 DATE

DRAWING NUMBER **SDL-102**



TYPE A
ALL AREAS
EXCEPT UNDER FENCES

TYPE B
UNDER FENCES



WEAKENED PLANE JOINT
MAX 20' OC

EXPANSION JOINT
MAX 120' OC

NOTES

1. REBAR SHALL BE CONTINUOUS WITH 12" OVERLAP WHERE SPLICED.
2. CONCRETE SHALL BE CLASS 520-C-2500 AND SAME COLOR AS ADJACENT CONCRETE AND HAVE A SMOOTH TROWEL FINISH.
3. INSTALL WEAKENED PLANE JOINTS AT EACH FENCE POST.
4. INSTALL EXPANSION JOINTS WHERE THE MOWING STRIP ABUTS CONCRETE IMPROVEMENT AND AT LOCATION **APPROVED BY ENGINEER**.

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

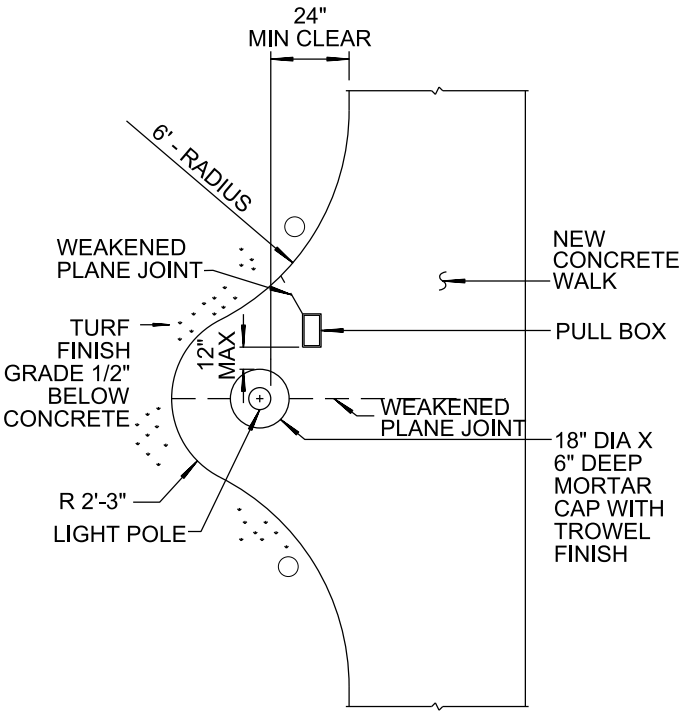
CITY OF SAN DIEGO – STANDARD DRAWING

CONCRETE MOWING STRIP

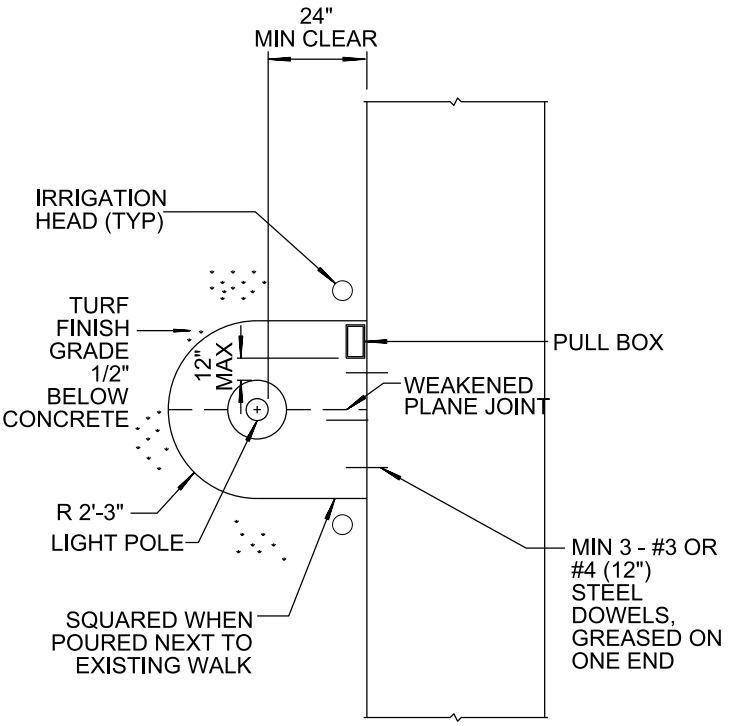
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/4/18 DATE

DRAWING NUMBER **SDL-103**



A - MONOLITHIC CONCRETE PLACEMENT



B - PAD WHEN ADJACENT TO EXISTING CONCRETE

NOTES:

1. USE MONOLITHIC PLACEMENT FOR NEW CONSTRUCTION.
2. POLE PADS SHALL DRAIN AT 1.5% MINIMUM IN SAME DIRECTION AS SIDEWALK.
3. CONCRETE PAD SHALL BE THE SAME AS SPECIFIED FOR SIDEWALK.
4. LOCATE LIGHT POLES OUTSIDE OF TURF AREAS AND AWAY FROM TREES AS **APPROVED BY THE ENGINEER** UNLESS SPECIFIED OTHERWISE.
5. PULL BOX WITH BOLT-DOWN LID MINIMUM 6" FROM ALL EDGES (POLYMER EDGED BOX WITH BRICK FOUNDATION).
6. IRRIGATION HEAD SHALL BE CLEAR OF CONCRETE WALK OR PAD PER SECTION 801-5.5.2 OF THE WHITEBOOK.

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
UPDATED	KC	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

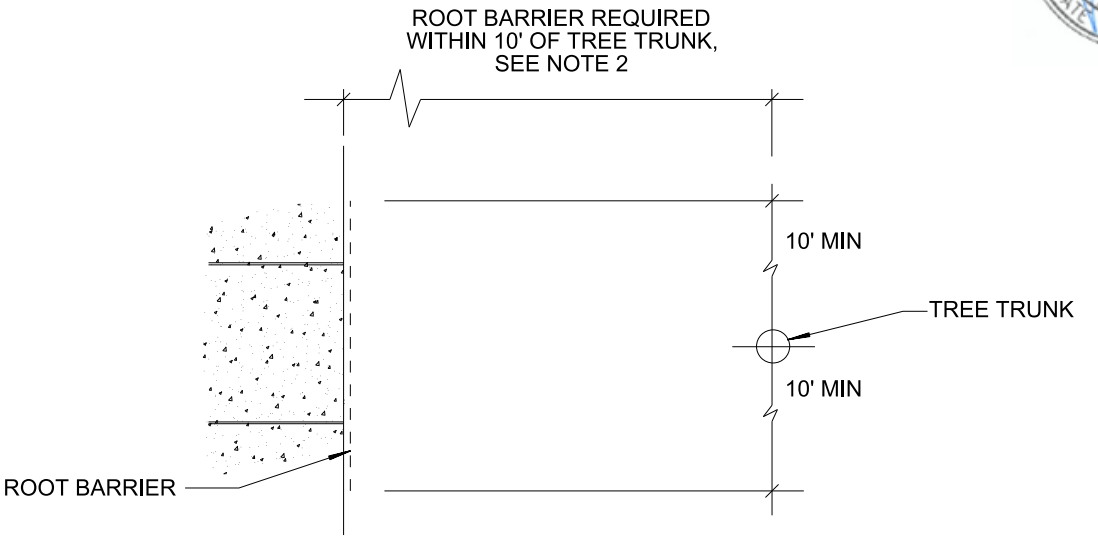
CITY OF SAN DIEGO – STANDARD DRAWING

LIGHT POLE PAD IN TURF AREAS

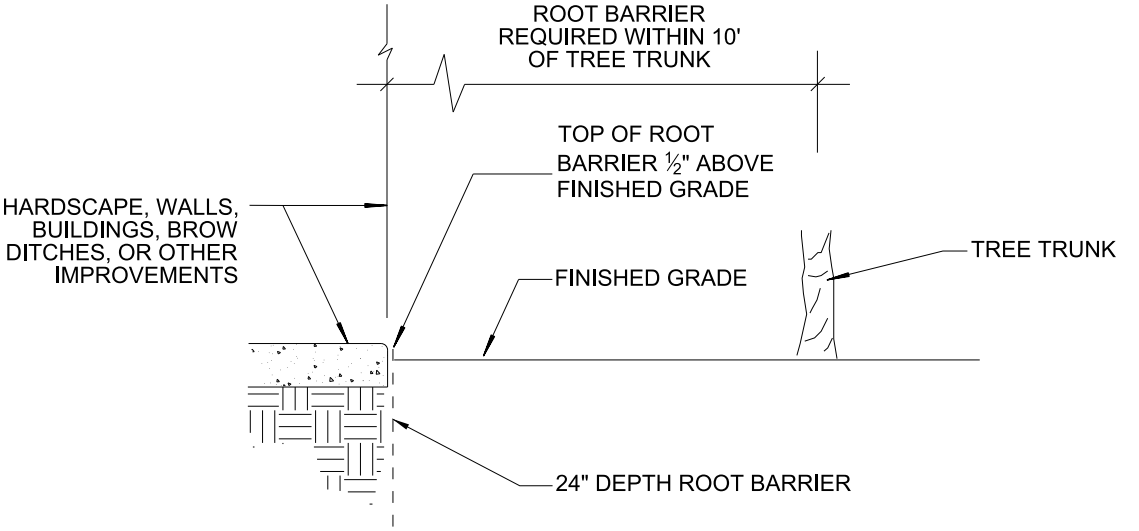
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 DATE 9/4/18

DRAWING NUMBER **SDL-105**



PLAN VIEW



SECTION

NOTE:

1. ROOT BARRIER SHALL BE INSTALLED ADJACENT TO THE IMPROVEMENT AND NOT AROUND THE ROOTBALL.
2. ROOT BARRIER REQUIRED WHEN TREE TRUNK IS WITHIN 10' OF HARDSCAPE, WALLS, BUILDINGS, BROW DITCHES, OR OTHER IMPROVEMENTS.
3. FOR ROOT BARRIER INSTALLATION WITH THE TREE GRATES **SEE SDL-104.**

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO – STANDARD DRAWING

ROOT CONTROL BARRIER

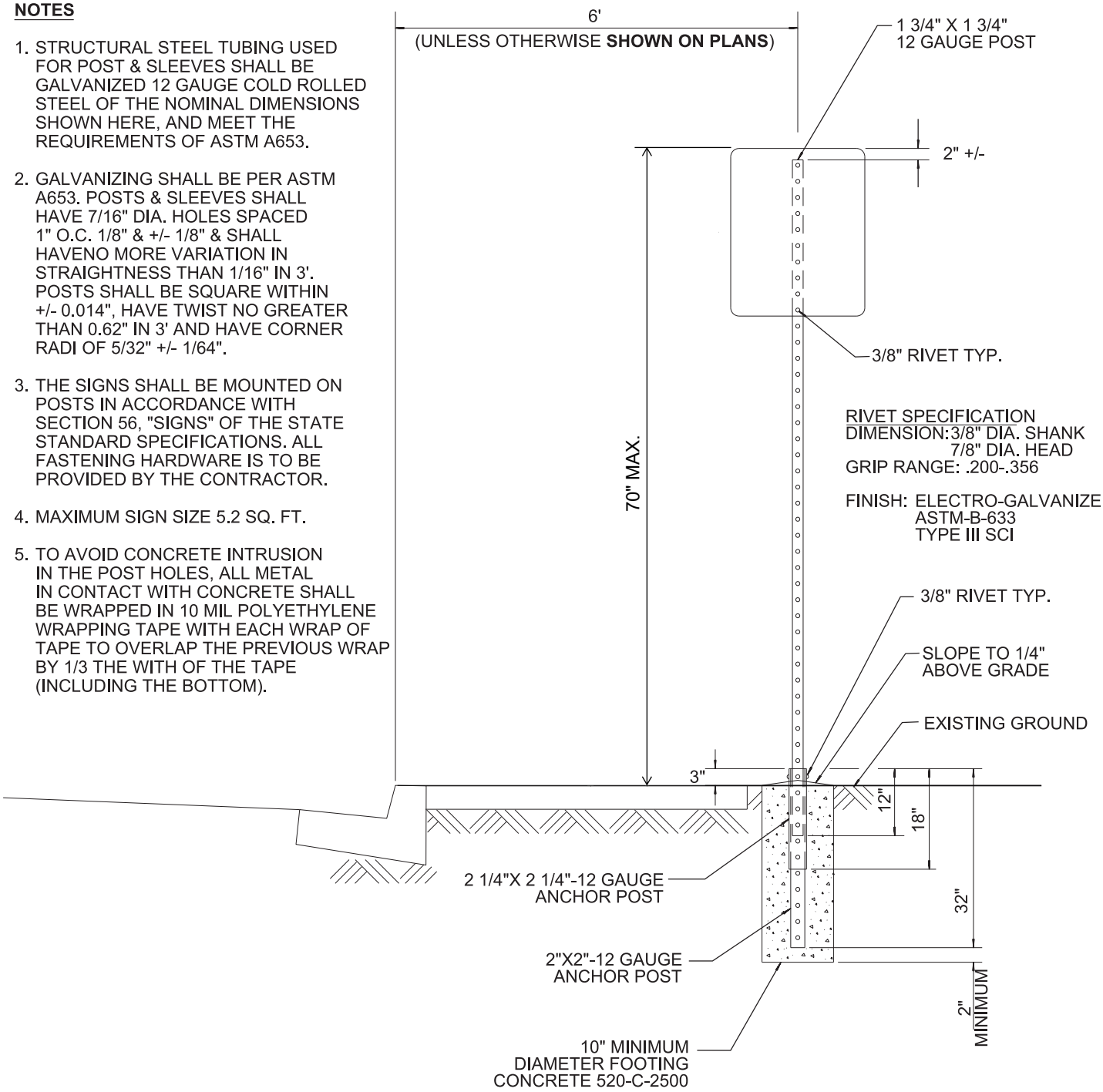
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/4/18 DATE

DRAWING NUMBER **SDL-106**

NOTES

1. STRUCTURAL STEEL TUBING USED FOR POST & SLEEVES SHALL BE GALVANIZED 12 GAUGE COLD ROLLED STEEL OF THE NOMINAL DIMENSIONS SHOWN HERE, AND MEET THE REQUIREMENTS OF ASTM A653.
2. GALVANIZING SHALL BE PER ASTM A653. POSTS & SLEEVES SHALL HAVE 7/16" DIA. HOLES SPACED 1" O.C. 1/8" & +/- 1/8" & SHALL HAVENO MORE VARIATION IN STRAIGHTNESS THAN 1/16" IN 3'. POSTS SHALL BE SQUARE WITHIN +/- 0.014", HAVE TWIST NO GREATER THAN 0.62" IN 3' AND HAVE CORNER RADI OF 5/32" +/- 1/64".
3. THE SIGNS SHALL BE MOUNTED ON POSTS IN ACCORDANCE WITH SECTION 56, "SIGNS" OF THE STATE STANDARD SPECIFICATIONS. ALL FASTENING HARDWARE IS TO BE PROVIDED BY THE CONTRACTOR.
4. MAXIMUM SIGN SIZE 5.2 SQ. FT.
5. TO AVOID CONCRETE INTRUSION IN THE POST HOLES, ALL METAL IN CONTACT WITH CONCRETE SHALL BE WRAPPED IN 10 MIL POLYETHYLENE WRAPPING TAPE WITH EACH WRAP OF TAPE TO OVERLAP THE PREVIOUS WRAP BY 1/3 THE WITH OF THE TAPE (INCLUDING THE BOTTOM).



REVISION	BY	APPROVED	DATE
ORIGINAL	BB	J. NAGELVOORT	05/15
UPDATED	MM	J. NAGELVOORT	08/15
UPDATED	AR	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

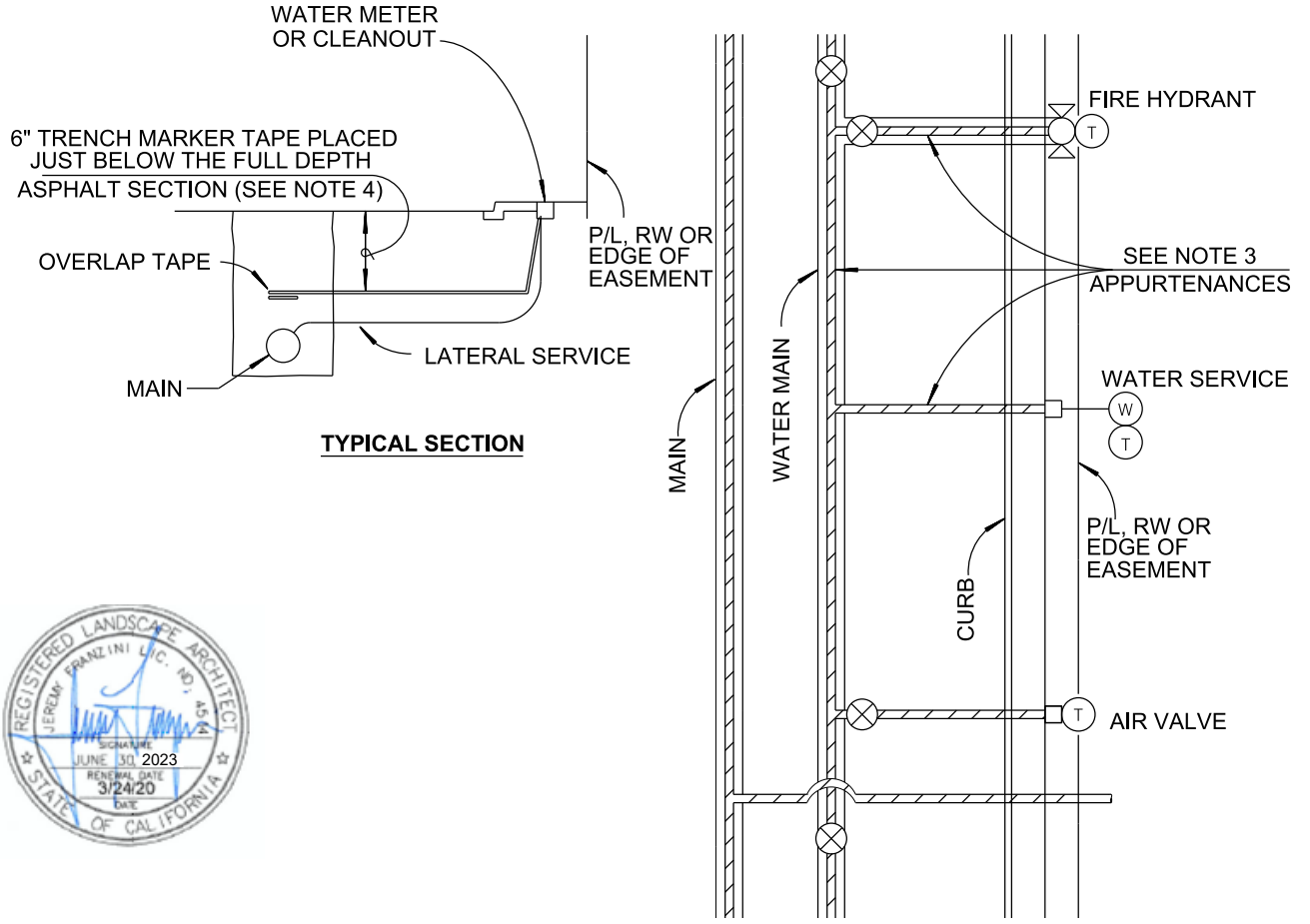
CITY OF SAN DIEGO – STANDARD DRAWING

BREAK-AWAY SIGN POST

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/4/18 DATE

DRAWING NUMBER **SDM-104**



NOTES:

1. TRENCH MARKER METALLIC TAPE SHALL BE 6" WIDE AND CONSIST OF A 20 GAUGE SOLID ALUMINUM FOIL CORE, ADHERED TO A 2.55 MIL 100% VIRGIN POLYETHYLENE BACKING WHICH IS ACID, ALKALINE AND CORROSION RESISTANT. ELONGATION PROPERTIES AND TENSILE STRENGTH OF NOT LESS THAN 7,800 PSI. TAPE SHALL EXTEND WITHIN UTILITY BOX OR PULLBOX TO ALLOW MARKOUT BY CONTINUITY TESTER.

2. TAPE SHALL BE INSTALLED ABOVE THE PIPE AS SPECIFIED AND RUN CONTINUOUSLY ALONG THE LENGTH OF THE PIPE AND ALL RELATED APPURTENANCES.
   A. BLUE WITH "CAUTION POTABLE WATER LINE BURIED BELOW" FOR WATER MAINLINES AND OVER PIPE SLEEVES.
   B. PURPLE WITH "CAUTION RECYCLED/RECLAIMED WATER LINE BURIED BELOW" FOR RECYCLED WATER AND IRRIGATION MAINLINES.
   C. RED WITH "CAUTION ELECTRIC LINE BURIED BELOW" FOR ELECTRICAL LINES, INCLUDING, BUT NOT LIMITED TO, 110/220V POWER TO IRRIGATION CONTROLLERS AND PUMPS, TRAFFIC SIGNALS AND STREETLIGHTS, COMMUNICATION CABLES AND IRRIGATION DIRECT BURIAL CONTROL WIRES TO REMOTE CONTROL VALVES.
   D. GREEN WITH "CAUTION SEWER LINE BURIED BELOW" FOR SEWER MAINLINES AND OVER PIPE SLEEVES.
   E. GREEN WITH "CAUTION STORM DRAIN LINE BURIED BELOW" FOR STORM DRAIN MAINLINES AND OVER PIPE SLEEVES.
3. FOR WATER MAIN AND SERVICES, ELECTRICALLY BOND WATER SERVICE TAPE AND WATER MAIN TAPE TOGETHER.
4. AFTER TRENCH BACKFILL IS COMPACTED, THE TAPE IS PLACED FOLLOWED BY BASE PAVE CONSTRUCTION.

REVISION	BY	APPROVED	DATE
ORIGINAL	KA	J. NAGELVOORT	01/12
UPDATED	BB	J. NAGELVOORT	06/15
UPDATED	BD	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	LS	J. NAGELVOORT	05/21

CITY OF SAN DIEGO – STANDARD DRAWING

WARNING / IDENTIFICATION TAPE INSTALLATION

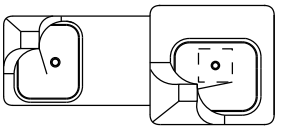
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 DATE 05/21/21

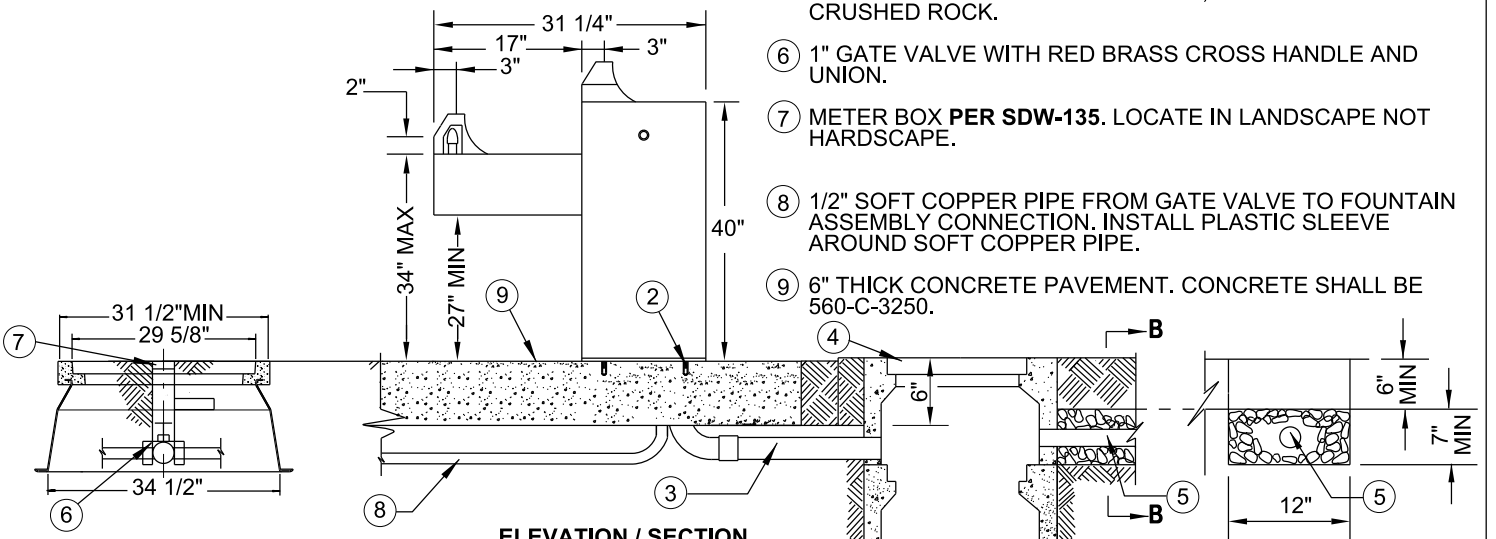
DRAWING NUMBER **SDM-105**

LEGEND:

1. DUAL - HEIGHT DRINKING FOUNTAIN **AS APPROVED BY THE CITY ENGINEER.**
2. 1/2" X 4" LOOP ANCHORS AND 1/2" X 1 1/2" BOLTS AT ALL LOCATIONS OR PER MANUFACTURER'S RECOMMENDATION.
3. 1 1/2" - 2" MIN. P.V.C. PIPE WITH LONG SWEEP 90 DEGREE ELBOW CONNECTION TO FOUNTAIN DRAIN.
4. STACKED TWO 9 1/2" X 16" CONCRETE YARD BOX WITH HINGED LOCKING TOP (BROOKS NO. 3HL OR EQUAL) SET ON RED BRICK FOUNDATION IN LANDSCAPE AREA.
5. 4" X 40' PERFORATED PLASTIC UNDERDRAIN PIPE WRAPPED WITH DRAINAGE FABRIC, ENCASED IN 3/4" CRUSHED ROCK.
6. 1" GATE VALVE WITH RED BRASS CROSS HANDLE AND UNION.
7. METER BOX **PER SDW-135.** LOCATE IN LANDSCAPE NOT HARDSCAPE.
8. 1/2" SOFT COPPER PIPE FROM GATE VALVE TO FOUNTAIN ASSEMBLY CONNECTION. INSTALL PLASTIC SLEEVE AROUND SOFT COPPER PIPE.
9. 6" THICK CONCRETE PAVEMENT. CONCRETE SHALL BE 560-C-3250.

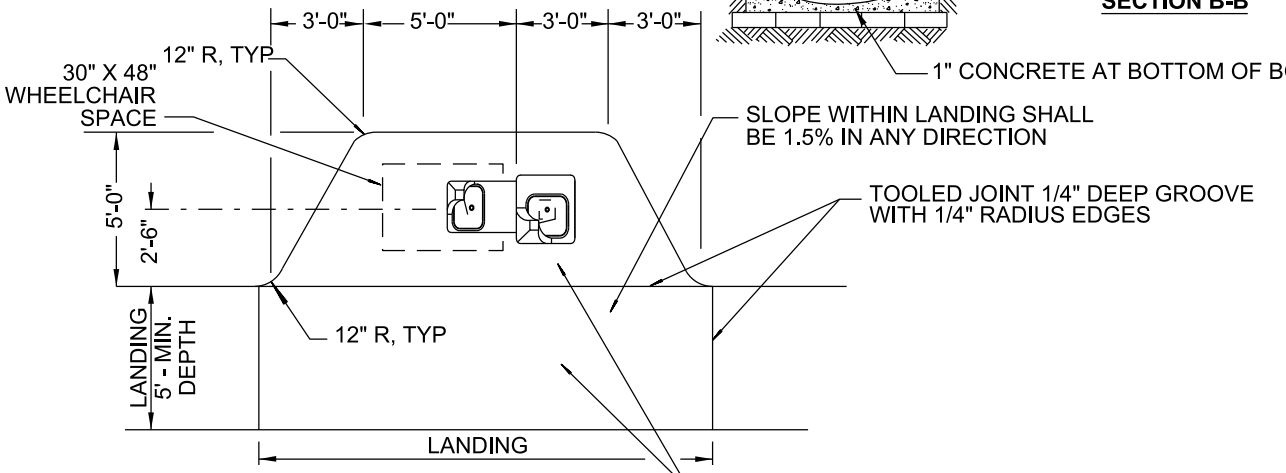


PLAN



ELEVATION / SECTION

SECTION B-B



PLAN AT ALCOVE ALONG CONCRETE WALKWAY

NOTES:

1. INSTALL DRINKING FOUNTAINS SO THAT RIGHT HAND SIDE FACES PREVAILING WIND.
2. HAND FORM A CONCRETE BOWL AT BOTTOM OF YARD BOX TO FACILITATE SAND CLEAN OUT.
3. PERFORATED DRAIN PIPE AND TRENCH SHALL DRAIN AWAY FROM FOUNTAIN.
4. USE RED BRASS BUSHING REDUCERS TO ADAPT TO FEED PIPE.
5. NO WATER PONDING IS ALLOWED IN LANDING AND ALCOVE AREAS.

REVISION	BY	APPROVED	DATE
ORIGINAL	SM	A. OSKOUI	12/03
UPDATE	FC	A. OSKOUI	12/06
UPDATE	FC	A. OSKOUI	12/08
UPDATE	KA	J. NAGELVOORT	01/12
UPDATE	RK	J. NAGELVOORT	07/18

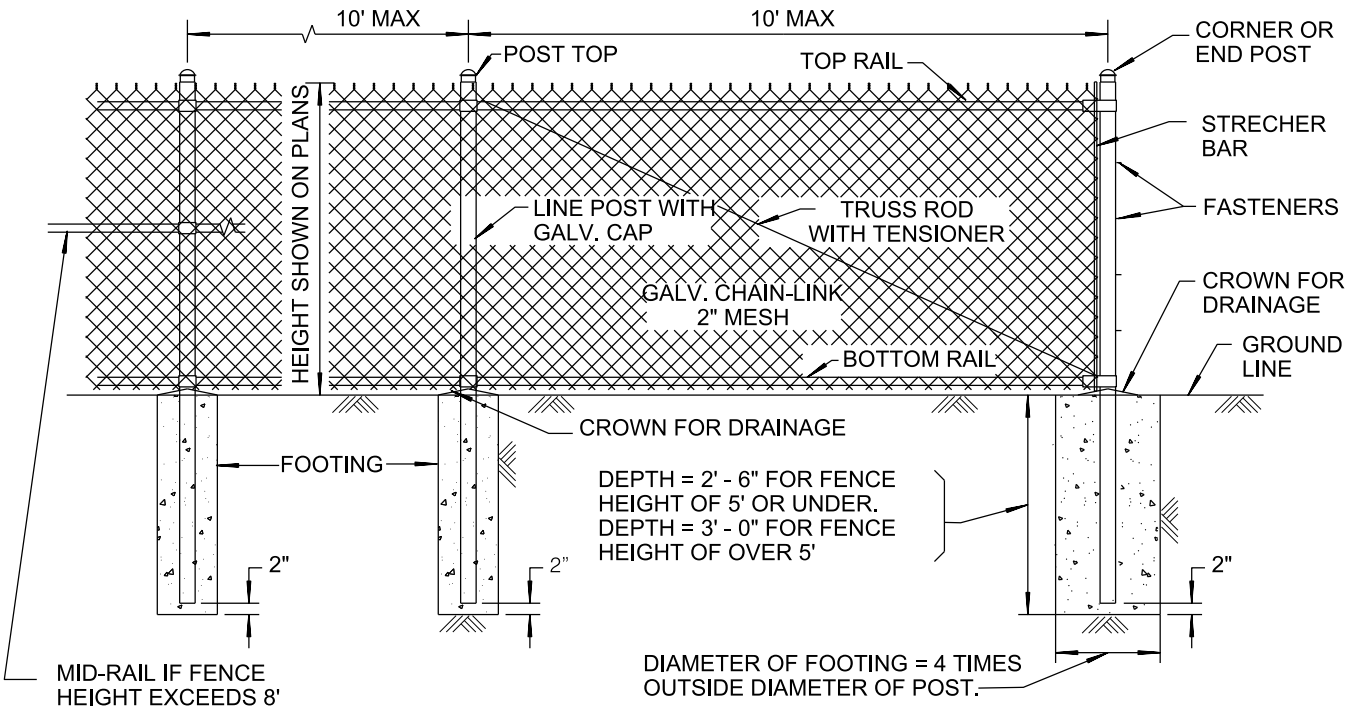
CITY OF SAN DIEGO – STANDARD DRAWING

DUAL HEIGHT DRINKING FOUNTAIN (NEW CONSTRUCTION)

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 7/3/18 DATE

DRAWING NUMBER **SDM-107**



NOTES:

1. ALL FOOTINGS SHALL BE 520-C-2500 CONCRETE.

2. THE FOLLOWING ITEMS SHALL BE FURNISHED AND INSTALLED ONLY WHEN **SHOWN ON THE PLANS** OR CALLED FOR IN THE SPECIAL PROVISIONS:
   A. BARBED WIRE
   B. EXTENSION ARM

3. CHAIN LINK FENCE SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION UNLESS SPECIFICALLY NOTED ON THIS DRAWING.

4. CHAIN LINK FENCE AND ALL FITTINGS SHALL BE 22 MIL PRESSURE-BONDED, OR 7 MIL THERMALLY-FUSED VINYL COATED, OVER 9 GAUGE ALUMINIZED STEEL CORE FABRIC, PRIOR TO COATING. POSTS AND RAILS SHALL BE GALVANIZED STEEL PVC VINYL BONDED, 10-14 MIL (COLOR SHALL MATCH FABRIC).

5. CHAIN LINK FABRIC SHALL HAVE KNUCKLED FINISH ON TOP EDGE.

6. THE FOLLOWING SHALL BE NOTED ON PLANS OR SPECIFICATIONS:
   A. COLOR OF FENCE AND FITTINGS
   B. MATERIAL AND FITTING STEEL CLASS: 1 OR 1A
   C. WIRE CLASS: 1 OR 1A

7. **SEE M-20** FOR ADDITIONAL DETAILS.

REVISION	BY	APPROVED	DATE
ORIGINAL		J.P. CASEY	06/92
UPDATE	KA	J. NAGELVOORT	01/12
UPDATE	HM	J. NAGELVOORT	02/16
UPDATE	HM	J. NAGELVOORT	11/17
REDRAFTED	CD	J. NAGELVOORT	09/18

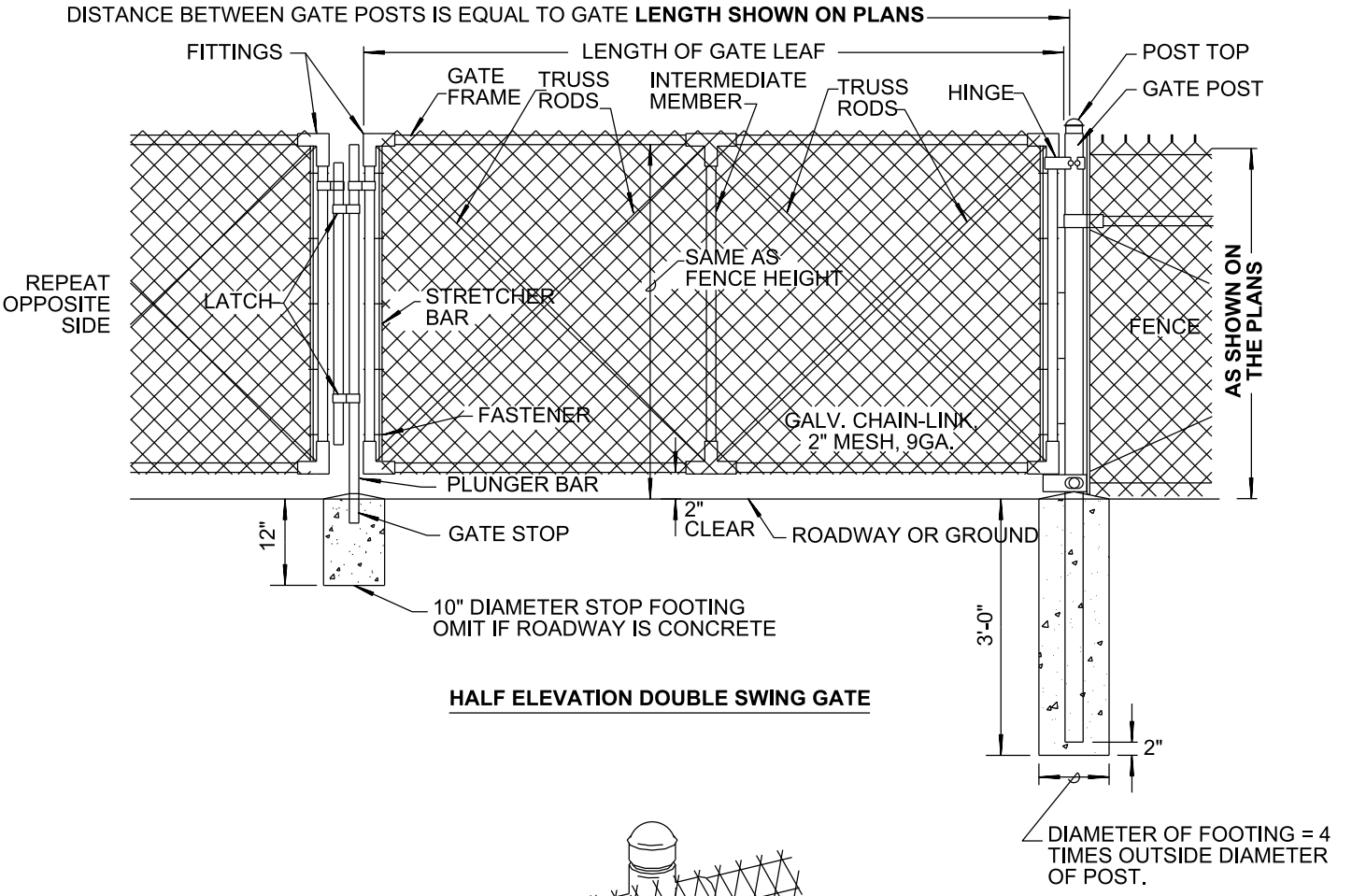
CITY OF SAN DIEGO – STANDARD DRAWING

VINYL COATED CHAIN LINK FENCE

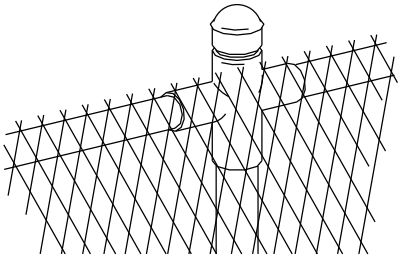
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 DATE 9/4/18

DRAWING NUMBER **SDM-112**



HALF ELEVATION DOUBLE SWING GATE



CHAIN LINK VEHICULAR GATE

NOTES:

1. ALL FOOTINGS SHALL BE 520-C-2500 CONCRETE.
2. EXTENSION POST SHALL BE FURNISHED AND INSTALLED ONLY WHEN **SHOWN ON THE PLANS** OR CALLED FOR IN THE SPECIAL PROVISIONS:
3. CHAIN LINK FENCE SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION UNLESS SPECIFICALLY NOTED ON THE DRAWING.
4. CHAIN LINK FABRIC SHALL HAVE KNUCKLED FINISH ON TOP EDGE.

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE
ORIGINAL	SM	A. OSKOUI	12/03
UPDATE	KA	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO – STANDARD DRAWING

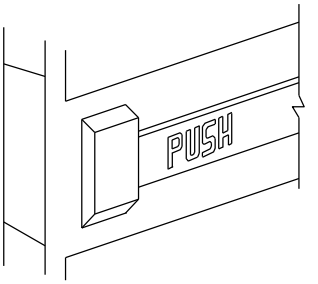
CHAIN LINK GATE

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/4/18 DATE

DRAWING NUMBER **SDM-114**

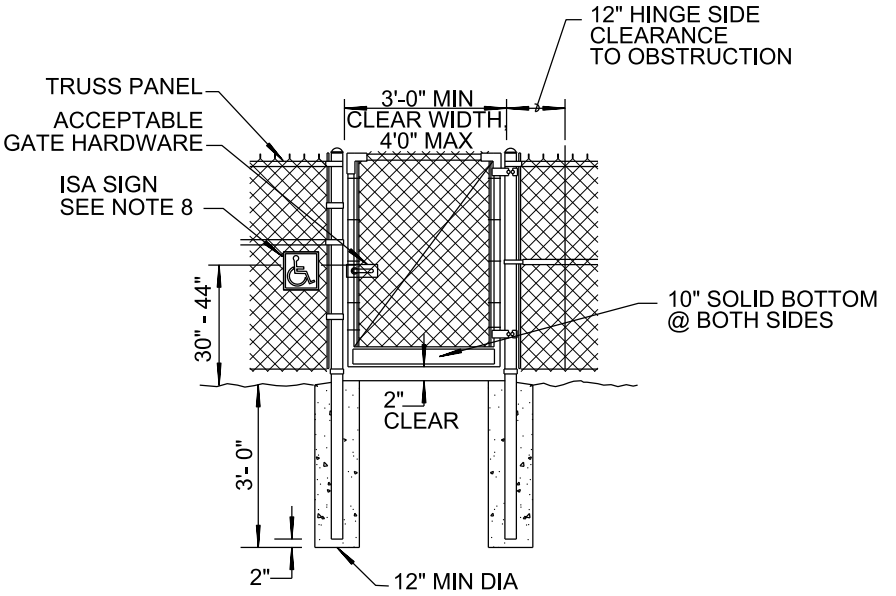
REGISTERED PROFESSIONAL ENGINEER
JOANNE S. TYLER
C 59286
CIVIL
STATE OF CALIFORNIA



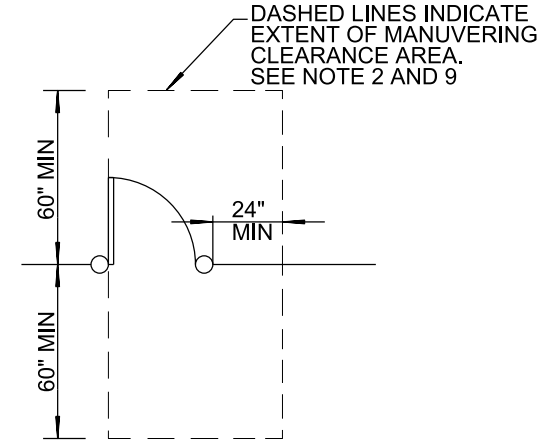
PANIC BAR

MODEL 33A-L-03 BY VON DUPRIN OR APPROVED EQUAL.

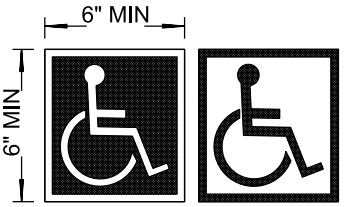
ACCEPTABLE GATE HARDWARE



MOUNTING DETAIL



LEVEL MANEUVERING CLEARANCE



INTERNATIONAL SYMBOL OF ACCESSIBILITY SIGN (ISA)

CHAIN LINK PEDESTRIAN GATE

NOTES

1. GATES THAT ARE ACCESSIBLE TO AND USABLE BY PERSONS WITH DISABILITIES SHALL BE PROVIDED WITH AT LEAST ONE INTERNATIONAL SYMBOL OF ACCESSIBILITY SIGN AS SHOWN ABOVE.
2. THE RUNNING AND CROSS SLOPE WITHIN THE LEVEL MANEUVERING CLEARANCE AREA SHALL BE 1.5% AND DESIGNED TO PREVENT WATER FROM ACCUMULATING WITHIN THE ENTIRE SURFACE.
3. IF THE GATE IS NOT SELF - CLOSING, PROVIDE ACCEPTABLE GATE HARDWARE ON BOTH SIDES.
4. PROVIDE 3/8" DIAMETER TENSION ROD AND TIGHTENER FOR GATES THAT ARE OVER 3' IN WIDTH.
5. IF PROVIDED, TIE FABRIC TOP AND FRAME WITH 11 GAUGE WIRE.
6. LATCHING AND LOCKING GATES THAT ARE HAND OPERATED SHALL BE OPERABLE WITH A SINGLE EFFORT NOT TO EXCEED 5-POUND PRESSURE.
7. THE SYMBOL CONTRAST ON SIGN SHALL BE LIGHT ON DARK OR DARK ON LIGHT.
8. MOUNTING HEIGHT - THE SIGN SHALL BE INSTALLED ON THE FENCE / WALL ADJACENT TO THE LATCH OUTSIDE OF THE DOOR. IT SHALL BE MOUNTED TO THE CENTERLINE OF THE ACCEPTED GATE HARDWARE. MOUNTING LOCATION SHALL BE DETERMINED SO THAT A PERSON MAY APPROACH WITHIN 3" OF SIGNAGE WITHOUT ENCOUNTERING PROTRUDING OBJECTS OR STANDING WITHIN THE SWING DOOR.
9. LANDING & APPROACH SPACE SHALL COMPLY WITH CURRENT CBC TITLE 24 AND ADA / ADAS.

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE
ORIGINAL	SM	A. OSKOUI	12/03
ORIGINAL	FC	A. OSKOUI	12/06
UPDATE	KA	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

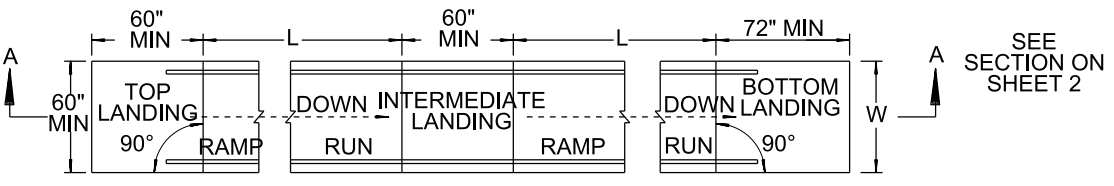
CITY OF SAN DIEGO – STANDARD DRAWING

CHAIN LINK GATE

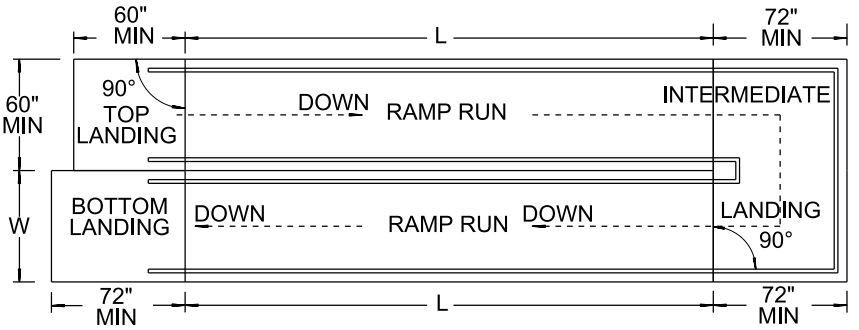
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/4/18 DATE

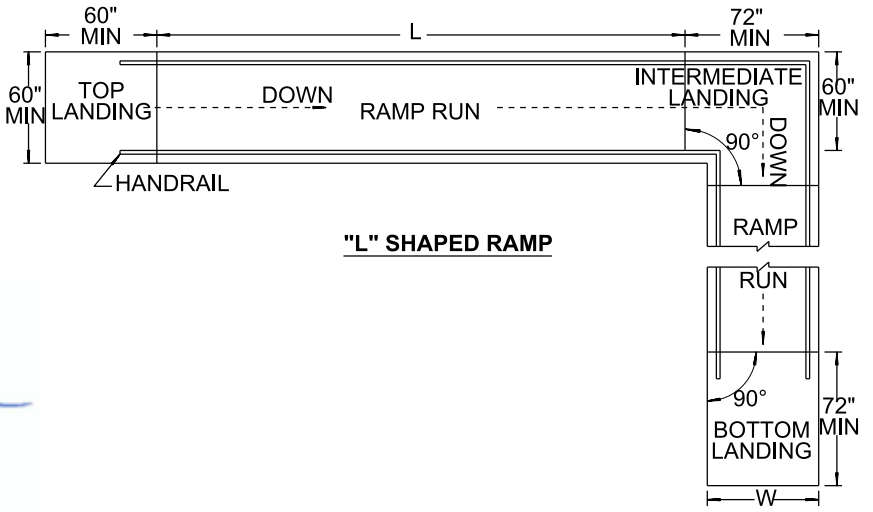
DRAWING NUMBER **SDM-114**



STRAIGHT RUN RAMP



"U" SHAPED RAMP



"L" SHAPED RAMP

LENGTH OF EACH SEGMENT OF RAMP RUN

MAX SLOPE	MAXIMUM LENGTH OF EACH RAMP SEGMENT (L)	MAXIMUM RISE BETWEEN LANDINGS
1:13 (7.69%)	32.5'	30"
1:14 (7.14%)	35'	30"
1:15 (6.67%)	37.5'	30"
1:16 (6.25%)	40'	30"
1:17 (5.88%)	42.5'	30"
1:18 (5.55%)	45'	30"
1:19 (5.26%)	47.5'	30"

NOTES:

1. (W) THE WIDTH OF THE RAMPS THAT ARE PART OF THE MEAN OF EGRESS WILL ALSO HAVE TO MEET THE ADDITIONAL CODE REQUIREMENTS.
2. THE WIDTH AT THE BOTTOM LANDING SHALL BE AS WIDE AS THE RAMP.
3. SPECIFY THE LEAST POSSIBLE SLOPE BELOW THE MAXIMUM TO PROVIDE A CONSTRUCTION TOLERANCE AND TO OFFER BETTER USABILITY.

SEE ADDITIONAL NOTES ON SHEET 3

REVISION	BY	APPROVED	DATE
ORIGINAL	SM	A. OSKOUI	12/03
UPDATE	FC	A. OSKOUI	12/06
UPDATE	KA	J. NAGELVOORT	01/12
UPDATE	FC	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

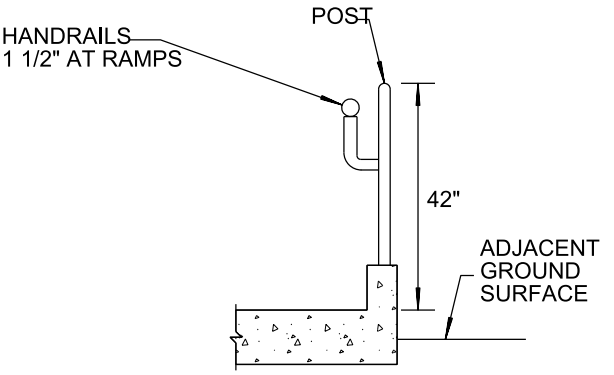
CITY OF SAN DIEGO – STANDARD DRAWING

PEDESTRIAN RAMP AND PROTECTIVE RAILING

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

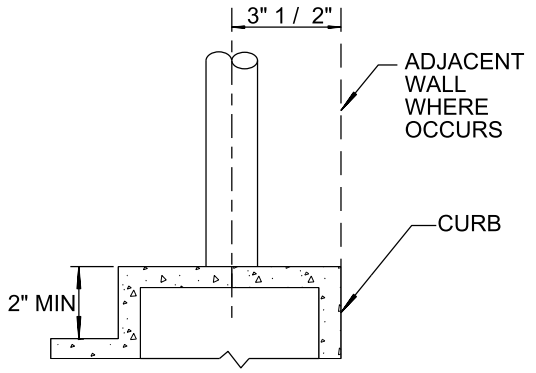
COORDINATOR R.C.E. 56523 — 9/4/18 DATE

DRAWING NUMBER **SDM-115**

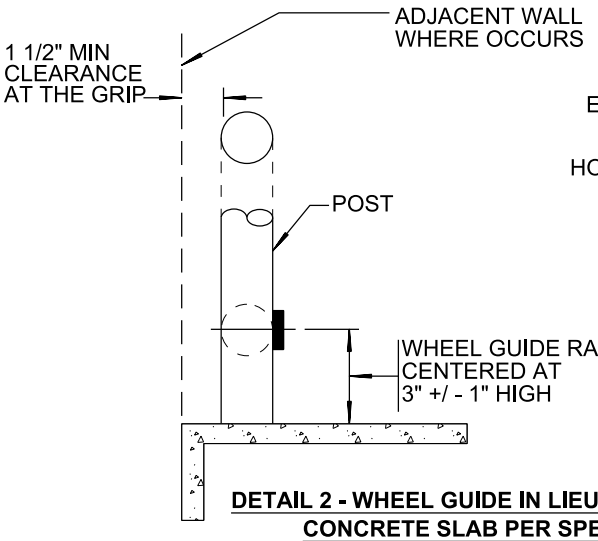


DETAIL IN LIEU OF SKATE STOPPERS

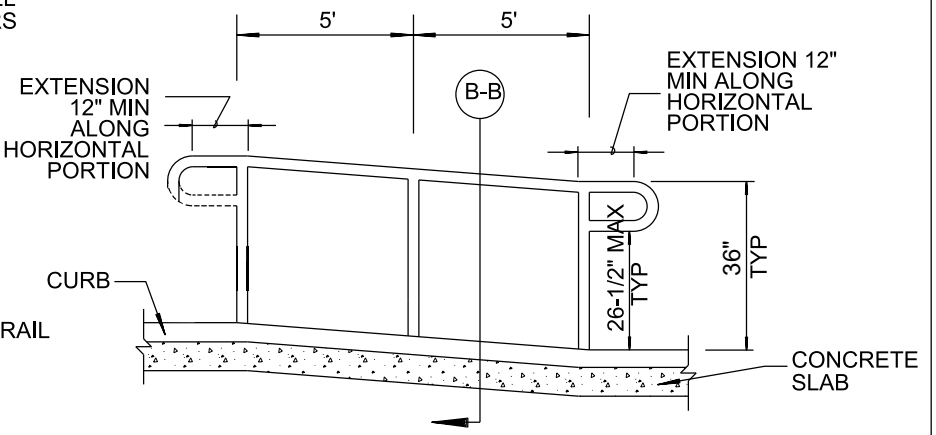
NOTE:
THE HEIGHT OF THE HANDRAIL SHALL BE CONSISTENT AT EACH RAMP RUN.



DETAIL 1



DETAIL 2 - WHEEL GUIDE IN LIEU OF CURB CONCRETE SLAB PER SPEC



SECTION A-A

REVISION	BY	APPROVED	DATE
ORIGINAL	SM	A. OSKOUI	12/03
UPDATE	FC	A. OSKOUI	12/06
UPDATE	KA	J. NAGELVOORT	01/12
UPDATE	FC	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO – STANDARD DRAWING

PEDESTRIAN RAMP AND PROTECTIVE RAILING

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/4/18 DATE

DRAWING NUMBER **SDM-115**

RAMP:

1. ANY WALKING SURFACE THAT IS PART OF AN ACCESSIBLE ROUTE WITH THE SLOPE GREATER THAN 5% SHALL BE CONSIDERED A PEDESTRIAN RAMP AND MUST COMPLY WITH THE PEDESTRIAN RAMP STANDARDS.
2. THE LEAST POSSIBLE SLOPE SHALL BE USED WITHOUT EXCEEDING 7.7%, PER CITY OF SAN DIEGO ACCESS MEMO.
3. THE RUNNING SLOPE SHALL BE UNIFORM ALONG EACH RAMP SEGMENT.
4. CROSS SLOPE SHALL NOT EXCEED 1.5%.
5. LANDINGS SHALL HAVE A 1.5% SLOPE IN BOTH DIRECTIONS.
6. WALKING SURFACE MUST BE STABLE, FIRM, AND SLIP RESISTANT. CONCRETE SHALL HAVE A MEDIUM BROOM TRANSVERSE FINISH.
7. LANDINGS MUST BE DESIGNED TO PREVENT PONDING.
8. WHERE THE CHANGE OF SLOPE OCCURS, GRADE BREAKS MUST BE PERPENDICULAR TO THE DIRECTION OF THE RAMP RUNS TO PREVENT CROSS SLOPE ISSUES.

HANDRAIL:

1. HANDRAILS ARE REQUIRED ON BOTH SIDES OF A PEDESTRIAN RAMP.

2. HANDRAILS SHALL BE CONTINUOUS FOR THE FULL LENGTH OF THE RAMP RUN PLUS THE EXTENSION.
3. INSIDE HANDRAILS AT "U" SHAPED AND "L" SHAPED RAMPS SHALL BE CONTINUOUS.
4. HANDRAILS SHALL EXTEND 12 INCHES MINIMUM BEYOND THE TOP, INTERMEDIATE AND BOTTOM OF EACH RAMP SEGMENT IN THE DIRECTION OF THE RAMP RUN, THE HANDRAIL EXTENTION SHALL BE PARALLEL TO THE LANDING SURFACE.
5. HANDRAIL EXTENSION SHALL NOT EXTEND INTO THE REQUIRED WIDTH OF AN ADJACENT ROUTE OF TRAVEL. IN EXISTING FACILITIES WHERE THE ENCROACHMENT OF THE EXTENSION IN THE DIRECTION OF THE RAMP CREATES A HAZARD, THE EXTENSION SHALL BE BENT 90 DEGREES TO THE RUN OF THE RAMP.
6. END OF HANDRAIL EXTENSION SHALL BE TURNED TO THE WALL, FLOOR OR POST.
7. END OF HANDRAIL EXTENSION SHALL BE TURNED TO THE FLOOR WHEN EXTENSION IS PROTRUDING PERPENDICULAR INTO PATH OF TRAVEL.
8. TOP GRIPPING SURFACE OF THE HANDRAIL SHALL BE UNIFORM IN HEIGHT. THE GRIPPING SURFACE SHALL BE CONTINUOUS AND SMOOTH (NO SHARP CORNERS).
9. THE GRIPPING PORTION SHALL BE 4 INCHES MIN TO 6-1/4 INCHES MAX PERIMETER DIMENSION, 1-1/4 INCHES TO 2-1/4 INCHES IN CROSS SECTIONAL NOMINAL DIMENSION OR SHAPED WITH EQUIVALENT GRIPPING SURFACE.
10. DESIGN AND SHOP DRAWINGS SHALL BE **APPROVED BY THE CITY ENGINEER** AND ACCESS COMPLIANCE OFFICER PRIOR TO FABRICATION.
11. ADJACENT WALL OR OTHER SURFACES SHALL BE FREE OF ANY SHARP OR ABRASIVE ELEMENT (SMOOTH FINISH).
12. A GUARDRAIL 42 INCHES ABOVE FINISHED FLOOR SHALL BE INSTALLED ALONG OPEN EDGES OF THE RAMP AND LANDINGS THAT ARE 30 INCHES OR MORE IN HEIGHT FROM THE ADJACENT GROUND SURFACE AND THE RAMP IS NOT BOUNDED BY A WALL OR FENCE. **SEE SDM-118**.
13. PROVIDE A CONTINUOUS GUIDE CURB OR GUIDE RAIL IF POSTS ARE INSTALLED ON THE RAMP SURFACE OR IF THE FINISH SURFACE IS GREATER THAN 4 INCHES HIGHER THAN THE ADJACENT GROUND SURFACE.
14. FOR HANDRAIL AND GUARDRAIL MATERIAL, FINISHES AND ADDITIONAL DETAILS, SEE RELATED DETAIL DRAWINGS.

REVISION	BY	APPROVED	DATE
ORIGINAL	SM	A. OSKOUI	12/03
UPDATE	FC	A. OSKOUI	12/06
UPDATE	KA	J. NAGELVOORT	01/12
UPDATE	FC	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO – STANDARD DRAWING

PEDESTRIAN RAMP AND PROTECTIVE RAILING

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/4/18 DATE

DRAWING NUMBER **SDM-115**

ON-STREET PARKING REQUIREMENTS:

1. WHERE ON-STREET PARKING IS PROVIDED ON THE BLOCK PERIMETER AND THE PARKING IS MARKED OR METERED, ACCESSIBLE PARKING SPACES SHALL BE PROVIDED IN ACCORDANCE WITH TABLE BELOW. WHERE PARKING PAY STATIONS ARE PROVIDED AND THE PARKING IS NOT MARKED, EACH 20'-0" FEET OF BLOCK PERIMETER WHERE PARKING IS PERMITTED SHALL BE COUNTED AS ONE PARKING SPACE.

2. MINIMUM REQUIRED PARKING RATIO FOR ACCESSIBLE PARKING SPACES.

TOTAL NUMBER OF MARKED OR METERED PARKING SPACES ON THE BLOCK PERIMETER	MINIMUM REQUIRED NUMBER OF ACCESSIBLE PARKING SPACES
1-25	1
26-50	2
51-75	3
76-100	4
101-150	5
151-200	6
201 AND OVER	4% OF TOTAL

NOTES:

1. METERED PARKING INCLUDES PARKING METERED BY PAY STATIONS. WHERE PARKING ON PART OF THE BLOCK PERIMETER IS ALTERED, THE MINIMUM NUMBER OF ACCESSIBLE PARKING SPACES REQUIRED IS BASED ON THE TOTAL NUMBER OF MARKED OR METERED PARKING SPACES ON THE BLOCK PERIMETER.

2. VAN PARKING SPACE IS NOT REQUIRED ON-STREET.

3. REVERSE ANGLED PARKING SHALL FOLLOW THE SAME REQUIREMENTS AS STANDARD ANGLED PARKING.

OFF-STREET PARKING REQUIREMENTS:

1. WHERE PARKING IS PROVIDED ON EACH FACILITY (LOT OR STRUCTURE), ACCESSIBLE PARKING SPACES SHALL BE PROVIDED.

2. PARKING SPACES USED EXCLUSIVELY FOR BUSES, TRUCKS, OTHER DELIVERY VEHICLES, OR VEHICULAR IMPOUND SHALL NOT BE REQUIRED TO COMPLY WITH THE ACCESSIBLE PARKING RATIO IF THE LOTS ACCESSED BY THE PUBLIC ARE PROVIDED WITH A PASSENGER DROP-OFF AND LOADING ZONE COMPLYING WITH PASSENGER LOADING ZONE STANDARDS. **SEE SDM-117 SHEET 9.**

   A. MINIMUM REQUIRED PARKING RATIO FOR ACCESSIBLE PARKING SPACES

TOTAL NUMBER OF PARKING SPACES PROVIDED IN PARKING FACILITY	MINIMUM NUMBER OF REQUIRED ACCESSIBLE PARKING SPACES
1-25	1
26-50	2
51-75	3
76-100	4
101-150	5
151-200	6
201-300	7
301-400	8
401-500	9
501-1,000	2% OF TOTAL
1,001 AND OVER	20, PLUS 1 FOR EACH 100, OR FRACTION THEREOF, OVER 1000

EXCEPTIONS:

1. 10% OF THE TOTAL NUMBER OF PARKING SPACES AT OUTPATIENT UNITS AND FACILITIES SHALL BE ACCESSIBLE.

2. 20% OF THE TOTAL NUMBER OF PARKING SPACES AT UNITS AND FACILITIES SPECIALIZING IN TREATMENT OR SERVICES FOR PERSONS WITH MOBILITY IMPAIRMENTS SHALL BE ACCESSIBLE.

   B. THE REQUIRED PARKING RATIO FOR ACCESSIBLE PARKING STALLS IS PROVIDED FOR EACH PARKING LOT ON THE SITE.

   C. AT LEAST ONE VAN PARKING SPACE IS REQUIRED FOR EVERY SIX OR FRACTION OF SIX PARKING SPACES.

   D. IN BUILDINGS OR FACILITIES WITH MULTIPLE ACCESSIBLE ENTRANCES WITH ADJACENT PARKING SPACES SHALL BE DISPERSED AND LOCATED CLOSEST TO THE ACCESSIBLE ENTRANCES. A VAN ACCESSIBLE SPACE SHALL BE PROVIDED AT EACH LOCATION.

3. VERTICAL CLEARANCE - PARKING SPACES FOR VANS AND THEIR ADJACENT ACCESS AISLE AND VEHICULAR ROUTES SERVING THEM SHALL PROVIDE A VERTICAL CLEARANCE OF 8'-2" MINIMUM.

REVISION	BY	APPROVED	DATE
ORIGINAL	FC	A. OSKOUI	12/06
UPDATED	KA	J. NAGELVOORT	01/12
UPDATED	FC	J. NAGELVOORT	02/16
UPDATED	FC	J. NAGELVOORT	09/18

CITY OF SAN DIEGO – STANDARD DRAWING

ACCESSIBLE PARKING (NOTES)

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/17/18 DATE

DRAWING NUMBER **SDM-117**

4. THE SURFACE OF THE ENTIRE AREA OF THE ACCESSIBLE PARKING SPACE(S) AND ACCESS AISLE(S) SHALL HAVE A SLOPE OF 1.5% IN ANY DIRECTION.

   A. GUTTERS AND SWALES SHALL NOT BE INCLUDED IN THE OVERALL DIMENSIONS OF THE ACCESSIBLE PARKING SPACES AND ACCESS AISLES, UNLESS SLOPE AND CROSS SLOPE IS 1.5% MAXIMUM.

   B. THE SURFACE SLOPE OF THE AREA IMMEDIATELY SURROUNDING THE ACCESSIBLE PARKING SPACE SHALL BE 1.5% FOR A WIDTH OF 4'-0".

   C. ADEQUATE DRAINAGE SHALL BE PROVIDED SO THAT WATER DOES NOT ACCUMULATE WITHIN THE ACCESSIBLE PARKING SPACE AND ACCESS AISLE.

   D. THE GUTTER SLOPE AT THE OPENING OF THE CURB RAMPS SERVING THE ACCESS AISLES SHALL BE 1.5%.

5. ACCESS AISLES (LOADING AND UNLOADING AREAS) SHALL BE PROVIDED FOR SINGLE AND DOUBLE ACCESSIBLE PARKING SPACES.

   A. THE ACCESS AISLE SHALL BE CONNECTED TO AN ACCESSIBLE ROUTE.

   B. FOR REGULAR ACCESSIBLE SPACE, THE ACCESS AISLE SHALL BE ON EITHER SIDE OF THE VEHICLE WHEN THE VEHICLE IS GOING FORWARD INTO THE PARKING SPACE.

   C. FOR VAN SPACE, THE ACCESS AISLE SHALL BE PLACED ON THE SIDE OPPOSITE THE DRIVER'S SIDE WHEN THE VEHICLE IS GOING FORWARD INTO THE PARKING SPACE (i.e. PASSENGER SIDE OF THE VEHICLE).

   D. THE CURB RAMP MAY NOT ENCROACH INTO THE REQUIRED DIMENSIONS FOR THE ACCESSIBLE PARKING SPACE AND ACCESS AISLE.

   E. CURB RAMPS SERVING THE ACCESS AISLES SHALL COMPLY WITH THE APPLICABLE CURB RAMP STANDARDS.

6. PARKING SPACES AND ACCESS AISLES SHALL BE DESIGNED SUCH THAT A PEDESTRIAN IS NOT REQUIRED TO TRAVEL BEHIND A PARKING SPACE OTHER THAN TO PASS BEHIND THE PARKING SPACE FOR THEIR PARKED VEHICLE.

7. SIGNAGE:
   A. A TOW AWA SIGN SHALL BE INSTALLED AND VISIBLE AT EACH ENTRANCE TO THE OFF STREET PARKING FACILITY OR IMMEDIATELY ADJACENT TO THE ACCESSIBLE PARKING SPACE.

REVISION	BY	APPROVED	DATE
ORIGINAL	FC	A. OSKOUI	12/06
UPDATED	KA	J. NAGELVOORT	01/12
UPDATED	FC	J. NAGELVOORT	02/16
UPDATED	FC	J. NAGELVOORT	09/18

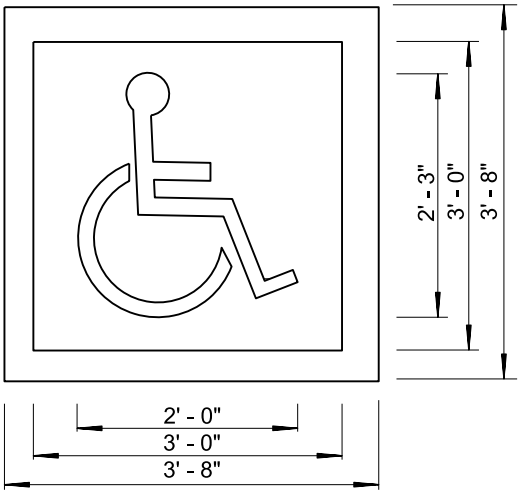
CITY OF SAN DIEGO – STANDARD DRAWING

ACCESSIBLE PARKING (NOTES)

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/17/18 DATE

DRAWING NUMBER **SDM-117**



NOTES:

1. THE ISA SHALL BE PAINTED WHITE ON A BLUE BACKGROUND. THE COLOR BLUE SHALL MATCH FS 15090 IN THE FEDERAL STANDARD 595C. A BORDER MAY BE PROVIDED INSIDE OR OUTSIDE OF THE MINIMUM REQUIRED ISA DIMENSION.
2. THE LOCATION OF THE ISA SHALL BE VISIBLE TO A TRAFFIC ENFORCEMENT OFFICER WHEN THE VEHICLE IS STATIONED IN THE PARKING SPACE.

INTERNATIONAL SYMBOL OF ACCESSIBILITY (ISA) PAVEMENT MARKING

NOTES:

1. THE WORDS "NO PARKING" SHALL BE LOCATED AT THE END OF THE ACCESS AISLE SO THAT IT IS VISIBLE TO TRAFFIC ENFORCEMENT OFFICIALS.
2. THE LETTERS SHALL BE NO LESS THAN 12" HIGH AND PAINTED IN WHITE LETTERS ON A BLUE BACKGROUND. THE COLOR BLUE SHALL MATCH FS15090 IN THE FEDERAL STANDARD 595C.

"NO PARKING" PAVEMENT MARKING

REVISION	BY	APPROVED	DATE
ORIGINAL	KA	J. NAGELVOORT	01/12
UPDATED	FC	J. NAGELVOORT	02/16
UPDATED	FC	J. NAGELVOORT	09/18

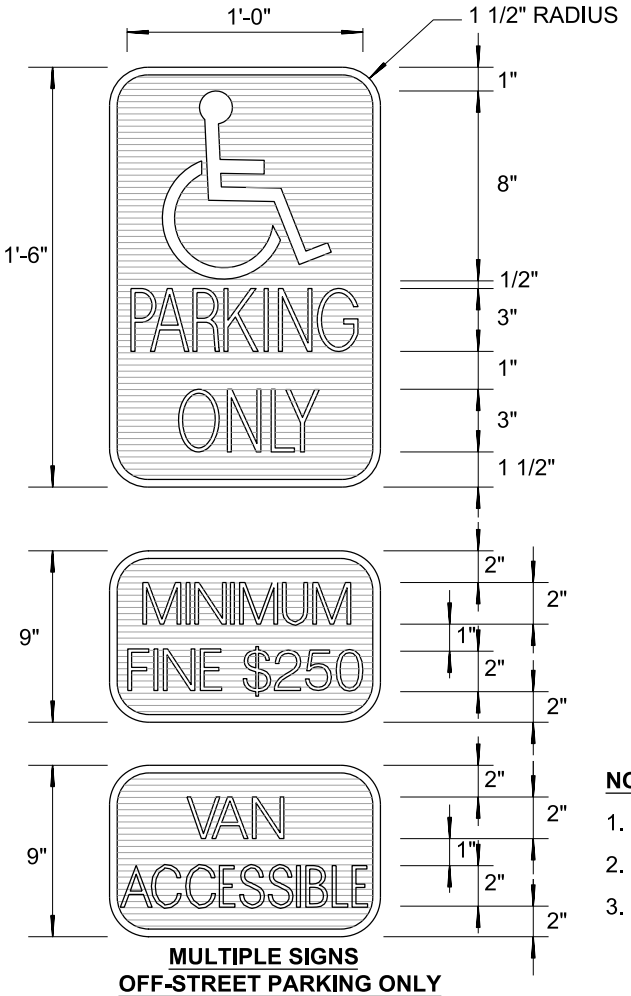
CITY OF SAN DIEGO – STANDARD DRAWING

ACCESSIBLE PARKING (OFF-STREET)

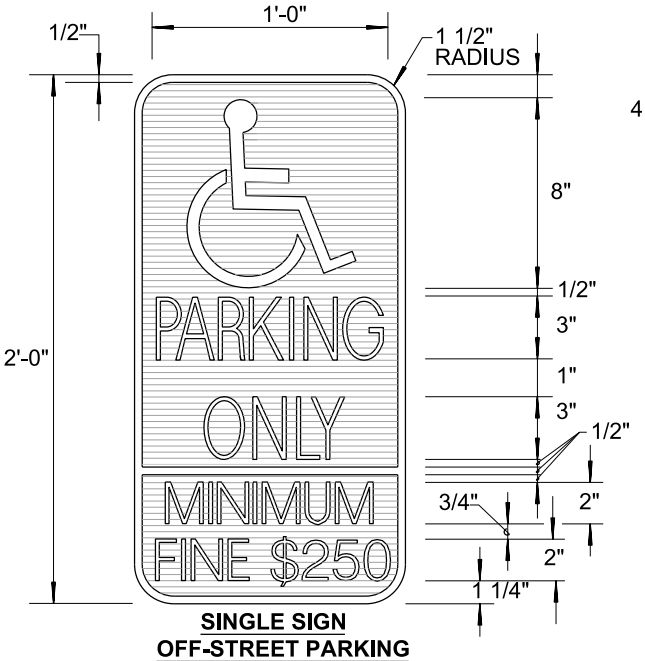
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/17/18 DATE

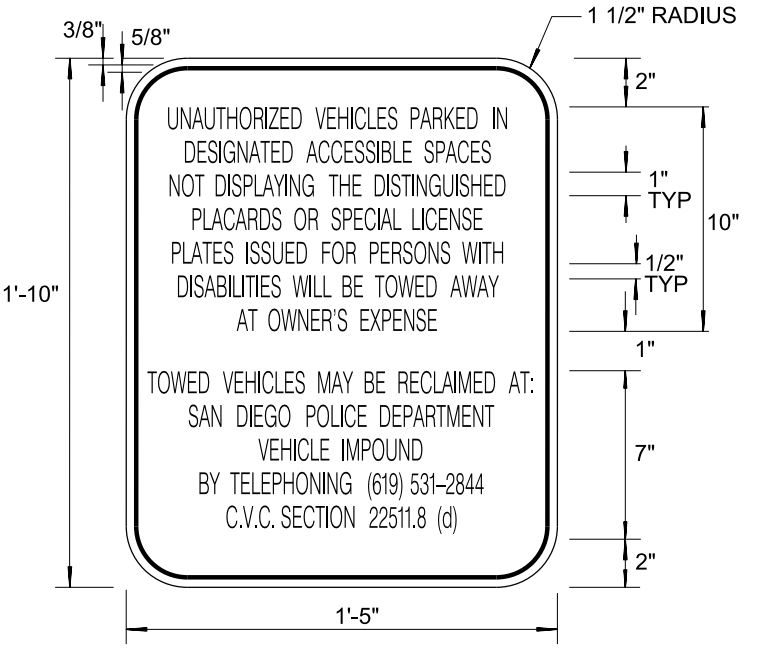
DRAWING NUMBER **SDM-117**



MULTIPLE SIGNS
OFF-STREET PARKING ONLY



SINGLE SIGN
OFF-STREET PARKING
ON-STREET PARKING



TOW-AWAY SIGN
FOR OFF-STREET PARKING ONLY

NOTES:

1. SIGN POST: **SEE SDM-104** FOR "BREAK-AWAY SIGN POST".
2. SIGNS SHALL BE CONSTRUCTED ON MINIMUM 1/16" THICK ALUMINUM.
3. COLORS:

   PARKING SIGNS:
   BACKGROUND - BLUE (RETROREFLECTIVE)
   BORDER, TEXT, AND SYMBOL - WHITE (RETROREFLECTIVE)

   TOW AWAY SIGN:
   BACKGROUND - WHITE (RETROREFLECTIVE)
   BORDER AND LEGEND - BLACK

4. FONTS: SAN SERIF CLEARVIEW, 1" MIN LETTER HEIGHT

SHEET 6 OF 9

REVISION	BY	APPROVED	DATE
ORIGINAL	KA	J. NAGELVOORT	01/12
UPDATED	FC	J. NAGELVOORT	02/16
UPDATED	FC	J. NAGELVOORT	09/18

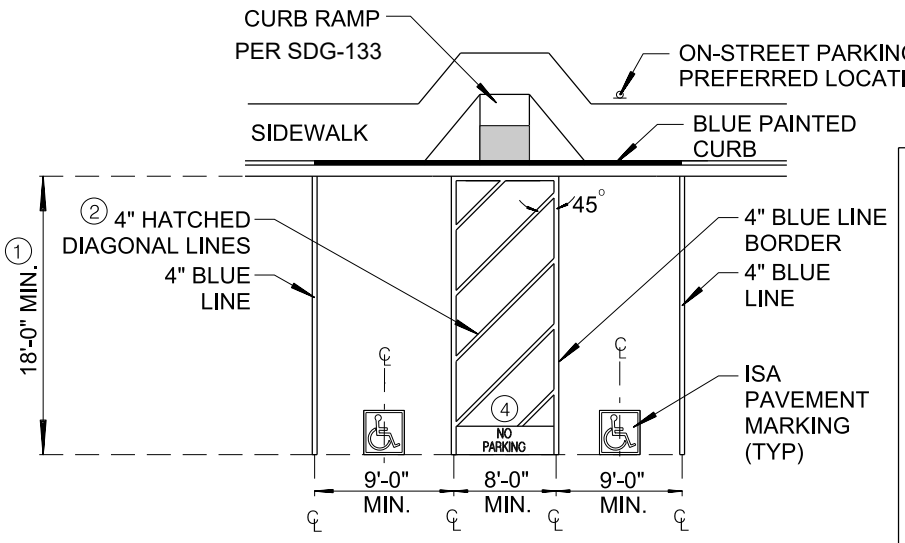
CITY OF SAN DIEGO – STANDARD DRAWING

ACCESSIBLE PARKING (SIGNS)

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/17/18 DATE

DRAWING NUMBER **SDM-117**



PERPENDICULAR DOUBLE PARKING SPACES

KEY NOTES:

1. 18'-0" LONG MIN TO EDGE OF GUTTER OR 18'-0" LONG MIN TO THE EDGE OF CURB IF GUTTER HAS 2% MAX SLOPE.
2. 4" HATCHED DIAGONAL LINES AT 3'-0" MAX ON-CENTER PAINTED A CONTRASTING COLOR WITH THE PARKING SURFACE (WHITE ON ASPHALT, BLUE ON CONCRETE).
4. "NO PARKING" SIGN **SEE DETAILS ON SDM-117** SHEET 5
5. DIMENSION IS BASED OFF THE CITY'S TRAFFIC ENGINEERING AND OPERATIONS ANGLE PARKING GUIDELINES AND THE LENGTH SHALL VARY BASED ON THE ANGLE AND TYPE OF STREET. THE DIMENSION SHALL BE TAKEN FROM FACE OF CURB, NOT EDGE OF GUTTER.

SHEET 7 OF 9

REVISION	BY	APPROVED	DATE
ORIGINAL	FC	A. OSKOUI	12/06
UPDATED	FC	J. NAGELVOORT	02/16
UPDATED	FC	J. NAGELVOORT	09/18

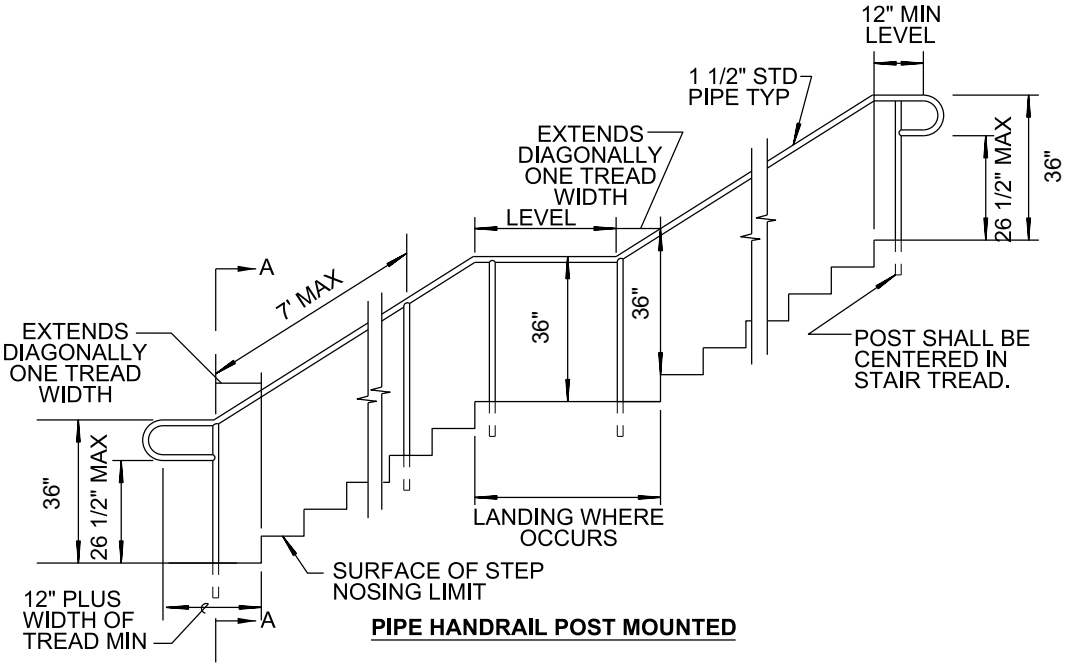
CITY OF SAN DIEGO – STANDARD DRAWING

ACCESSIBLE PARKING (ON-STREET)

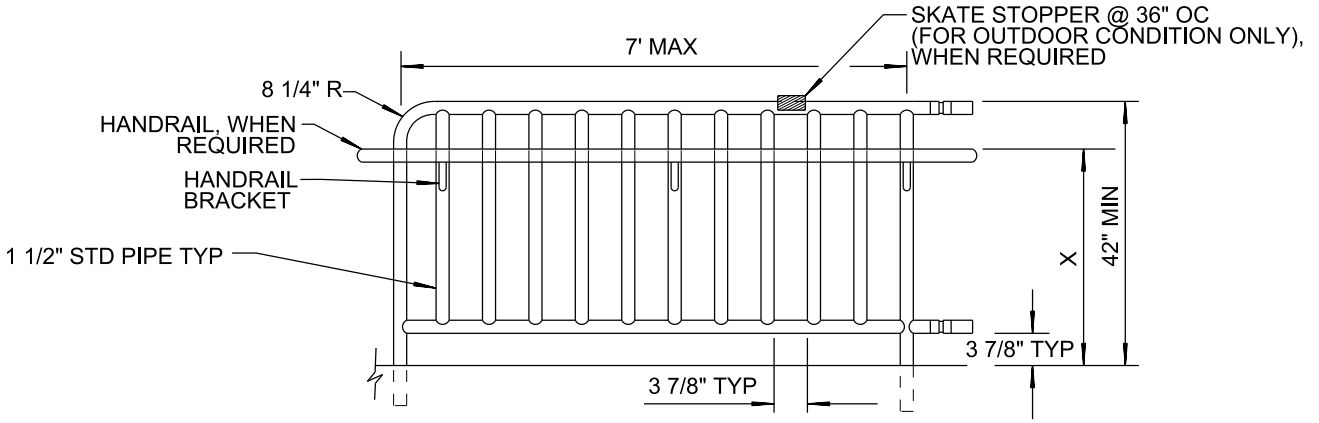
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/17/18 DATE

DRAWING NUMBER **SDM-117**



PIPE HANDRAIL POST MOUNTED



PIPE GUARDRAIL - POST TYPE

NOTES:

1. THE TOP OF GRIPPING SURFACE OF HANDRAILS SHALL BE THE SAME HEIGHT VERTICALLY ABOVE WALKING SURFACES, STAIR NOSINGS, AND LANDING SURFACES. HANDRAILS SHALL BE AT A CONSISTENT HEIGHT ABOVE WALKING SURFACES, STAIR NOSINGS,AND LANDING SURFACES.
2. BOTTOM AND TOP LANDINGS SHALL BE AS WIDE AS THE WIDTH OF THE STAIR, 48" MINIMUM.

REVISION	BY	APPROVED	DATE
ORIGINAL*	BB	J. NAGELVOORT	01/12
UPDATED	FC	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

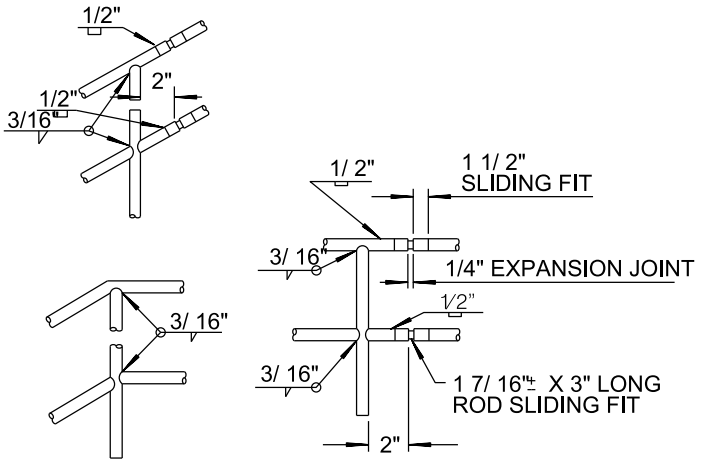
CITY OF SAN DIEGO – STANDARD DRAWING

PEDESTRIAN PROTECTIVE RAILING & STAIR HANDRAIL

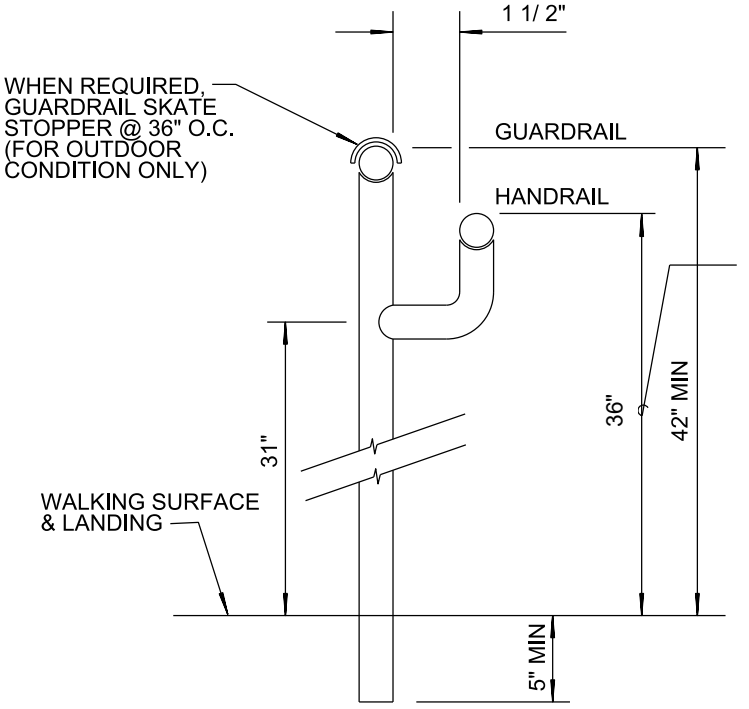
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/4/18 DATE

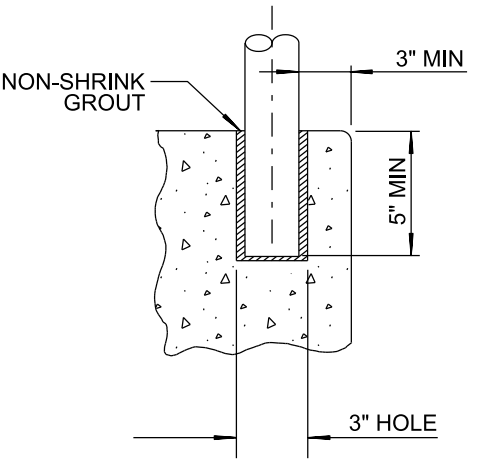
DRAWING NUMBER **SDM-118**



WELDING DETAILS

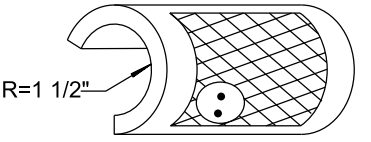


PIPE GUARDRAIL



MOUNTING DETAIL*

*POST SHALL BE GROUTED IN PLACE USING NON-SHRINK GROUT.



ALUMINUM GUARDRAIL SKATE STOPPER

RAILING NOTES

1. 1/4" EXPANSION JOINTS @ 16' ON CENTER.
2. WELD AND GRIND SMOOTH ALL CONNECTIONS.
3. ALL RAILING TO BE HOT DIP GALVANIZED AFTER FABICATION.
4. PIPE SHALL BE SEAMLESS STEEL ASTM A53 GRADE B.
5. INSTALL HANDRAILS ON BOTH SIDES.
6. STAIRS AND LANDINGS THAT ARE OPEN ON ONE OR BOTH SIDES AND MORE THAN 30" ABOVE THE ADJACENT GROUND SHALL BE PROVIDED WITH GUARDRAIL.

REVISION	BY	APPROVED	DATE
UPDATE	KA	J. NAGELVOORT	01/12
UPDATE	FC	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

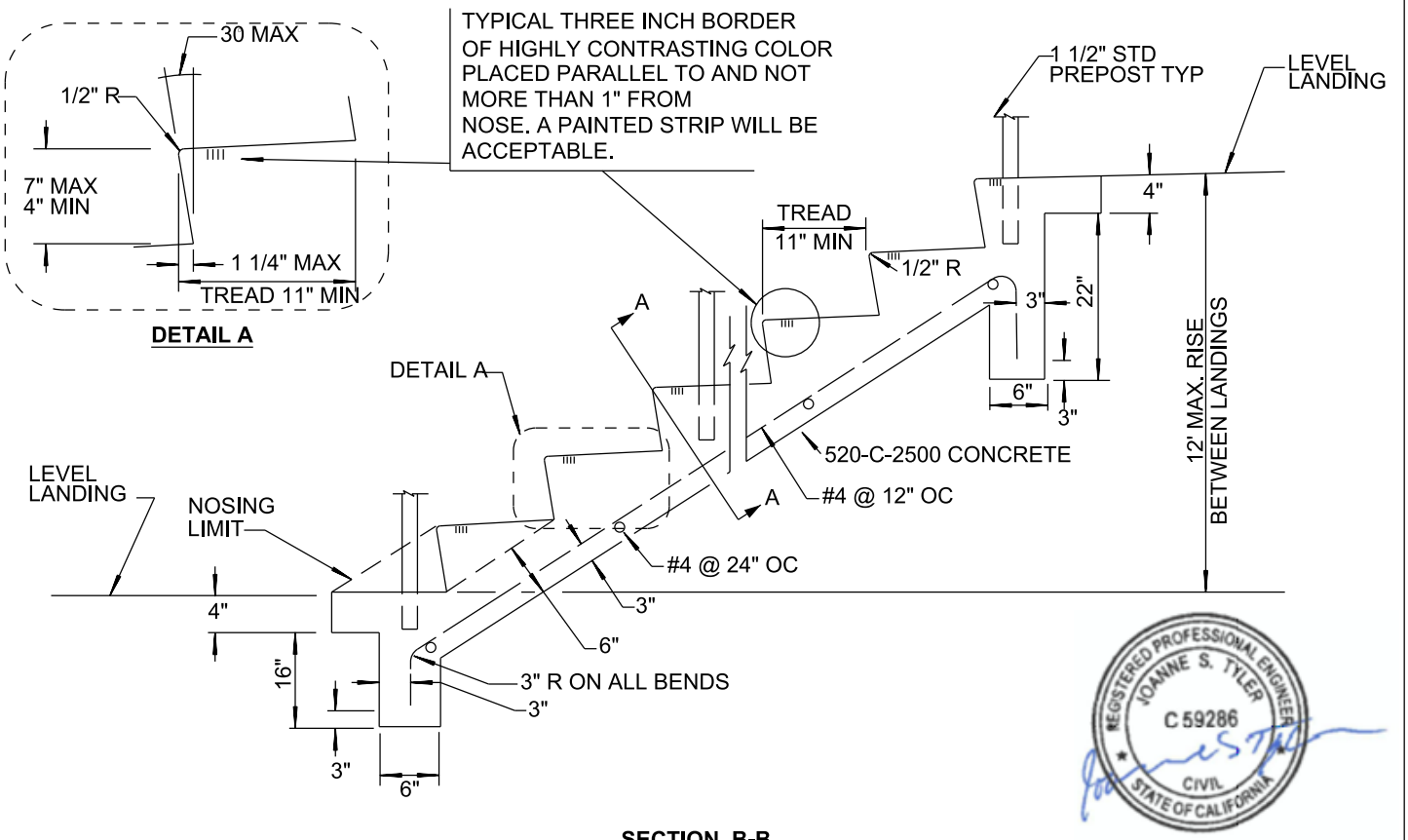
CITY OF SAN DIEGO – STANDARD DRAWING

PEDESTRIAN PROTECTIVE RAILING & STAIR HANDRAIL

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — DATE 9/4/18

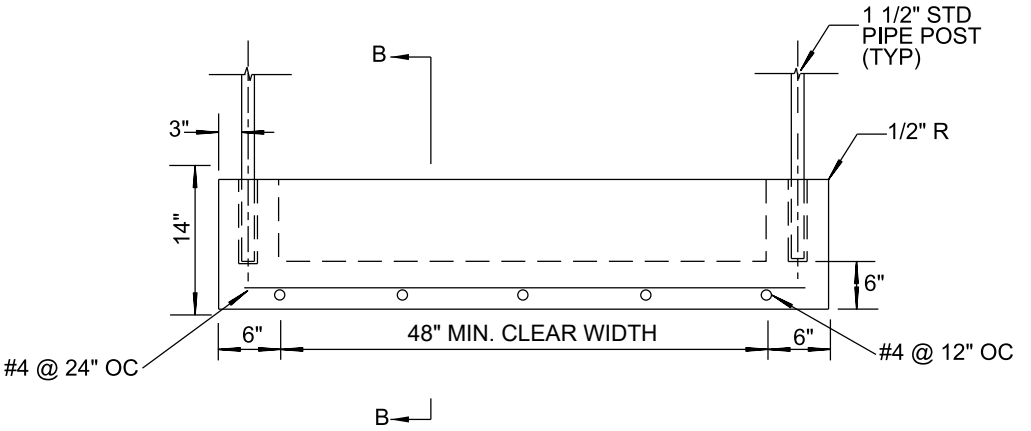
DRAWING NUMBER **SDM-118**



SECTION B-B

NOTES

1. BROOM FINISH ON TREADS, TROWEL FINISH ON ALL OTHER EXPOSED SURFACES.
2. 1/4" PER 1' SLOPE ON TREADS FOR DRAINAGE.



SECTION A-A
CONCRETE STEPS

REVISION	BY	APPROVED	DATE
UPDATED	KA	J. NAGELVOORT	01/12
UPDATED	FC	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

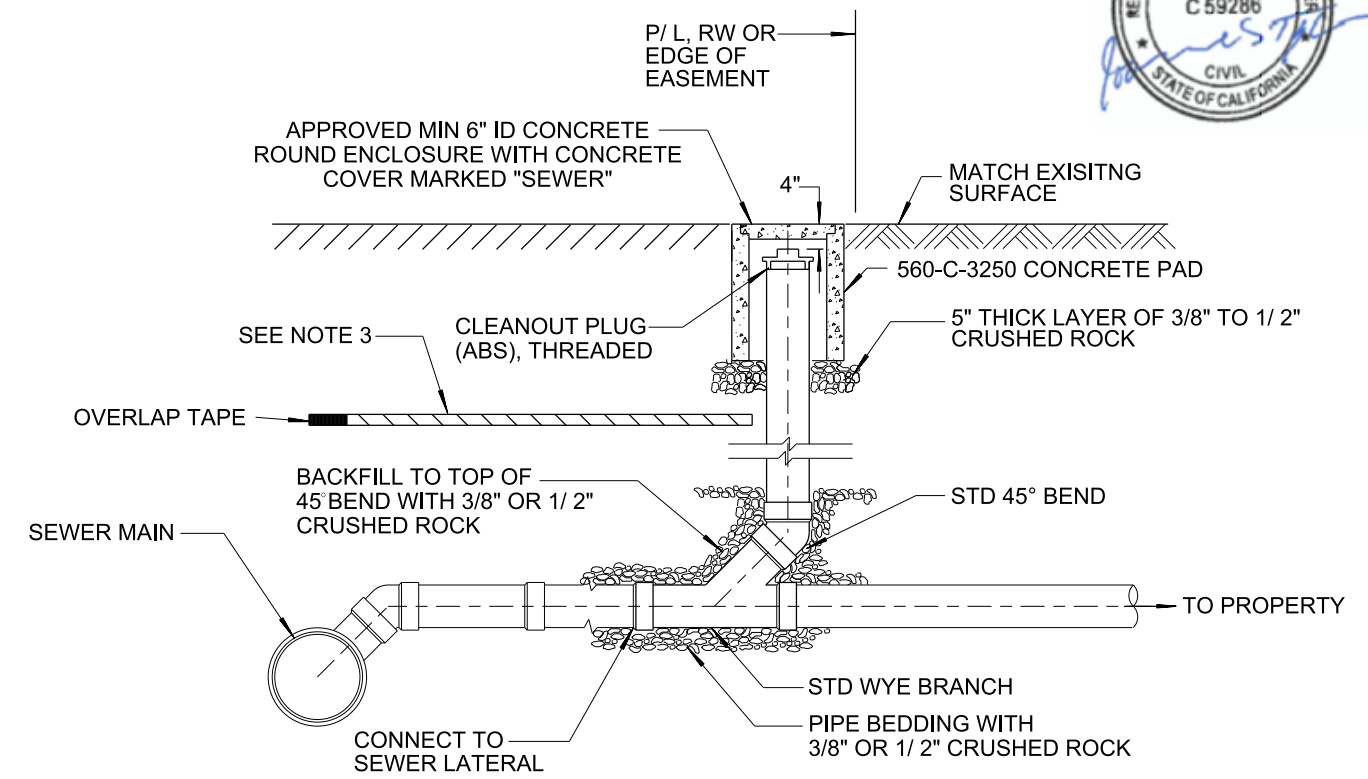
CITY OF SAN DIEGO – STANDARD DRAWING

PEDESTRIAN PROTECTIVE RAILING & STAIR HANDRAIL

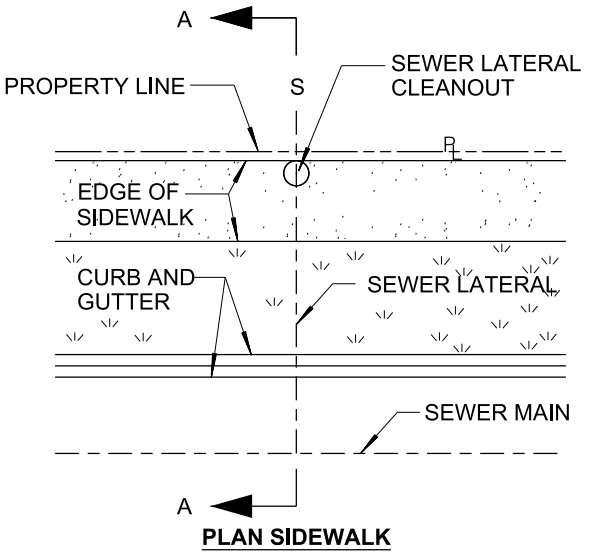
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 DATE 9/4/18

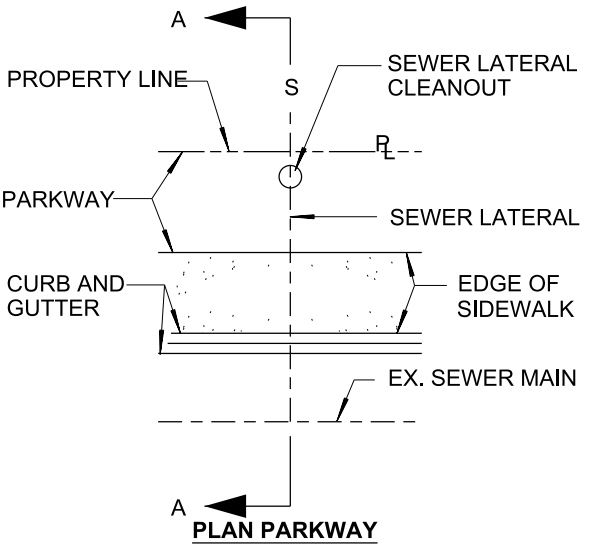
DRAWING NUMBER **SDM-118**



SECTION A-A



PLAN SIDEWALK



PLAN PARKWAY

NOTES:

1. RISER AND CLEANOUT PLUG SHALL BE SAME DIAMETER AS SEWER LATERAL.
2. CLEANOUT SHALL BE LOCATED AS CLOSE AS POSSIBLE TO THE PROPERTY LINE, OR BEHIND THE PROPERTY LINE ON CITY'S RIGHT OF WAY.
3. CLEANOUTS INSTALLED ON SIDEWALKS OR WALKWAYS SHALL BE FLUSH TO THE FINISH SURFACE.
4. INSTALL WARNING/ IDENTIFICATION TAPE **PER SDM-105.**

REVISION	BY	APPROVED	DATE
DETAIL	SS	A. OSKOUI	12/03
UPDATED	KA	J. NAGELVOORT	01/12
UPDATED	BB	J. NAGELVOORT	07/15
UPDATED	JN	J. NAGELVOORT	11/17
REDRAFTED	CD	J. NAGELVOORT	08/18
UPDATED	TP	J. NAGELVOORT	09/20

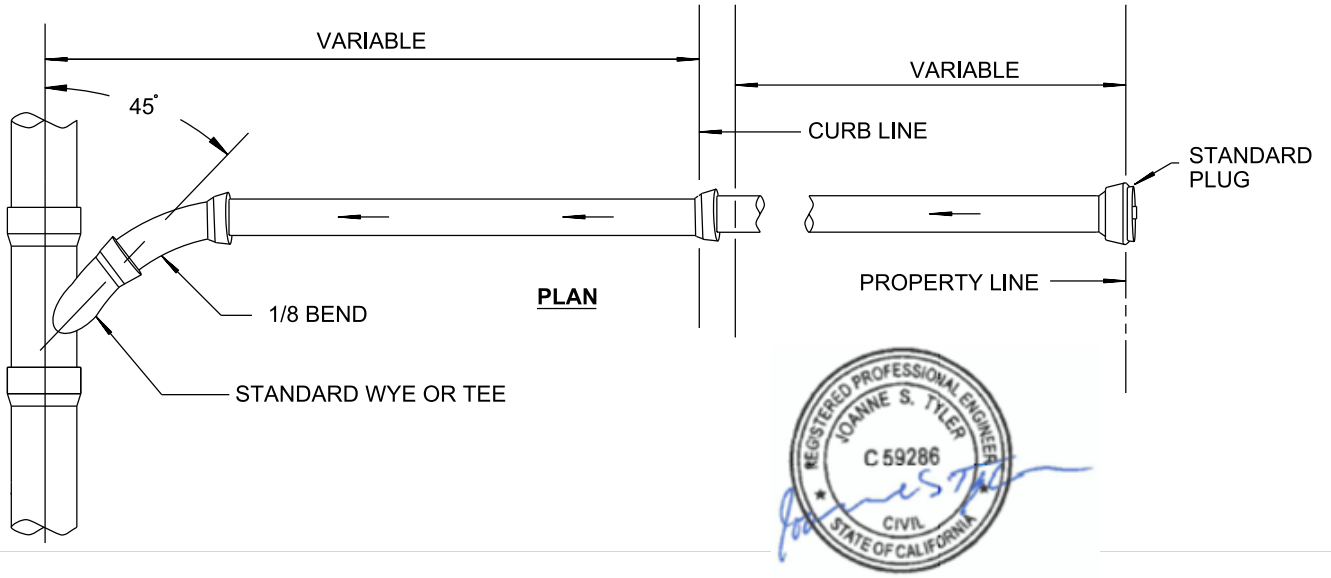
CITY OF SAN DIEGO – STANDARD DRAWING

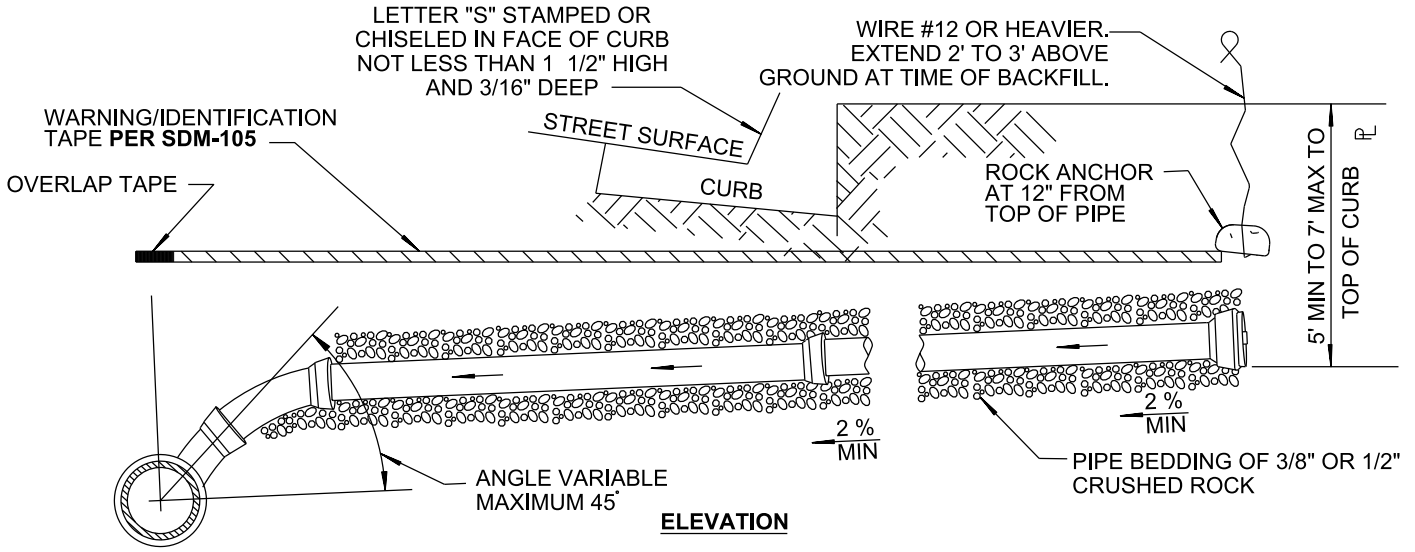
SEWER LATERAL CLEANOUT ON SIDEWALK AND PARKWAY

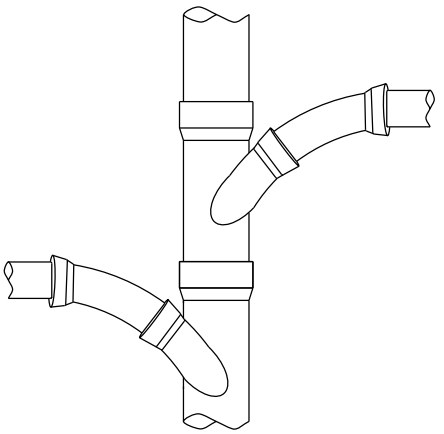
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/22/20 DATE

DRAWING NUMBER **SDS-103**





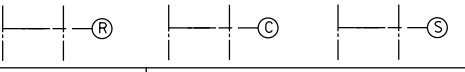


DETAIL SHOWING THE MANNER OF CONNECTING OPPOSITE LATERALS TO A SEWER MAIN. TWO CONNECTIONS SHALL NOT BE MADE IN THE SAME LENGTH OF PIPE.

NOTES

1. IN NO CASE SHALL A LATERAL CONNECT TO THE SEWER MAIN DIRECTLY ON TOP OF THE PIPE.
2. ALL JOINTS ON SEWER LATERAL PIPE SHALL BE COMPRESSION TYPE OR APPROVED SOLVENT WELD.
3. LATERAL SHALL EXTEND TO PROPERTY LINE **UNLESS SHOWN OTHERWISE ON PLANS**
4. DO NOT TAP HOLE AND INSERT LATERAL PIPE DIRECTLY INTO EXISTING MAIN. ALL CONNECTIONS TO EXISTING MAINS SHALL BE MADE USING AN APPROVED SADDLE FOR CLAY PIPE OR APPROVED WYE FOR PVC PIPE.
5. ALL CONNECTIONS TO NEWLY INSTALLED SEWER MAINS SHALL BE MADE USING A WYE MATCHING THE MATERIAL OF THE MAIN.

LEGEND ON PLANS



REVISION	BY	APPROVED	DATE
DETAIL	JP	A. OSKOUI	12/03
UPDATED	KA	J. NAGELVOORT	01/12
UPDATED	JN	J. NAGELVOORT	11/17
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	TP	J. NAGELVOORT	12/19

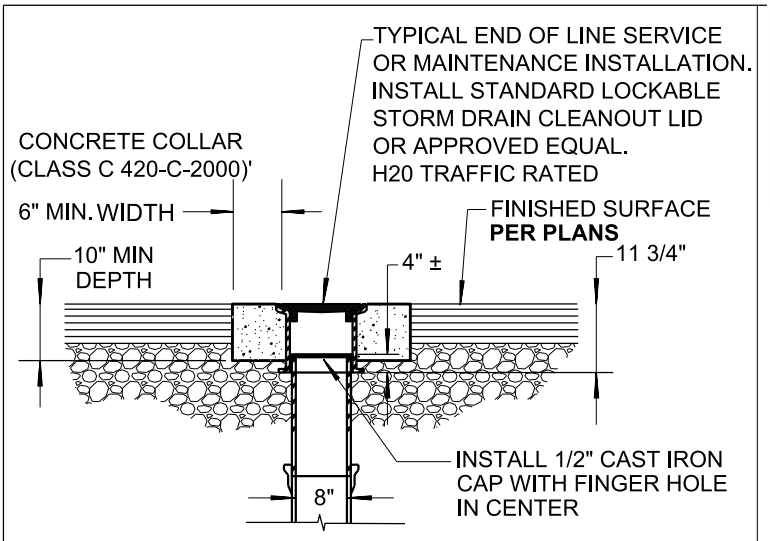
CITY OF SAN DIEGO – STANDARD DRAWING

HOUSE CONNECTION (SEWER LATERAL)

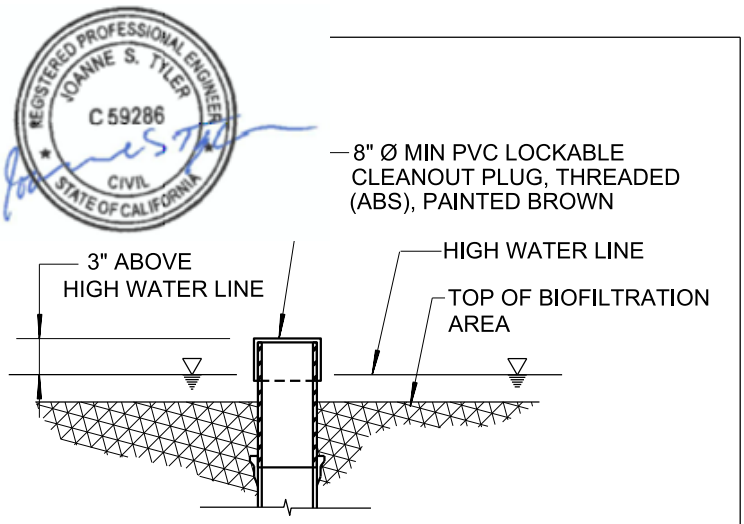
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 12/18/19 DATE

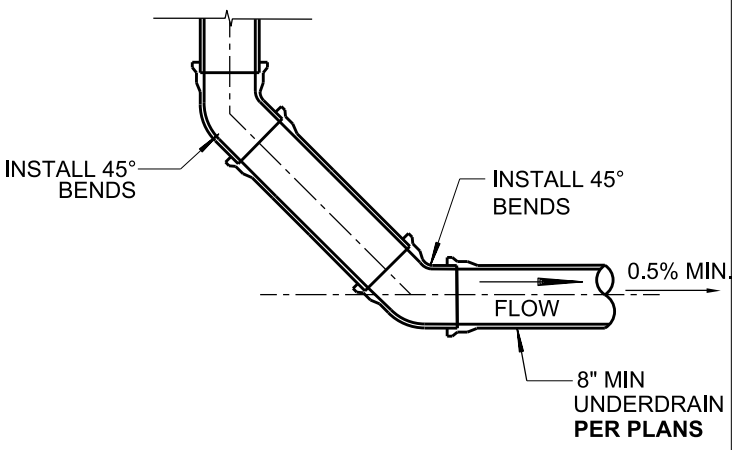
DRAWING NUMBER **SDS-105**



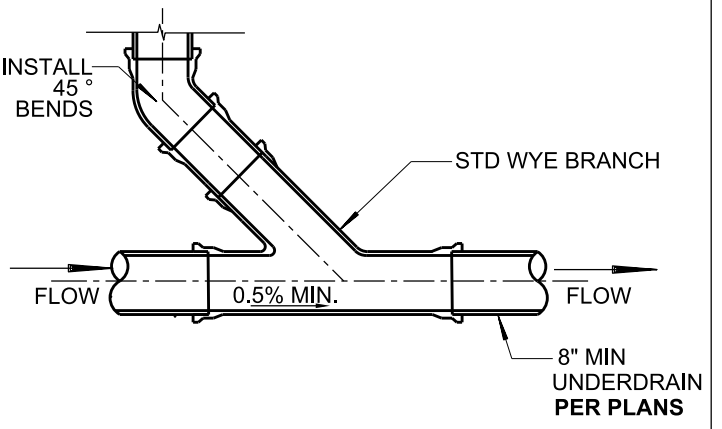
PAVEMENT AREA CLEANOUT - SURFACE



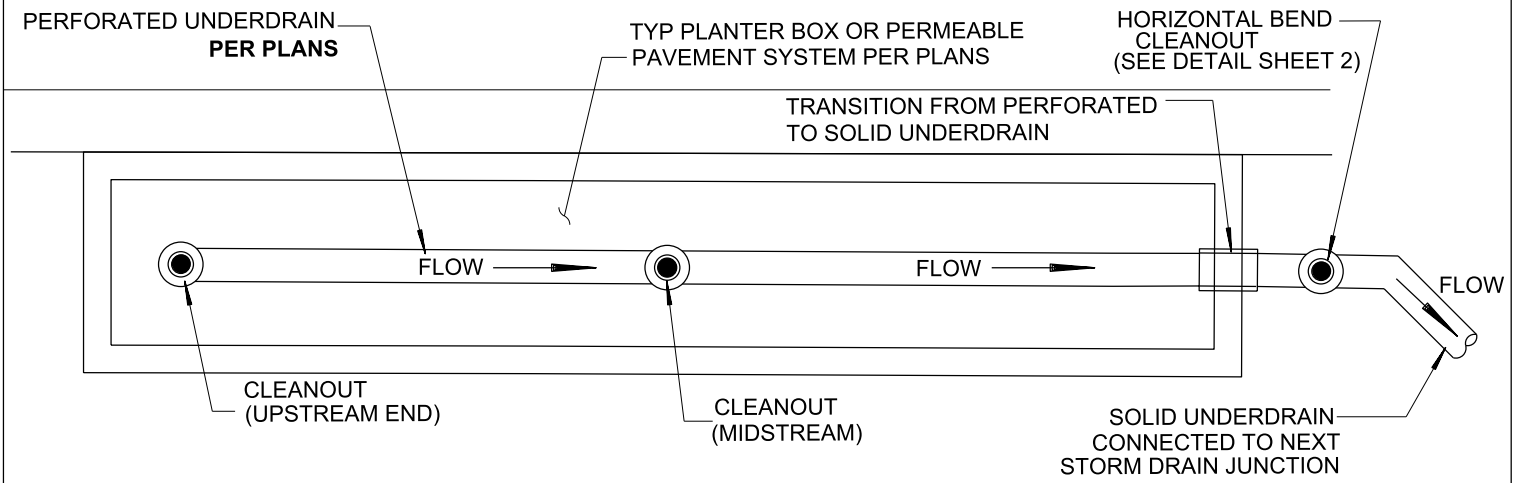
BIOFILTRATION AREA CLEANOUT - SURFACE



PLAN (CLEANOUT - UPSTREAM)



PLAN (CLEANOUT - MIDSTREAM)



PLAN VIEW - TYPICAL STORM DRAIN CLEANOUT LOCATIONS

NOTE

SEE ADDITIONAL NOTES ON SHEET 2

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE
ORIGINAL	CG	J.NAGELVOORT	06 /18

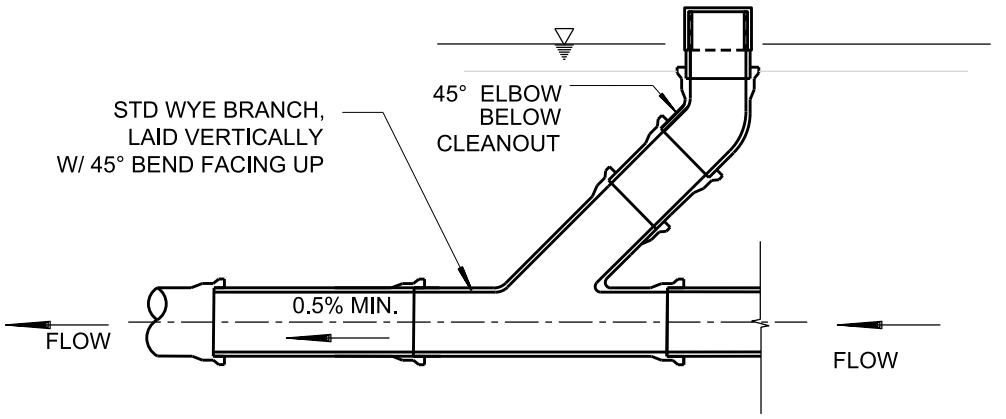
CITY OF SAN DIEGO – STANDARD DRAWING

CLEANOUT FOR UNDERDRAIN

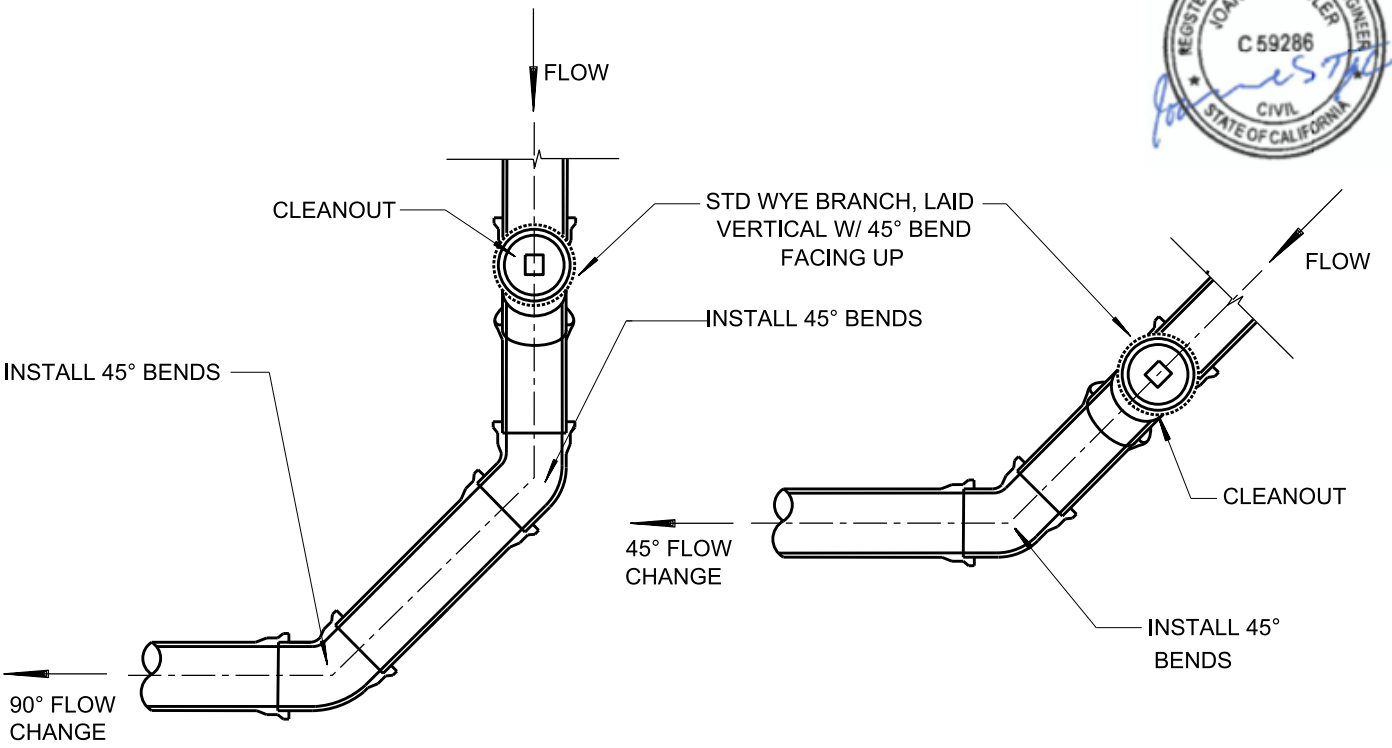
RECOMMENDED BY THE CITY
OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 06/05/2018 DATE

DRAWING NUMBER **SDSW-101**



PROFILE (MIDSTREAM CLEANOUT)



PLAN - 90° BEND CLEANOUT

PLAN - 45° BEND CLEANOUT

NOTES:

1. FOR PERMEABLE PAVEMENT APPLICATIONS, PIPES AND FITTINGS SHALL BE PROPERLY ALIGNED AND MAINTAINED WHILE CONCRETE IS BEING PLACED AND ALLOWED TO HARDEN. JOINTS FOR PIPES AND FITTINGS SHALL BE MADE PRIOR TO PLACING CONCRETE. CONCRETE FOR BEDDING, ENCASEMENT, AND WALL SUPPORT FOR PIPES AND FITTINGS SHALL BE PLACED UNIFORMLY AROUND THE PIPE AND FITTINGS AS SHOWN, AND SHALL BE CLASS 420-C-2000.
2. USE OF SMALLER DEGREE BENDS ONLY ALLOWED **PER ENGINEER'S APPROVAL.**

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE
ORIGINAL	CG	J.NAGELVOORT	06 /18

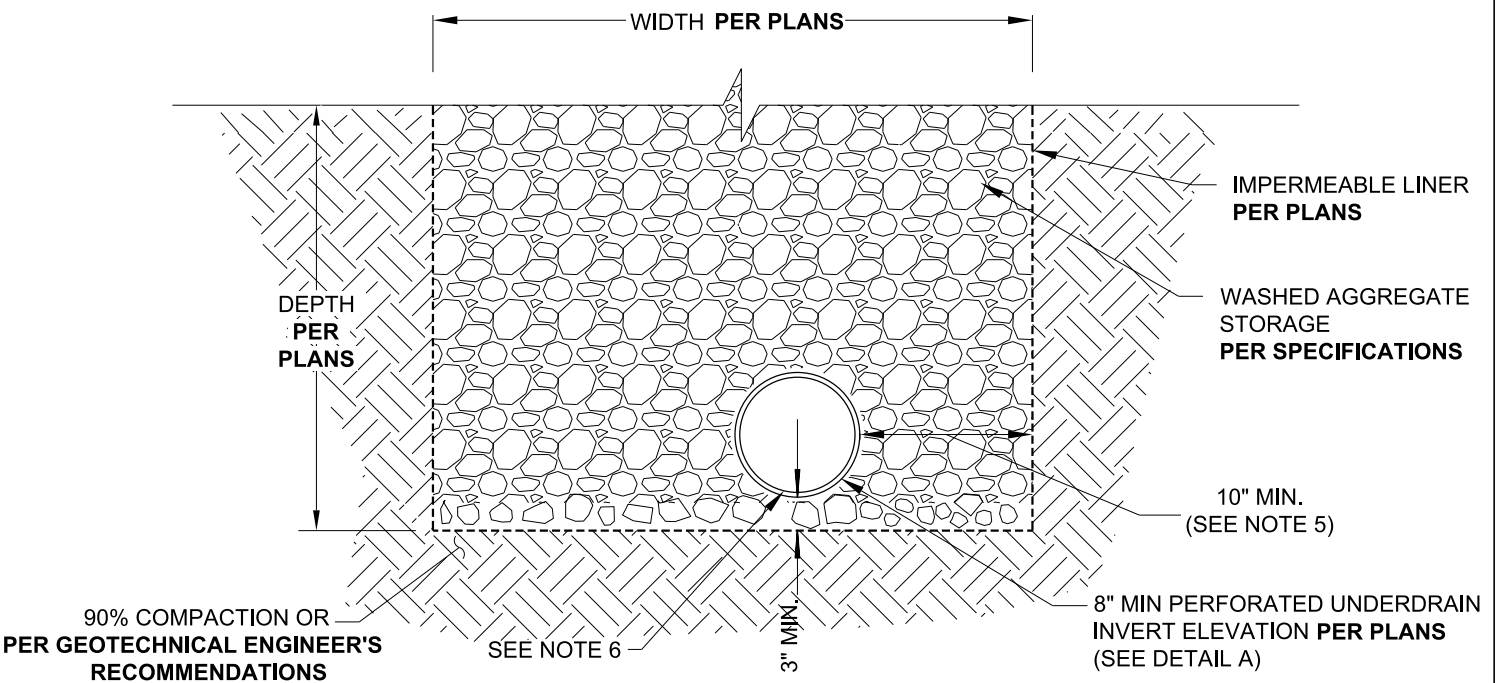
CITY OF SAN DIEGO – STANDARD DRAWING

CLEANOUT FOR UNDERDRAIN

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

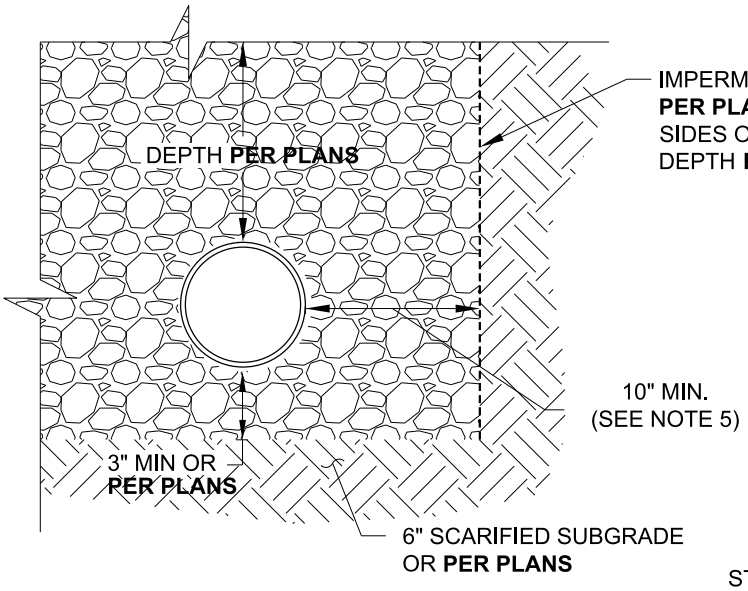
COORDINATOR R.C.E. 56523 06/05/2018 DATE

DRAWING NUMBER **SDSW-101**

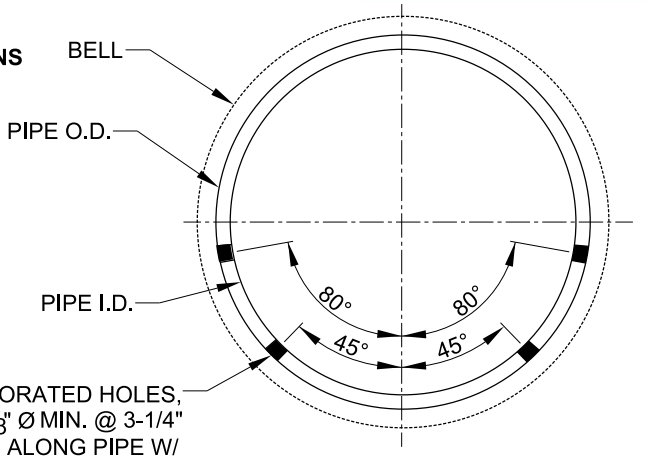


UNDERDRAIN WITH BOTTOM LINER

REGISTERED PROFESSIONAL ENGINEER JOANNE S. TYLER C 59286 CIVIL STATE OF CALIFORNIA



UNDERDRAIN WITHOUT BOTTOM LINER



DETAIL A - PERFORATED HOLE PLACEMENT

NOTES:

SEE ADDITIONAL NOTES ON SHEET 2

SHEET 1 OF 2

REVISION	BY	APPROVED	DATE
ORIGINAL	CG	J.NAGELVOORT	06 /18

CITY OF SAN DIEGO – STANDARD DRAWING

PERFORATED UNDERDRAIN DETAIL

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 06/05/2018 DATE

DRAWING NUMBER **SDSW-102**

NOTES:

1. PLACEMENT OF THE UNDERDRAIN SHALL BE **PER PLANS,** OR AS DIRECTED BY THE ENGINEER. HORIZONTAL LOCATION MAY VARY WITHIN PAVEMENT SECTION AS LONG AS MINIMUM OFFSET DISTANCES AND BOTTOM SLOPES ARE MAINTAINED.

2. PERFORATED PLASTIC PIPE SHALL BE SMOOTH-WALL PVC PLASTIC PIPE OR CORRUGATED PVC PLASTIC PIPE WITH A SMOOTH INTERIOR SURFACE, MADE OF PVC PLASTIC HAVING A CELL CLASSIFICATION OF 12454 OR 13364, AS DEFINED IN ASTM D1784.

3. PIPE, FITTING, AND JOINT DIMENSIONS SHALL BE COMPATIBLE AND MEASURED IN ACCORDANCE WITH ASTM D 2122. FITTING AND JOINT MATERIAL SHALL BE COMPATIBLE WITH THE PIPE MATERIAL.

4. PIPE PENETRATIONS THROUGH IMPERMEABLE BARRIER SHALL BE SEALED **ACCORDING TO PLANS.**

5. FOR PERMEABLE PAVEMENT UNDERDRAINS, MINIMUM OFFSET TO INSIDE EDGE OF TRENCH SHALL BE 10 INCHES.

6. DEPTH OF PERFORATED PVC PIPE MAY BE ADJUSTED TO TIE INTO THE ADJACENT CONNECTION POINT OF THE DOWNSTREAM DRAINAGE INFRASTRUCTURE, AS NEEDED, **PER ENGINEER'S APPROVAL.**

SHEET 2 OF 2

REVISION	BY	APPROVED	DATE
ORIGINAL	CG	J.NAGELVOORT	06 /18

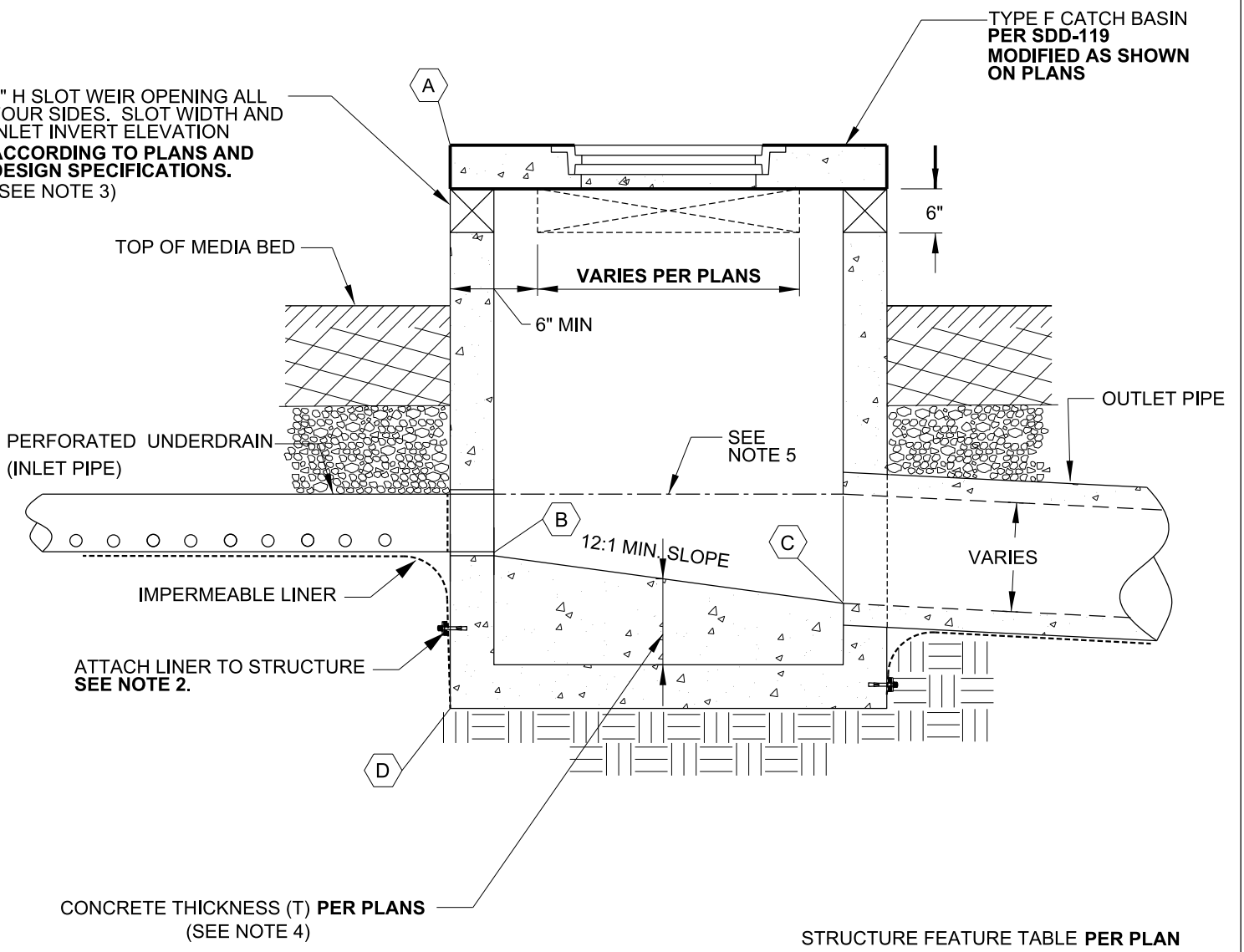
CITY OF SAN DIEGO – STANDARD DRAWING

PERFORATED UNDERDRAIN DETAIL

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 06/05/2018 DATE

DRAWING NUMBER **SDSW-102**



STRUCTURE FEATURE TABLE **PER PLAN**

LOCATION	COMMENTS
A	TOP OF STRUCTURE
B	INVERT OF UNDERDRAIN
C	INVERT OF CULVERT - OUT
D	BOTTOM OF STRUCTURE

NOTES:

1. UTILIZE LINER AND UNDERDRAIN ONLY IF **SPECIFIED IN PLANS.**
2. ATTACH LINER TO STRUCTURE USING BATTEN AND ANCHOR BOLT CONNECTION **PER SDSW-104.**
3. MINIMUM 6" HORIZONTAL OFFSET FROM EDGE OF STRUCTURE TO SLOT WEIR OPENING, BOTH SIDES, TO ENSURE STRUCTURAL SUPPORT OF SLAB TOP.
4. THICKNESS OF SUMP VARIES **PER PLANS** BASED ON ANTI-BUOYANCY REQUIREMENTS.
5. INSIDE CROWN (SOFFIT) ELEVATIONS OF THE INCOMING AND OUTLET STORM DRAINS ARE TO BE MATCHED.
6. BURY STRUCTURE INTO THE SUBGRADE **PER PLAN**.

REGISTERED PROFESSIONAL ENGINEER
JOANNE S. TYLER
C 59286
CIVIL
STATE OF CALIFORNIA

REVISION	BY	APPROVED	DATE
ORIGINAL	CG	J.NAGELVOORT	06 /18

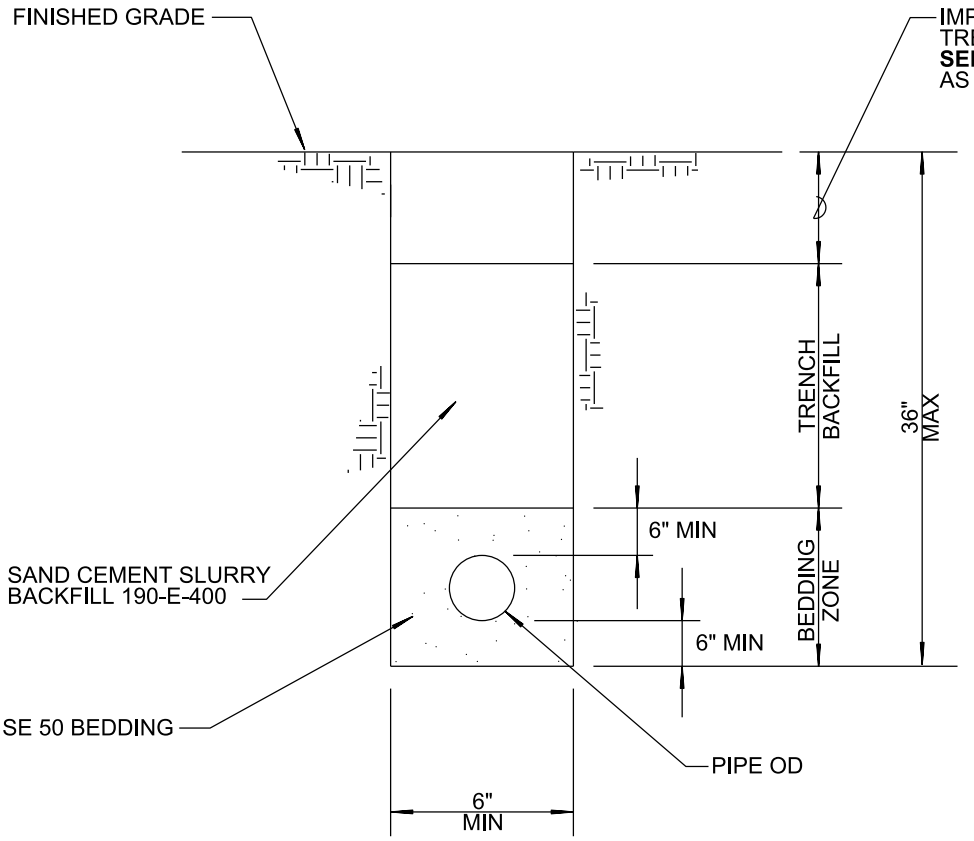
CITY OF SAN DIEGO – STANDARD DRAWING

BIORETENTION OVERFLOW STRUCTURE

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 06/05/2018 DATE

DRAWING NUMBER **SDSW-103**



TRENCH SECTION

REGISTERED PROFESSIONAL ENGINEER
JOANNE S. TYLER
C 59286
CIVIL
STATE OF CALIFORNIA

NOTES:

1. THE PROPOSED WATER SERVICE SHALL BE SECURED IN CENTER OF THE TRENCH.
2. SAND CEMENT SLURRY BACKFILL SHALL BE THOROUGHLY CONSOLIDATED TO ENCASE CONDUITS. TAMPERS OR VIBRATORS SHALL BE USED.
3. EXISTING PAVEMENT WILL NOT REQUIRE SAW CUTTING WHEN USING ROCKWHEEL FOR EXCAVATION EXCEPT WHEN THE EXISTING PAVEMENT IS CONCRETE AND TRENCH FINISH IS CONCRETE.
4. CUTS SHALL BE PARALLEL OR PERPENDICULAR TO STREET CENTERLINE, WHEN PRACTICAL.
5. IN MAJOR OR PRIME ARTERIAL STREETS, ON APPROVAL SET ACCELERATING ADMIXTURE, SUCH AS CALCIUM CHLORIDE, MAY BE USED ONLY WITH PRIOR APPROVAL OF THE ENGINEER OTHERWISE THE CONTRACTOR SHALL PROTECT THE TRENCH WITH THE APPROVAL OF THE ENGINEER.
6. 6" METAL TAPE SHALL BE INSTALLED ABOVE PIPE 4" BELOW TRENCH CAP AND 12" BELOW FINISH GRADE IN UNIMPROVED STREETS.

REVISION	BY	APPROVED	DATE
ORIGINAL	KA	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

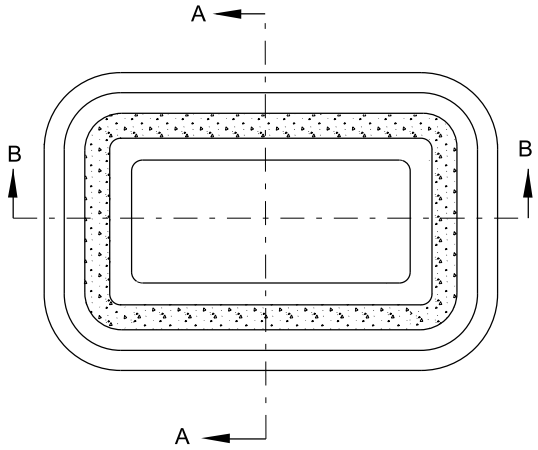
CITY OF SAN DIEGO – STANDARD DRAWING

NARROW TRENCH FOR 1" & 2" WATER SERVICES

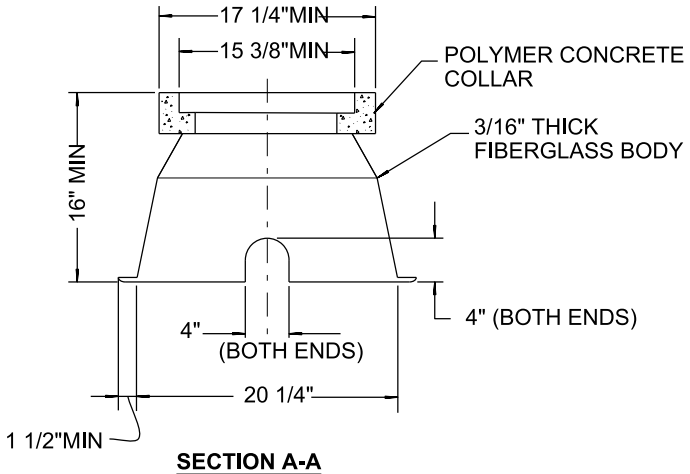
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/4/18 DATE

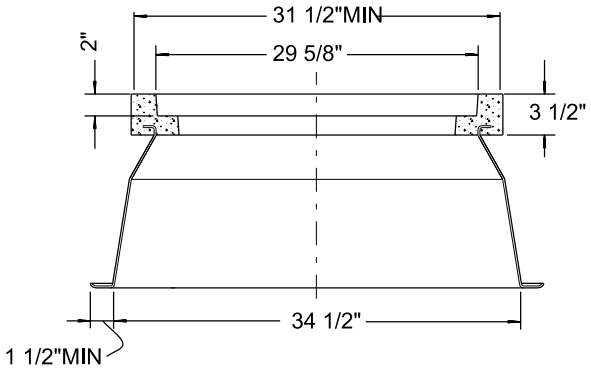
DRAWING NUMBER **SDW-107**



PLAN VIEW



SECTION A-A



SECTION B-B

NOTES:

1. METER BOX SHALL BE POLYMER CONCRETE OR POLYMER COMPOSITE MATERIAL IN ACCORDANCE WITH THE CITY'S APPROVED MATERIAL LIST (AML).
2. BOX AND COVER SHALL WITHSTAND AASHTO H-20 (ASTM C857).
3. FOR COVER DETAIL, **SEE SDW-136**.
4. **SEE SDW-137** FOR INSTALLATION PROCEDURE.

REVISION	BY	APPROVED	DATE
ORIGINAL	SS	A. OSKOUI	12/03
UPDATED	KA	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	TP	J. NAGELVOORT	09/19

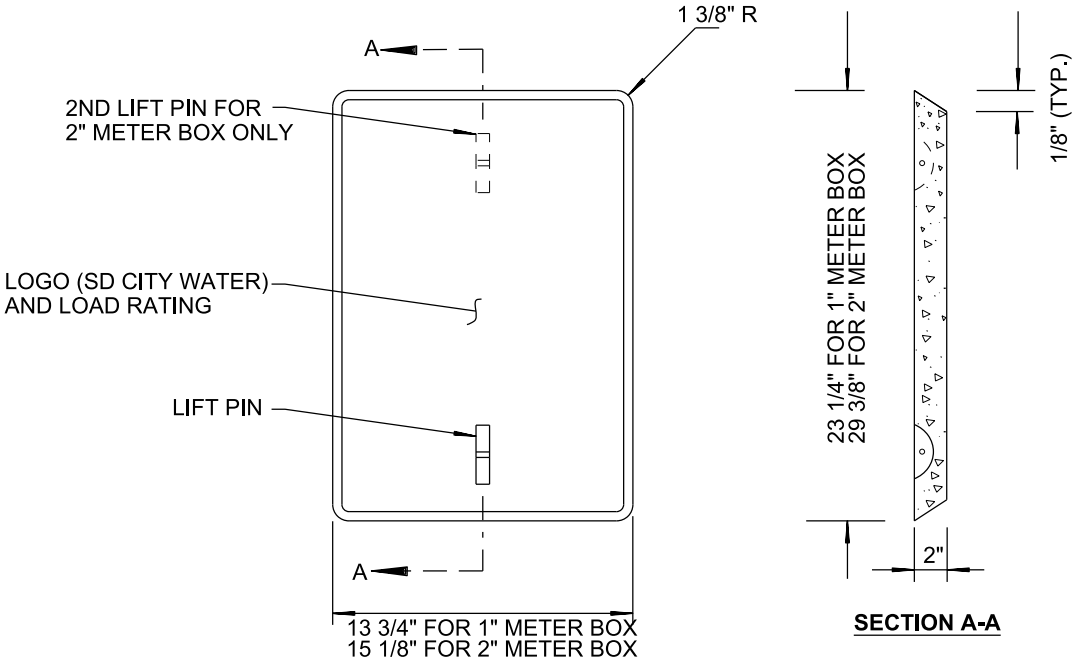
CITY OF SAN DIEGO – STANDARD DRAWING

WATER METER BOX FOR 2" WATER SERVICE

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/11/19 DATE

DRAWING NUMBER **SDW-135**



SOLID COVER FOR TRAVELED WAY AND OUTSIDE TRAVELLED WAY

NOTES:

1. COVER SHALL WITHSTAND AASHTO H-20 (ASTM C857).
2. COVER SHALL HAVE NON-SKID SURFACE.
3. COVER SHALL BE POLYMER CONCRETE OR POLYMER COMPOSITE MATERIAL IN ACCORDANCE WITH THE CITY'S APPROVED MATERIALS LIST (AML).

REVISION	BY	APPROVED	DATE
ORIGINAL	SS	A. OSKOUI	12/03
UPDATED	KA	J. NAGELVOORT	01/12
UPDATED	BB	J. NAGELVOORT	06/14
REDRAFTED	CD	J. NAGELVOORT	09/18
UPDATED	TP	J. NAGELVOORT	09/19

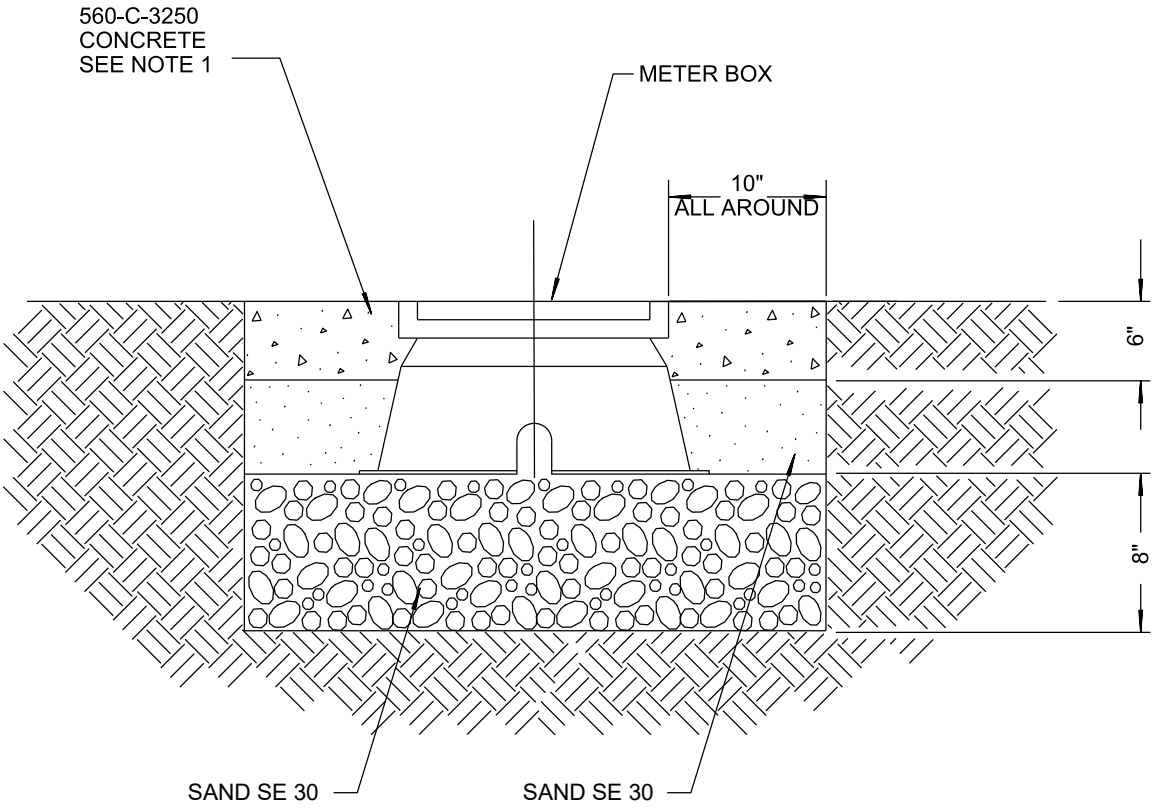
CITY OF SAN DIEGO – STANDARD DRAWING

WATER METER BOX COVER FOR 1" OR 2" WATER SERVICE

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/11/19 DATE

DRAWING NUMBER **SDW-136**



NOTES:

1. **REFER TO SDG-107** NOTE 3 FOR CURING REQUIREMENTS.

REGISTERED PROFESSIONAL ENGINEER
JOANNE S. TYLER
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CIVIL
STATE OF CALIFORNIA

REVISION	BY	APPROVED	DATE
ORIGINAL	SS	A. OSKOUI	12/03
UPDATED	KA	J. NAGELVOORT	01/12
REDRAFTED	CD	J. NAGELVOORT	09/18

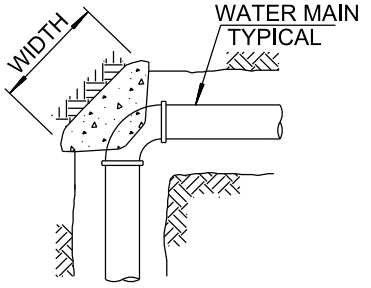
CITY OF SAN DIEGO – STANDARD DRAWING

TRAFFIC RATED COVER AND METER BOX INSTALLATION

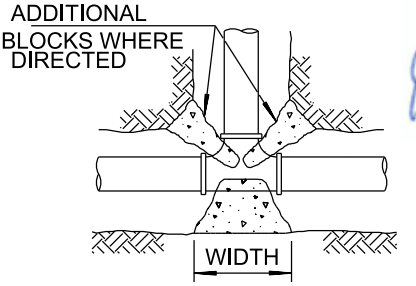
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 9/4/18 DATE

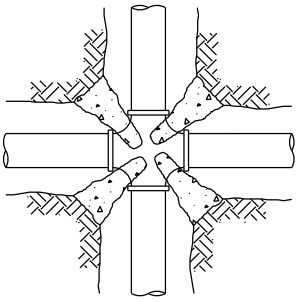
DRAWING NUMBER **SDW-137**



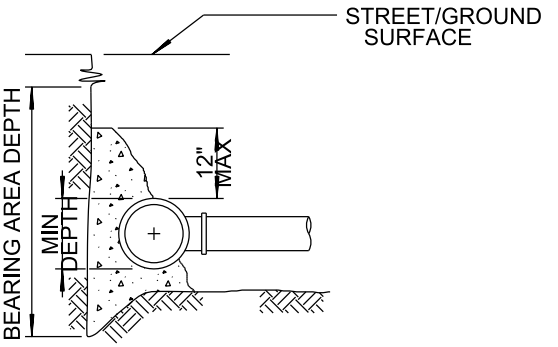
BEND



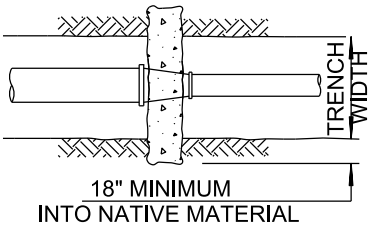
TEE PLAN



CROSS

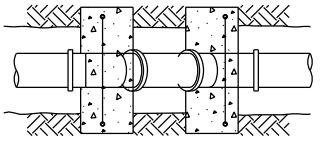


TEE ELEVATION

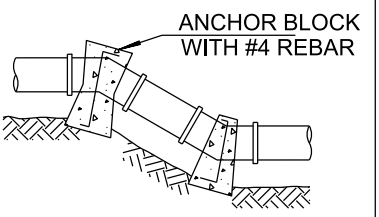


REDUCER

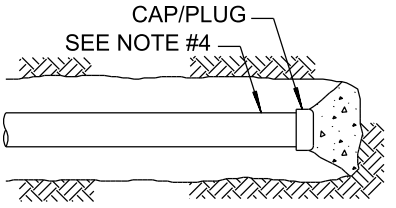
SEE NOTE
1 BELOW



VERT BENDS PLAN



VERT BENDS ELEVATION



END CAP

NOTES:

1) THE ANCHOR BLOCKS ON VERTICAL BENDS REQUIRE ENGINEER APPROVAL.
2) A MINIMUM OF 6" OF CONCRETE SHALL BE POURED ON WETTED UNDISTURBED OR COMPACTED SOIL BENEATH EACH INSTALLATION.
3) TEE SHALL BE CONCRETE BLOCKED A MINIMUM OF 6" ON ALL THREE SIDES.
4) USE 12" - 18" LENGTH OF PIPE BETWEEN THE END CAP AND THE LAST JOINT AS A BOND BREAKER ON DEAD END BLOCKING.

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
UPDATED	HM	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO – STANDARD DRAWING

CONCRETE THRUST AND ANCHOR BLOCK INSTALLATIONS

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/4/18 DATE

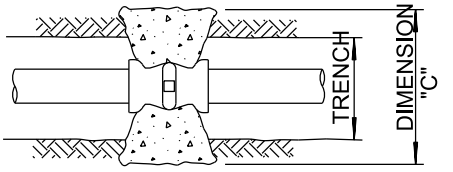
DRAWING NUMBER **SDW-151**

VALVE SUPPORT BLOCK

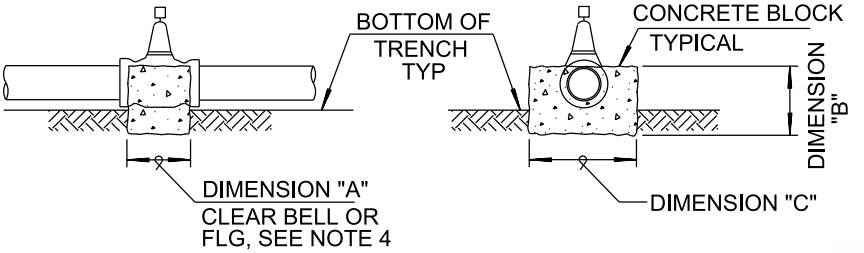
VALVE SIZE	DIMENSION "A"	DIMENSION "B"
4"	12"	12"
6"	12"	12"
8"	13"	14"
10"	14"	16"
12"	15"	18"
DIMENSION "C" = TRENCH WIDTH PLUS TWO TIMES THE PIPE DIAMETER		

THRUST AND ANCHOR BLOCKS

MINIMUM BEARING AREA IN SQUARE FOOT SEE NOTE 2				
MAIN SIZE	TEES	90° BEND	45° BEND	$22\frac{1}{2}$° BEND
4"	4	5	3	1.5
6"	8	10	5	2.5
8"	12	16	9	4.5
10"	17	24	13	6.5
12"	24	33	19	9.5



VALVE SUPPORT PLAN



VALVE SUPPORT ELEVATION

NOTES:

1) BEARING AREA BASED ON SOIL BEARING VALUE OF 1500 PSF AND 225 PSI LINE PRESSURE AND A MINIMUM OF 36" COVER:
   FOR BEARING= 1000 PSF, 1.5 x AREA SHOWN
   FOR BEARING= 500 PSF, 3.0 x AREA SHOWN

2) ENGINEER SHALL DETERMINE SIZES, REFER TO SPECIFICATIONS FOR THRUST AND ANCHOR BLOCK SIZING.

3) THRUST BLOCKS SHALL BE CENTERED ON THE FITTING SO THAT THE BEARING AREA IS EXACTLY OPPOSITE THE RESULTANT DIRECTION OF THRUST.

4) CONCRETE SHALL BE PLACED SO THAT FITTINGS AND VALVES WILL BE ACCESSABLE FOR REPAIR OR REPLACEMENT.

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
UPDATED	HM	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

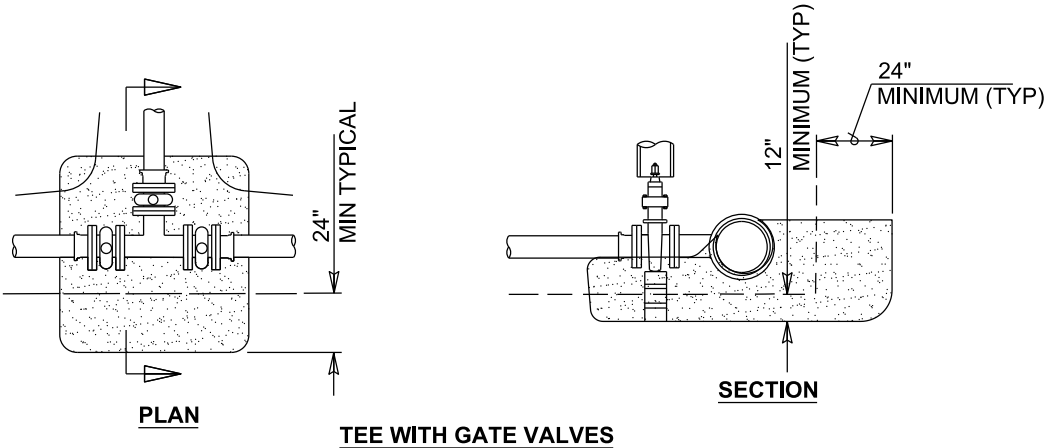
CITY OF SAN DIEGO – STANDARD DRAWING

CONCRETE THRUST AND ANCHOR BLOCK INSTALLATIONS

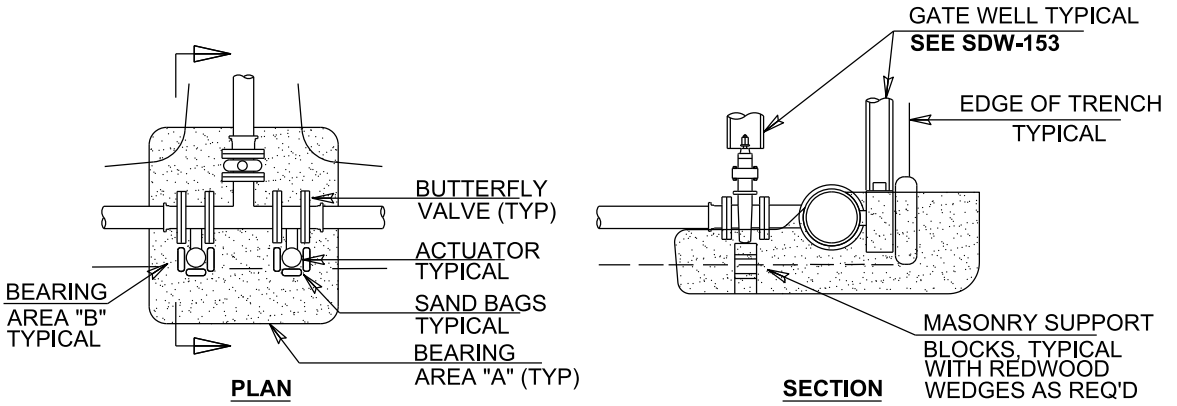
RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 DATE 9/4/18

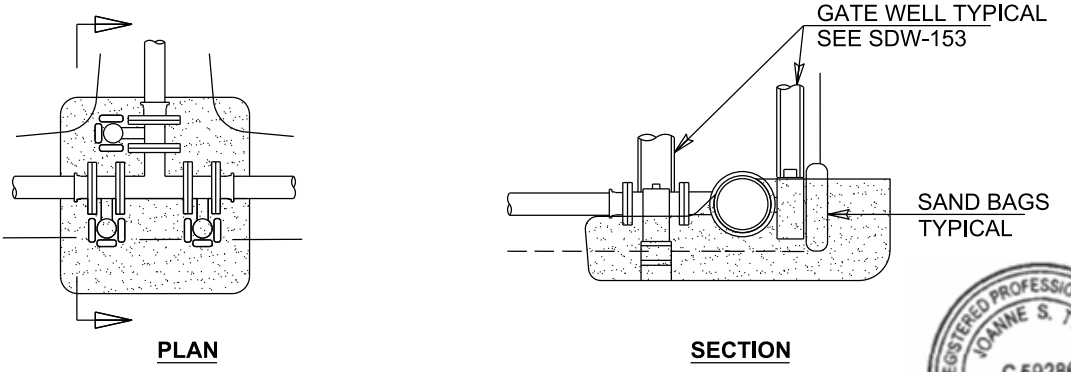
DRAWING NUMBER **SDW-151**



TEE WITH GATE VALVES



TEE WITH BUTTERFLY VALVES ON MAIN



TEE WITH BUTTERFLY VALVES

REGISTERED PROFESSIONAL ENGINEER JOANNE S. TYLER C 59286 CIVIL STATE OF CALIFORNIA

NOTES:

1) BEARING AREA "B" MUST BE EQUAL TO OR GREATER THAN THE AREA REQUIRED FOR A 90° ELBOW INSTALLATION.
2) INSTALL SAND BAGS AROUND BUTTERFLY VALVE ACTUATOR TO ISOLATE IT FROM CONCRETE.
3) BFV'S INSTALLED AT CROSSES OR TEES REQUIRE A FLANGED DUCTILE IRON SPOOL TO BE INSTALLED BETWEEN THE FITTING AND VALVE IN ACCORDANCE WITH THE SPECIFICATIONS.

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
UPDATED	HM	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

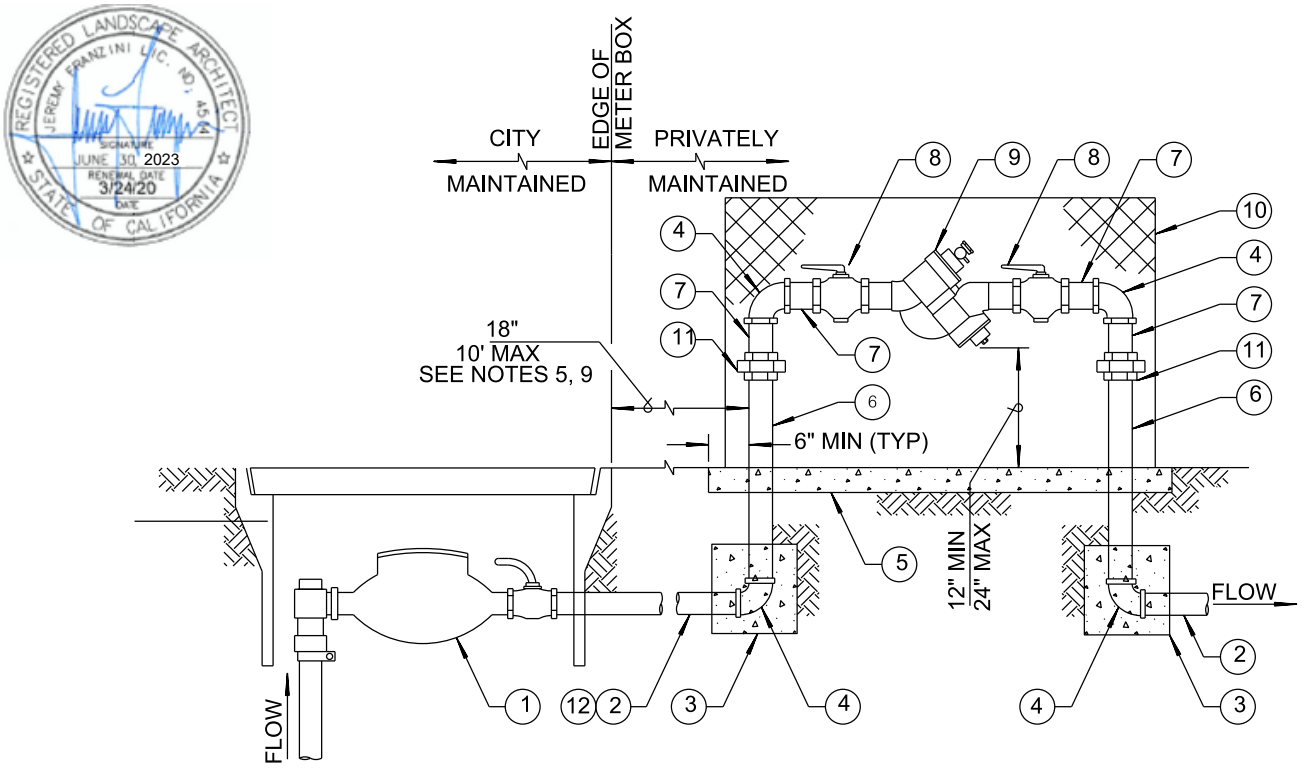
CITY OF SAN DIEGO – STANDARD DRAWING

CONCRETE THRUST AND ANCHOR BLOCK INSTALLATIONS

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

COORDINATOR R.C.E. 56523 — 9/4/18 DATE

DRAWING NUMBER **SDW-151**



NOTES:

1) INSTALL WARNING/ IDENTIFICATION TAPE **PER SDM-105**.
2) LOCATE BACKFLOW PREVENTION ASSEMBLY IN SUCH A MANNER THAT WILL ALLOW THE ASSEMBLY TO BE READILY ACCESSIBLE FOR INSPECTION AND REPAIR.
3) STRAINERS SHALL NOT BE INSTALLED PRIOR TO THE FIRST SHUT-OFF VALVE.
4) ALL ABOVE GROUND PIPING, UNIONS, ELBOWS, & NIPPLES SHALL BE SOLDERED COPPER OR THREADED BRASS.
5) INSTALL A CASING ENCASED IN CONCRETE WHEN THE DISTANCE BETWEEN THE METER BOX AND THE RISER TO THE ASSEMBLY EXCEEDS 18", REQUIRES APPROVAL.
6) INSTALL A PRESSURE REDUCING VALVE UPSTREAM OF THE FIRST 90° DEGREE ELL WHEN SYSTEM PRESSURE EXCEEDS 150 PSI.
7) TESTING SHALL BE CONDUCTED IN ACCORDANCE WITH SPECIFICATIONS PRIOR TO ACCEPTANCE.
8) BACKFLOW PREVENTION ASSEMBLY & APPURTENANCES INSTALLED FOR THE USE OF RECYCLED WATER SHALL BE IDENTIFIED AS DESCRIBED IN SPECIFICATIONS.
9) PUBLIC UTILITIES DEPARTMENT, CROSS CONNECTION CONTROL UNIT MUST APPROVE LOCATION. SHOW ON PLANS.
10) ALL RISER ELBOWS AND UNDERGROUND PIPING SHALL BE TYPE (L) OR (M) COPPER, OR RED BRASS.

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
1	METER BOX & METER ASSEMBLY	8	BALL VALVE "SHUT-OFF"
2	SCHEDULE 80 PVC, RED BRASS OR COPPER PIPE	9	APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY SIZED TO MATCH METER
3	CONCRETE THRUST BLOCK **PER SDW-151**	10	ENCLOSURE SHALL BE INSTALLED LEVEL AND PLUMB. ENCLOSURE IS REQUIRED.
4	90 DEGREE BRASS ELL SEE NOTES 4 & 6	11	UNIONS SEE NOTE 4
5	CONCRETE SLAB, MINIMUM 4" THICK x 18" WIDE	12	PRESSURE REDUCING VALVE SEE NOTES 4 & 6
6	BRASS OR COPPER PIPE SEE NOTE 4		
7	3" LONG NIPPLE SEE NOTE 4		

REVISION	BY	APPROVED	DATE
ORIGINAL*	KA	J. NAGELVOORT	01/12
UPDATED	KA	J. NAGELVOORT	12/12
UPDATED	FG	J. NAGELVOORT	08/15
UPDATED	FG	J. NAGELVOORT	02/16
REDRAFTED	CD	J. NAGELVOORT	09/18

CITY OF SAN DIEGO – STANDARD DRAWING

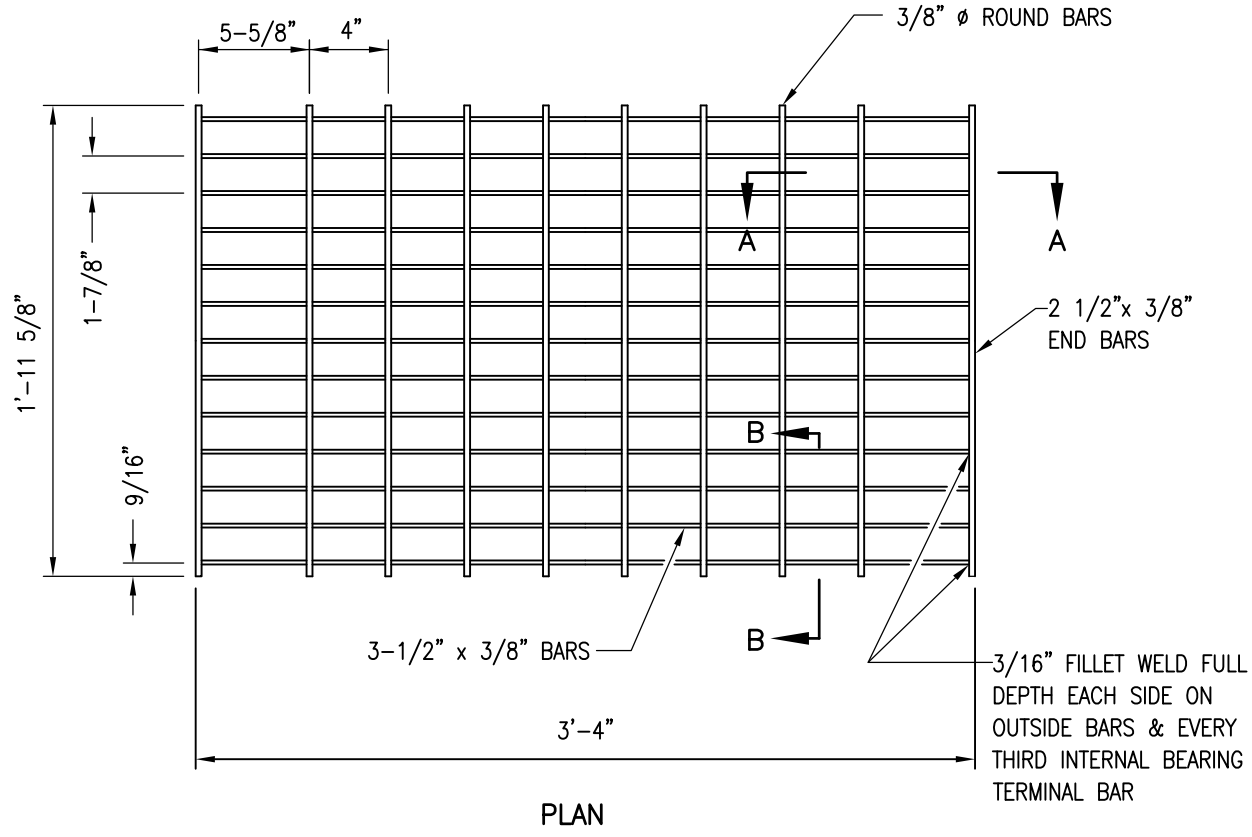
BACKFLOW PREVENTER FOR 3/4" TO 2" METERED SERVICE

RECOMMENDED BY THE CITY OF SAN DIEGO STANDARDS COMMITTEE

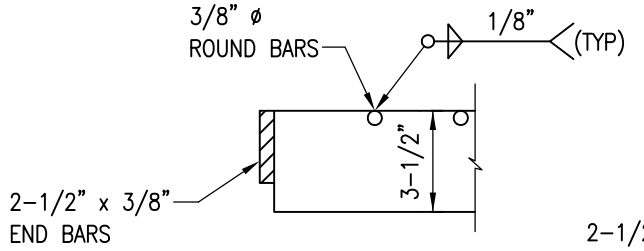
COORDINATOR R.C.E. 56523 — 9/4/18 DATE

DRAWING NUMBER **SDW-155**

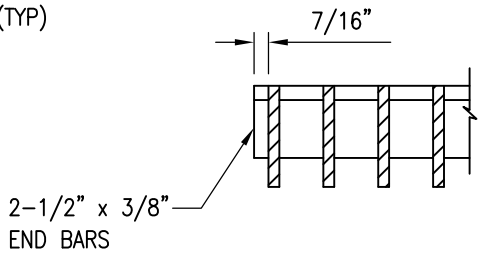
APPENDIX B



PLAN



SECTION A–A



SECTION B–B

NOTES
1. HOT-DIP GALVANIZE ALL PARTS AFTER FABRICATION.
2. DIMENSIONS ARE TO CENTERLINE OF BARS UNLESS OTHERWISE NOTED.
3. NOT TO BE USED IN PEDESTRIAN AREAS.
4. WEIGHT: 200 POUNDS +/-.

REGISTERED PROFESSIONAL ENGINEER
JOANNE S. TYLER
C 59286
CIVIL
STATE OF CALIFORNIA

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Edited		T. Stanton	02/09
Edited	S.S.	T. Regello	03/11
Edited	T.R.	T. Regello	10/15
Edited	M.W.	M. Widelski	10/18

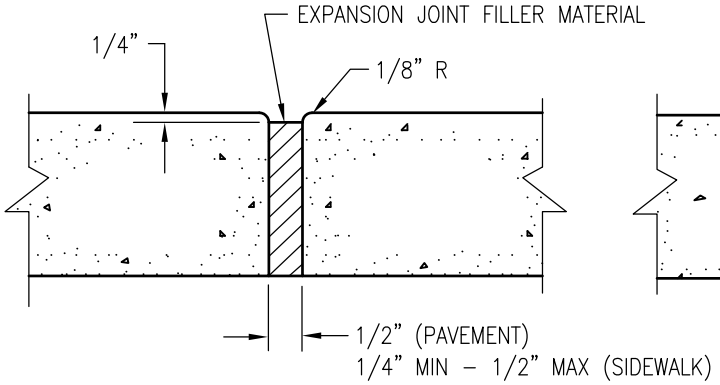
SAN DIEGO REGIONAL STANDARD DRAWING

DRAINAGE STRUCTURE GRATE

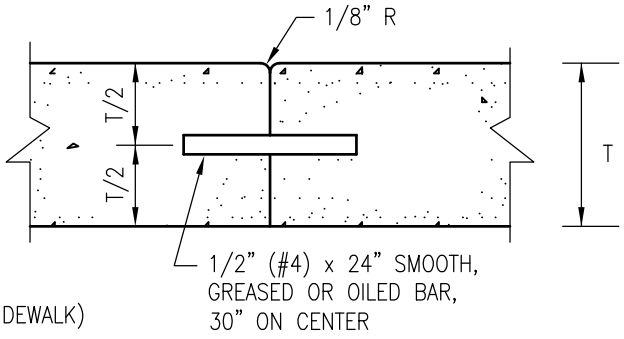
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

10/25/2018
Chairperson R.C.E. 19246 Date

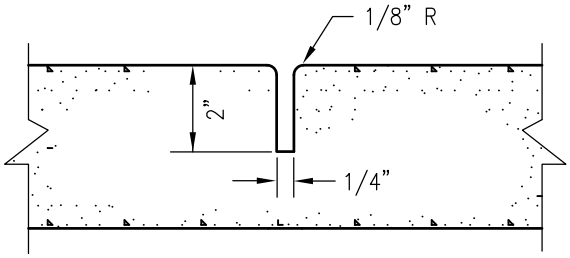
DRAWING NUMBER D-15



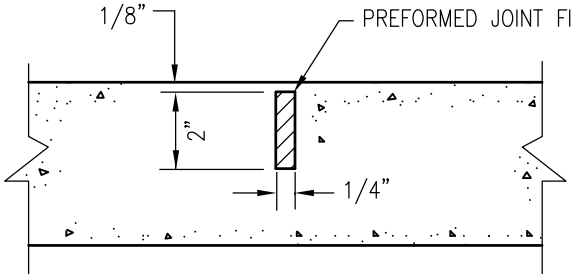
EXPANSION JOINT



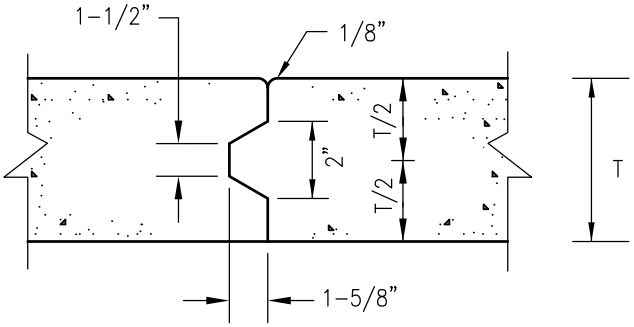
CONTACT JOINT



WEAKENED PLANE JOINT
CURB AND SIDEWALK



WEAKENED PLANE JOINT
GUTTER AND CONCRETE PAVEMENT



KEYED JOINT

Revision	By	Approved	Date
ORIGINAL		PARKINSON	02/95
ADD METRIC		T. STANTON	03/03
REFORMATTED		T. STANTON	04/06
UPDATED	CV	MR/CV	11/11
REVIEWED	CV	CV	12/15

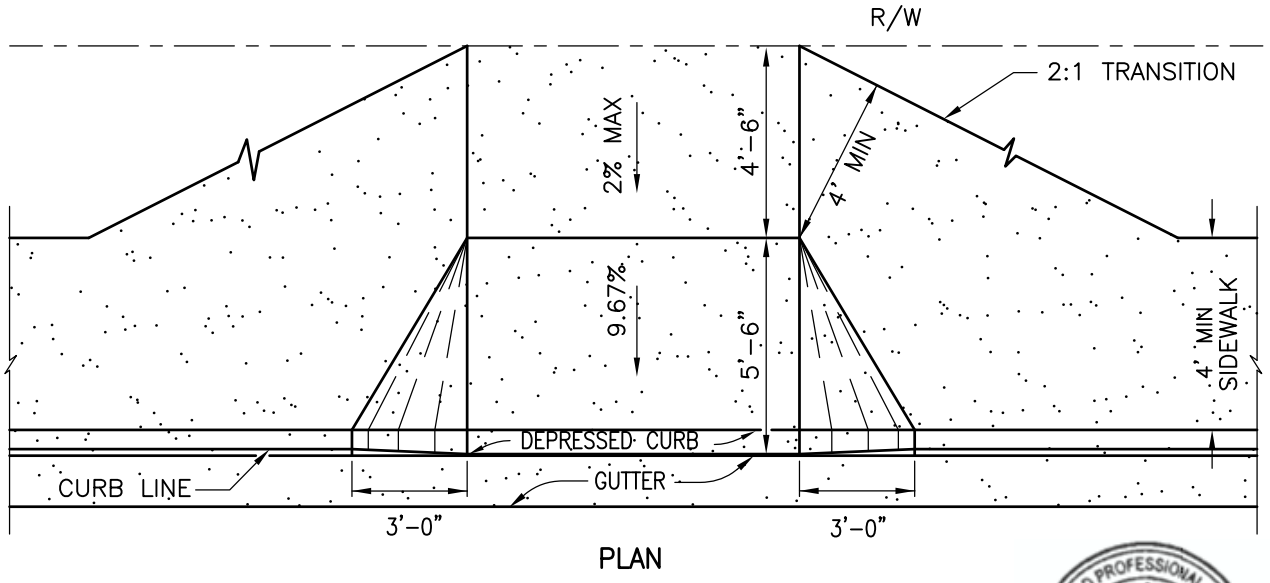
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE JOINT DETAILS

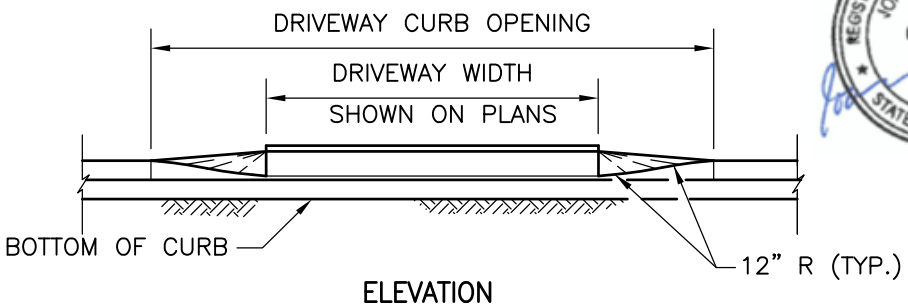
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

T. Stanton 10/25/2018
Chairperson R.C.E. 19246 Date

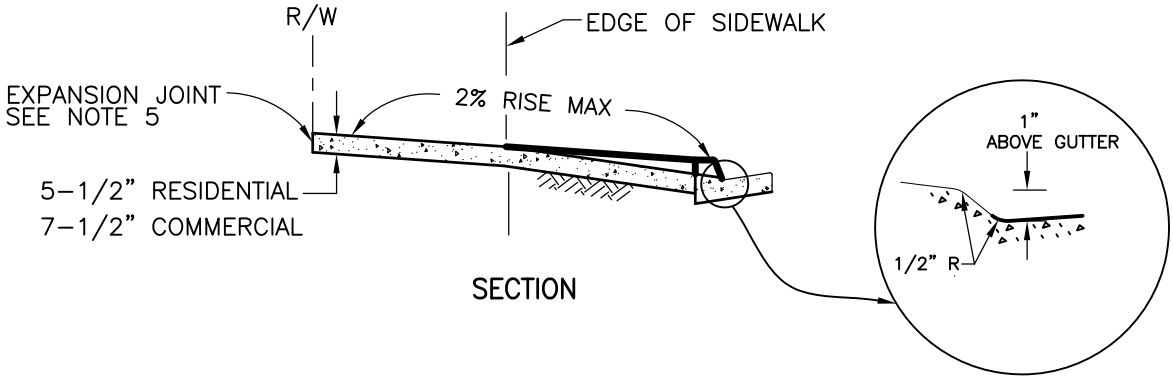
DRAWING NUMBER G-10



PLAN



ELEVATION



SECTION

REGISTERED PROFESSIONAL ENGINEER JOANNE S. TYLER C 59286 CIVIL STATE OF CALIFORNIA

NOTES:

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED BY THE AGENCY.
2. FOR RESIDENTIAL USE, CONCRETE SHALL BE 520-C-2500; FOR COMMERCIAL USE, CONCRETE SHALL BE 560-C-3250.
3. SEE STANDARD DRAWINGS G-15 AND G-16 FOR WIDTH AND LOCATION REQUIREMENTS.
4. DRIVEWAY RAMP TO EXTEND 10' FROM CURB FACE OR TO PROPERTY LINE WHICHEVER IS LESS.
5. PLACE EXPANSION JOINT AT RIGHT-OF-WAY OR 10' WHICHEVER IS LESS.
6. SEE STANDARD DRAWINGS G-2 AND G-10 FOR CURB AND JOINT DETAILS.
7. DIMENSIONS SHOWN REFLECT A 6" CURB HEIGHT.

Revision	By	Approved	Date
ORIGINAL		R. MUNOZ	4/97
ADD METRIC		T. STANTON	03/03
REVIEWED		T. STANTON	04/06
UPDATED	MR	MR/CV	02/12
UPDATED	CV	CV	12/15

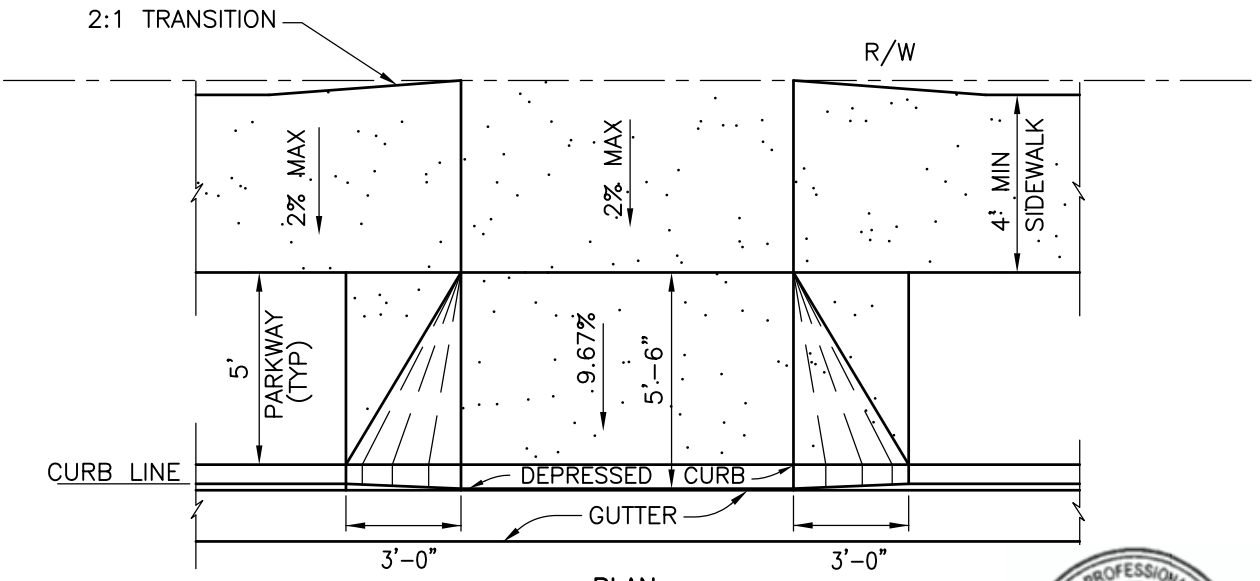
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE DRIVEWAY - TYPE A (CONTIGUOUS SIDEWALK)

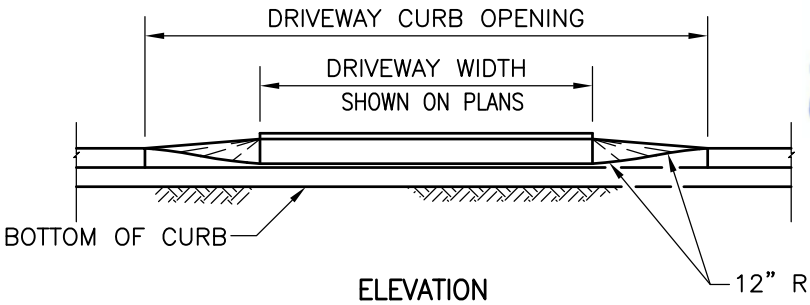
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 10/25/2018

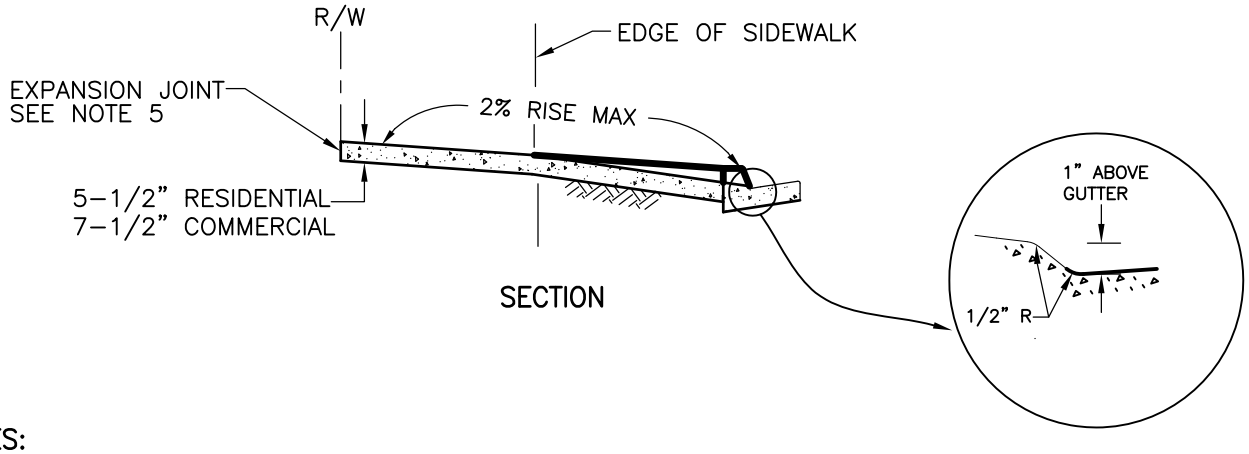
DRAWING NUMBER G-14A



PLAN



ELEVATION



SECTION

REGISTERED PROFESSIONAL ENGINEER JOANNE S. TYLER C 59286 CIVIL STATE OF CALIFORNIA

NOTES:

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED BY THE AGENCY.
2. FOR RESIDENTIAL USE, CONCRETE SHALL BE 520-C-2500; FOR COMMERCIAL USE, CONCRETE SHALL BE 560-C-3250.
3. SEE STANDARD DRAWINGS G-15 AND G-16 FOR WIDTH AND LOCATION REQUIREMENTS.
4. DRIVEWAY RAMP TO EXTEND TO 10' FROM CURB FACE OR TO PROPERTY LINE WHICHEVER IS LESS.
5. PLACE EXPANSION JOINT AT RIGHT-OF-WAY OR 10', WHICHEVER IS LESS.
6. SEE STANDARD DRAWINGS G-2 AND G-10 FOR CURB AND JOINT DETAILS.
7. DIMENSIONS SHOWN REFLECT A 6" CURB HEIGHT.

Revision	By	Approved	Date
ORIGINAL		R. MUNOZ	4/97
ADD METRIC		T. STANTON	03/03
REFORMATTED		T. STANTON	04/06
UPDATED	MR	MR/CV	02/12
UPDATED	CV	CV	12/15

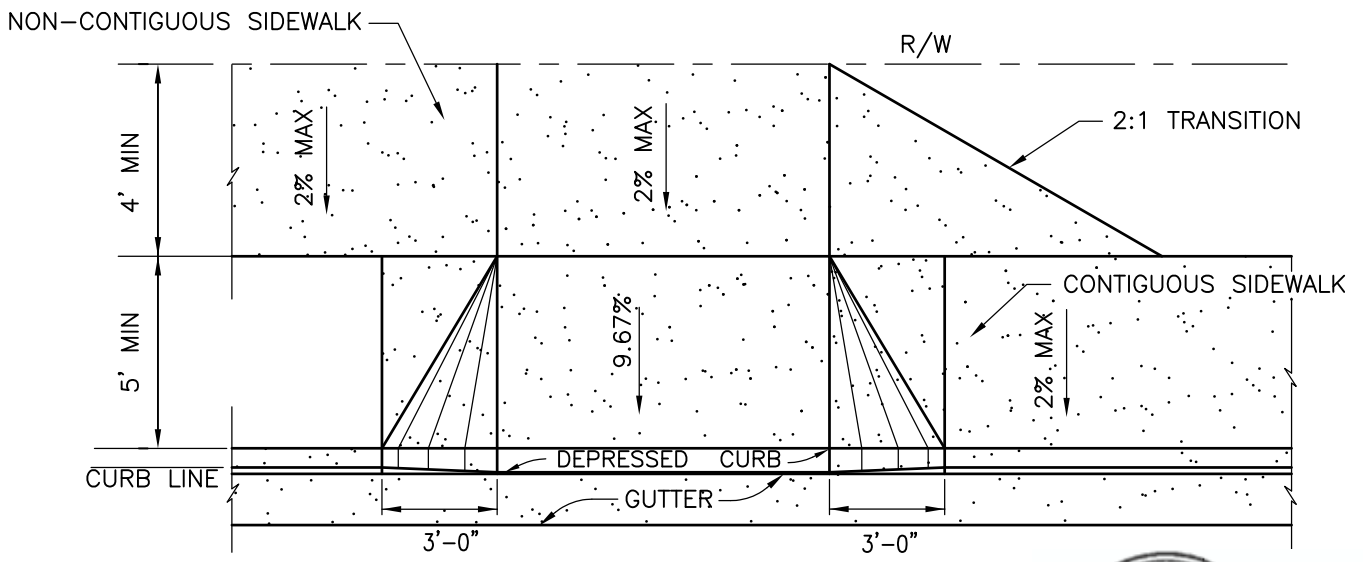
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE DRIVEWAY (NON-CONTIGUOUS SIDEWALK)

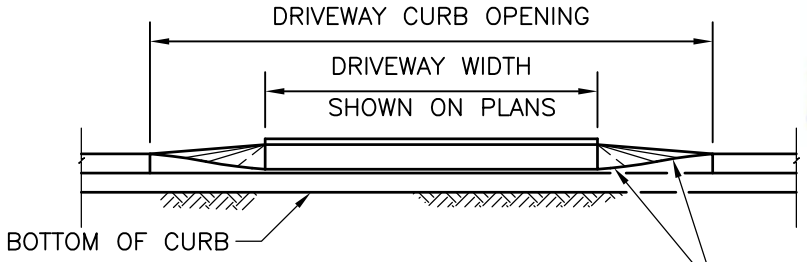
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 10/25/2018

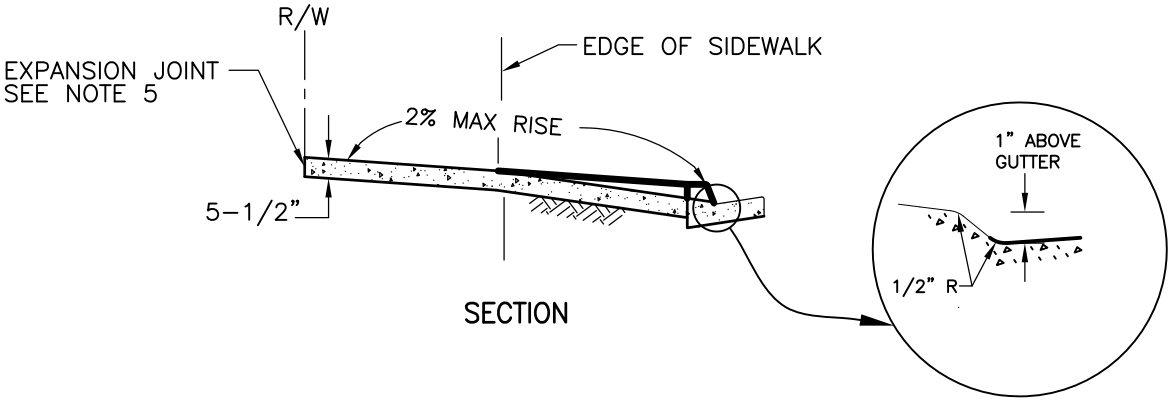
DRAWING NUMBER G-14B



PLAN



ELEVATION



SECTION

NOTES:

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED BY THE AGENCY.
2. CONCRETE SHALL BE 520–C–2500.
3. SEE STANDARD DRAWINGS G–15 AND G–16 FOR WIDTH AND LOCATION REQUIREMENTS.
4. DRIVEWAY RAMP TO EXTEND 10' FROM FACE OF CURB OR TO PROPERTY LINE WHICHEVER IS LESS.
5. PLACE EXPANSION JOINT AT RIGHT–OF–WAY OR 10', WHICHEVER IS LESS.
6. SEE STANDARD DRAWINGS G–2 AND G–10 FOR CURB AND JOINT DETAILS.
7. DIMENSIONS SHOWN REFLECT A 6" CURB HEIGHT.

Revision	By	Approved	Date
ORIGINAL		R. MUNOZ	4/97
ADD METRIC		T. STANTON	03/03
REFORMATTED		T. STANTON	04/06
UPDATED	MR	MR/CV	02/12
UPDATED	CV	CV	12/15

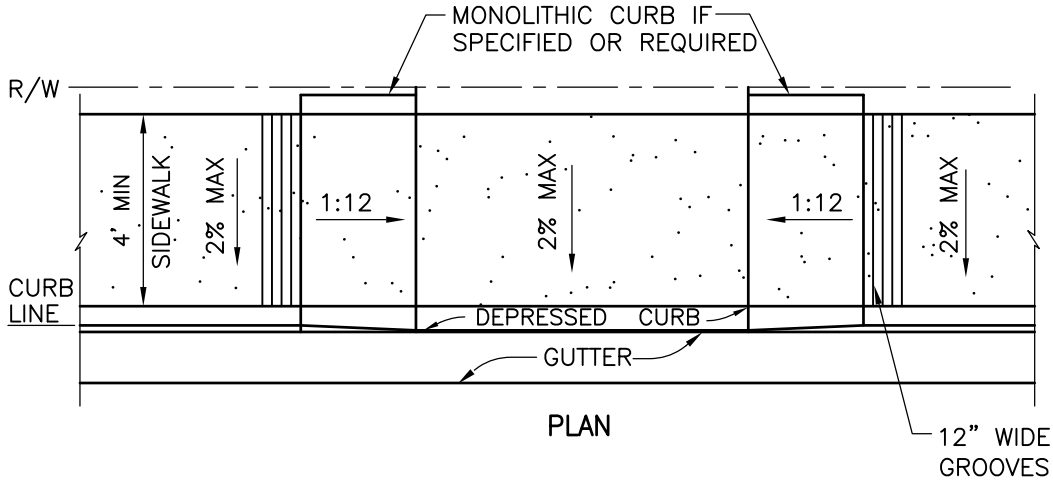
SAN DIEGO REGIONAL STANDARD DRAWING

RESIDENTIAL CONCRETE DRIVEWAY (PARKWAY LESS THAN 10' IN DEPTH)

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

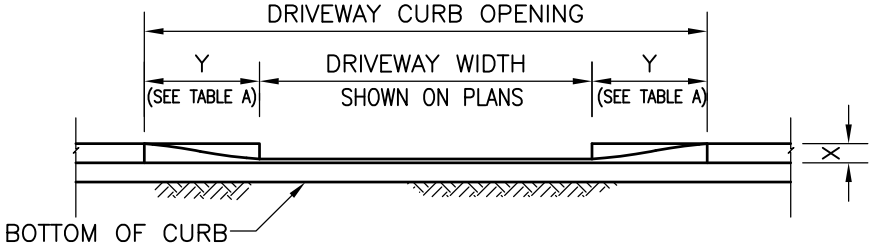
10/25/2018
Chairperson R.C.E. 19246 Date

DRAWING NUMBER G–14C



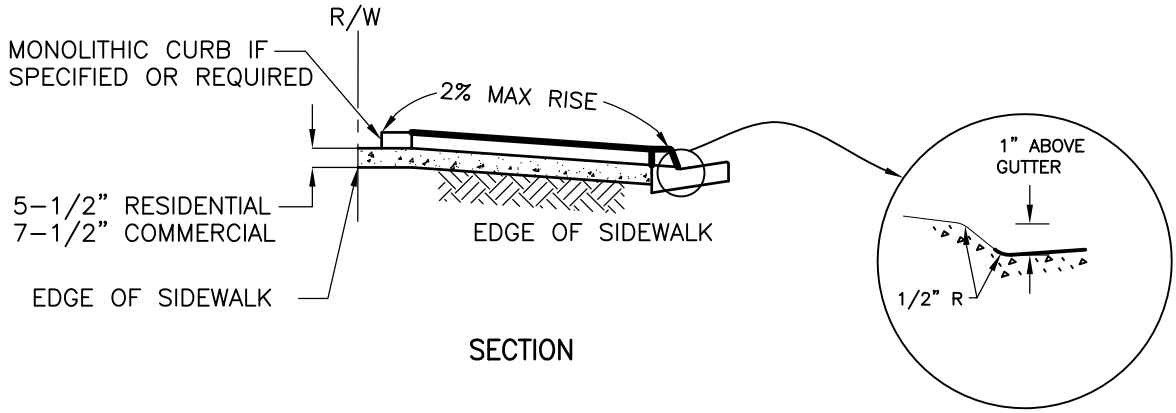
PLAN

12" WIDE BORDER WITH 1/4" GROOVES APPROX. 3/4" O.C.



ELEVATION

TABLE A	
X	Y
CURB HEIGHT	RAMP LENGTH
1"	0'-0"
2"	1'-0"
3"	2'-0"
4"	3'-0"
5"	4'-0"
6"	5'-0"
7"	6'-0"
8"	7'-0"



SECTION

NOTES:

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED BY THE AGENCY.
2. FOR RESIDENTIAL USE, CONCRETE SHALL BE 520-C-2500; FOR COMMERCIAL USE, CONCRETE SHALL BE 560-C-3250.
3. SEE STANDARD DRAWINGS G-15 AND G-16 FOR WIDTH AND LOCATION REQUIREMENTS.
4. SEE STANDARD DRAWINGS G-2 AND G-10 FOR CURB AND JOINT DETAILS.
5. PLACE EXPANSION JOINT AT RIGHT-OF-WAY.
6. DIMENSIONS SHOWN REFLECT A 6" CURB HEIGHT.
7. RAMP LENGTH CALCULATIONS ARE BASED ON X-1" TO ACCOUNT FOR THE 1" DRIVEWAY LIP.

Revision	By	Approved	Date
ORIGINAL	HH	T. STANTON	02/03
ADD METRIC		T. STANTON	03/03
REVIEWED		T. STANTON	04/06
UPDATED	MR	MR/CV	02/12
UPDATED	CV	CV	12/15

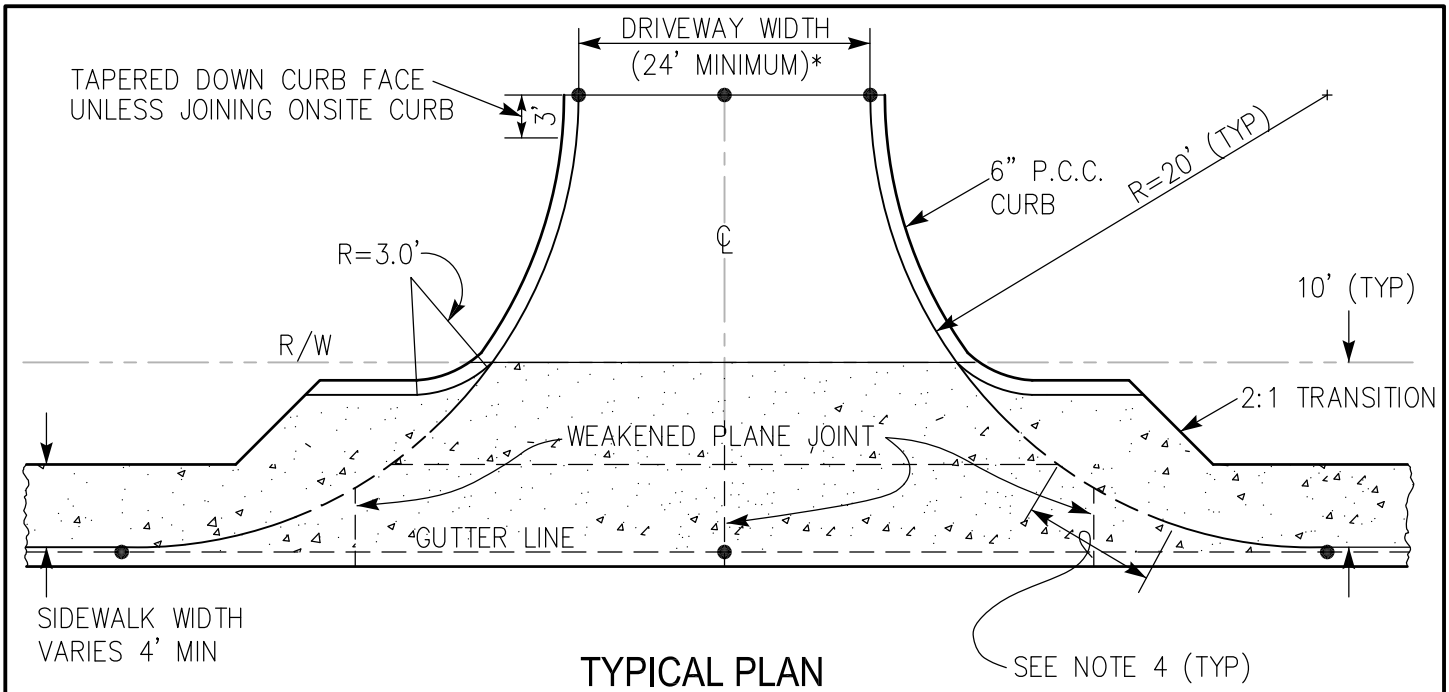
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE DRIVEWAY (FOR CONFINED RIGHT-OF-WAY)

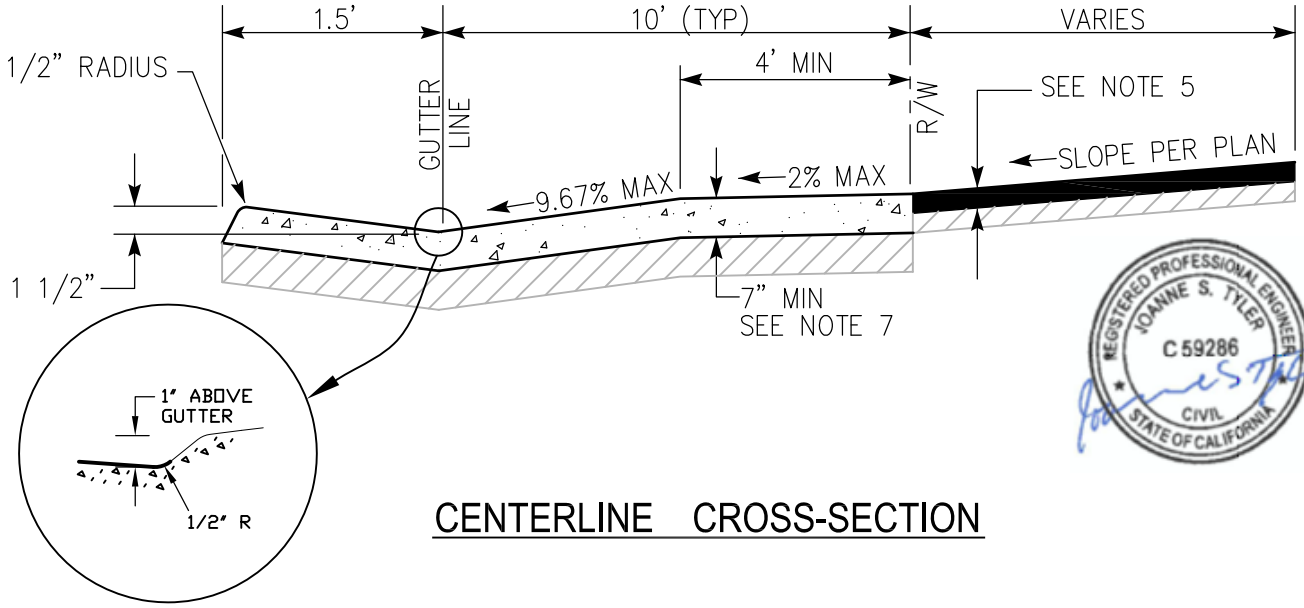
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 10/25/2018

DRAWING NUMBER G-14D



TYPICAL PLAN



CENTERLINE CROSS-SECTION

1. * OR AS REQUIRED BY THE AGENCY.
2. ● = ELEVATION SHOWN ON PLANS (TOP OF CURB, AND GUTTER ELEVATION)
3. ALL CONCRETE SHALL BE 560-C-3250
4. TRANSITION FROM FULL HEIGHT CURB TO NO CURB. 6FT TRANSITION FOR 5FT WIDE SIDEWALK AND 8FT TRANSITION FOR 6FT WIDE SIDEWALK.
5. PAVEMENT STRUCTURAL SECTION SHALL BE SHOWN ON PLANS.
6. SEE G-2 AND G-10 FOR CURB AND JOINT DETAILS.
7. BASE MATERIAL AS SHOWN ON PLANS.

Revision	By	Approved	Date
NEW	MR	MR/CV	09/11
UPDATED	CV	CV	12/15

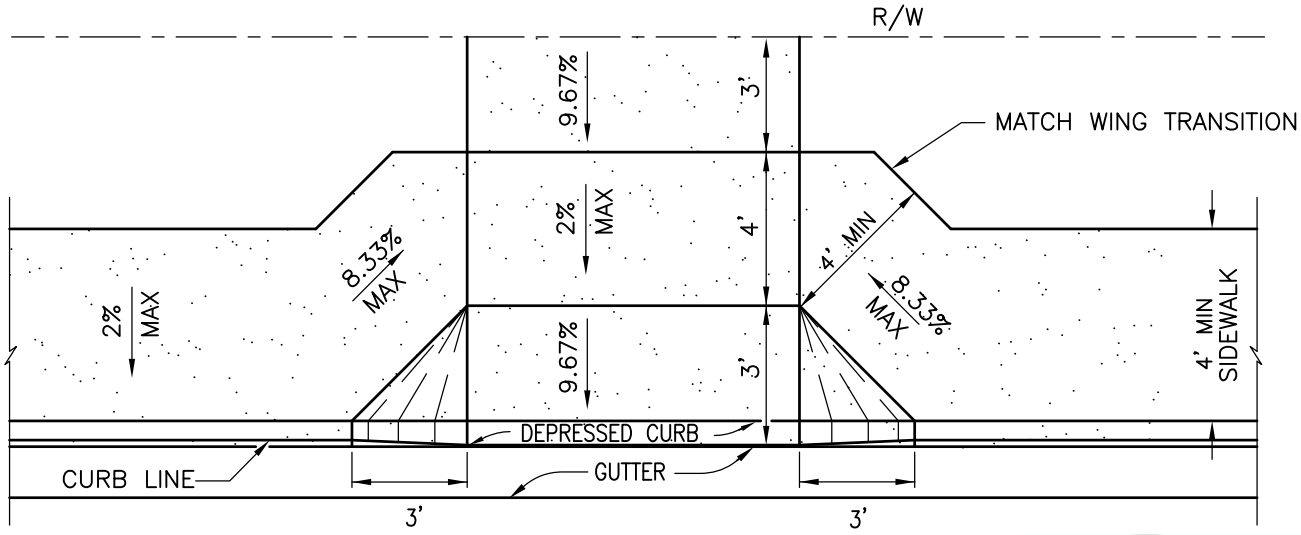
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE DRIVEWAY (ALLEY TYPE)

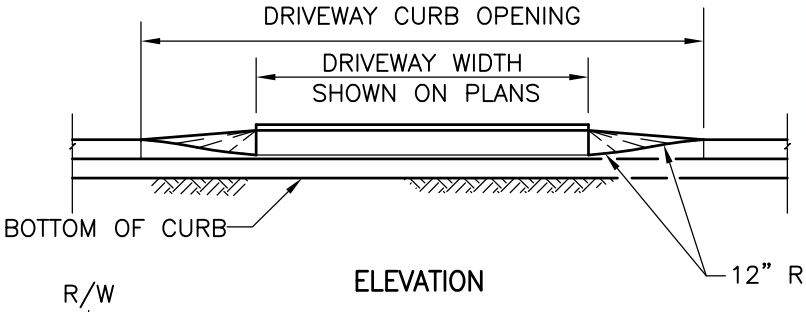
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

10/25/2018
Chairperson R.C.E. 19246 Date

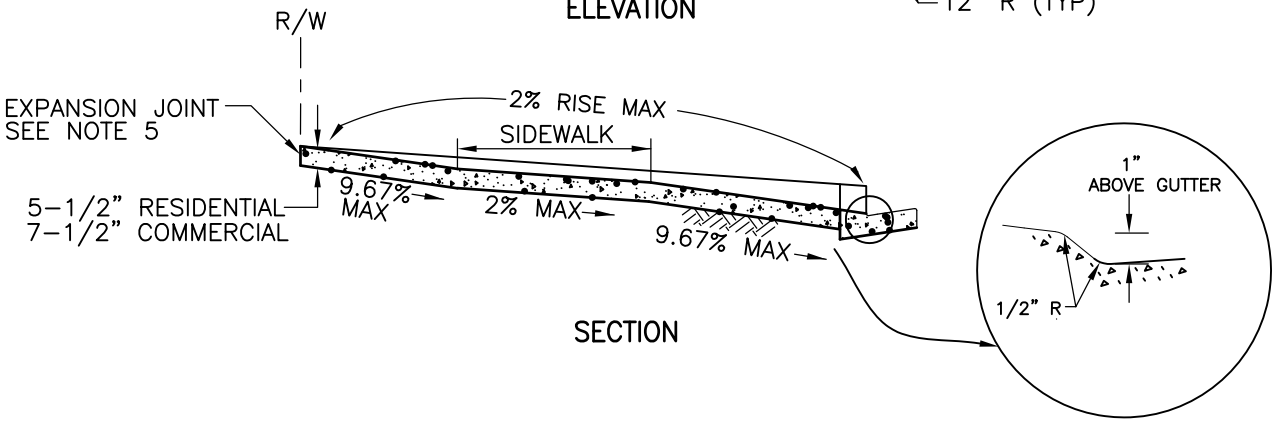
DRAWING NUMBER G-14E



PLAN



ELEVATION



SECTION

REGISTERED PROFESSIONAL ENGINEER JOANNE S. TYLER C 59286 CIVIL STATE OF CALIFORNIA

NOTES:

1. NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED BY AGENCY.
2. FOR RESIDENTIAL USE, CONCRETE SHALL BE 520-C-2500; FOR COMMERCIAL USE, CONCRETE SHALL BE 560-C-3250.
3. SEE STANDARD DRAWINGS G-15 AND G-16 FOR WIDTH AND LOCATION REQUIREMENTS.
4. DRIVEWAY RAMP TO EXTEND TO 10' FROM CURB FACE OR TO RIGHT-OF-WAY, WHICHEVER IS LESS.
5. PLACE EXPANSION JOINT AT RIGHT-OF-WAY OR 10', WHICHEVER IS LESS.
6. SEE STANDARD DRAWINGS G-2 AND G-10 FOR CURB AND JOINT DETAILS.
7. DIMENSIONS SHOWN REFLECT A 6" CURB HEIGHT.

Revision	By	Approved	Date
NEW	MR	MR/CV	02/12
UPDATED	CV	CV	12/15

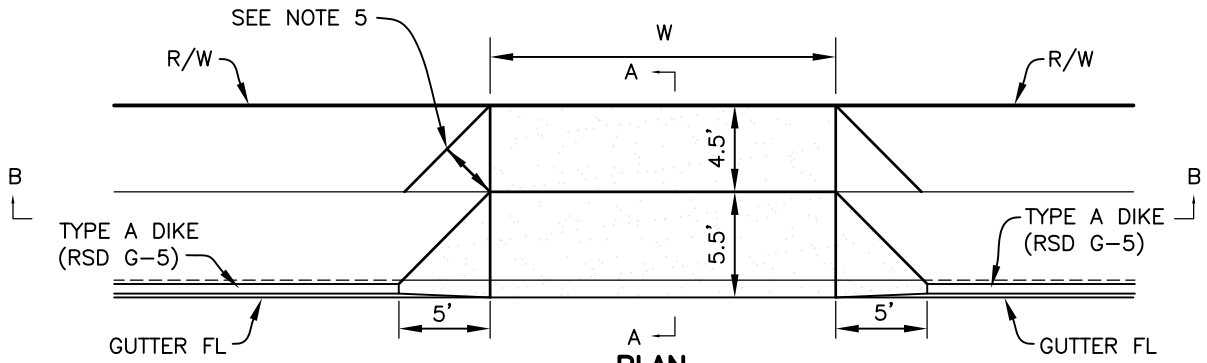
SAN DIEGO REGIONAL STANDARD DRAWING

CONCRETE DRIVEWAY - TYPE B (CONTIGUOUS SIDEWALK)

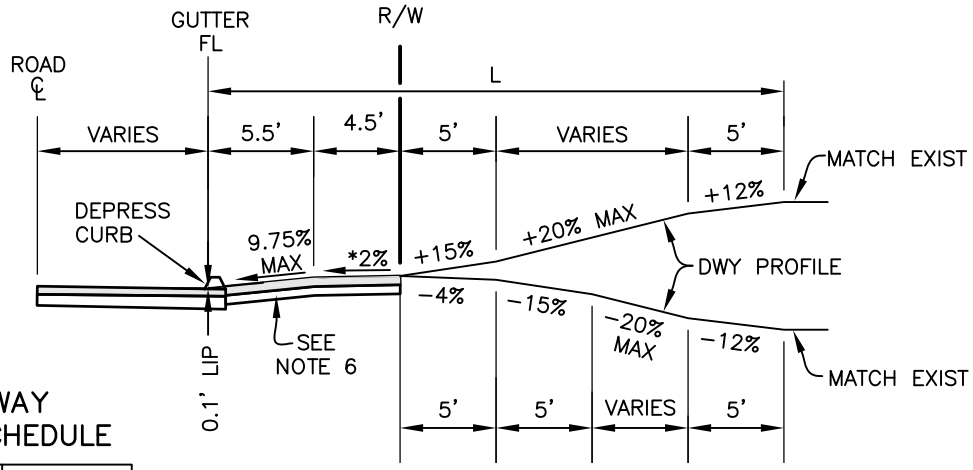
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 10/25/2018

DRAWING NUMBER G-14F



PLAN
NO SCALE

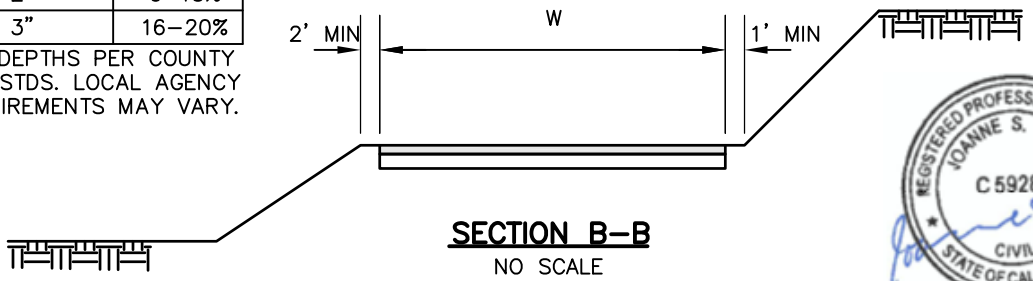


SECTION A–A
NO SCALE

DRIVEWAY PAVING SCHEDULE

MINIMUM DEPTH OF A.C.	GRADE
2"	0–15%
3"	16–20%

MIN DEPTHS PER COUNTY FIRE STDS. LOCAL AGENCY REQUIREMENTS MAY VARY.



SECTION B–B
NO SCALE

NOTES:

1. DRIVEWAY PROFILE, WIDTH (W) AND LENGTH (L) SHALL BE SHOWN ON PLANS.
2. DRIVEWAYS WITH GRADES GREATER THAN 15% SHALL BE SURFACED WITH ASPHALT CONCRETE (AC) OR PORTLAND CEMENT CONCRETE (PCC).
3. MAXIMUM GRADE BREAK 14% (5' MINIMUM VERTICAL CURVE PREFERRED).
4. SEE SAN DIEGO AREA REGIONAL STANDARD DRAWINGS G–15 & G–16 FOR DRIVEWAY LOCATION & WIDTH REQUIREMENTS AND G–14 SERIES FOR PCC DRIVEWAYS.
5. 4' MINIMUM ADA ACCESS WHEN WALKWAYS ARE PROVIDED.
6. 4" MINIMUM AC OVER 6" MINIMUM BASE, UNLESS OTHERWISE INDICATED ON PLANS.

Revision	By	Approved	Date
NEW	MR	MR/CV	09/11
UPDATED	CV	CV	12/15

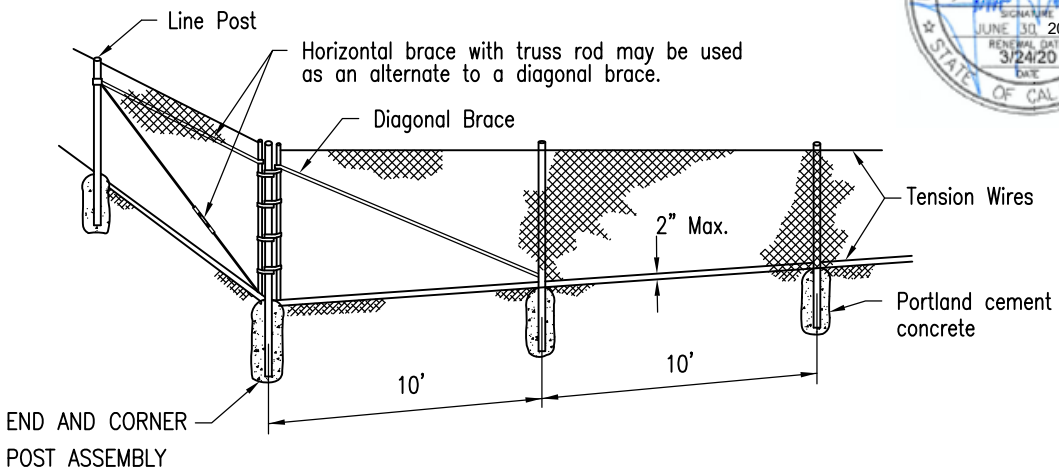
SAN DIEGO REGIONAL STANDARD DRAWING

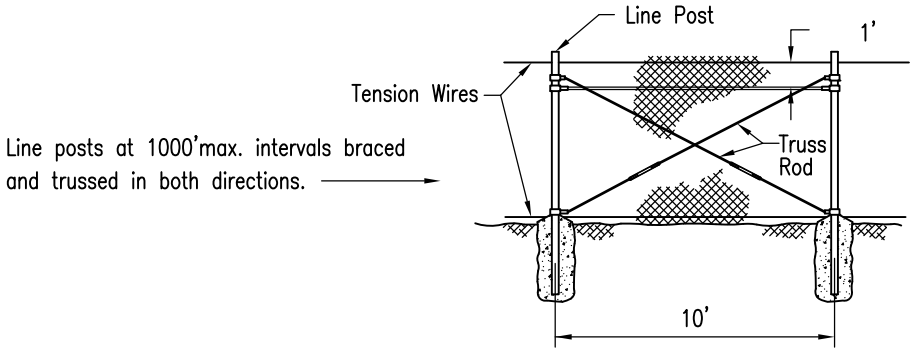
ASPHALT CONCRETE DRIVEWAY

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

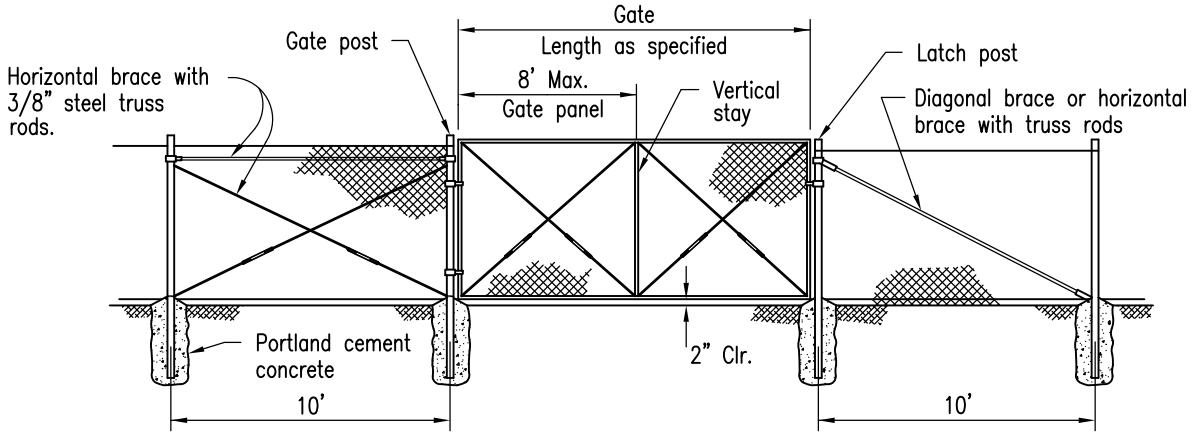
Chairperson R.C.E. 19246 — 10/25/2018 Date

DRAWING NUMBER G–14G





LINE POST BRACING



GATE ASSEMBLY

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Revised		D. Gerschoffer	09/15
Reviewed		D. Gerschoffer	10/18

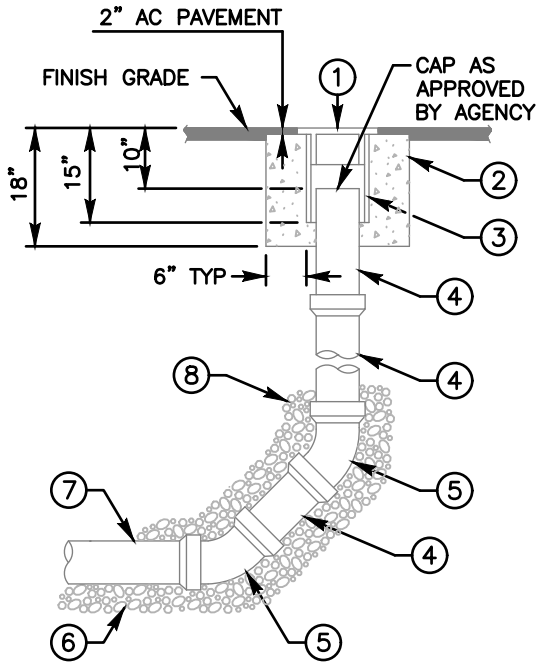
SAN DIEGO REGIONAL STANDARD DRAWING

CHAIN LINK FENCE DETAILS

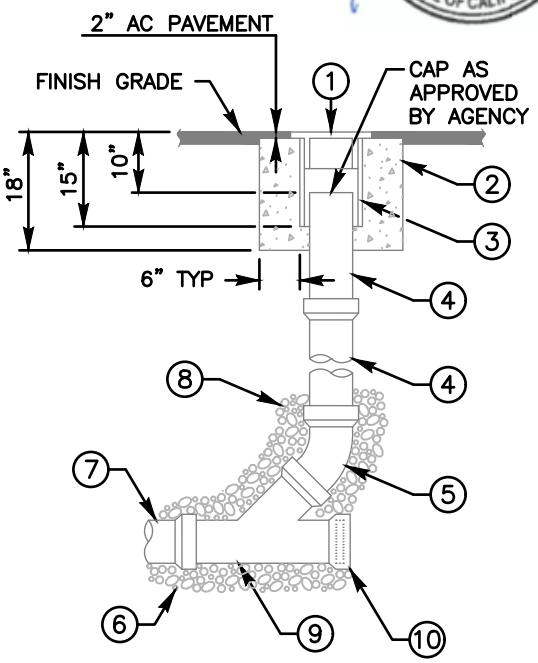
RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

10/25/2018
Chairperson R.C.E. 19246 Date

DRAWING NUMBER M-20



TYPE A
MAINS FOR 6" AND 8"



TYPE B
SEWER LATERAL CLEANOUT

NOTES:
1) REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE
2) CLEANOUTS TO BE INSTALLED AT THE END OF MAINS WHERE INDICATED ON THE PLANS
3) CLEANOUT PIPE TO BE SAME SIZE AND MATERIAL AS SEWER MAIN UP TO 8"
4) BACKFILL TO TOP OF 45° BEND WITH 3/4" CRUSHED ROCK
5) MATERIALS SHALL BE SELECTED FROM THE AGENCY'S APPROVED MATERIALS LIST

LEGEND ON PLANS

ITEM NO	SIZE AND DESCRIPTION	ITEM NO	SIZE AND DESCRIPTION
1	12" CI CLEANOUT BOX COVER MARKED 'SEWER' AND AGENCY NAME AS REQUIRED	5	45° ELBOW
2	CONCRETE RING	6	3/4" CRUSHED ROCK PIPE BEDDING
3	12" PVC, C-900 x 15" LONG (CLEANOUT BOX)	7	SEWER MAIN
4	SIZE x REQUIRED LENGTH PVC PIPE	8	3/4" CRUSHED ROCK SEE NOTE 4
		9	STANDARD WYE BRANCH
		10	INSTALL PLUG AND CONCRETE LUG

Revision	By	Approved	Date
ORIGINAL		Kercheval	12/75
Replaced S-03		J. Tomasulo	03/05
Delete Metric	MR	B. KNOLL	03/11
Reviewed	BK	B. KNOLL	04/15
Reviewed	BK	B. KNOLL	10/18

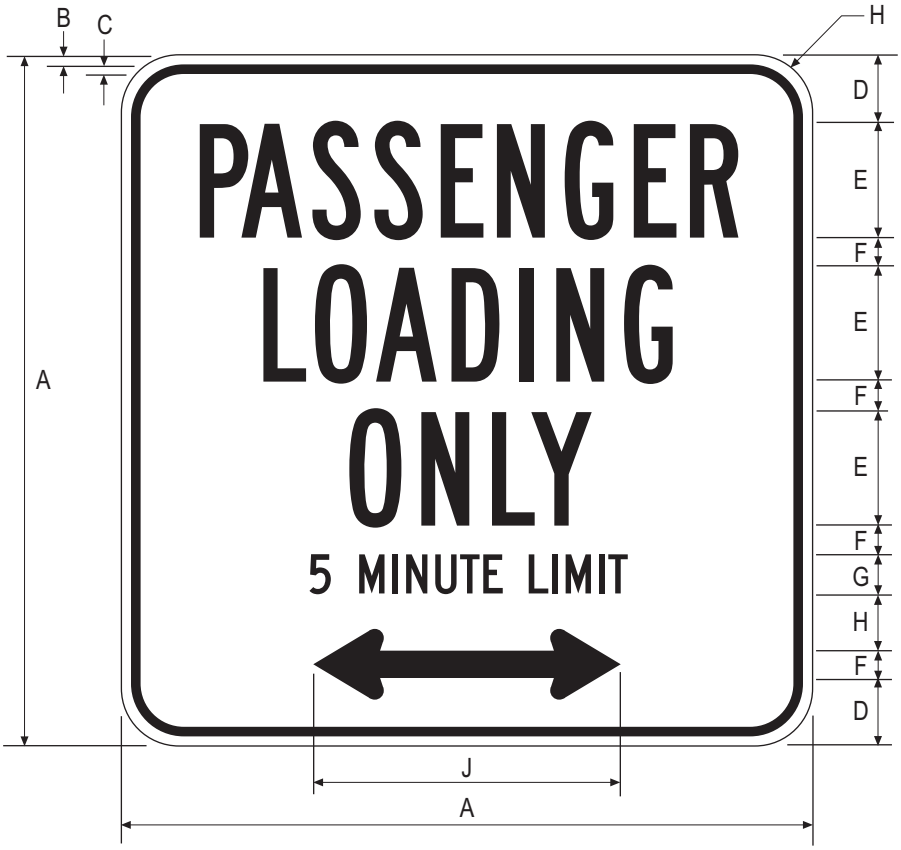
SAN DIEGO REGIONAL STANDARD DRAWING

SEWER CLEANOUT

RECOMMENDED BY THE SAN DIEGO REGIONAL STANDARDS COMMITTEE

Chairperson R.C.E. 19246 Date 10/25/2018

DRAWING NUMBER SC-01



NOTE: See Standard Arrow Detail for Regulatory Signs in Appendix.

R25C (CA)

ENGLISH UNITS

A	B	C	D	E	F	G	H	J
18	.375	.5	1.75	3B	.75	1C	1.5	8

COLORS: BORDER & LEGEND - BLACK
BACKGROUND - WHITE (RETROREFLECTIVE)

2/17/09

REGISTERED PROFESSIONAL ENGINEER
JOANNE S. TYLER
C 59286
CIVIL
STATE OF CALIFORNIA

R100B (CA)

COLORS: BORDER & LEGEND - BLACK
BACKGROUND - WHITE
(RETROREFLECTIVE)
7/1/08

SUPPLEMENTARY SPECIAL PROVISIONS

APPENDICES

APPENDIX A

NOTICE OF DETERMINATION AND SITE DEVELOPMENT PERMIT

SAN DIEGO COUNTY CLERK
CEQA FILING COVER SHEET

FILED
Oct 30, 2020 10:47 AM
Ernest J. Dronenburg, Jr.
SAN DIEGO COUNTY CLERK
File # 2020-000834
State Receipt # 37-20200782
Document # 2020-NOD-135

THIS SPACE FOR CLERK'S USE ONLY

Complete and attach this form to each CEQA Notice filed with the County Clerk

TYPE OR PRINT CLEARLY

Project Title

SALK NEIGHBORHOOD PARK SOP

Check Document being Filed:

- (●) Environmental Impact Report (EIR)
- ( ) Mitigated Negative Declaration (MND) or Negative Declaration (ND)
- ( ) Notice of Exemption (NOE)
- ( ) Other (Please fill in type):

FILED IN THE OFFICE OF THE SAN DIEGO
COUNTY CLERK ON October 30, 2020
Posted October 30, 2020 **Removed** _____
Returned to agency on _____
DEPUTY _____

Filing fees are due at the time a Notice of Determination/Exemption is filed with our office.For more information on filing fees and No Effect Determinations, please refer to California Code of Regulations, Title 14, section 753.5.

NOTICE OF DETERMINATION
(Consistency Determination Pursuant to CEQA Section 15162)

(Choose one)
TO: X Recorder/County Clerk
P.O. Box 1750, MS A33
1600 Pacific Hwy, Room 260 San
Diego, CA 92101-2422

Office of Planning and Research
1400 Tenth Street, Room 121
Sacramento, CA 95814

FROM: City of San Diego
Development Services Department
1222 First Avenue, MS 501
San Diego, CA 92101

PROJECT NUMBER: 649077

STATE CLEARINGHOUSE NUMBER: 2010011021

PROJECT TITLE: Salk Neighborhood Park SOP

PROJECT LOCATION: 10264 Parkdale Avenue, San Diego, CA 92126

PROJECT DESCRIPTION: The project proposes construction of a 4.1-acre park and a 2.0-acre joint use park to include a comfort station, multi-use fields, lighting, walkways retaining walls, landscape, bioretention basins, and 43 parking spaces. The site is located at 10264 Parkdale Avenue, and on portions of Maddox Park adjacent to the Jonas Salk Elementary. The site is in the Open Space (OP-1-1) and Residential Single Dwelling Unit (RS-1-14) Zones, within the Mira Mesa Community Plan Area.

An Environmental Impact Report (EIR) was certified for the Jonas Salk Area Elementary School (SCH No. 2010011021), which analyzed construction and operation of the new school; construction and operation of a park and joint-use facilities; implementation of a Vernal Pool Restoration Plan (mitigation) within the City of San Diego's McAuliffe Park site (restoration site to be owned and maintained by the District); and implementation of 0.76-acres of vernal pool mitigation within the City of San Diego's Carroll Canyon Preserve site.

Pursuant to Public Resources Code Section 21166 and CEQA guidelines 15162 and 15163 (related to EIR's), the City has determined that: (1) there is substantial evidence that none of the conditions requiring preparation of a subsequent or supplemental EIR exist, and (2) the City will rely on the previous environmental document, which adequately addresses this project.

The proposed project _ would, or X would not introduce additional impacts or increase the severity of impacts beyond those already analyzed in the Jonas Salk Area Elementary School EIR.

PROJECT APPLICANT: Gretchen Elchar, Public Works, 525 B Street, MS 908A, Suite 750, San Diego, CA 92101, 619-533-4110

This is to advise that the City of San Diego Development Services Department on July 23, 2020 approved the above described project and made the following determinations:

(1) No Substantial changes are proposed in the project which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; and,

(2) No Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or,

(3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified, shows any of the following:

a. The project will have one or more significant effects not discussed in the previous EIR;
b. Significant effects previously examined will be substantially more severe than shown in the previous EIR;
c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or,

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

It is hereby certified that the final environmental report, including comments and responses, is available to the public at the office of the Development Services Department, 1222 First Avenue, San Diego, CA 92101.

Analyst: Holowach Telephone: (619) 446-5187

Filed by: Signature

Planner Title

[Attach Copy of Check, Proof of CDFG Payment, or No Effect Form] Reference: California Public Resources Code, Section 15162/63.

State of California - Department of Fish and Wildlife

2020 ENVIRONMENTAL FILING FEE CASH RECEIPT

DFW 753.5a (Rev. 12/10/19) Previously DFG 753.5a

RECEIPT
37-2020- 0782

STATE CLEARINGHOUSE NUMBER *(If applicable)*
2010011021

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY.

LEAD AGENCY	LEAD AGENCY EMAIL	DATE
CITY OF SAN DIEGO DEVELOPMENT SERVICES DEPARTMENT		10/30/2020

COUNTY/STATE AGENCY OF FILING	DOCUMENT NUMBER
San Diego County	2020-NOD-0135

PROJECT TITLE
SALK NEIGHBORHOOD PARK SOP

PROJECT APPLICANT NAME	PROJECT APPLICANT EMAIL	PHONE NUMBER
PUBLIC WORKS, GRETCHEN EICHAR		619-533-4110

PROJECT APPLICANT ADDRESS	CITY	STATE	ZIP CODE
525 B STREET SUITE 750	SAN DIEGO	CA	92101

PROJECT APPLICANT *(Check appropriate box)*

☒ Local Public Agency ☐ School District ☐ Other Special District ☐ State Agency ☐ Private Entity

CHECK APPLICABLE FEES:

☒ Environmental Impact Report (EIR)	$3,343.25	$ 0.00
☐ Mitigated/Negative Declaration (MND)(ND)	$2,406.75	$ 0.00
☐ Certified Regulatory Program document (CRP)	$1,136.50	$ 0.00

☐ Exempt from fee

- ☐ Notice of Exemption (attach)
- ☐ CDFW No Effect Determination (attach)

☒ Fee previously paid (attach previously issued cash receipt copy)

☐ Water Right Application or Petition Fee (State Water Resources Control Board only)	$850.00	$ 0.00
☒ County documentary handling fee		$ 50.00
☐ Other		$ 0.00

PAYMENT METHOD:

☐ Cash ☐ Credit ☒ Check ☐ Other **TOTAL RECEIVED** $ 50.00

SIGNATURE	AGENCY OF FILING PRINTED NAME AND TITLE
X	San Diego County KARINA ORTIZ , Deputy

Payment Reference #: CHECK NO 0001807173

ORIGINAL - PROJECT APPLICANT | COPY - CDFW/ASB | COPY - LEAD AGENCY | COPY - COUNTY CLERK | DFW 753.5a (Rev. 20191210)

San Diego County

Transaction #: 5031954
Receipt #: 2020572893

Ernest J. Dronenburg, Jr.
Assessor/Recorder/County Clerk
1600 Pacific Highway Suite 260
P. O. Box 121750, San Diego, CA 92112-1750
Tel. (619) 237-0502 Fax (619) 557-4155
www.sdarcc.com

Cashier Date: 10/30/2020
Cashier Location: SD

Print Date: 10/30/2020 10:48 am

Payment Summary

Total Fees:	$50.00
Total Payments:	$50.00
Balance:	$0.00

Payment

CHECK PAYMENT #0001807173 $50.00

Total Payments $50.00

Filing

CEQA - NOD Document #: 2020-000834 Date: 10/30/2020 10:47AM Pages: 6
Map #: 20200782

Fees: Fish & Wildlife County Administrative Fee $50.00

Total Fees Due: $50.00

Grand Total - All Documents: $50.00

State of California—The Resources Agency
DEPARTMENT OF FISH AND GAME

2011 ENVIRONMENTAL FILING FEE CASH RECEIPT

RECEIPT# SD2011 0968
STATE CLEARING HOUSE # (if applicable) 2010011021

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY

LEAD AGENCY: SAN DIEGO UNIFIED SCHOOL DISTRICT (SDUSD)
DATE: 11-09-2011
COUNTY/STATE AGENCY OF FILING: SAN DIEGO
DOCUMENT NUMBER: *20110210*
PROJECT TITLE: JONAS SALK AREA ELEMENTARY SCHOOL PROJECT
PROJECT APPLICANT NAME: SAN DIEGO UNIFIED SCHOOL DISTRICT
PHONE NUMBER: 858-627-7241
PROJECT APPLICANT ADDRESS: 4860 RUFFNER STREET
CITY: SAN DIEGO
STATE: CA
ZIP CODE: 92111

PROJECT APPLICANT (Check appropriate box):
☐ Local Public Agency ☑ School District ☐ Other Special District ☐ State Agency ☐ Private Entity

CHECK APPLICABLE FEES:

☑ Environmental Impact Report	$2,839.25	$ $2,839.25
☐ Negative Declaration	$2,044.00	$
☐ Application Fee Water Diversion (State Water Resources Control Board Only)	$850.00	$
☐ Projects Subject to Certified Regulatory Programs	$965.50	$
☑ County Administrative Fee	$50.00	$ $50.00
☐ Project that is exempt from fees		
☐ Notice of Exemption		
☐ DFG No Effect Determination (Form Attached)		
☐ Other _____		$

PAYMENT METHOD:
☐ Cash ☐ Credit ☑ Check ☐ Other 15834513

TOTAL RECEIVED $ $2,889.25

SIGNATURE: X L. Kesian
TITLE: Deputy

ORIGINAL - PROJECT APPLICANT COPY - DFG/ASB COPY - LEAD AGENCY COPY - COUNTY CLERK FG 753.5a (Rev. 7/08)

110210

Notice of Determination

Appendix D

To:
☒ Office of Planning and Research
For U.S. Mail: P.O. Box 3044, Sacramento, CA 95812-3044
Street Address: 1400 Tenth St., Sacramento, CA 95814

☒ County Clerk
County of: San Diego
Address: 1600 Pacific Highway, Ste. 260, San Diego, CA 92101

From:
Public Agency: San Diego Unified School District (SDUSD)
Address: 4860 Ruffner Street, San Diego, CA 92111
Contact: James H. Watts
Phone: 858-627-7241

Lead Agency (if different from above):
Address:
Contact:
Phone:

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

State Clearinghouse Number (If submitted to State Clearinghouse): 2010011021

Project Title: Jonas Salk Area Elementary School Project

Project Location (include county): Parkdale Avenue and Flanders Drive in San Diego, CA 92126, San Diego County

Project Description:

The proposed project involves the following components: 1. Construction and operation of the new school; 2. Construction and operation of a park and joint-use facilities (to be owned by the City of San Diego); 3. Implementation of a Vernal Pool Restoration Plan (mitigation) within the City of San Diego's McAuliffe Park site (restoration site to be owned and maintained by the District); and, 4. Implementation of 0.76-acres of vernal pool mitigation within the City of San Diego's Carroll Canyon Preserve site.

This is to advise that the San Diego Unified School District ☒ Lead Agency or ☐ Responsible Agency has approved the above described project on 11/8/2011 (Date) and has made the following determinations regarding the above described project:

1. The project [☒ will ☐ will not] have a significant effect on the environment.
2. ☒ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
   ☐ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [☒ were ☐ were not] made a condition of the approval of the project.
4. A mitigation reporting or monitoring plan [☒ was ☐ was not] adopted for this project.
5. A statement of Overriding Considerations [☒ was ☐ was not] adopted for this project.
6. Findings [☒ were ☐ were not] made pursuant to the provisions of CEQA.

FILED
Ernest J Dronenburg, Jr., Recorder County Clerk
NOV 09 2011
BY L. Kesian DEPUTY

This is to certify that the final EIR with comments and responses and record of project approval, or the negative Declaration, is available to the General Public at: SDUSD, 4860 Ruffner Street, San Diego, CA 92111 (Physical Plant Operations Annex)

Signature (Public Agency) _____ Title Director of Planning

Date 11/8/11 Date Received for filing at OPR _____

FILED IN THE OFFICE OF THE COUNTY CLERK
San Diego County on NOV 09 2011
Posted NOV 09 2011 Removed _____
Returned to agency on _____
Deputy L. Kesian

Authority cited: Sections 21083, Public Resources Code.
Reference Section 21000-21174, Public Resources Code.

Revised 2005

Ernest J. Dronenburg, Jr.

COUNTY OF SAN DIEGO

ASSESSOR/RECORDER/COUNTY CLERK

ASSESSOR'S OFFICE
1600 Pacific Highway, Suite 103
San Diego, CA 92101-2480
Tel. (619) 236-3771 * Fax (619) 557-4056

www.sdarcc.com

RECORDER/COUNTY CLERK'S OFFICE
1600 Pacific Highway, Suite 260
P.O. Box 121750 * San Diego, CA 92112-1750
Tel. (619)237-0502 * Fax (619)557-4155

Transaction #: 260192120111109
Deputy: LKESIAN
Location: COUNTY ADMINISTRATION BUILDING
09-Nov-2011 09:04

FEES:

2,839.25	Qty of 1 Fish & Game Env Impact (2500) for Ref# NOD: 210
50.00	Qty of 1 Fish and Game Filing Fee
2,889.25	TOTAL DUE

PAYMENTS:

2,889.25	Check
2,889.25	TENDERED

SERVICES AVAILABLE AT OFFICE LOCATIONS

* Tax Bill Address Changes
* Records and Certified Copies:
  Birth/ Marriage/ Death/ Real Estate
* Fictitious Business Names (DBAs)
* Marriage Licenses and Ceremonies
* Assessor Parcel Maps
* Property Ownership
* Property Records
* Property Values
* Document Recordings

SERVICES AVAILABLE ON-LINE AT www.sdarcc.com

* Forms and Applications
* Frequently Asked Questions (FAQs)
* Grantor/ Grantee Index
* Fictitious Business Names Index (DBAs)
* Property Sales
* On-Line Purchases
  Assessor Parcel Maps
  Property Characteristics
  Recorded Documents

State of California - Department of Fish and Wildlife

2020 ENVIRONMENTAL FILING FEE CASH RECEIPT

DFW 753.5a (Rev. 12/10/19) Previously DFG 753.5a

RECEIPT
37-2020- 0782

STATE CLEARINGHOUSE NUMBER *(If applicable)*
2010011021

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY.

LEAD AGENCY	LEAD AGENCY EMAIL	DATE
CITY OF SAN DIEGO DEVELOPMENT SERVICES DEPARTMENT		10/30/2020

COUNTY/STATE AGENCY OF FILING	DOCUMENT NUMBER
San Diego County	2020-NOD-0135

PROJECT TITLE
SALK NEIGHBORHOOD PARK SOP

PROJECT APPLICANT NAME	PROJECT APPLICANT EMAIL	PHONE NUMBER
PUBLIC WORKS, GRETCHEN EICHAR		619-533-4110

PROJECT APPLICANT ADDRESS	CITY	STATE	ZIP CODE
525 B STREET SUITE 750	SAN DIEGO	CA	92101

PROJECT APPLICANT *(Check appropriate box)*

☒ Local Public Agency ☐ School District ☐ Other Special District ☐ State Agency ☐ Private Entity

CHECK APPLICABLE FEES:

☒ Environmental Impact Report (EIR)	$3,343.25	$ 0.00
☐ Mitigated/Negative Declaration (MND)(ND)	$2,406.75	$ 0.00
☐ Certified Regulatory Program document (CRP)	$1,136.50	$ 0.00

☐ Exempt from fee
- ☐ Notice of Exemption (attach)
- ☐ CDFW No Effect Determination (attach)

☒ Fee previously paid (attach previously issued cash receipt copy)

☐ Water Right Application or Petition Fee (State Water Resources Control Board only)	$850.00	$ 0.00
☒ County documentary handling fee		$ 50.00
☐ Other		$ 0.00

PAYMENT METHOD:

☐ Cash ☐ Credit ☒ Check ☐ Other **TOTAL RECEIVED** $ 50.00

SIGNATURE	AGENCY OF FILING PRINTED NAME AND TITLE
X D. Hernandez	San Diego County DEANNA HERNANDEZ , Deputy

Payment Reference #: CHECK NO 0001807173, REM: 11/09/2011 RECT: SD2011 0968

ORIGINAL - PROJECT APPLICANT | COPY - CDFW/ASB | COPY - LEAD AGENCY | COPY - COUNTY CLERK | DFW 753.5a (Rev. 20191210)

DOC# 2020-0620509

Oct 14, 2020 09:41 AM
OFFICIAL RECORDS
Ernest J. Dronenburg, Jr.,
SAN DIEGO COUNTY RECORDER
FEES: $0.00 (SB2 Atkins: $0.00)

PAGES: 17

RECORDING REQUESTED BY
CITY OF SAN DIEGO
DEVELOPMENT SERVICES
PERMIT INTAKE, MAIL STATION 501

WHEN RECORDED MAIL TO
PROJECT MANAGEMENT
PERMIT CLERK
MAIL STATION 501

WBS NUMBER: S-14007.02.06 SPACE ABOVE THIS LINE FOR RECORDER'S USE

SITE DEVELOPMENT PERMIT 2430531
SALK NEIGHBORHOOD PARK PROJECT NO. 649077 [MMRP]
DEVELOPMENT SERVICES DEPARTMENT

This Site Development Permit No. 2430531 is granted by the Development Services Department of the City of San Diego to the City of San Diego Parks & Recreation Department, Owner, and City of San Diego Engineering and Capital Projects Department, Permittee, pursuant to San Diego Municipal Code (SDMC) section 126.0505 for potential impacts to Environmentally Sensitive Lands. The project consists of three adjacent sites totaling 11.15-acres: the Salk Neighborhood Park located at 10264 Parkdale Avenue; the Joint Use Facility adjoining the north side of Jonas Salk Elementary School; and the Maddox Neighborhood Park. The three sites are in the Open Space (OP-1-1) and Residential Single Dwelling Unit (RS-1-14) Zones, within the Mira Mesa Community Plan Area. The project sites are legally described as:

Salk Neighborhood Park (Parcel 1)
Beginning at the most southeasterly corner of said lot 222; said point being on the northwesterly right-of- way of Parkdale Avenue as dedicated per said map no. 9087; thence along said right of way, north 31°21' 40" east 79.45 feet to the southeast corner of the 11 foot-wide right of way of Parkdale Avenue, dedicated per document recorded may 2, 2014 as file no. 2014-0179883 of official records; thence northwesterly along said right-of-way, north 58° 46'45" west 11.00 feet; thence leaving said right-of-way north 58°46'45" west 26.35 feet; thence north 51°16'24" west 339.00 feet; thence south 41°18'54" west 54.17 feet; thence north 47°10'02" west 268.95 feet to the most northwesterly line of said lot 222; thence along said line, south 52°30'04" west 427.86 feet to the most westerly corner of said lot 222; thence south 37°29'35" east 285.09 feet to the most southerly corner of said lot 222; thence along the southerly line of said lot 222, north 52°29'22" east 360.11 feet to an angle point in said southerly line; thence continuing along said southerly line, south 58°42'02" east 305.04 feet to a corner of lot 222; thence north 31°19'52" east 42.75 feet to a corner of said lot 222; thence south 58°37'28" east 100.08 feet to said point of beginning.

Joint Use Facility (Parcel 2)
Beginning at the most southeasterly corner of said lot 222; said point being on the northwesterly right -of-way of Parkdale Avenue as dedicated per said map no. 9807; thence along said right of

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way, north 31°21' 40" east 79.45 feet to the southeast corner of the 11 foot -wide right of way of Parkdale Avenue, dedicated per document recorded may 2, 2014 as file no. 2014-0179883 of official records; thence northwesterly along said right-of-way north 58° 46'45" west 11.00 feet; thence leaving said right-of-way north 58°46'45" west 26.35 feet; thence north 51°16'24" west 339.00 feet to the true point of beginning; thence south 41°18'54" west 54.17 feet; thence north 47°10'02" west 268.95 feet to the most northwesterly line of said lot 222; thence along said line, north 52°30'04" east 397.52 feet; thence south 37°29'56" east 195.45 feet; thence south 41°18'54" west 305.00 feet to the true point of beginning.

Maddox Neighborhood Park
Lot 221 of Mira Mesa West Unit No. 2, according to Map thereof No. 9087 filed in the Office of the County Recorder of San Diego County, State of California on January 16, 1979.

Subject to the terms and conditions set forth in this Permit, permission is granted to Owner/Permittee to construct Salk Neighborhood Park, the Joint Use Park at Jonas Salk Elementary School, and Maddox Park improvements described and identified by size, dimension, quantity, type, and location on the approved exhibits (Exhibit "A") dated May 8, 2020, on file in the Development Services Department.

The project shall include:

a. Salk Neighborhood Park, a 4.1-acre public park including walkways and paths, turf, lighting, seating, picnic tables, retaining walls, waste receptacles, ADA accessibility improvements, shade structures, fencing, monument and interpretive signage, and a 43-space parking lot. Public art elements (human sun dial, butterfly, caterpillar) will be incorporated for all ages. Post construction fencing to prohibit access and avoid potential impacts to biological resources adjacent to site. The park development plan alternatives include multiple generational exercise equipment, and rubberized surfaces in lieu of sod areas;

b. Joint Use Park at Jonas Salk Elementary School is 2.0-acres to include a comfort station, multiple use fields, lighting, walkways, retaining walls, landscape, and stormwater bioretention basin;

c. Maddox Park, a 5.05-acre existing facility, will be upgraded with shade sails, lighting, seating, ADA Access, trash receptacles, dog agility equipment, landscaping, stormwater biofiltration basin, and post construction fencing to prohibit access and avoid potential impacts to biological resources adjacent to site;

b. Landscaping, retaining walls, hardscape, and bioretention basins (planting, irrigation and landscape related improvements);

c. 43 Off-street parking spaces;

d. Public and private accessory improvements determined by the Development Services Department to be consistent with the land use and development standards for this site in accordance with the adopted community plan, the California Environmental Quality Act

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(CEQA) and the CEQA Guidelines, the City Engineer's requirements, zoning regulations, conditions of this Permit, and any other applicable regulations of the SDMC.

STANDARD REQUIREMENTS:

1. This permit must be utilized within 10 years (120) months after the date on which all rights of appeal have expired. If 10 years have passed from the date on which all rights of appeal have expired and the City is unable to establish, with evidence in accordance with Section 126.0108(c), that at least one of the circumstances identified in Section 126.0108(b) occurred, then the development permit shall be void. This permit must be utilized by August 5, 2030.

2. No permit for the construction, occupancy, or operation of any facility or improvement described herein shall be granted, nor shall any activity authorized by this Permit be conducted on the premises until:

   a. The Owner/Permittee signs and returns the Permit to the Development Services Department; and

   b. The Permit is recorded in the Office of the San Diego County Recorder.

3. While this Permit is in effect, the subject property shall be used only for the purposes and under the terms and conditions set forth in this Permit unless otherwise authorized by the appropriate City decision maker.

4. This Permit is a covenant running with the subject property and all of the requirements and conditions of this Permit and related documents shall be binding upon the Owner/Permittee and any successor(s) in interest.

5. The continued use of this Permit shall be subject to the regulations of this and any other applicable governmental agency.

6. Issuance of this Permit by the City of San Diego does not authorize the Owner/Permittee for this Permit to violate any Federal, State or City laws, ordinances, regulations or policies including, but not limited to, the Endangered Species Act of 1973 (ESA) and any amendments thereto (16 U.S.C. § 1531 et seq.).

7. The Owner/Permittee shall secure all necessary construction permits. The Owner/Permittee is informed that to secure these permits, substantial construction modifications and site improvements may be required to comply with applicable construction, fire, mechanical, and plumbing codes, and State and Federal disability access laws.

8. Construction plans shall be in substantial conformity to Exhibit "A." Changes, modifications, or alterations to the construction plans are prohibited unless appropriate application(s) or amendment(s) to this Permit have been granted.

9. All of the conditions contained in this Permit have been considered and were determined necessary to make the findings required for approval of this Permit. The Permit holder is required to comply with each and every condition in order to maintain the entitlements that are granted by this Permit.

ENVIRONMENTAL/MITIGATION REQUIREMENTS:

10. Mitigation requirements in the Mitigation, Monitoring, and Reporting Program [MMRP] shall apply to this Permit. These MMRP conditions are hereby incorporated into this Permit by reference.

11. The mitigation measures specified in the MMRP and outlined in Environmental Impact Report, SCH No. 2010011021, certified in November 2011 by the San Diego Unified School District, shall be noted on the construction plans and specifications under the heading ENVIRONMENTAL MITIGATION REQUIREMENTS.

12. The Owner/Permittee shall comply with the MMRP as specified in Environmental Impact Report, SCH No. 2010011021, certified in November 2011 by the San Diego Unified School District, to the satisfaction of the Development Services Department and the City Engineer. Prior to the issuance of the "Notice to Proceed" with construction, all conditions of the MMRP shall be adhered to, to the satisfaction of the City Engineer

CLIMATE ACTION PLAN REQUIREMENTS:

13. Owner/Permittee shall comply with the Climate Action Plan (CAP) Consistency Checklist stamped as Exhibit "A." Prior to issuance of any construction permit, all CAP strategies shall be noted within the first three (3) sheets of the construction plans under the heading "Climate Action Plan Requirements" and shall be enforced and implemented to the satisfaction of the Development Services Department.

ENGINEERING REQUIREMENTS:

14. The drainage system proposed for this development, as shown on the site plan, is public and subject to approval by the City Engineer.

15. All Public Improvements shall be constructed per approved Exhibit 'A' and satisfactory to the City Engineer.

16. The project shall incorporate any construction Best Management Practices necessary to comply with Chapter 14, Article 2, Division 1 (Grading Regulations) of the SDMC, into the construction plans or specifications.

17. The Project shall prepare a Technical Report that will be subject to final review and approval by the City Engineer, based on the Storm Water Standards in effect at the time of the construction permit issuance.

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18. The project shall submit a Water Pollution Control Plan (WPCP). The WPCP shall be prepared in accordance with the guidelines in Part 2 Construction BMP Standards Chapter 4 of the City's Storm Water Standards.

PLANNING/DESIGN REQUIREMENTS:

19. All signs associated with this development shall be consistent with sign criteria established by either the approved Exhibit "A" or City-wide sign regulations.

20. All private outdoor lighting shall be shaded and adjusted to fall on the same premises where such lights are located and in accordance with the applicable regulations in the SDMC.

TRANSPORTATION REQUIREMENTS

21. Owner/Permittee shall maintain off-street parking spaces on the property at all times in the approximate locations shown on the approved Exhibit "A."

22. All automobile, motorcycle and bicycle parking spaces must be constructed in accordance with the requirements of the SDMC. All on-site parking stalls and aisle widths shall be in compliance with requirements of the City's Land Development Code and shall not be converted and/or utilized for any other purpose, unless otherwise authorized in writing by the appropriate City decision maker in accordance with the SDMC.

23. Owner/Permittee shall provide and maintain 10 feet x 10 feet visibility triangle area on both sides of the driveway measured along the property line on Parkdale Avenue. No obstructions higher than 36 inches shall be located within this area e.g. shrubs, walls, columns, signs etc.

INFORMATION ONLY:

- The issuance of this discretionary permit alone does not allow the immediate commencement or continued operation of the proposed use on site. Any operation allowed by this discretionary permit may only begin or recommence after all conditions listed on this permit are fully completed and all required ministerial permits have been issued and received final inspection.

- Any party on whom fees, dedications, reservations, or other exactions have been imposed as conditions of approval of this Permit, may protest the imposition within ninety days of the approval of this development permit by filing a written protest with the City Clerk pursuant to California Government Code-section 66020.

- This development may be subject to impact fees at the time of construction permit issuance.

APPROVED by the Development Services Department of the City of San Diego on July 23, 2020 and CM-6969.

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AUTHENTICATED BY THE CITY OF SAN DIEGO DEVELOPMENT SERVICES DEPARTMENT

Karen Bucey
Development Project Manager

NOTE: Notary acknowledgment must be attached per Civil Code section 1189 et seq.

The undersigned Owner/Permittee, by execution hereof, agrees to each and every condition of this Permit and promises to perform each and every obligation of Owner/Permittee hereunder.

City of San Diego
Engineering and Capital Projects Department
Owner/Permittee

By Yovanna L. Lewis
Yovanna L. Lewis
Associate Engineer

NOTE: Notary acknowledgments must be attached per Civil Code section 1189 et seq.

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CALIFORNIA ALL-PURPOSE ACKNOWLEDGEMENT **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 August 26, 2020 before me, Teresa Dolores Morse, Notary Public,
Date *Here Insert Name and Title of Officer*

personally appeared Karen Bucey
Name 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, 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.

TERESA DOLORES MORSE
Notary Public - California
San Diego County
Commission # 2277360
My Comm. Expires Mar 9, 2023

I certify under the 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.

Place Notary Seal Above

Signature Teresa Dolores Morse

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CALIFORNIA ALL-PURPOSE ACKNOWLEDGEMENT **CIVIL CODE §1189**

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STATE OF CALIFORNIA)
) §
COUNTY OF San Diego)

On August 26, 2020 before me, Teresa Dolores Morse, Notary Public,
Date *Here Insert Name and Title of Officer*

personally appeared Yovanna L Lewis
Name 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, 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.

TERESA DOLORES MORSE
Notary Public - California
San Diego County
Commission # 2277360
My Comm. Expires Mar 9, 2023

Place Notary Seal Above

I certify under the 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 Teresa Dolores Morse

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DEVELOPMENT SERVICES DEPARTMENT
RESOLUTION NO.CM-6969
SITE DEVELOPMENT PERMIT 2430531
SALK NEIGHBORHOOD PARK PROJECT NO. 649077 [MMRP]

WHEREAS, the City of San Diego Engineering and Capital Projects Department, Owner/ Permittee,filed an application with the City of San Diego to construct Salk Neighborhood Park, located at 10264 Parkdale Avenue, consisting of three adjacent sites, the Salk Neighborhood Park; a Joint Use Park at Jonas Salk Elementary School; and the Maddox Park improvements (as described in and by reference to the approved Exhibits "A" and corresponding conditions of approval for the associated Permit No. 2430531, on portions of a the component site consisting of 11.15-acre;

WHEREAS, the three sites are in the Open Space (OP-1-1) and Residential Single Dwelling Unit (RS-1-14) Zones, within the Mira Mesa Community Plan Area;

WHEREAS, the project site is legally described as;

Salk Neighborhood Park (Parcel 1)
Beginning at the most southeasterly corner of said lot 222; said point being on the northwesterly right-of- way of Parkdale Avenue as dedicated per said map no. 9087; thence along said right of way, north 31°21' 40" east 79.45 feet to the southeast corner of the 11 foot-wide right of way of Parkdale Avenue, dedicated per document recorded may 2, 2014 as file no. 2014-0179883 of official records; thence northwesterly along said right-of-way, north 58° 46'45" west 11.00 feet; thence leaving said right-of-way north 58°46'45" west 26.35 feet; thence north 51°16'24" west 339.00 feet; thence south 41°18'54" west 54.17 feet; thence north 47 °10'02" west 268.95 feet to the most northwesterly line of said lot 222; thence along said line, south 52°30'04" west 427.86 feet to the most westerly corner of said lot 222; thence south 37°29'35" east 285.09 feet to the most southerly corner of said lot 222; thence along the southerly line of said lot 222, north 52°29'22" east 360.11 feet to an angle point in said southerly line; thence continuing along said southerly line, south 58°42'02" east 305.04 feet to a corner of lot 222; thence north 31°19'52" east 42.75 feet to a corner of said lot 222; thence south 58° 37'28" east 100.08 feet to said point of beginning.

Joint Use Facility (Parcel 2)
Beginning at the most southeasterly corner of said lot 222; said point being on the northwesterly right -of-way of Parkdale Avenue as dedicated per said map no. 9807; thence along said right of way, north 31°21' 40" east 79.45 feet to the southeast corner of the 11 foot -wide right of way of Parkdale Avenue, dedicated per document recorded may 2, 2014 as file no. 2014-0179883 of official records; thence northwesterly along said right-of-way north 58° 46'45" west 11.00 feet; thence leaving said right-of-way north 58°46'45" west 26.35 feet; thence north 51°16'24" west 339.00 feet to the true

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point of beginning; thence south 41°18'54" west 54.17 feet; thence north 47°10'02" west 268.95 feet to the most northwesterly line of said lot 222; thence along said line, north 52°30'04" east 397.52 feet; thence south 37°29'56" east 195.45 feet; thence south 41°18'54" west 305.00 feet to the true point of beginning.

Maddox Neighborhood Park
Lot 221 of Mira Mesa West Unit No. 2, according to Map thereof No. 9087 filed in the Office of the County Recorder of San Diego County, State of California on January 16, 1979.

WHEREAS, on July 17, 2020, the Development Services Department of the City of San Diego considered Site Development Permit No. 2430531 pursuant to the Land Development Code of the City of San Diego; NOW, THEREFORE,

BE IT RESOLVED by the Development Services Department of the City of San Diego, that it adopts the following findings with respect to Site Development Permit No. 2430531:

SITE DEVELOPMENT PERMIT (San Diego Municipal Code Section 126.0505)

(a) Findings for all Site Development Permits Section 126.0505

1. The proposed development will not adversely affect the applicable land use plan.

The project consists of three adjacent sites totaling 11.15-acres: the Salk Neighborhood Park located at 10264 Parkdale Avenue; the Joint Use Facility adjoining the north side of Jonas Salk Elementary School; and the Maddox Neighborhood Park. The three sites are in the Open Space (OP-1-1) and Residential Single Dwelling Unit (RS-1-14) Zones, within the Mira Mesa Community Plan Area. Key features will include a comfort station, site furnishings, lighting, concrete walkways, retaining walls, multi-use fields, permanent landscaping, public art, and bioretention basins. A new parking lot will be constructed along Parkdale Avenue with 43 parking spaces and bicycle racks. The park entrance and sidewalks will also be installed along Parkdale Avenue adjacent to Jonas Salk Elementary School. Maddox Park improvements will include installation of benches, shade sails, dog park agility equipment, trash receptacles, pet waste stations, drinking fountain with pet bowl, lighting, and fencing.

The Mira Mesa Community Plan Land Use Element designates the Salk Park and the Joint Use Field portions of the site as Community Park land use designation and the portion known as Maddox Park is designated as Neighborhood Park and proposed uses are consistent with the designations. The proposed project will contribute to satisfying population-based park acreage requirements set forth in the City of San Diego General Plan, Recreation Element. Furthermore, the proposed project is consistent with the Mira Mesa Community Plan, Park and Recreation Facilities Element, which includes policies for the development of active recreation facilities and development of future school sites for park purposes. Therefore, the proposed development will not adversely affect the applicable land use plan.

2. **The proposed development will not be detrimental to the public health, safety, and welfare.**

The project consists of three adjacent sites totaling 11.15-acres: the Salk Neighborhood Park located at 10264 Parkdale Avenue; the Joint Use Facility adjoining the north side of Jonas Salk Elementary School; and the Maddox Neighborhood Park. The three sites are in the Open Space (OP-1-1) and Residential Single Dwelling Unit (RS-1-14) Zones, within the Mira Mesa Community Plan Area.

The permit for the project includes conditions relevant to achieving project compliance with the applicable regulations in effect for this project. The permit conditions have been determined to be necessary to avoid adverse impacts upon the health, safety and general welfare of persons residing or working in the surrounding area.

The project would be required to obtain building permits and a public improvement permit prior to the construction of the development. The building plans and public improvement plans shall be reviewed, permitted, and inspected by the City for compliance with all applicable building, mechanical, electrical, fire code requirements, and development regulations. The permit for the project includes various conditions and referenced exhibits of approval relevant to achieving project compliance with the applicable regulations of the San Diego Municipal Code in effect for this project. Such conditions include and the removal of existing driveways and the construction of one new driveway, new curb and gutters, new sidewalks, new curb ramp, storm runoff restrictions, parking, and landscaping requirements. These conditions have been determined as necessary to avoid adverse impacts upon the health, safety and general welfare of persons residing or working in the surrounding area. Therefore, the proposed development will not be detrimental to the public health, safety, and welfare.

3. **The proposed development will comply with the applicable regulations of the Land Development Code, including any allowable deviations pursuant to the Land Development Code.**

The project consists of three adjacent sites totaling 11.15-acres: the Salk Neighborhood Park located at 10264 Parkdale Avenue; the Joint Use Facility adjoining the north side of Jonas Salk Elementary School; and the Maddox Neighborhood Park. The three sites are in the Open Space (OP-1-1) and Residential Single Dwelling Unit (RS-1-14) Zones, within the Mira Mesa Community Plan Area.

The project is on a previously graded site and contains steep slopes, vegetated habitat, vernal pools, and is adjacent to Multiple Habitat Planning Area (MHPA). The City of San Diego and the San Diego Unified School District (SDUSD) entered into a Memorandum of Understanding for development of the park and joint use areas. SDUSD was responsible for the preparation of an Environmental Impact Report (EIR SCH No. 2010011021) that studied the potential environmental impacts of development.

SDUSD coordinated with the U.S. Fish and Wildlife Services to identify vernal pools mitigation sites. Consistent with the Vernal Pool Habitat Conservation Plan (VPHCP) and Biology Guidelines, the U.S. Fish and Wildlife Service issued an Incidental Take Permit (E86352A) on October 22, 2012 with an expiration date of October 22, 2022.

A Biological Resource Report (March 4, 2020) was prepared for the site consistent with the City's Biology Guidelines. The study reviewed potential project impacts and proposed mitigation and found them consistent with the Vernal Pool Habitat Conservation Plan (VPHCP) and Biology Guidelines.

Additionally, the site contains steep hillsides that run offsite into adjacent MHPA and an open space canyon system. The project development will generally be on top of slope in the previously graded portion of the site with several small area of encroachment onto steep slopes for retaining walls design to minimize impacts to the steep hillside areas. An administrative MHPA Boundary Line Correction, under separate action, is in progress to correct the skewed boundary line that slightly overlaps the project area and realign it to the parcel boundaries previously authorized under the EIR. The project has been designed to minimize grading, retaining walls and impacts to the steep hillside areas approximately 3.2 percent of the project would encroach into steep hillsides. The project does not exceed the Steep Hillside Guidelines allowance for Public Projects of up to 40 percent in the Land Development Manual.

The project proposes no deviations to the Land Development Code and the issuance of the Site Development Permit will ensure that the project complies with all provisions and regulations set forth in the City's Land Development Code. Therefore, the proposed development will comply with the applicable regulations of the Land Development Code, including any allowable deviations pursuant to the Land Development Code.

(b) Supplemental Findings – Environmentally Sensitive Lands

1. The site is physically suitable for the design and siting of the proposed development and the development will result in minimum disturbance to environmentally sensitive lands.

The project consists of three adjacent sites totaling 11.15-acres: the Salk Neighborhood Park located at 10264 Parkdale Avenue; the Joint Use Facility adjoining the north side of Jonas Salk Elementary School; and the Maddox Neighborhood Park. The three sites are in the Open Space (OP-1-1) and Residential Single Dwelling Unit (RS-1-14) Zones, within the Mira Mesa Community Plan Area.

The project is on a previously graded site and contains steep slopes, vegetated habitat, vernal pools, and is adjacent to Multiple Habitat Planning Area (MHPA). The City of San Diego and the San Diego Unified School District (SDUSD) entered into a Memorandum of Understanding for development of park and joint use areas. SDUSD was responsible for the preparation of an Environmental Impact Report (EIR SCH No. 2010011021) that studied the potential environmental impacts of development.

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Mitigation for impacts to sensitive habitats identified in EIR (SCH No. 2010011021) were done with the completion of the Jonas Salk School. No further mitigation is required. Therefore, the site is physically suitable for the design and siting of the proposed development and the development will result in minimum disturbance to environmentally sensitive lands.

2. **The proposed development will minimize the alteration of natural landforms and will not result in undue risk from geologic and erosional forces, flood hazards, or fire hazards.**

The project consists of three adjacent sites totaling 11.15-acres: the Salk Neighborhood Park located at 10264 Parkdale Avenue; the Joint Use Facility adjoining the north side of Jonas Salk Elementary School; and the Maddox Neighborhood Park. The three sites are in the Open Space (OP-1-1) and Residential Single Dwelling Unit (RS-1-14) Zones, within the Mira Mesa Community Plan Area.

The project is on a previously graded site, is not located in a flood plain, nor on a site with any known geological risks. A geotechnical report was prepared by SCST, Inc., dated July 17, 2017, on behalf of the City to inform the design of the project including earthwork, foundations, slabs on grade, and retaining walls. The study found the site is predominately characterized by undocumented fill. Remedial earthwork is recommended to prepare the site for the proposed park improvements.

The proposed park will utilize proper engineering design and stormwater best management practices during construction, such as sediment and erosion control, dust control, spill prevention, trash control, and delineation of project limits to prevent temporary erosional forces from construction activities.

A Landscape Planting Plan has been developed for the project and all temporary impact areas will be revegetated with permanently irrigated landscaping. Native vegetation will be sited adjacent to the brush management zone at the canyon edge. Installation of landscaping along the property boundary and canyon edge would be separated by a chain-link fence. For all post-construction permanently irrigated areas, a 90-day Plant Establishment Period will be implemented to ensure adequate plant establishment and sustainability of the plantings and seedlings.

The project has been designed to minimize grading and protect against erosional forces through stormwater facilities. Therefore, the proposed development will minimize the alteration of natural landforms and will not result in undue risk from geologic and erosional forces, flood hazards, or fire hazards.

3. The proposed development will be sited and designed to prevent adverse impacts on any adjacent environmentally sensitive lands.

The project consists of three adjacent sites totaling 11.15-acres: the Salk Neighborhood Park located at 10264 Parkdale Avenue; the Joint Use Facility adjoining the north side of Jonas Salk Elementary School; and the Maddox Neighborhood Park. The three sites are in the Open Space (OP-1-1) and Residential Single Dwelling Unit (RS-1-14) Zones, within the Mira Mesa Community Plan Area.

The project is on a previously graded site and contains steep slopes, vegetated habitat, vernal pools, and is adjacent to Multiple Habitat Planning Area (MHPA). The City of San Diego and the San Diego Unified School District (SDUSD) entered into a Memorandum of Understanding for development of park and joint use areas. SDUSD was responsible for the preparation of an Environmental Impact Report (EIR SCH No. 2010011021) that studied the potential environmental impacts of development.

SDUSD coordinated with the U.S. Fish and Wildlife Services to identify vernal pools mitigation sites. Consistent with the Vernal Pool Habitat Conservation Plan (VPHCP) and Biology Guidelines, the U.S. Fish and Wildlife Service issued an Incidental Take Permit (E86352A) on October 22, 2012 with an expiration date of October 22, 2022.

A Biological Resource Report (March 4, 2020) was prepared for the site consistent with the City's Biology Guidelines. The study reviewed potential project impacts and proposed mitigation and found them consistent with the Vernal Pool Habitat Conservation Plan (VPHCP) and Biology Guidelines.

Additionally, the site contains steep hillsides that run offsite into adjacent MHPA and an open space canyon system. The project development will generally be on top of slope in the previously graded portion of the site with several small area of encroachment onto steep slopes for retaining walls design to minimize impacts to the steep hillside areas. An administrative MHPA Boundary Line Correction, under separate action, is in progress to

correct the skewed boundary line that slightly overlaps the project area and realign it to the parcel boundaries previously authorized under the EIR. The project has been designed to minimize grading, retaining walls and impacts to the steep hillside areas approximately 3.2 percent of the project would encroach into steep hillsides. The project does not exceed the Steep Hillside Guidelines allowance for Public Projects of up to 40 percent in the Land Development Manual.

Mitigation for impacts to sensitive habitats identified in EIR (SCH No. 2010011021) were done with the completion of the Jonas Salk School. No further mitigation is required. Therefore, the proposed development will be sited and designed to prevent adverse impacts on adjacent environmentally sensitive lands.

4. **The proposed development will be consistent with the City of San Diego's Multiple Species Conservation Program (MSCP) Subarea Plan and Vernal Pool Habitat Conservation Plan (VPHCP).**

The project consists of three adjacent sites totaling 11.15-acres: the Salk Neighborhood Park located at 10264 Parkdale Avenue; the Joint Use Facility adjoining the north side of Jonas Salk Elementary School; and the Maddox Neighborhood Park. The three sites are in the Open Space (OP-1-1) and Residential Single Dwelling Unit (RS-1-14) Zones, within the Mira Mesa Community Plan Area.

The project is on a previously graded site and contains steep slopes, vegetated habitat, vernal pools, and is adjacent to Multiple Habitat Planning Area (MHPA). The City of San Diego and the San Diego Unified School District (SDUSD) entered into a Memorandum of Understanding for development of park and joint use areas. SDUSD was responsible for the preparation of an Environmental Impact Report (SCH No. 2010011021) that studied the potential environmental impacts of development.

SDUSD coordinated with the U.S. Fish and Wildlife Services to identify vernal pools mitigation sites. Consistent with the Vernal Pool Habitat Conservation Plan (VPHCP) and Biology Guidelines, the U.S. Fish and Wildlife Service issued an Incidental Take Permit (E86352A) on October 22, 2012 with an expiration date of October 22, 2022.

A Biological Resource Report (March 4, 2020) was prepared for the site consistent with the City's Biology Guidelines. The study reviewed potential project impacts and proposed mitigation and found them consistent with the Vernal Pool Habitat Conservation Plan (VPHCP) and Biology Guidelines.

Additionally, the site contains steep hillsides that run offsite into adjacent MHPA and an open space canyon system. The project development will generally be on top of slope in the previously graded portion of the site with several small area of encroachment onto steep slopes for retaining walls design to minimize impacts to the steep hillside areas. An administrative MHPA Boundary Line Correction, under separate action, is in progress to correct the skewed boundary line that slightly overlaps the project area and realign it to the parcel boundaries previously authorized under the EIR. The project has been designed to minimize grading, retaining walls and impacts to the steep hillside areas approximately 3.2

percent of the project would encroach into steep hillsides. The project does not exceed the Steep Hillside Guidelines allowance for Public Projects of up to 40 percent in the Land Development Manual.

Mitigation for impacts to sensitive habitats identified in EIR (SCH No. 2010011021) were done with the completion of the Jonas Salk School. No further mitigation is required. Therefore, the project is consistent with the City's MSCP Subarea Plan and VPHCP.

5. The proposed development will not contribute to the erosion of public beaches or adversely impact local shoreline sand supply.

The project consists of three adjacent sites totaling 11.15-acres: the Salk Neighborhood Park located at 10264 Parkdale Avenue; the Joint Use Facility adjoining the north side of Jonas Salk Elementary School; and the Maddox Neighborhood Park. The three sites are in the Open Space (OP-1-1) and Residential Single Dwelling Unit (RS-1-14) Zones, within the Mira Mesa Community Plan Area.

The proposed project is located inland approximately 5.8-miles from the Pacific Ocean and is not located within the Coastal Overlay Zone. The development of the Salk Park, Joint Use Field and Maddox Park improvements will include stormwater Best Management Practices and will not contribute to the erosion of public beaches or adversely impact local shoreline sand supply.

6. The nature and extent of mitigation required as a condition of the permit is reasonably related to, and calculated to alleviate, negative impacts created by the proposed development.

The project consists of three adjacent sites totaling 11.15-acres: the Salk Neighborhood Park located at 10264 Parkdale Avenue; the Joint Use Facility adjoining the north side of Jonas Salk Elementary School; and the Maddox Neighborhood Park. The three sites are in the Open Space (OP-1-1) and Residential Single Dwelling Unit (RS-1-14) Zones, within the Mira Mesa Community Plan Area.

The City of San Diego and the San Diego Unified School District (SDUSD) entered into a Memorandum of Understanding for development of park and joint use areas. SDUSD was responsible for the preparation of an Environmental Impact Report (EIR SCH No. 2010011021) that studied the potential environmental impacts of development.

Additionally, a Biological Resources Report (City of San Diego, 2020) was prepared to analyze current conditions at the site and the adequacy of mitigation identified under the EIR for Development of the Jonas Salk School. The proposed project will impact approximately 0.074-acre of Chamise Chaparral, 5.518-acres of disturbed, 0.457-acre of ornamental vegetation, 1.521-acres of developed areas, and 0.002-acre of potential vernal pool habitat. All impacts associated with the development of the park had been authorized as permanent impacts and mitigated for, as required by the EIR. Therefore, the nature and extent of mitigation required as a condition of the permit is reasonably related to, and calculated to alleviate, negative impacts created by the proposed development.

The above findings are supported by the minutes, maps and exhibits, all of which are incorporated herein by this reference.

BE IT FURTHER RESOLVED that, based on the findings hereinbefore adopted by the Development Services Department, Site Development Permit No. 2430531 is hereby GRANTED by the Development Services Department to the referenced Owner/Permittee, in the form, exhibits, terms and conditions as set forth in Permit No. 2430531, a copy of which is attached hereto and made a part hereof.

Karen Bucey
Development Project Manager
Development Services

Adopted on July 17, 2020

WBS#: S-14007.02.06

ORIGINAL

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.)

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.

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.

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.

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

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

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

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.

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. Theses 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.

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)

City of San Diego PUBLIC UTILITIES Water & Wastewater

(For Office Use Only)

NS REQ	FAC#
DATE	BY

METER SHOP (619) 527-7449

Application Date	Requested Install Date:

Meter Information

Fire Hydrant Location: (Attach Detailed Map//Thomas Bros. Map Location or Construction drawing.) Zip:	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: ☐ 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: (PERSON IN ACCOUNTS PAYABLE)			Phone: ( )
Site Contact Name and Title:			Phone: ( )
Responsible Party Name:			Title:
Cal ID#			Phone: ( )
Signature:		Date:	

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

☐ Fire Hydrant Meter Removal Request	Requested Removal Date:	
Provide Current Meter Location if Different from Above:		
Signature:	Title:	Date:
Phone: ( )	Pager: ( )	

☐ City Meter	☐ 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%	$ -
					$ -		$ -		$ -	0.00%	$ -
	CHANGE ORDER No.				$ -		$ -		$ -	0.00%	$ -
					$ -		$ -		$ -	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

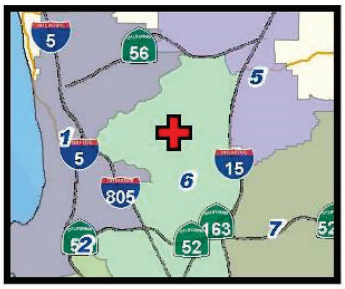
Construction Cash Flow Forecast

"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												

APPENDIX E

LOCATION MAP



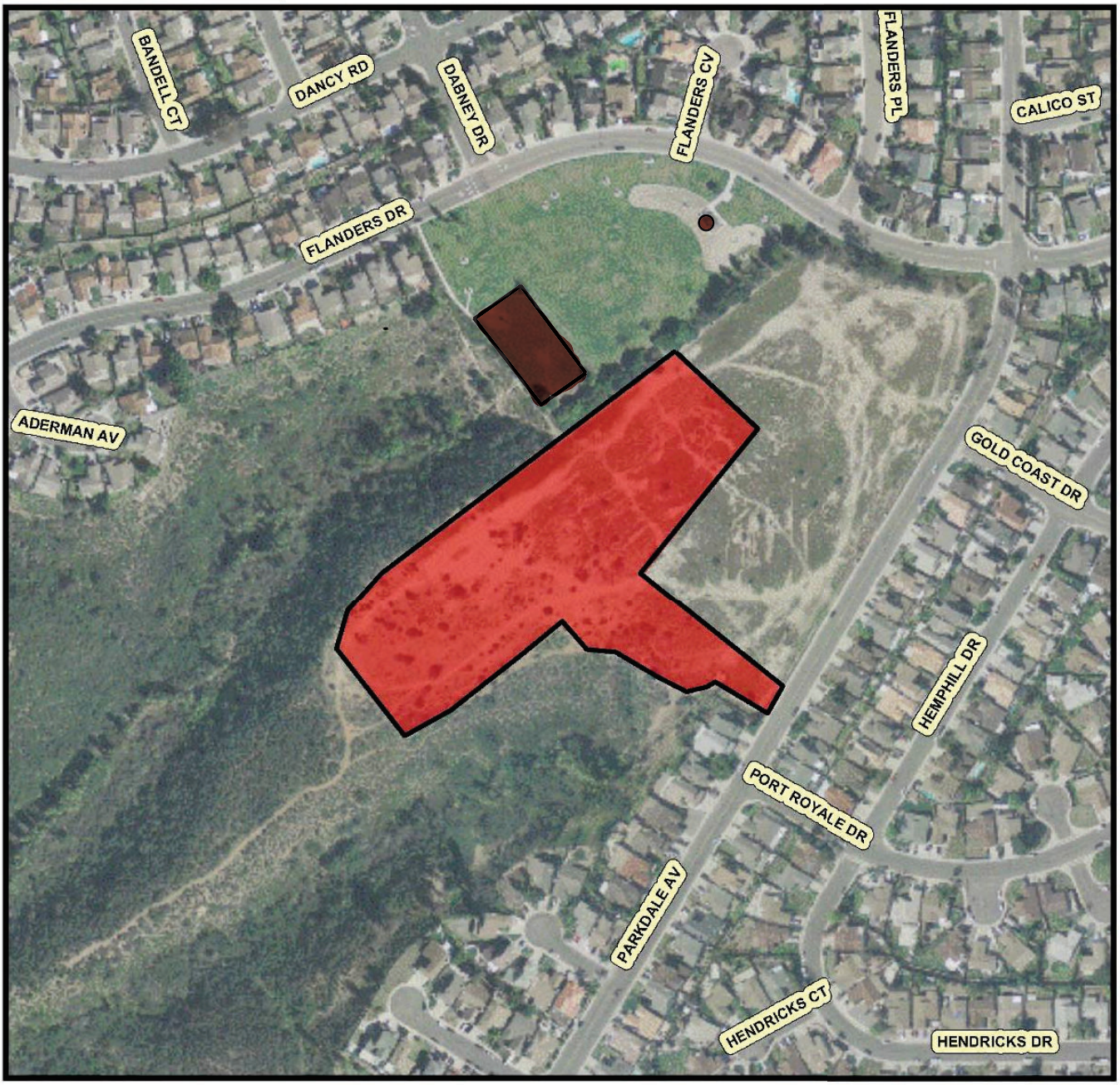
LOCATION MAP

SALK NEIGHBORHOOD PARK AND JOINT USE FACILITY

CITY OF SAN DIEGO PUBLIC WORKS DEPARTMENT

PROJECT OFFICER II
Kevin Oliver
(619) 533-5139

PROJECT ENGINEER
Yovanna Lewis
(619) 533-5130



Legend

Project Location

N
W
E
S
No Scale

S:\PITS\PITS-CIP-Preliminary-Engineering-and-Program-Coordination\Drafting\Park & Rec Projects\Salk Neighborhood Park & Joint Use Fac\CIP Tracking\Location Map

COMMUNITY NAME: Mira Mesa

COUNCIL DISTRICT: 06

SAP ID: S-14007

APPENDIX F

SAMLE OF PUBLIC NOTICE

The City of SAN DIEGO

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

To contact the City of San Diego: SD Public Works
619-533-4207 | engineering@sandiego.gov | sandiego.gov/CIP

This information is available in alternative formats upon request.

The City of SAN DIEGO

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

To contact the City of San Diego: SD Public Works
619-533-4207 | engineering@sandiego.gov | sandiego.gov/CIP

This information is available in alternative formats upon request.

APPENDIX G

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 2018 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:

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

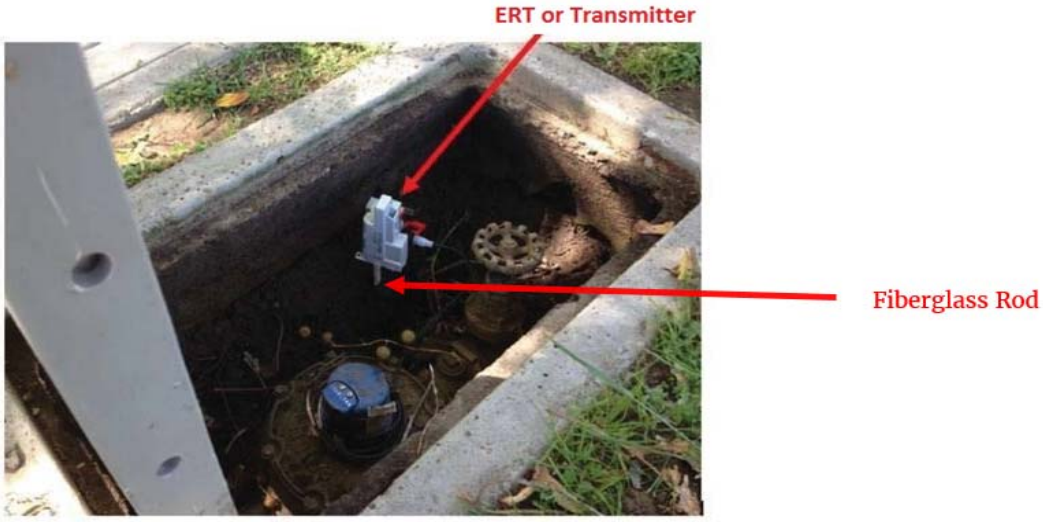


Photo 6 below is an example of disturbance that shall be avoided:

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

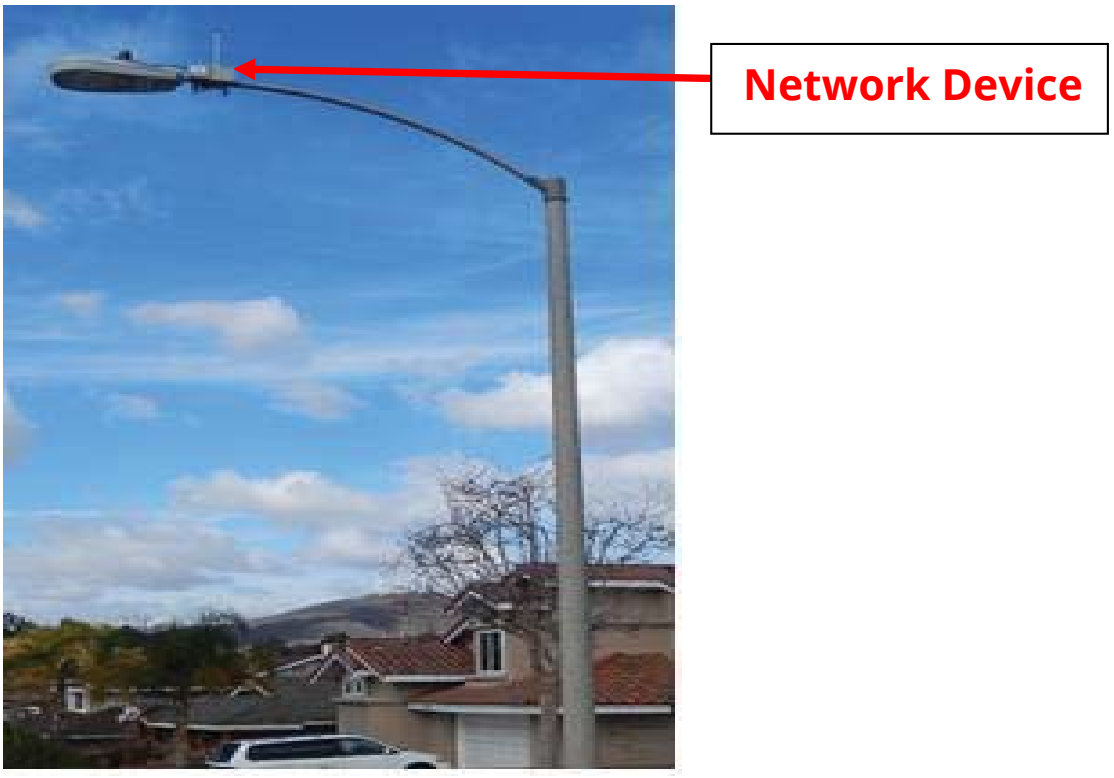


Photo 9

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 H

SWPPP CONSTRUCTION BMP MAINTENANCE LOG

SWPPP Construction BMP Maintenance Log

Examples of construction BMP maintenance activites 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 Acitivities

- 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

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 Marcon Engineering, Inc., herein called "Contractor" for construction of **Salk Neighborhood Park Joint Use Development**; Bid No. **K-22-1993-DBB-3-B;** in the total amount of ($7,240,888.00), which is comprised of the Base Bid plus Additive Alternates A, B, C, and D,

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).
   (d) That certain documents entitled, **Salk Neighborhood Park Joint Use Development** on file in the office of Purchasing & Contracting Department as Document No. **S-14007** 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 **Salk Neighborhood Park Joint Use Development**, Bid Number **K-22-1993-DBB-3-B**, 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.

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 §22.3102 authorizing such execution.

THE CITY OF SAN DIEGO

By Berric Doringo

Print Name: Berric Doringo
Deputy Director
Purchasing & Contracting Department

Date: 7/26/2022

APPROVED AS TO FORM: which is comprised of the

Mara W. Elliott, City Attorney

By Dana Fairchild

Print Name: Dana Fairchild
Deputy City Attorney

Date: 7/29/2022

CONTRACTOR

By

Print Name: Maryory Contreras

Title: President

Date: 06-21-2022

City of San Diego License No.: B1998012843

State Contractor's License No.: 631811 (A,B,C8)

DEPARTMENT OF INDUSTRIAL RELATIONS (DIR) REGISTRATION NUMBER: 1000029618

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:

Salk Neighborhood Park Joint Use Facility
(Project Title)

as particularly described in said contract and identified as Bid No. **K-22-1993-DBB-3-B**; SAP No. (WBS) **S-14007**; 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

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 - Section 3-2, "SELF-PERFORMANCE", 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 SDVOSB①	WHERE CERTIFIED②	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 SDVOSB①	WHERE CERTIFIED②
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 Planet Bids.

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. **SUBCONTRACTOR LISTING FOR ALTERNATE ITEMS**

D. **MANDATORY DISCLOSURE OF BUSINESS INTERESTS FORM**

E. **DEBARMENT AND SUSPENSION CERTIFICATION FOR PRIME CONTRACTOR**

F. **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 MarCon Engineering, Inc. as Principal, and Endurance Assurance Corporation 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-21-1993-DBB-3 - Salk Neighborhood Park Joint Use Facility

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 16th day of May, 2022

MarCon Engineering, Inc. (SEAL)
(Principal)

By: _____
(Signature)

Endurance Assurance Corporation (SEAL)
(Surety)

By: _____
(Signature)
Lawrence F. McMahon, Attorney-in-Fact

(SEAL AND NOTARIAL ACKNOWLEDGEMENT OF SURETY)

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 MAY 16 2022 before me, Natassia Kirk-Smith, Notary Public,
Date *Here Insert Name and Title of the Officer*

personally appeared Lawrence F. McMahon
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.

NATASSIA KIRK-SMITH
Notary Public - California
Orange County
Commission # 2253818
My Comm. Expires Aug 12, 2022

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

SOMPO INTERNATIONAL
INSURANCE

POWER OF ATTORNEY

2697

KNOW ALL BY THESE PRESENTS, that **Endurance Assurance Corporation**, a Delaware corporation, **Endurance American Insurance Company**, a Delaware corporation, **Lexon Insurance Company**, a Texas corporation, and/or **Bond Safeguard Insurance Company**, a South Dakota corporation, each, a "Company" and collectively, "**Sompo International**," do hereby constitute and appoint: **Lawrence F. McMahon** as true and lawful Attorney(s)-In-Fact to make, execute, seal, and deliver for, and on its behalf as surety or co-surety; bonds and undertakings given for any and all purposes, also to execute and deliver on its behalf as aforesaid renewals, extensions, agreements, waivers, consents or stipulations relating to such bonds or undertakings provided, however, that no single bond or undertaking so made, executed and delivered shall obligate the Company for any portion of the penal sum thereof in excess of the sum of **ONE HUNDRED MILLION Dollars ($100,000,000.00).**

Such bonds and undertakings for said purposes, when duly executed by said attorney(s)-in-fact, shall be binding upon the Company as fully and to the same extent as if signed by the President of the Company under its corporate seal attested by its Corporate Secretary.

This appointment is made under and by authority of certain resolutions adopted by the sole shareholder of each Company by unanimous written consent effective the 15th day of June, 2019, a copy of which appears below under the heading entitled "Certificate".

This Power of Attorney is signed and sealed by facsimile under and by authority of the following resolution adopted by the sole shareholder of each Company by unanimous written consent effective the 15th day of June, 2019 and said resolution has not since been revoked, amended or repealed:

RESOLVED, that the signature of an individual named above and the seal of the Company may be affixed to any such power of attorney or any certificate relating thereto by facsimile, and any such power of attorney or certificate bearing such facsimile signature or seal shall be valid and binding upon the Company in the future with respect to any bond or undertaking to which it is attached.

IN WITNESS WHEREOF, each Company has caused this instrument to be signed by the following officers, and its corporate seal to be affixed this 15th day of June, 2019.

Endurance Assurance Corporation
By: Richard M Appel
Richard Appel; SVP & Senior Counsel

Endurance American Insurance Company
By: Richard M Appel
Richard Appel; SVP & Senior Counsel

Lexon Insurance Company
By: Richard M Appel
Richard Appel; SVP & Senior Counsel

Bond Safeguard Insurance Company
By: Richard M Appel
Richard Appel; SVP & Senior Counsel

ACKNOWLEDGEMENT

On this 15th day of June, 2019, before me, personally came the above signatories known to me, who being duly sworn, did depose and say that he/her is an officer of each of the Companies; and that he executed said instrument on behalf of each Company by authority of his office under the by-laws of each Company.

By: Amy Taylor
Amy Taylor, Notary Public - My Commission Expires 5/9/23

CERTIFICATE

I, the undersigned Officer of each Company, DO HEREBY CERTIFY that:

1. That the original power of attorney of which the foregoing is a copy was duly executed on behalf of each Company and has not since been revoked, amended or modified; that the undersigned has compared the foregoing copy thereof with the original power of attorney, and that the same is a true and correct copy of the original power of attorney and of the whole thereof;
2. The following are resolutions which were adopted by the sole shareholder of each Company by unanimous written consent effective June 15, 2019 and said resolutions have not since been revoked, amended or modified:

   "RESOLVED, that each of the individuals named below is authorized to make, execute, seal and deliver for and on behalf of the Company any and all bonds, undertakings or obligations in surety or co-surety with others: RICHARD M. APPEL, BRIAN J. BEGGS, CHRISTOPHER DONELAN, SHARON L. SIMS, CHRISTOPHER L. SPARRO, MARIANNE L. WILBERT

   ; and be it further

   RESOLVED, that each of the individuals named above is authorized to appoint attorneys-in-fact for the purpose of making, executing, sealing and delivering bonds, undertakings or obligations in surety or co-surety for and on behalf of the Company."
3. The undersigned further certifies that the above resolutions are true and correct copies of the resolutions as so recorded and of the whole thereof.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal this 16th day of May 20 22.

By: Daniel S. Ludie, Secretary

NOTICE: U. S. TREASURY DEPARTMENT'S OFFICE OF FOREIGN ASSETS CONTROL (OFAC)

No coverage is provided by this Notice nor can it be construed to replace any provisions of any surety bond or other surety coverage provided. This Notice provides information concerning possible impact on your surety coverage due to directives issued by OFAC. **Please read this Notice carefully.**

The Office of Foreign Assets Control (OFAC) administers and enforces sanctions policy, based on Presidential declarations of "national emergency". OFAC has identified and listed numerous foreign agents, front organizations, terrorists, terrorist organizations, and narcotics traffickers as "Specially Designated Nationals and Blocked Persons". This list can be located on the United States Treasury's website – https://www.treasury.gov/resource-center/sanctions/SDN-List.

In accordance with OFAC regulations, if it is determined that you or any other person or entity claiming the benefits of any coverage has violated U.S. sanctions law or is a Specially Designated National and Blocked Person, as identified by OFAC, any coverage will be considered a blocked or frozen contract and all provisions of any coverage provided are immediately subject to OFAC. When a surety bond or other form of surety coverage is considered to be such a blocked or frozen contract, no payments nor premium refunds may be made without authorization from OFAC. Other limitations on the premiums and payments may also apply.

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: Marcon Engineering Inc.

Certified By Maryory Contreras Title CEO

Name

Signature Date May 24,2022

USE ADDITIONAL FORMS AS NECESSARY

SUBCONTRACTORS ADDITIVE/DEDUCTIVE ALTERNATE

*** FOR USE WHEN LISTING SUBCONTRACTORS ON ALTERNATES ***

(Use Additional Sheets As Needed)

ADDITIVE/DEDUCTIVE ALTERNATE	SUBCONTRACTOR NAME, LOCATION, PHONE & EMAIL	CONSTRUCTOR OR DESIGNER	DIR REGISTRATION NUMBER	SUBCONTRACTOR LICENSE NUMBER	TYPE OF WORK	DOLLAR VALUE OF SUBCONTRACT	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WoSB, HUBZone, OR SDVOSB①	WHERE CERTIFIED	CHECK IF JOINT VENTURE PARTNERSHIP
	Name:__________ Address:__________ City:________ State:______ Zip:______ Phone:________ Email:__________								
	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.

SUBCONTRACTORS ADDITIVE/DEDUCTIVE ALTERNATE

***** FOR USE WHEN LISTING SUBCONTRACTORS ON ALTERNATES *****

(Use Additional Sheets As Needed)

ADDITIVE/DEDUCTIVE ALTERNATE	SUBCONTRACTOR NAME, LOCATION, PHONE & EMAIL	CONSTRUCTOR OR DESIGNER	DIR REGISTRATION NUMBER	SUBCONTRACTOR LICENSE NUMBER	TYPE OF WORK	DOLLAR VALUE OF SUBCONTRACT	MBE, WBE, OBE, DVBE, OBE, ELBE, SLBE, SDB, WoSB, HUBZone, OR SDVOSB①	WHERE CERTIFIED	CHECK IF JOINT VENTURE PARTNERSHIP
	Name:____________ Address:____________ City:________ State:______ Zip:______ Phone:________ Email:____________								
	Name:____________ Address:____________ City:________ State:______ Zip:______ Phone:________ Email:____________								
	Name:____________ Address:____________ City:________ State:______ Zip:______ Phone:________ Email:____________								

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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.

Mandatory Disclosure of Business Interests Form

BIDDER/PROPOSER INFORMATION

Legal Name		DBA	
Marcon Engineering Inc.			
Street Address	**City**	**State**	**Zip**
876 N Broadway	Escondido	CA	92025
Contact Person, Title		**Phone**	**Fax**
Maryory Contreras CEO		760-871-0477 EXT 12	

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
Maryory Contreras	CEO
City and State of Residence	**Employer (if different than Bidder/Proposer)**
Solana Beach, 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.

Maryory Contreras CEO		May 24,2022
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
Maryory Contreras is CEO and 100% owns Marcon Engineering	CEO

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: Marcon Engineering Inc.

Certified By: Maryory Contreras — Title: CEO

Name

Signature — Date: May 24,2022

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
(Masonry) Tier 1 Masonry	Pablo Christopher Pelaez - President

☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE
(Playground Surfacing) Spectraturf	Arthur Byron Dodge - President

☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE
(Installing Playground Equipment and Shade Shelters) Western State Builders	Julian Patrick Dillavou-Moen - CEO

☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE
Gravity Retaining Walls Homeland Engineering	Jack James Robertson Jr. - CEO

Contractor Name: Marcon Engineering Inc.

Certified By: Maryory Contreras (Name) Title: CEO

Signature: [signature] Date: May 24,2022

****USE ADDITIONAL FORMS AS NECESSARY****

DEBARMENT AND SUSPENSION CERTIFICATION

SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS

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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
(Fencing) Team-West Contracting	Dawn Renee Lilly - President

☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE
(Electrical) Moor Electric	Dwayne Henry - President

☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE
(Landscape + Irrigation) Makelele Landscape and Maintenance	Jose Guadalupe Cardenas Arellano President

☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE
(Concrete) QSB Construction	Alicia Espinal Lowery - President

Contractor Name: Marcon Engineering Inc.

Certified By Maryory Contreras Title CEO

Name

Signature Date May 24,2022

****USE ADDITIONAL FORMS AS NECESSARY****

DEBARMENT AND SUSPENSION CERTIFICATION

SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS

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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
(Structural Steel, Railings, Wire Gratings)	Hammed Ardalani - President
SDStature	

☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE
(Plumbing) Weber's Plumbing	Justin Lee Weber - President

☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE
(Rough Carpentry, Glue lams, Fiber Cement Board)	Troy Aaron Parry - President
Oak Hollow Restoration	

☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE
(Asphalt Paving) Sealright Paving	Frank Tovar Vasquez - President

Contractor Name: Marcon Engineering Inc.

Certified By: Maryory Contreras — Title: CEO

Name

Signature — Date: May 24,2022

****USE ADDITIONAL FORMS AS NECESSARY****

DEBARMENT AND SUSPENSION CERTIFICATION

SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS

TO BE COMPLETED BY BIDDER

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☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE

☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE

☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE

☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE

Contractor Name: Marcon Engineering Inc.

Certified By Maryory Contreras Title CEO

Name

Signature

Date May 24,2022

****USE ADDITIONAL FORMS AS NECESSARY****

DEBARMENT AND SUSPENSION CERTIFICATION

SUBCONTRACTORS, SUPPLIERS AND MANUFACTURERS

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☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE

☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE

☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE

☒ SUBCONTRACTOR ☐ SUPPLIER ☐ MANUFACTURER

NAME	TITLE

Contractor Name: Marcon Engineering Inc.

Certified By Maryory Contreras Title CEO

Name

Signature Date May 24,2022

****USE ADDITIONAL FORMS AS NECESSARY****

Bid Results

Bidder Details

Vendor Name	Marcon Engineering, Inc.
Address	876 N Broadway Escondido, California 92025 United States
Respondee	Carson Allen
Respondee Title	Estimator
Phone	760-871-0477
Email	carson.allen@marconeng.com
Vendor Type	MBE, CADIR, WBE, WOSB, PQUAL, FEM, LAT
License #	631811
CADIR	1000029618

Bid Detail

Bid Format	Electronic
Submitted	05/24/2022 1:54 PM (PDT)
Delivery Method	
Bid Responsive	
Bid Status	Submitted
Confirmation #	292591

Respondee Comment

Buyer Comment

Attachments

File Title	File Name	File Type
1. Pending.pdf	1. Pending.pdf	CONTRACTOR'S CERTIFICATION OF PENDING ACTIONS
2. Sub list Alternate Changes.pdf	2. Sub list Alternate Changes.pdf	SUBCONTRACTOR LISTING FOR ALTERNATE ITEMS
3. Mandatory.pdf	3. Mandatory.pdf	MANDATORY DISCLOSURE OF BUSINESS INTERESTS FORM
4. Prime.pdf	4. Prime.pdf	PRIME - DEBARMENT AND SUSPENSION CERTIFICATION
5. Subs not complete.pdf	5. Subs not complete.pdf	SUBS, SUPPLIERS, MANUF. - DEBARMENT AND SUSPENSION CERTIFICATION
6. Bid Bond.pdf	6. Bid Bond.pdf	Bid Bond

Subcontractors

Showing 11 Subcontractors

Name & Address	Desc	License Num	CADIR	Amount	Type
Homeland Engineering Inc. 11337 Moreno Ave. Lakeside, California 92040	Constructor Modular retaining Walls	990582	1000008253	$62,473.00	CADIR, CAU, DVBE, MALE, SLBE, Local
Makelele Systems Landscape & Mai PO BOX 2044 Makelele Systems San Marcos, California 92079	Constructor-Landscape & Irrigation	987557	1000028415	$575,568.00	MBE, CADIR, MALE, LAT, Local
Oak Hollow Restoration 444 Sixth St. Norco, California 92860	Constructor-Rough Carpentry,Glue lams, Fiber cement Board	1051967	10000364957	$131,400.00	
QSB Construction 350 W 9th Avenue STE 101 Escondido, California 92025	Constructor Concrete(partial)	956107	1000004298	$550,000.00	LAT, FEM, ELBE, PQUAL, MBE, CADIR, WBE, WOSB, Local
SDSTATURE 1934 North Marshall Unit 109 El Cajon, California 92020	Constructor-Structural Steel, Railings, Wire Gratings	990906	1000023037	$96,300.00	MALE, CADIR, Local
SealRight Paving, Inc. 9053 Olive Dr. Spring Valley, California 91977	Constructor-Asphalt Paving	364113	1000039542	$77,412.00	DBE, MBE, CADIR, MALE, LAT, Local
SpectraTurf 555 S. Promenade Avenue Suite #103 Corona, California 92879	Constructor-Playground Surfacing	854429	1000002615	$111,597.00	CADIR
Team West Contracting Corporation 1611 Jenks Drive Corona, California 92880	Constructor-Fencing	934352	1000768825	$286,000.00	DBE, MBE
Tier 1 Masonry 5806 Lynn St. San Diego, California 92105	Constructor-Masonry	1070572	1000717976	$280,800.00	MALE, LAT, Local
Weber's Plumbing PO BOX 549 WINCHESTER, California 92596	Constructor-Plumbing	444338	1000856354	$97,000.00	
Western State Builders Inc 2141 Orange Ave. Escondido, California 92029	Constructor-Install Shade Shelters	1069677	1000706410	$93,500.00	Local

Line Items

Discount Terms No Discount

Item #	Item Code	Type	Item Description	UOM	QTY	Unit Price	Line Total	Response	Comment
Main Bid							$6,780,546.00		
1	524126		Bonds (Payment and Performance)	LS	1	$53,453.00	$53,453.00	Yes	
2	236220		Building Permits (EOC Type I)	AL	1	$92,000.00	$92,000.00	Yes	
3	237310		Specialty Inspection Paid For By the Contractor (EOC Type I)	AL	1	$15,000.00	$15,000.00	Yes	
4	238990		Construction for Salk Neighborhood Park Joint Use Development	LS	1	$6,093,714.00	$6,093,714.00	Yes	
5	238990		Mobilization	LS	1	$197,100.00	$197,100.00	Yes	
6			Field Orders (EOC Type II)	AL	1	$252,000.00	$252,000.00	Yes	
7	541330		Traffic Control and Working Drawings	LS	1	$4,000.00	$4,000.00	Yes	
8	238210		SDG&E Service Orders	LS	1	$10,000.00	$10,000.00	Yes	
9	541330		SWPPP Development	LS	1	$2,000.00	$2,000.00	Yes	
10	237310		SWPPP Implementation	LS	1	$59,279.00	$59,279.00	Yes	
11	541330		SWPPP Permit Fee (EOC Type I)	AL	1	$2,000.00	$2,000.00	Yes	
Additive Alternate A							$115,223.00		
12	238990		Maddox Park Shade Sail	LS	1	$115,223.00	$115,223.00	Yes	
Additive Alternate B							$77,611.00		
13	238990		Exercise Equipment	LS	1	$77,611.00	$77,611.00	Yes	
Additive Alternate C							$119,438.00		
14	238990		Rubberized Play Surfacing at Exercise Equipment	LS	1	$119,438.00	$119,438.00	Yes	
Additive Alternate D							$148,070.00		
15	238990		Exercise Equipment Area Shade Sails	LS	1	$148,070.00	$148,070.00	Yes	

Line Item Subtotals

Section Title	Line Total
Main Bid	**$6,780,546.00**
Additive Alternate A	**$115,223.00**
Additive Alternate B	**$77,611.00**
Additive Alternate C	**$119,438.00**
Additive Alternate D	**$148,070.00**
Grand Total	**$7,240,888.00**